Students and Teachers Engaging in Cognitively Demanding Instruction

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Producing challenging instruction has been an enduring goal of American educators and policymakers. Although, different waves of reform have tried to enhance students' learning opportunities, few of them have produced significant and lasting instructional changes (Cuban 1984; Ball 1990; McLaughlin 1991; Elmore 1996). For years, reform initiatives have barely touched classroom dynamics, only approaching them in relatively superficial ways (Cohen 1990; Peterson 1990; Wiemers 1990). As a consequence, teachers' and students' interactions--the instructional core--have not experienced major transformations (Elmore and McLaughlin 1988).

Educators and policymakers have struggled with the feasibility of committing schools to challenging instructional reforms, especially when they are located in highly disadvantaged settings. Many of them distrust the capacity that these schools and teachers have to involve students in cognitively demanding teaching and learning exchanges. Indeed, on average, disadvantaged schools have weaker capacity, due to conditions such as higher teacher mobility and less qualified practitioners (Hanushek 2006). Moreover, many of them have inadequate instructional materials and deteriorating buildings (Carrol, Fulton et al. 2004). The disparities that persist between schools serving high-poverty communities and those serving more affluent groups represent what some have called a two-tiered education system (Carrol, Fulton et al. 2004). This gap between schools suggests that there are two educational realities, which are the result of inequities in educational resources and is often the justification for providing different types of resources for different settings.

The history of American education since the federal involvement in the 1960s is one in which some educators and policymakers have argued that disadvantaged students should be exposed to basic (and less demanding) forms of instruction first and then to more demanding forms of instruction. In theory, more challenging instruction should come later, once the basic elements have been taught and learned. The result of this strategy has been that students in high poverty settings have most often been provided with the former, but rarely exposed to the latter (Allington 1991; Moll 1991; Barnes 2006).

In the mid nineties different agencies (universities, research centers and non profit institutions) started what has come to be known as comprehensive school reform programs (hereafter, CSRs). Among their heterogeneous goals, CSRs have aimed to produce challenging forms of instruction in traditionally disadvantaged school settings (Rowan, Camburn et al. 2004). These school initiatives, along with standards reforms, have aimed to enhance students' learning opportunities by supporting more challenging and demanding forms of teaching and learning (Resnick and Hall 1998).

The purpose of this paper is to look deeply into the learning opportunities that two comprehensive school reforms—America's Choice (AC), and Success for All (SFA) — have offered to students who attend school in highly disadvantaged settings. By analyzing the ways in which these two reforms provide resources to deploy more cognitively demanding forms of teaching and learning, we will explore how cognitively demanding tasks can be produced within traditionally disadvantaged localities. This paper addresses four questions regarding students' learning opportunities:

(1) How do AC and SFA design for the use of cognitively demanding tasks?

(2) How do teachers use cognitively demanding tasks in instruction?

(3) How do students react to more cognitively demanding learning experiences?

(4) What conditions limit or facilitate teachers and students from engaging in challenging instruction?

Using data from a multi-year, multi-method research program called The Study of Instructional Improvement (SII)[1], this paper presents new empirical insights to understand the opportunities and obstacles that comprehensive reform initiatives face when trying to enhance students' learning opportunities. We look closely at instruction to describe the characteristics of literacy tasks that promote a cognitