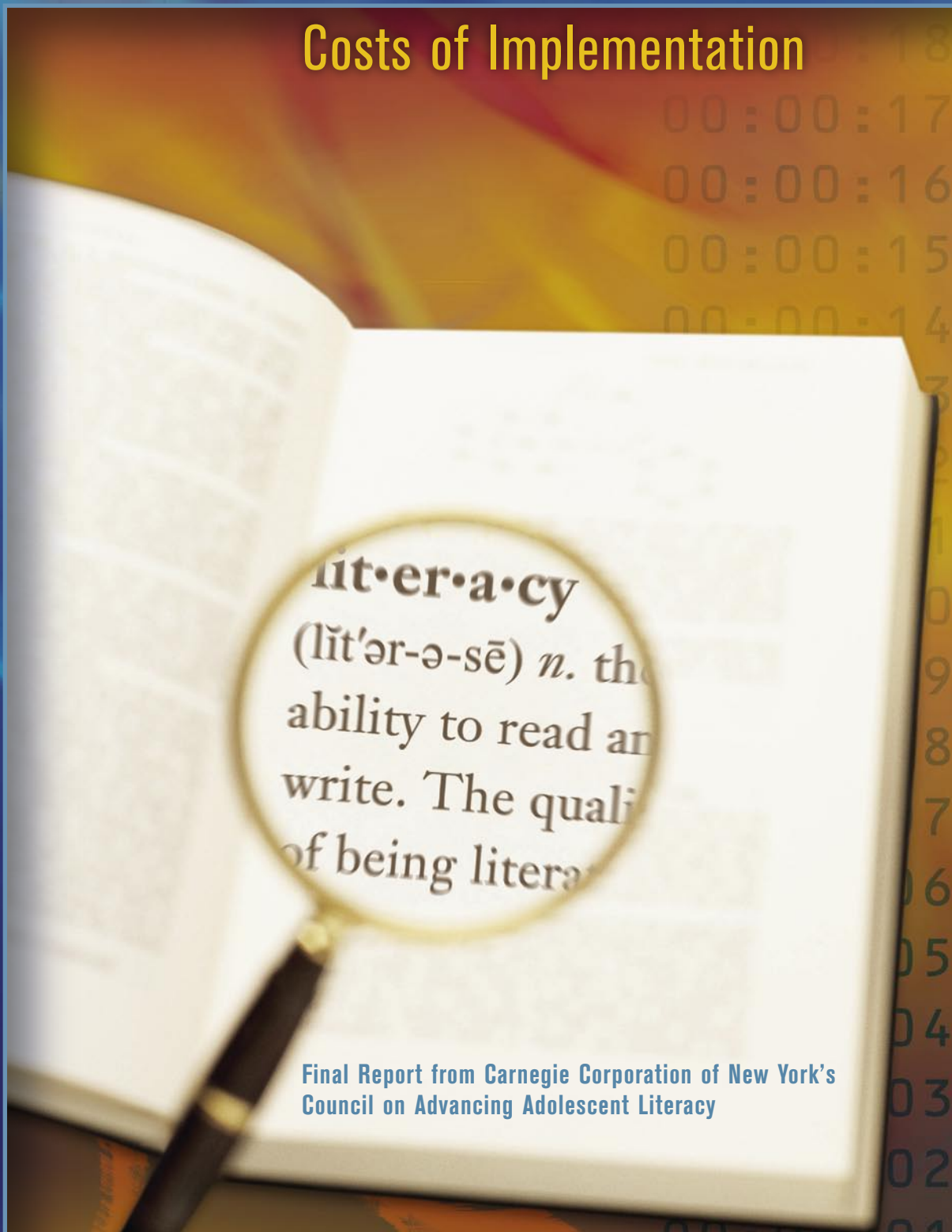
Adolescent Literacy Programs

Costs of Implementation



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Final Report from Carnegie Corporation of New York's Council on Advancing Adolescent Literacy

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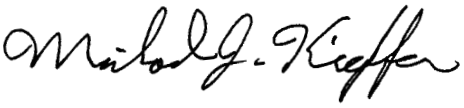

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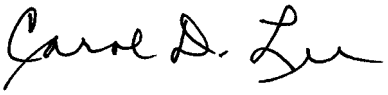

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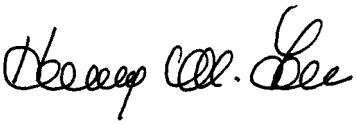

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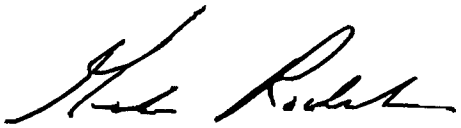

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Many educators and researchers have proposed reforms for dealing with the ongoing adolescent literacy crisis. Progress in strengthening young people's literacy now depends on schools a) choosing appropriate programs and b) implementing them consistently and effectively. Yet the history of school reform is littered with reforms that were adopted and quickly abandoned for not answering students' needs. Time and resources routinely go to waste as schools and school districts recycle through reform after reform showing little long-term progress. Often, schools adopt reforms in a mechanical fashion, as if a perfunctory acceptance of the reform and its training requirements were sufficient to routinely yield educational success. But without appropriate leadership, resources, and commitment to succeed, any such effort is bound to fail.

This paper reviews the literature on implementation of educational reforms, then examines differences in implementation and costs among a sample of schools that have each adopted one of three well-known (READ 180, Questioning the Author, and Reading Apprenticeship) reforms, concluding with a few recommendations—simple procedures that we believe will improve schools' chances for achieving positive results with literacy reform.

Importance of Implementation

Educational reform at the school district or site typically begins with a specific challenge that has reached a crisis point, such as low student performance, disruption or absenteeism. Those in charge of fixing the problem usually survey a number of alternatives such as new textbooks, curriculum packages, software, and staff development, before making a choice. Soon afterward, materials are purchased and professional development begins, and the reform is said to be in place. Decision-makers begin to look for results within just a few months after starting the reform. After a year or so, when the expected improvements are still not forthcoming, they decide that the reform did not work and launch a search for a new and better one.

This behavior is so typical of the reform process that anyone who has worked in a school or school district for a decade or so will have experienced as many as three or four different reforms dedicated to the same problem, and dozens of different reforms addressing the myriad issues facing their schools. School reforms tend to be adopted in a perfunctory manner, implicitly assuming that the adoption of new materials and professional development associated with the reform will automatically transform the school and alleviate the targeted problem. But such is almost never the case, so the search for solutions continues to follow a repetitive pattern as previous efforts fail and get replaced by a new approach.

Two explanations are often given by observers for the familiar stop-and-go pattern of school reform. The first is that schools are unique institutions which cannot be altered by taking a cookie-cutter approach. Rather, change strategies must take account of the unique features of the school situation, including previous school experience with reforms, school leadership and level of commitment to change, staff capacity, student characteristics, and available resources.

For example, schools with habitual adoption and turnover of reforms may see reform as a ritual rather than a reality to be taken seriously. School administrators may lack a full understanding of the needs of a reform and how to create productive roles that will support the reform. School staff may not believe that change is needed, and may attribute problems to factors such as teacher turnover, inadequate resources, and student limitations. Furthermore, schools may launch a reform without first gaining a clear idea of what resources are required and where they will be obtained. Likewise, school

districts may encourage or mandate adoptions of reforms without providing the supportive conditions for success.

This explanation for failure of reform suggests that any strategy for reform must build not only on the theory and details of the reform, but also on the concrete features and realities of the school in which the reform is being enacted (Evans, 1996).

The second reason often given for repeated failure of reforms is closely related to the first. According to this second view, not only does each school differ as a context for change, but even an understanding of the differences may not be fully adequate for developing a strategy for change. Schools are not quiescent or inert organizations waiting to follow instructions from outside experts on how to alter themselves. Rather, they respond to outside interventions, molding them in ways that are often unpredictable and even unrecognizable. In a famous set of studies by the Rand Corporation, it was found that although adopted reforms are explicitly designed to change how schools operate, schools themselves have the agency and wherewithal to reshape the reform, or even to neuter it completely. The failure of school reforms can therefore be attributed to the capacity of the schools to swallow external interventions without allowing the reforms to fundamentally change school directions.[1]

Because this second explanation is so closely related to the first, it suggests much the same strategy for making a chosen reform work, rather than permitting it to be derailed by aspects of the school culture into which it gets introduced: namely, detailed resource planning and cost-accounting prior to implementing the reform.

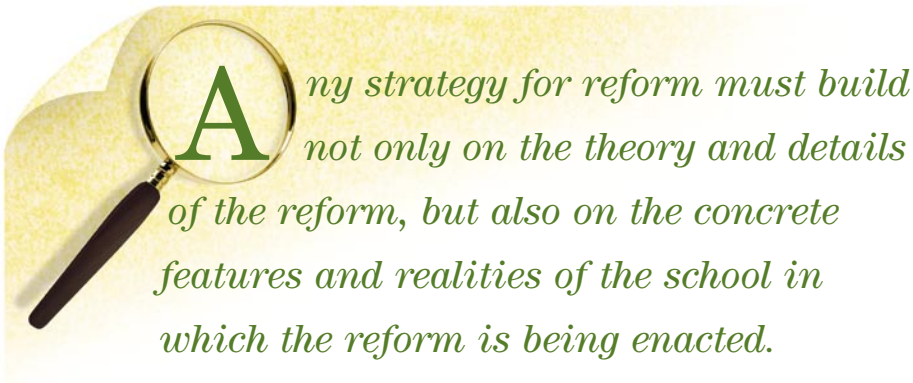
Although there exists a massive literature on the importance of paying attention to the details of implementation (cf. Berends, Kirby, Naftel, & McKelvey, 2001), school organizations and operations typically undervalue the need for implementation planning. The Rand multi-year evaluations of the New American Schools (Berends et al., 2001) concluded that: "Throughout the history of research on program initiatives, one finding has emerged again and again: Implementation dominates outcomes" (p. 23; see also Fullan, 1991; Pressman & Wildavsky, 1973). Schools need to plan in greater depth the process of implementing reforms, beginning with the specification of the types of resources that will be needed and their costs, and moving on to include the concrete, day-to-day details of implementation.

This paper outlines how resources can be identified and their costs more precisely determined. By paying closer attention to the resource needs and uses necessary to support reform, rather than merely presuming that the reform will make itself work once it has been put into process, schools have a better chance of achieving their desired results, thereby breaking out of the endless cycle of hope, effort, and disappointment.

Resources and Implementation

Although there may be many reasons for poor implementation of school reform, two of the most common are (1) failure to account for the resources that will be needed to promise success, and (2) failure to procure the appropriate resources at the outset.

Effective reform requires concrete efforts to ascertain the precise resources that will be needed to make the reform work. One cannot simply assume that these resources will automatically become available when and as needed. For example, the demand for reduced class size has specific resource consequences in that schools must hire more teachers and provide additional classroom space. Yet often, at a late hour, decision-makers find themselves scrambling for the necessary additional space and qualified personnel. Likewise, schools sometimes fail to make provisions for the time commitments of their personnel, overlooking or improperly scheduling necessary



work hours. Longer instructional periods for literacy activities usually means that provisions for teacher assignments and scheduling must be changed. If the school day remains fixed, resources and time must be reallocated, with obvious consequences for the overall scheduling of classes and assignments. In an extended day, additional teaching resources must be provided. Time for professional development includes not only the time allocated to formal workshops and professional development, but also time required for instructional planning among faculty, and consultation and evaluation by coaches with classroom teachers. Yet, all too often, schools make no formal arrangements to capture the time needed for such activities. Rather, they assume that the time will be "found" somewhere or other. If school principals, along with other school-site administrators, are to show real leadership in the reform process, they must find the time to engage in training, teacher meetings, classroom observations and feedback, modeling good practices, and so on. Yet, many decision-makers simply assume that administrative staff will find the necessary hours for all of these activities by rearranging their daily schedules to juggle the additional responsibilities. In some reforms, schools are expected to hire a full-time or part-time coach. Instead, the added coaching tasks are handed to a Title I coordinator or department head on top of existing responsibilities.

Fortunately, there exist relatively simple tools for identifying the resources needed to implement reforms. These tools are easy to use because they build on knowledge of the resources and activities integral to the intervention. The basic model used to evaluate the resources that will be needed and their cost is what is known as the "ingredients method" (Levin & McEwan, 2001). The method requires that planners follow a number of relatively simple steps in planning implementation.

The first step is to identify the "ingredients" or resources that will be required to put a reform into place (Levin & McEwan, 2001, Chapter 3). Such identification must be done in a systematic way that entails participation by both school and district staff members, all of whom need to understand exactly what it will take to implement the reform. Likewise, district staff must be fully cognizant of program requirements and funding needs. Most aspects of this type of analysis can be done by using a financial spread sheet such as EXCEL. On the spreadsheet, personnel positions are listed according to their qualifications and the portion of time that will be needed. If the principal is expected to allocate one-quarter of her time to the reform, that requirement is identified in a formal way rather than entrusted to "whether and when she has time." The same goes for other personnel positions. During the planning process, it is crucial that decision-makers begin to identify where the needed personnel will come from. Will extra teachers be needed to free up time for professional development and teacher discussions and deliberations? If so, how many positions will be needed and with what qualifications? Clearly, the answers to such questions have far-reaching implications for hiring or reassignment.

Facilities needs and specific furnishings and equipment should also be identified in the spreadsheet "ingredients analysis." If additional classroom space is needed for reductions in class size, that space should be specified. If computers, software, instructional materials, and other equipment are required, these should be denoted explicitly rather than merely presumed. Ultimately, all necessary ingredients will be listed along with sufficient detail regarding qualities and characteristics. The compiling of the needed ingredients is not only important for developing a complete list of resources associated with the intervention; it also gives school and district personnel a better understanding of the needs and purposes of the overall reform, and enlists joint support in obtaining the resources. Specific sources of information in identifying ingredients include: descriptive materials on the reform and interviews with the sponsor or developer of the intervention; articles and reports on experiences of other schools in adopting the intervention; and observations and interviews (often by email or telephone) with personnel in other schools or districts that have already adopted the intervention.

The second stage in using the ingredients method to identify resources and implementation needs is to associate each of the ingredients with its cost. Methods of setting out the cost for each have been well-developed in the literature (Levin & McEwan, 2001: Chapter 4). A complete listing of ingredients and their costs will provide an estimate of the overall cost of the intervention. This process also clarifies the resources

that must be in place to promise success, so that the school year begins with the necessary personnel and adjustments in schedule and group size that are integral to the specific reform.

The third stage in the ingredients form of analysis is to ascertain where resources will come from. In some cases reallocation of the budget may be necessary, assigning existing resources to the intervention in place of using them for activities of a lower priority. In other cases new resources will be required with implications for school budgets or for obtaining volunteer support. At this stage the details of financing must be in place in order to move forward with the reform.

Implementation is a joint responsibility of the model developer and the school and school district. The model developer must provide clear guidelines with respect to how the reform works and what modifications it requires to usual school practices as well as the ingredients needed to make it succeed. The school and school district must set out a blueprint in advance that allows for identification, funding, and acquisition of required resources and planning the activities that comprise the reform. The precise nature of the blueprint will vary from site to site depending upon initial alignment of programs and personnel. In some schools the challenge of a specific reform will require greater modifications of resources and prove more costly than in others. For example, as we will show, reforms that require a small class size are simpler to implement in a district that already has smaller classes than the norm.

In the following pages we illustrate some dramatically different costs and methods of implementing the same reforms. Our aim is to assist school decision-makers and schools in selecting from among these or other interventions to improve literacy among their students based not only on students' needs, but also on a careful consideration of the costs of implementation. In some of these cases, the wide divergence in costs is due to the need to make larger departures from existing practices at some sites than at others. In other cases, the site decision-makers have decided to make special modifications in the models. In still others, idiosyncratic factors seem to have entered into implementation decisions. The overall lesson we hope to convey is that careful planning and analysis in advance of launching a reform is likely to provide both better implementation and better cost management.

Although we are illustrating the variability in implementation among a small sample of adolescent literacy reforms, the overall findings should not be viewed as unique. Virtually all reforms show this type of variability, even those largely implemented by "formula." For example, one of the most widely used reading reforms at the elementary school level, Success for All (SFA), shows similar variability despite relatively rigid requirements in materials, organization, and instructional practices. Using the ingredients method of estimating costs, King (1994) found that Success for All had an implementation cost ranging from about $500 per child to about $1,300 per child, even though its sponsors report a cost of only about $150 per child for materials and training (about $75,000 for a school with 500 students). The cost difference can be accounted for by the fact that SFA requires schools to provide extended class periods for reading, smaller class sizes, and additional personnel in the school for supporting the reform, changes that are not accounted for in the cost estimates of the developer. Deciding whether large differences in cost from site-to-site are associated with differences in effectiveness among sites lies outside the scope of this study, though that possibility certainly exists.

Three Adolescent Literacy Programs

To demonstrate the variability in implementation and subsequent variability in costs, we selected three highly regarded reforms for improving adolescent literacy. We then gathered information on how these programs were implemented at different sites. We collected data on the logistics of the implementation as well as the resources used to carry out the intervention at each chosen site. Each developer provided the same description of the intervention and its implementation requirements to the different sites. From the perspective of the developer, success requires that the nature of the professional development and the provisions necessary for the reform have clear similarities, ensuring quality control from site-to-site. We describe three interventions and explore differences in their implementation and costs among sites to see how much variance exists. In order, the chosen interventions are:

- Read 180
- Questioning the Author
- Reading Apprenticeship

Read 180

Read 180 is a reading intervention designed for struggling readers in late elementary, middle and high school. Read 180's stated goal is to improve students' decoding, fluency and comprehensions skills. The program was developed through collaborative research between Vanderbilt University and the Orange County Public School System in Florida. It was piloted with more than 10,000 students between 1994 and 1999 (Scholastic Research and Evaluation Department, 2006, July). Scholastic began publishing Read 180 in 1999 and currently markets the program to school districts across the country.

Read 180 lessons consist of whole group, small group and individualized literacy instruction. During whole group instruction teachers read aloud, engage students in shared and choral reading, and model fluent reading and the use of reading strategies. The class is then divided into three groups that rotate through three reading stations: small group instruction, computerized instruction and independent reading. In small group instruction, the teacher gives more personalized reading instruction to a small group of students. At the computer station, students receive individualized instruction via a program that advances to new text only after students demonstrate mastery in fluency, word recognition, spelling and comprehension. The program provides support for readers, including a video to enhance background knowledge, pronunciation, translation and definitions for difficult words in the text, decoding tips, and a summary of the student's reading accomplishments. During independent reading, students self-select texts from the Read 180 library and listen to audiobooks, which model fluent reading and comprehension strategies. The Read 180 lesson ends with another short period of whole group instruction (Florida Center for Reading Research, 2006).

Scholastic recommends that Read 180 be delivered to students in daily 90-minute instructional blocks. Using this model, students get 20 minutes of whole group instruction and three 20-minute rotations through the stations, followed by a 10 minute wrap up. Scholastic also suggests limiting enrollment in Read 180 classes to 15 students. While many school districts follow these recommendations closely, others do not have either the resources or flexibility to modify the school day or to drastically reduce class size to fit Scholastic's recommendations. When this is the case, schools tend to mold the program to fit their specific circumstances. Some schools use the Read 180 program with average, or only slightly reduced class sizes. Others split the 90-minute instructional block into two 45-minute periods within the same day, or even into two 45-minute periods on consecutive days. The intervention has also been used as an after-school program, administered as infrequently as two times a week.

Questioning the Author

Questioning the Author is an instructional technique, rather than a complete literacy program or curriculum. It is designed to engage late elementary through high school students in critical reading, thinking and discussion. The goal is for students to improve comprehension and retention of the information presented in texts (Beck, McKeown, Hamilton, & Kucan, 1997). As such, it has been used primarily with content area texts, particularly in the social sciences, but the technique is intended to be appropriate for interactions with any type of text. Questioning the Author was developed by researchers at the University of Pittsburgh and Bethany College in cooperation with the Pittsburgh Public Schools.

Using this approach to literacy instruction, teachers model their own reading processes for students (Beck, McKeown, Sandora, Kucan, & Worthy, 1996). In addition, they make use of a carefully constructed set of questions, referred to as queries. The *queries* are posed at planned intervals during the reading of the text and are designed to assist students in constructing meaning. Students are encouraged to see authors as fallible human beings who do not always express information and ideas clearly. Through student-to-student interaction, the group works collaboratively to demystify the text and uncover its more subtle meanings. Teachers use discussion strategies such as "marking" (drawing attention to an idea) and "revoicing" (using other words) to enhance student discussion and comprehension (Florida Center for Reading Research, 2006).

Questioning the Author requires few resources beyond professional development costs. However, the training time varies widely, ranging from approximately four to twelve days per teacher in the first year. Because teacher preparation is an integral part of this program, developers believe that new practitioners will need 1.5 hours to prepare for each lesson. This time demand is needed because appropriate queries must be planned out by teachers

for each new text. However, most schools are unable or unwilling to give teachers the additional planning time needed for this preparation; as a result, teachers must either implement the technique without the suggested preparation time or spend many hours outside of school preparing texts and developing queries. The developers also recommend rearranging the classroom furniture into a U shape so that students can see each other's faces during the discussion. Some teachers choose to follow this suggestion and others do not.

Reading Apprenticeship

Reading Apprenticeship is an approach to literacy that seeks to demystify academic reading for middle and high school students who struggle with text comprehension. Similar to Questioning the Author, it is not a complete curriculum so much as a pedagogical approach. In contrast to Questioning the Author, Reading Apprenticeship aims to root literacy instruction and practice in the subject areas by attending to the unique demands and practices within each discipline. Developed by the Strategic Literacy Initiative (SLI) at WestEd, it is based on the premise that remedial, basic-skills programs result in a "literacy ceiling" that can limit academic and other opportunities (Greenleaf, Schoenbach, Cziko, & Mueller, 2001, p. 86). To surpass these limitations, Reading Apprenticeship prepares educators from all content areas to embrace new and complex conceptions of reading as well as new ways to develop students' academic reading skills. In Reading Apprenticeship classrooms, teachers and students act as partners in a collaborative inquiry into reading as they engage with texts in a specific subject area.

In order to create classrooms where students function as active and effective readers and learners, Reading Apprenticeship trains teachers to reframe reading and writing in their subject areas by planning along four dimensions: social, personal, cognitive, and knowledge building. The social dimension focuses on creating and maintaining a supportive learning environment where students may feel comfortable making mistakes and asking questions. The personal dimension seeks to improve students' identities and attitudes as readers. The cognitive dimension provides students with strategies and tools to aid comprehension, with an emphasis on group discussion of when and why certain tools are useful. The knowledge-building dimension involves recognition and expansion of the knowledge students bring to a text. These four dimensions are linked in the classroom through "metacognitive conversation," a practice that makes the invisible aspects of each dimension visible and open for discussion (for detailed discussion of dimensions, see Schoenbach, Braunger, Greenleaf, & Litman, 2003).

While it is possible for Reading Apprenticeship to be implemented by a single teacher, its developer, SLI, emphasizes the importance of cross-curricular implementation. In an ideal implementation, all teachers in a school will implement Reading Apprenticeship, meeting regularly to discuss progress and strategies. It is considered vital that "full implementation" schools make time for such meetings to occur.

SLI trains educators in Reading Apprenticeship through a variety of professional development

opportunities, ranging from eight-day SLI series of sessions to one-day sessions provided by local "teacher experts." Nevertheless, all professional development educators are trained to see reading differently through examining their own reading process, that of adult peers, and of students. Because Reading Apprenticeship focuses on "retraining" content-area teachers, program implementation does not require structural change to the school schedule, purchase of new equipment, or additional personnel.

Data and Analysis

Our project was constrained to three months during the summer of 2005, so time factors limited the more refined collection and analysis of data that would be required in a precise cost accounting. However, we believe that differences in the resource patterns among sites and the overall cost magnitudes are broadly representative.

A five-step method was used to gather and organize data for this study; this approach is part of the "ingredients method" described in Levin & McEwan (2001, Chapter 3 & 4).

First, we reviewed published program documents for each intervention. These documents included general program descriptions, implementation guidelines, reports by previous program evaluators, district and program websites, implementation videos, journal articles, and various other sources of information. This review of published materials familiarized us with the programs and alerted us to potential costs and pitfalls of implementation.

Second, we contacted program developers by telephone and, where possible, met with them in person. Developers explained both the minimal and ideal resources required for successful implementation of their intervention. They described the primary obstacles to implementation as well as the resources and actions that schools and districts commonly used to overcome those obstacles. Each of the three program developers provided a wide-range of program literature and contact information for successful program implementers around the country.

Third, we conducted telephone interviews with school and district personnel—teachers, principals, technology specialists, district literacy coordinators, and superintendents—to learn how programs were being implemented at the local level. Our goal was to document and understand the various ways that a single model took on different operational features at the sites of implementation. Respondents at each site were asked not only to describe the pattern of implementation, but also to identify the characteristics of personnel required for successful program implementation. For example, one district noted the necessity of a full-time district literacy coordinator, while another had no such position. In addition, respondents described the nature of the professional development offered to teachers, administrators, and technicians. Finally, they described the materials and the facilities required to implement the program. Some of the interventions required the purchase of additional technology and the procurement of additional classrooms while others did not. At each of these stages, local staff described problems they encountered as well as the resources and actions they used (or tried to use) to overcome these problems. The short timeframe of this study (June to August 2005) and the lack of program implementation over the summer were limiting factors in this phase of the study. In some cases, it was difficult to schedule interviews because school personnel were out of the office for the summer. We note the number of sites contacted at the beginning of each program's results section. Our limited time frame also made it impractical to conduct observations on site.

Fourth, we used the above sources of information to construct an ingredients list for each site's implementation. This list outlined the personnel, materials and facilities used at each implementation site, as compared to the developers' recommended ingredients. The purpose of this method was not to highlight inconsistencies between implementer approaches and developer models, but rather to show future schools and districts the real range of resources required to implement a given intervention. By identifying the ingredients that are actually used in an intervention, we hope to inspire schools to think more deeply about the resources, time requirements, and personnel needs that contribute to program success.

Fifth, we created Excel spreadsheets detailing the ingredients and relative costs for each intervention across different sites. Costs were assigned to the ingredients using national averages, developer cost estimates, and individual site estimates. Total program costs were determined as well as program

costs per student. Although major cost components such as program licenses, professional development, and computers are purchased in the first year, they continue to provide services over a number of years; using proper costing techniques, these costs were annualized where appropriate.[2] That is, only that portion of the cost of such ingredients that should be charged to a single year of use is included in these estimates. To annualize costs, we assumed five years of program implementation at a 5 percent discount rate. Five years is also a number recommended by Scholastic for Read 180, although the program has been implemented beyond five years in some sites. Exceptions to the five year expected lifespan are noted in the tables.

Findings

The following presentation describes the findings from analysis of site implementation of each of the reforms. Since this work was performed over the summer, we were limited in both time and access to school personnel in obtaining data. Accordingly, what follows should be viewed not for its precise cost analysis as much as for its patterns of resource use and the magnitudes of cost. Also, our purpose is not to compare the cost of different intervention models, because some are more modest than others, a factor that may be reflected in both their scope and effectiveness, and because they have distinctively different goals. Results for each program are summarized separately below and in Tables 1-3. Each of the tables report for one program the costs of that program's ingredients, the costs at an "idealized" site described by the developers, and the costs at one or more actual implementation sites. We close by offering our readers some conclusions and insights gained through this study.

Read 180: Ingredients and Costs

The list of ingredients for Read 180 was derived from extensive telephone conversations and emails with numerous sites suggested by Scholastic, the sponsor of Read 180. Three of these sites, chosen for their diversity in geographic region and school size, are included in Table 1. In addition, we obtained details on the intervention from meetings, phone conversations, and correspondence with Scholastic representatives. The main categories of cost ingredients include personnel, professional development, facilities, equipment and materials, and licenses purchased. Table 1 provides a listing of ingredients with the additional quantities of each for three Read 180 school sites and the recommended model of Scholastic.

Personnel costs were divided into five categories: school administrators, school technicians, district coordinators, district technicians, and additional teachers required for program implementation. Additional teachers are required for Read 180 when schools cut class sizes for the program and/or alter their schedules to accommodate the recommended 90 minute class period. Therefore, we calculated the number of additional teachers needed for Read 180 where the Read 180 requirements deviated from existing class sizes and period lengths.

Clearly, the simple purchase of Read 180 courseware in itself is inadequate to ensure increased student literacy achievement without appropriate staffing, professional development, and use of the courseware. One purpose of this report is to make the less conspicuous costs of adolescent literacy programs and their appropriateness visible to future implementers such as non-teacher personnel. All sites reported that district leadership and support are required to initiate and sustain an effective implementation of Read 180. For example, a teacher from a large urban district reported that, in its first four years of Read 180 instruction, his school had four different principals, none of whom were committed to Read 180. As a result, there was vast inconsistency in implementation, with children constantly being shifted in and out of Read 180 classes. In the fifth year of implementation, the school hired a principal who was supportive of Read 180 and, for the first time, the teacher had the same students from September to June. In addition, support for program challenges was readily available, as were resources for program essentials such as headphones and technical support. In this case, both additional principal time and school resources were needed to maximize the success of the program. The above description of essential support systems was echoed by Scholastic, as well as teachers, principals and district personnel at all sites.

While some districts reported few technology problems, others described technology as a primary obstacle to program implementation. In all cases,

technology-related personnel provided essential support to Read 180 teachers. Many schools employ on-site technology specialists to resolve problems quickly, and all districts in our sample use a district-level technology expert who travels from school to school, resolving hardware and software problems.

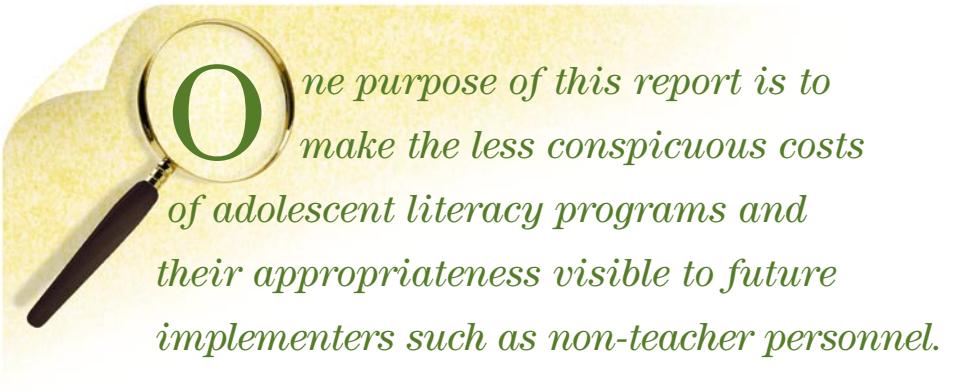
To determine program costs for school administrators, school technicians, district coordinators, and district technicians, we converted the amount of time spent on Read 180 per school-year into a percent of a position (assuming 1440 work hours per year) and divided that number by the average national salary for that position. All personnel costs were calculated using national averages for the 2004-2005 school year (Educational Research Service, 2005), plus 25 percent estimated fringe benefits.

Scholastic provides numerous options for Read 180 professional development, some of which are included in the cost of the program licensing. According to Scholastic, two days of implementation training for teachers as well as the teachers' participation in its online course—both provided with the purchase of Read 180—are necessary in the first year of implementation. Optimally, Scholastic recommends that districts purchase a selection of additional half-day seminars and/or additional online reading courses. For school and district level administrators, Scholastic recommends participation in a half-day leadership development course, included in the price of the program. Finally, for technicians, Scholastic provides a Read 180 Technical Training Program at an additional cost of $9,000 for one day or $12,000 for two days. The training prepares technicians to provide program support within their school environment.

Additional professional development costs that are not included with the purchase of Read 180, but are important for schools to consider, include substitute costs (where required), additional teacher training, and the opportunity costs associated with time spent on Read 180 training. Because professional development is intended to exert an impact beyond the year that it is provided, the costs are annualized (i.e., divided into yearly costs).

Additional classrooms make up the primary facility requirement for Read 180 to accommodate reduced class size.[3] While Scholastic provides no recommendation for facilities, it is important to note that Read 180 classrooms must be large enough to house computers for one third of the students as well as provide sufficient space for the small groups, independent reading, and computerized instruction groups.

Because Read 180 is a technology-based intervention, equipment and materials are vital to program implementation. Student computers and application servers comprise the largest equipment cost. However, this cost varies depending on the existing technological infrastructure of a school. For example, a school without adequate models or numbers of computers for Read 180 will incur greater first year technology costs than will a school with the proper infrastructure already in place. Scholastic recommends a specific arrangement of system requirements for the best performance of Read 180; however, it acknowledges local differences in technology infrastructure and makes recommendations to schools and districts based on the technology that they already have.



While computers and servers comprise the largest equipment costs, full implementation also requires a printer, headphones, and cassette/CD players. Districts can also purchase additional classroom books and project reading kits. Costs for equipment and materials were annualized based on their average lifespan.

In order to determine the costs of implementing Scholastic's recommendations for Read 180, one must know the situation of the school prior to implementation. Much of the cost depends on pre-existing local conditions such as class size, technology

infrastructure, length of class periods, and personnel characteristics. Using information from three districts, all of which enthusiastically endorse Read 180, we were able to calculate the range of approximate costs associated with implementing this program. These results are found in Table 1.

READ 180 SITE ONE

Site One is a large urban/suburban school district with an enrollment of close to 300,000 students. During the 2004-2005 school year, this district used the Read 180 program to instruct approximately 6,700 students. Initially, Site One adopted an "early bird" schedule in which students arrived at school prior to the beginning of the regular school day. Attendance was a serious problem, so Site One modified its schedule to allow students to receive Read 180 instruction daily, in 90-minute blocks during the school day. In addition, Read 180 classes are capped at 30 students, a significant reduction from the 38 student per class district average reported by the district.[4] However, since we could not confirm that the average class size was initially this large, we have used a class size of 30 as the initial level. Bear in mind that Scholastic recommends a maximum class size of 15 for Read 180.

At Site One, the Coordinator of Instructional Programs coordinates Read 180. She spends approximately 90 percent of her time on Read 180-related activities, which includes meeting with Scholastic and district personnel, observing teachers and reporting Read 180 results to interested parties. Each of the 81 schools that are using Read 180 has its own Educational Computer Strategist (ECS), who spends approximately one hour per week on Read 180, usually resolving problems with computer hardware. A technical field manager trains the ECSs and provides specialized knowledge on the Read 180 software as needed. All of the district's 210 Read 180 teachers attended one-day of professional development prior to implementing the program in their classrooms.

Site One purchased 185 stages of 60 Read 180 licenses in 2004, giving it the capacity to serve 11,110 students with the intervention; however, during the last school year only 6,701 students received Read 180 instruction. The reasons for this underutilization varied from school to school and included lack of administrator support, the inability of teachers to manage the small group structure of a Read 180 classroom, and a lack of school funds for Read 180 materials. These implementation problems and the resulting idle licenses greatly increased the per student cost of Read 180 for Site One. An additional 37 teachers are needed to accommodate the time requirement for Read 180 extended class periods.[5] The salaries and benefits for these teachers constituted the other major expense in implementing Read 180 at Site One. The cost per student at Site One for 2004-2005 was estimated to be about $600 per student.

READ 180 SITE TWO

Site Two is significantly smaller than Site One, serving an enrollment of almost 48,000 students, with 1,080 in Read 180 classrooms during the 2004-2005 school year. Site Two adheres closely to the Scholastic model. Read 180 classes are limited to 15 students, half the size of the reported, average middle school language arts class. In addition, class periods for Read 180 are 90 minutes long, which is twice the average class period length in the district. With these two modifications the school district would need to hire approximately 18 additional teachers, without reducing other school programs. The additional personnel cost is by far the largest resource burden for Site Two.

In this district, the Secondary Reading Supervisor is responsible for overseeing Read 180. Managing the program occupies about one third of her time. While Scholastic provides one day of training to teachers, the Secondary Reading Supervisor provides seven additional days of training to Read 180 teachers throughout the school year. This extra professional development necessitates substitutes for the 58 teachers who use Read 180.

Four district-level computer technicians work exclusively on Read 180.[6] Their job entails providing hardware and software support to schools, updating computer programs, and running the district's unique centralized computer system, which enables the district coordinator to see and manage student data from the district office. Computer technicians stationed at each school deal with simple hardware problems related to Read 180 in addition to non-Read 180 technology issues at the school.

In addition to the classroom stations suggested by Scholastic, this school district has a "computers down" station in each classroom. This area contains skills

cards, and other non-computerized reading activities, and allows teachers to continue using the Read 180 small group instructional model even when the computers are not working.

The cost of implementing Read 180 at Site Two is about $1,500 per student, the highest in our study. Reducing class size by 50 percent for Read 180, doubling the instructional periods and hiring four district technology experts, contributes heavily to this cost. Additionally, Site Two's higher costs may be attributable to the relatively small size of its implementation and the attempt to centralize the data.

READ 180 SITE THREE

This school district is a suburban district that enrolled about 42,000 students in 2004-2005. Read 180 is used to remediate literacy instruction for about 2,400 students. As was true for Sites One and Two, Site Three substantially reduces class size in Read 180 classes from a reported average of 38 to 24 students per class. However, because we could not confirm officially the initial class size, we calculate the costs based upon an average class size of 30. Unlike the other sites, Site Three does not modify the school schedule for Read 180, so students receive 45-55 minutes of instruction daily instead of the recommended 90 minutes.

The implementation of Read 180 at Site Three is facilitated by the Program Specialist for Literacy in Secondary Education. She spends about 80 percent of her time overseeing Read 180. Part of her job is augmenting the two-day implementation training offered by Scholastic with 2-4 additional training days for teachers. All of the training takes place during the school year, so substitute teachers are hired to cover the Read 180 classes. Read 180 teachers are also asked to participate in monthly meetings outside of their contract time, for which they are paid an hourly wage.

School level "micro-computer specialists," employed by most high schools and some middle schools spend about 2 hours a week per Read 180 classroom. They perform routine maintenance on Read 180 computers and programs. When schools cannot afford a micro-computer specialist the teachers and district technician spend more time on the technological aspects of the program. One district level Read 180 technician works with all of the schools and trains the micro-computer specialists, (initially, the district purchased a two day technology training from Scholastic). Read 180 maintenance, upgrades and trainings occupy about 40 percent of his time.

Currently, Site Three spends about $285 per Read 180 student. The cost is significantly lower than those of the other sites because this district uses 45-55 minute periods as opposed to the 90 minute suggested class periods. While we cannot comment on the effectiveness of this approach, the students at Site Three receive half as much Read 180 instruction as those at the other two sites, allowing the teachers to instruct twice as many students.

READ 180 SUMMARY

Table 1 compares the ingredients and costs of implementation at the three Read 180 sites and for the Scholastic recommended model. Bear in mind that the overall numbers are sensitive to the scale of implementation, but the per-student cost provides a reasonable picture of the difference in magnitude of the costs at each site and the Scholastic recommendation. There is remarkable variability in implementation logistics and the consequent differences in costs. For example, the recommended Scholastic model for implementation would entail about $1,100 in costs if followed faithfully in a district with a class size of 30.[7] But, in Site Three the cost is only one-quarter of this amount because there was only a small reduction in class size (30 to 24 students) and no increase in instructional time. This comparison also illustrates the substantial impact on costs of changes in class size and length of instructional period. For example, the costs imputed for the additional teacher resources in the Scholastic Model are about $950 a student, far in excess of the relatively modest charges for licensing the program and the equipment that is required. Clearly when class size is kept constant or reduced only slightly or instructional time is maintained or increased only a small amount, the costs of Read 180 are also reduced. However, these deviations from Scholastic's recommended implementation model might seriously impair effectiveness.

Questioning the Author: Costs and Ingredients

The ingredients needed to successfully implement Questioning the Author (QtA) were determined

through extensive oral and written contact with the developers at the University of Pittsburgh, and with one implementation site. Although we contacted other sites repeatedly, we were unable to conduct interviews due to the timeframe of this study.

QtA is a professional development program that aims to equip teachers with new tools for engaging students in text and curriculum. Therefore, it does not require additional materials or modifications to the school day. Because there are very broad guidelines for class size and no recommendations for period length, it is extremely unlikely that schools will hire additional staff for the express purpose of implementing QtA; however, it is suggested by the developers that a minimum of two teachers per school are prepared so that they can plan lessons and provide support to each other.

Costing results for QtA are found in Table 2. The main costs of this program are incurred for professional development. In addition to the materials for teachers and the initial training, schools are expected to hire consultants to observe each teacher eight times during their first year of implementing QtA. Each observation costs $187.50, meaning that the observation bill for one teacher is $1500. Like other one-time professional development expenses, this cost is annualized over the expected life of the program, making it about $350 per year.[8] Alternatively, districts can hire a full time facilitator to train teachers and do the observations. The developers estimate that someone in this position would need to spend about three hours per month with each teacher-implementer.

The developers suggest that administrators attend the one-day training, and do about three observations of each teacher so that they understand and are able to support the teacher-implementers. Both of these activities have opportunity costs, which are calculated by multiplying the administrator's salary and benefits by the percentage of time that person spends on the program. Using national averages for administrator salaries, we calculated this cost to be about $1,300 annually.

A hypothetical high school or middle school that trained two teachers in QtA following the developer's guidelines would spend only a very modest amount of about $11.00 per student annually. The emphasis is on incorporating in the curriculum and the teachers' repertoires the capacity to ask questions in a manner that elicits thinking and articulate responses from students. The very low cost reflects the fact that no modifications are required in class size, scheduling, personnel augmentation, or additional facilities and materials.

QUESTIONING THE AUTHOR SITE ONE

Site One is a district with a total enrollment of 3,200 students. In this district, Questioning the Author has been implemented in language arts classes in grades 3 through 8. Because most of the teachers who adopted the approach work in elementary schools, they only teach one group of students per day.

In addition to a two-day initial training provided by the developers, 25 teachers and three administrators received QtA-related professional development one day per month throughout the year. Removing the teachers from classrooms for nine days incurred $27,000 in substitute teacher costs.[9] The other large cost for QtA Site One was for teacher observations. At eight observations per teacher, the district paid an estimated $37,500 to the University of Pittsburgh for consultants to do observations. Annualized, this cost becomes $8662.50 per year over a five year period.

The cost of implementing QtA at Site One is estimated to be about $35 per student per year. This cost estimate may be low because teacher-training time was not included in the analysis. The higher per-student cost at QtA Site One is attributable to a one-day a month professional development session for all teachers which is not required by the developer of the model. Still, the cost per student is very modest.

An interesting note is that this district reported very little teacher turnover. The director of Elementary Curriculum and Instruction described it as a place where "teachers get a job and stay for their career." From this perspective, it makes sense to invest heavily in professional development because teachers may use the technique to benefit students in that district long after the professional development period is over: clearly an important consideration for model choice and implementation.

Reading Apprenticeship Ingredients and Costs

The list of ingredients for Reading Apprenticeship (RA) was obtained through reviews of program literature and from telephone conversations with the developer, SLI at WestEd and implementers

from multiple sites, two of which are represented in Table 5.3. The primary ingredient categories for RA are personnel and professional development. Because RA is a professional development process that trains teachers to think and teach in a new way, there are no facilities or equipment costs associated with implementation.

Schools and school districts need not hire additional teachers to implement RA because the program is delivered by content-area teachers in their content-area classes. While the personnel costs for teachers do not change with RA, the program does incur opportunity costs for school and district level administrators time. To determine these costs, we converted the amount of time spent on RA per school year into a percent of a full-time position and divide that number by the average national salary for that position.

Rather than endorse a specific model of implementation, SLI provides schools and school districts with a range of professional development options to choose from. The National Institute in Reading Apprenticeship (NIRA) is an eight-day "training-of-trainers" program designed to prepare school, district, or department leaders to train teachers in local professional development sessions or implement RA in their own classrooms. Site-based trainings, provided by SLI staff or certified RA consultants, range in length from one to seven days. Finally, the Bay Area Network Series is a seven-day program, similar to NIRA but designed for educators in the Bay Area.[10] Following the first year of implementation, SLI offers continued training that is included with the purchase of the program. Other significant costs associated with professional development include substitute costs and opportunity costs for school and administrator training time.

In evaluating the data below, it is essential to remember that both sites from which we obtained information were recommended by SLI, and both enthusiastically endorsed RA. Thus, it is possible that our data: (1) do not account for the full range of variety in RA implementation and (2) do not account for implementation obstacles experienced by less successful districts. Despite the fact that both sites have experienced success with RA, we found a wide difference in implementation between the two sites which had a large impact on costs. Because this is not a cost-effective analysis, however, we cannot comment on the relative effectiveness of the two approaches.

READING APPRENTICESHIP SITES ONE AND TWO

Reading Apprenticeship Site One and Site Two are both rural districts in the same state. During the 2004-2005 school year, Site One, a district comprised of five high schools, trained 42 teachers and served approximately 1,270 students. In the same year Site Two, implementing RA in one large high school, trained 57 teachers and served approximately 1,150 students. While both sites trained similar numbers of teachers who served similar numbers of students, the costs per student were significantly different with Site One spending just over three times more per student annually. These differences are due to different methods of implementation, but the overall cost at both sites is relatively modest because no additional personnel, materials, or facilities are needed.

The primary costs for Site One were in professional development. The district customized the site-based training to provide 42 teachers with five days of training by SLI experts for $60,000. In addition, it sent 8 teacher-leaders to participate in NIRA for the cost of $33,000. These teachers returned to their schools as leaders of program implementation. The total substitute costs for these trainings were around $28,000.[11]

While Site One paid SLI around $90,000 for professional development, Site Two paid only $4,000 because it trained its teachers "in house." Site Two sent four teacher-leaders (including one administrator) to the Bay Area Network Series and these teachers, rather than SLI experts, provided training to the site's 53 remaining teachers during monthly professional development meetings, one third of which were set aside by the principal for exclusive focus on RA.[12] The substitute costs for the Bay Area trainings were around $3,360.[13] It is important to remember that in both models the professional development costs are low estimates because we do not account for initial teacher training time.

Outside of professional development, the primary cost to both sites was for school and district administrator time. While the costs do not seem high, it is essential that this category not be overlooked by future implementers. In Site One, the assistant superintendent spent approximately 70 hours per year

on RA while in Site Two the assistant superintendent spent about 100 hours per year, clearly significant numbers considering the numerous responsibilities and obligations of top district administrators. In both sites, this time was spent in staff training meetings, working with program developers and school administrators, securing program resources, organizing logistics, etc. While such time commitments are clearly not "officially" required for program implementation,[14] both sites emphasized that without such strong district involvement and organization, it would be difficult to consistently implement the intervention at a high level.

In addition to the large time investment by district administrators, there are three other similarities that are important to note. First, school administrators at both sites attended the vast majority of teacher-related professional development sessions. At Site Two, for example, the three top administrators attended the Bay Area Network training over the course of three years, along with most in-school collaborative meetings and trainings. Second, both sites adhere closely to SLI's recommendation that RA be "embedded in subject-area instruction across the curriculum, rather than becoming the sole purview of the English department" (Greenleaf, Schoenbach, Cziko, & Mueller, 2001, p. 89). Taken together, these two factors advanced implementation by creating collaborative cultures of literacy with extensive administrative support.

Third, both sites reported few problems with teacher turnover. Because RA is an approach to the professional development of teachers, the risks associated with turnover are high. For example, a teacher who is trained in his second year and leaves by his fifth will raise the annualized cost of RA implementation by reducing its lifespan. Thus, local retention rates should be considered when generalizing RA data across districts. That being said, high turnover schools can minimize this risk by selecting the teacher-leaders who are most likely to remain at the school over time.

Recommendations for Successful Implementation

An important finding from this study is that implementation costs may vary considerably from setting to setting because of differences in implementation. Some of the variation in costs may be due to different prices for resources among areas, such as differences in teacher salaries and benefits among places with low costs of living and high costs of living. These are not reflected in our data because we used an average of "national" prices in estimating the costs. Other factors could cause differences in the cost of implementing the same program, such as the presence of students with special needs (immigrants and English language learners), or the fact that the school happens to be located in a poor area. However, we believe that most of the difference is simply due to differences in implementation among school sites, with some using more resources for the same intervention.

We believe that if schools were to put into practice the following recommendations, they could provide more effective implementation and better monitoring of costs.

1. **Selection of Intervention**—When selecting a reform or intervention schools should set aside sufficient time to gather appropriate information and to include discussions and input by teachers and other staff who will be involved in implementation. Considerable experience affirms that staff agreement on goals and knowledge of and commitment to reforms provides greater promise of success. Datnow (2000) has emphasized that the process of participation of teachers and other staff in becoming informed about the issues leading to new interventions and the choice of interventions is key to their cooperation. However, she found that often this process of school "buy-in" has been carried out in a perfunctory manner, culminating in a ritual vote that reaffirms the obvious and declared preference of key administrators. An authentic process of informing staff and obtaining

their input is more likely to enhance school-wide understanding of the need for change and instill a widespread willingness on the part of staff to get involved in both the choice of an intervention and its effective implementation.

Given the presence of many reforms dedicated to improving adolescent literacy, it is crucial to attempt to match potential choices of reforms to student needs and the capacity of a school to implement the intervention. A review of the various alternatives will reveal that different reforms have been developed for different groups of students (e.g., English language learners) or students with different learning needs. Evaluations of results will also emphasize where these reforms have shown success. Further, the descriptions of the interventions will suggest strengths that schools might build on such as experience with the use of educational technologies or particular approaches to student grouping or scheduling that match up well with specific reforms. Obviously, it is better to choose potential reforms which match school strengths than to require the schools to develop major new ones in order for a reform to succeed.

2. **Implementation Requirements**—The adoption of a reform that matches the needs and strengths of a school is based upon the overall features of the school and reform. However, such a decision does not address the details of implementation and their costs. The ingredients method allows for both planning the intervention and ascertaining its costs. This method calls for decision-makers to identify and specify all of the resources and conditions that will be required to make the reform a success. Details on identification of ingredients, personnel, facilities, equipment, supplies, and other resources can be found in Levin and McEwan (2001). The goal of this activity is to be clear about what will be needed with special attention to the qualitative dimensions of the resources such as the qualifications of appropriate personnel. Information on required ingredients can be obtained from three sources. First, developers can provide descriptive materials and information as well as referring to other sites that have adopted the reform. Second, these other sites can be contacted, and visited if close-by, to observe the program. Third, practitioners at these sites can be interviewed on details of their implementation, as well as lessons learned from their experience. All of this information can be integrated into a plan for implementation and the resources necessary for the plan to succeed.

3. **Costs and Resource Availability**—Two key questions on which good implementation rests are: "Has adequate funding been put aside to cover the cost of the reform?" And, "Are the appropriate resources available?" The way to ascertain the answer to the first question is to know the cost of the reform by placing a cost on all of the ingredients (Levin & McEwan, 2001). Not all of the ingredients require additional funding if some of them can be obtained through reallocation of existing resources from less productive uses. Many reforms stumble because available personnel in the school such as administrators, coordinators, and coaches do not have the skills or experiences that are necessary to provide support for the reform. This may place the school in a difficult situation where personnel must be marshaled from those internally available in the school or district, but those who are readily available are inappropriate.

From the analyses of cost and resource availability, it is possible to ascertain both the obstacles to implementation success as well as possible solutions for overcoming those obstacles. If the costs exceed the resources that are available, it is important to seek additional resources or to decide how to accommodate reform within available resources. For example, the cost of additional personnel and space for reducing class size to some prescribed level may exceed the funding and space that are available. Schools will need to confer with developers on how to address this shortcoming or if successful implementation can take place despite this shortfall. A similar analysis must be done in terms of assuring that appropriate personnel are in place. At the point of implementation planning, the specific personnel who will work with the reform should be noted. This is important for two reasons. First, the particular personnel should be familiarizing themselves with the reform and their roles, well in advance of the actual implementation. Second, those who are planning the implementation need to size up required qualifications with those of the potential appointees. If available personnel are inappropriate, the organizers of the reform will need to seek alternatives or confer with the developers on what might be done.

4. **Implementation Plan**—All resource requirements are identified, and provision is made

for their availability for the reform. Funding is adequate to cover their costs or to provide appropriate resources from within the school organization. Plans are made to acquire materials, software, and equipment in sufficient time to launch the reform. A timeline and calendar for professional development and other activities such as monitoring, classroom observations, feedback, and evaluation of results must be set out. If the school site lacks the funding and available resources to implement the reform along the lines recommended by the developer, discrepancies will become obvious and there will be time to enable a search for alternatives. Minimally, this approach to costing and implementation planning will establish whether the reform is feasible in the sense of the school having the operational and financial capacity to undertake it. More promising is the possibility that such planning will provide a blueprint for implementation, avoiding many of the unpleasant surprises and unintentional compromises that many schools have had to face in the process of implementing reform.

Conclusion

Although the developers of the most up-to-date adolescent literacy reforms have made considerable investments in constructing and testing their models, these efforts do not guarantee that the intervention will produce results when adopted in a specific school setting. Adoption of a promising reform, by itself, is not sufficient to assure that the reform has predictable costs and effectiveness. *How* a given reform is implemented determines its probability of success or failure, as well as its overall cost. Careful planning and analysis prior to launching a reform will likely provide both better implementation and better cost management. Such planning offers schools and districts ways to break out of the endless cycle of hope, effort, and disappointment that unfortunately has afflicted so many attempts at improving students' literacy.

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TABLE No. 1. | *Read 180 Implementation Models*

INGREDIENTS LIST	INGREDIENT		SCHOLASTIC	
	Costs	Annual Costs	Inputs[1]	Annual Costs
LICENSES (Packs of 60)	$32,000.00	$7,392.00[2]	1	$7,392.00
PERSONNEL (FTE)				
Additional teachers[3]	$57,355.00[4]	$57,355.00	1	$57,125.58
Read 180 teacher: student ratio			1:15	
Percent reduction from 30 student class size[5]			50%	
School level administration	$105,282.50	$105,282.50	no rec.[6]	
In-school technician	$57,355.00[9]	$57,355.00		
Read 180 district technician	$95,385.00	$95,385.00		
Read 180 district coordinator	$85,892.50	$85,892.50	no rec.	
PROFESSIONAL DEVELOPMENT				
1st year teachers trained[10]			1	
1st day implementation training	included		yes	
2nd day implementation training	included		yes	
Red online course	2 included		yes	
Seminar series	$2,500.00	$577.50	2 optimal	
Independent district training				
Non-contract training time				
Substitute days	$120.00	$27.72		
Total teacher training days			2	
Administrator training time	$105,282.50	$24,320.26	0.003	$315.85[11]
Technician training time	$57,355.00	$13,249.01	.005	$66.25
Half day implementation training	included			
1 day implementation training	included		Yes	
1 day technical training	$9,000.00	$2,079.00		
2 day technical training	$12,000.00	$2,772.00		
FACILITIES				
Classrooms			no rec.	

TABLE No. 1. | *Read 180 Implementation Models (continued)*

INGREDIENTS LIST	READ 180 SITE ONE		READ 180 SITE TWO		READ 180 SITE THREE	
	Inputs	Annual Costs	Inputs	Annual Costs	Inputs	Annual Costs
LICENSES (Packs of 60)	186	$1,372,472.64	18	$133,056.00	40	$295,680.00
PERSONNEL (FTE)						
Additional teachers[3]	36.86	$2,114,105.30	17.93	$1,028,375.15	3.12	$178,947.60
Read 180 teacher: student ratio	1:30		1:15		1:24	
Percent reduction from 30 student class size[5]	0%		50%		20%	
School level administration	n.r[7]		n.r.		0.02[8]	$2,105.65
In-school technician	2.36	$135,357.80	.45	$25,809.75	0.83	$47,604.65
Read 180 district technician	1.125	$107,308.13	4	$381,540.00	0.4	$38,154.00
Read 180 district coordinator	0.9	$77,303.25	0.33	$28,344.53	0.8	$68,714.00
PROFESSIONAL DEVELOPMENT						
1st year teachers trained[10]	270		58		37	
1st day implementation training	yes		yes		yes	
2nd day implementation training	no		no		yes	
Red online course	limited		no		no	
Seminar series	no		no		no	
Independent district training			7 days		3 days	
Non-contract training time					9 hrs.	$5,994.00
Substitute days	270	$7,484.40	348	$9,646.56	185	$5,128.20
Total teacher training days	270		464		185	
Administrator training time	0.003	$72.96	0	$0.00	0.001	$33.78
Technician training time	0.243	$3,219.51	0.132	$1,748.87	0.07	$883.18
Half day implementation training	81		no		no	
1 day implementation training	no		no		no	
1 day technical training	no		22	$2,079.00	no	
2 day technical training	no		no		1	$2,772.00
FACILITIES						
Classrooms	166		18[12]		20	

TABLE No. 1. | *Read 180 Implementation Models (continued)*

INGREDIENTS LIST	INGREDIENT		SCHOLASTIC		
	Costs	Annual Costs	Inputs[1]	Annual Costs	
EQUIPMENT AND MATERIALS					
Student computers	$600.00	$138.60	5	$693.00	
Application server	$2,000.00	$462.00	1	$462.00	
Printers	$120.00	$27.72	1	$27.72	
Cassette players	$4.00	$4.00	5	$20.00	
Headphones	$10.00	$10.00	5	$50.00	
Additional books for classroom	$499.00	$183.23[13]			
Project achievement reading kits	$169.00	$62.06[14]			
Total cost				**$66,152.39**	
Students served				**60**	
Cost per student				**$1,102.54**	

TABLE No. 1. | *Read 180 Implementation Models (continued)*

INGREDIENTS LIST	READ 180 SITE ONE		READ 180 SITE TWO		READ 180 SITE THREE	
	Inputs	Annual Costs	Inputs	Annual Costs	Inputs	Annual Costs
EQUIPMENT AND MATERIALS						
Student computers	1660	$230,076.00	108	$14,968.80	144	$19,958.40
Application server	85	$39,270.00	18	$8,316.00	20	$9,240.00
Printers	166	$4,601.52	18	$498.96	20	$554.40
Cassette players	n.r.		n.r		144	$576.00
Headphones	n.r.		n.r.		144	$1,440.00
Additional books for classroom	n.r.		yes		18	$3,298.19
Project achievement reading kits	n.r.		18	$1,117.02	50	$3,102.84
Total cost		**$4,019,271.50**		**$1,635,500.64**		**$684,186.89**
Students served		**6,701**		**1,080**		**2,400**
Cost per student		**$610.55**		**$1,514.35**		**$285.08**

[1] Reported by Scholastic Read 180 National Implementation Manager.
[2] All one time costs are annualized over five years using a five percent discount rate unless otherwise noted.
[3] Additional teacher formula, assuming a six period day and class size of 30: 100/(Read 180 Class Size * Read 180 periods per day)=X ; 100/(30 *6 periods per day)=.56 ; (X-.56)/100= new teachers per Read 180 student * number of Read 180 students severed = number of additional Read 180 teachers.
[4] All personnel costs were calculated using national averages for the 2004-2005 school year (Source: Educational Research Service) plus 25% estimated fringe benefits, unless otherwise noted.
[5] We assumed an original class size of 30 at all sites, although many districts reported higher class sizes in non Read 180 middle and high school language arts classes.
[6] No rec: no specific recommendation; depends on size of implementation and district resources.
[7] n.r.: not reported.
[8] Number of additional hours divided by 1,440 (work hours per year). This formula for personnel is used throughout the study.
[9] No national salary information was available. Teacher salary information was used as an estimate of in school technician costs.
[10] The cost of teacher time is calculated as part of teacher salaries. It also effects substitute time.
[11] Formula used to derive opportunity cost of training: Hours of training/1440 = % FTE. FTE* # trained = total training FTE. Total training FTE * annualized salary = opportunity cost of training. This calculation was used for all personnel opportunity costs.
[12] This district uses only "oversized" classrooms for Read 180.
[13] Annualized over three years based on reports from sites.
[14] Annualized over three years based on reports from sites.

TABLE No. 2. | *Questioning the Author (QtA) Implementation Models*

INGREDIENTS LIST	INGREDIENT		UNIVERSITY OF PITTSBURGH		
	Costs	Annual Costs	Suggested Inputs[17]	Total Costs	Annual Costs
PERSONNEL (FTE)					
Additional teachers required[18]	$57,355.0019	$57,355.00	0	$0.00	$0.00
QtA teacher: student ratio			1:20[20]		
District teacher :student ratio			1:20		
Students per teacher trained			120[22]		
School level Administration	$105,282.50	$105,282.50	0.01[24]	$1,052.83	$1,052.83
District-level Administration	$85,892.50	$85,892.50	0	$0.00	$0.00
PROFFESIONAL DEVELOPMENT					
Teacher training	$55.0025	$12.71	2	$110.00	$25.41
Day 1 workshop	$2,500.0026	$577.50	1	$2,500.00	$577.50
Day 2 workshop			0		
45 minute demonstration lesson	included		yes		
Observations – 8 per teacher	$187.50	$43.31	16	$3,000.00	$693.00
OR District Facilitator	$85,892.50	$19,841.17	0.04[27]		
Monthly meetings, annually	included		18 hours[28]		
Total training days per teacher			4.25		
Substitute days first year[30]	$120.00[31]	$27.72	0		
Planning time first year			1.5 hrs per lesson		
Planning time after first year			45 min per lesson		
School administrator training time	$105,282.50	$24,320.26	0.005	$526.41	$121.60
District administrators training time	$85,892.50	$19,841.17	0.005	$429.46	$99.21
FACILITIES					
Classrooms			2		
EQUIPMENT/MATERIALS			standard		
Total Cost				**$7,618.70**	**$2,569.54**
Students served[34]				**240**	**240**
Cost Per Student				**$31.74**	**$10.71**

TABLE No. 2. | *Questioning the Author (QtA) Implementation Models (continued)*

INGREDIENTS LIST	QtA SITE ONE[15]		
	Inputs[16]	Total Costs	Annual Costs
PERSONNEL (FTE)			
Additional teachers required[18]	0	$0.00	$0.00
QtA teacher: student ratio	01:22.5[21]		
District teacher :student ratio	01:22.5		
Students per teacher trained	22.5[23]		
School level Administration	0	$0.00	$0.00
District-level Administration	0.03	$2,576.78	$2,576.78
PROFFESIONAL DEVELOPMENT			
Teacher training	25	$1,375.00	$317.63
Day 1 workshop	1	$2,500.00	$577.50
Day 2 workshop	1		
45 minute demonstration lesson	no		
Observations – 8 per teacher	200	$37,500.00	$8,662.50
OR District Facilitator	not used		
Monthly meetings, annually	1800 hours[29]		
Total training days per teacher	12		
Substitute days first year[30]	225	$27,000.00	$6,237.00
Planning time first year	45 min[32]		
Planning time after first year	45 min[33]		
School administrator training time	0	$0.00	$0.00
District administrators training time	0.183	$15,718.33	$3,630.93
FACILITIES			
Classrooms	25		
EQUIPMENT/MATERIALS	standard		
Total Cost		**$86,670.10**	**$22,002.33**
Students served[34]		**625**	**625**
Cost Per Student		**$138.67**	**$35.20**

[15] School district with 3,200 total enrollment.
[16] Provided by the Director of Curriculum and Instruction.
[17] Provided by Dr. Margaret McKeown, University of Pittsburgh.
[18] FTE: Full time employees. Costs for teacher time were only calculated above and beyond inputs before the implementation of QtA.
[19] All personnel costs are calculated using national averages for the 2004-2005 school year plus 25% for fringe benefits unless otherwise noted.
[20] Average of the suggested class size of 12 to 28.
[21] Average of reported class size of 20 to 25.
[22] 20 students per period, six periods per day.
[23] These teachers were multi-subject classroom teachers who stayed with the same students all day.
[24] Calculated by dividing the number of hours spent on QtA by the estimated total number of hours worked, 1440. Similar calculations are made using the same method throughout the table.
[25] Cost of teacher materials for professional development provided by Dr. Margaret McKeown, University of Pittsburgh.
[26] Flat rate for training provided by Dr. Margaret McKeown, University of Pittsburgh.
[27] About 3 hours per month per QtA teacher.
[28] 1 hour per teacher per month.
[29] 1 full day (8 hours) per teacher per month.
[30] The substitute days may differ from total training days because some training took place over the summer.
[31] This is an estimate that we used throughout the study. Substitute costs vary substantially by region.
[32] Standard for the district.
[33] Standard for the district.
[34] Students per class* class periods per day = students served per year * 5 = students served over the five year implementation period.

TABLE No. 3. | *Reading Apprenticeship (RA) Implementation Models*

INGREDIENTS LIST	INGREDIENT		RA SITE ONE		
	Cost[35]	Annualized[36]	Inputs[37]	Cost	Annualized
PERSONNEL					
Additional Teachers for RA	$57,355.00	$57,355.00	0	$0	$0
RA teacher:student ratio			1:22		
District teacher:student ratio			1:22		
School level Administration	$105,282.50	$105,282.50	0.01[39]	$1,052.83	$1,052.83
District-level Administration	$85,892.50	$85,892.50	0.05[40]	$4,294.63	$4,294.63
PROFFESIONAL DEVELOPMENT					
1st Yr Teachers Trained					
NIRA[42]	$4,000.00	$924.00	8	$33,000[43]	$7,623.00
West Ed Site-based training[44] from:					
One Day	$7,500.00	$1,732.50			
Seven Days	$50,000.00	$11,550.00			
District Customized			42	$60,000	$13,860.00
Bay Area Network Series	$1,000.00	$231.00	no		
Paid Collaboration Time[46]			yes	$6,000.00	$6,000.00
Training after 1st Year					
Site-based training	included		yes	included	
Continuing Network Series	included		no		
Substitute days	$120.00	$27.72	234[48]	$28,080.00	$5,897.00
School administrator training	$105,282.50	$24,320.26	0.004[50]	$421.13	$97.28
District administrator training	$85,892.50	$19,841.17	0.009[52]	$773.03	$178.56
Total Cost				**$133,621.62**	**$39,003.30**
Students Served in '04-'05				**1,271**	**1,271**
Cost per student				**$105.13**	**$30.69**

TABLE No. 3. | *Reading Apprenticeship (RA) Implementation Models (continued)*

INGREDIENTS LIST	RA SITE TWO		
	Inputs[38]	Cost	Annualized
PERSONNEL			
Additional Teachers for RA	0	$0	$0
RA teacher:student ratio	1:26		
District teacher:student ratio	1:26		
School level Administration	0.01	$1,052.83	$1,052.83
District-level Administration	0.07[41]	$5,964.76	$5,964.76
PROFFESIONAL DEVELOPMENT			
1st Yr Teachers Trained			
NIRA[42]	no		
West Ed Site-based training[44] from:	no		
One Day			
Seven Days			
District Customized			
Bay Area Network Series	4[45]	$4,000.00	$924.00
Paid Collaboration Time[46]	n.r[47]		
Training after 1st Year			
Site-based training	no		
Continuing Network Series	4	included	
Substitute days	28[49]	$3,360.00	$776.16
School administrator training	0.04[51]	$4,211.30	$972.81
District administrator training	0.04[53]	$3,340.26	$771.60
Total Cost		**$21,929.15**	**$10,462.16**
Students Served in '04-'05		**1,150**	**1,150**
Cost per student		**$19.07**	**$9.10**

[35] All personnel costs were calculated using national averages for the 2004/5 school year (Source: Educational Research Service) plus 25 %estimated fringe benefits. 0All program costs are provided by WestEd.
[36] To annualize costs, this table assumes a five year lifespan and a five percent discount rate unless otherwise noted.
[37] Provided by assistant district superintendent.
[38] Provided by assistant district superintendent and school principal.
[39] Twenty hours per year.
[40] Seventy hours per year.
[41] One hundred hours per year: includes six hours of staff training meetings per month and forty hours of marketing, securing resources, presenting, organizing, etc.
[42] National Institute in Reading Apprenticeship. See www.wested.org/cs/sli for more information.
[43] $4,125 per teacher. This number includes travel expenses.
[44] For a complete description of these options, see http://www.wested.org/cs/sli/print/docs/sli/services.htm.
[45] Twenty teachers have been trained over five years at approximately four per year.
[46] District pays teacher leaders for collaborative monthly meetings.
[47] Not reported.
[48] Five days per teacher for 42 teachers for the site based training and 3 days per teacher for 8 teachers for NIRA training.
[49] Seven days per teacher for 4 teachers.
[50] Six hours total: four hrs ½ day training and two hrs end of year meeting.
[51] 56 hours per administrator. One administrator participates in the seven day training each year.
[52] Participation in school administrator half-day training.
[53] District administrator participates in half-day training.

Endnotes

1 The literature on resistance to school change and on how schools shape reforms (rather than reforms shaping schools) is substantial. On the former, see Evans (1996). On the latter, see the summary in McLaughlin (1990) of the Rand Change-Agent studies.

2 For further information on how to annualize costs, see Levin & McEwan (2001, pp.67-70).

3 The annualized value of additional classrooms is not included here on the assumption that if only a small proportion of students were enrolled in Read 180, space might be found for 90 minutes a day. However, if larger numbers were enrolled and schools were fully utilized, our assumption will understate the costs.

4 In both this case and that of site three we questioned the large class sizes reported to us. Respondents replied that in both cases the districts were growing so rapidly that school construction could not keep up with the expansion of enrollments, resulting in very large classes at certain grade levels.

5 Since class size remained at 30 (double the Read 180 recommendation), there was no additional need for teachers to reduce class size.

6 Scholastic views these costs as discretionary on the part of the district. The new version of Read 180 will provide for a centralized data processing and analysis system.

7 The cost estimates in Table 1 are on the conservative side because we did not include several areas of potential cost including the annualized costs of extra classrooms, where needed.

8 We have used a 5 year expected lifespan consistently throughout this study

9 Estimated assuming a substitute teacher costs $120 per day

10 For full descriptions of RA professional development options, see http://www.wested.org/cs/sli/view/serv.

11 Estimated assuming a substitute teacher cost of $120 per day.

12 The teacher-leaders trained in 2004-2005 joined other teacher-leaders trained by SLI in previous years

13 Estimated assuming a substitute teacher cost of $120 per day.

14 Both Site Five administrators emphasized that they went above and beyond the requirements for successful RA implementation.

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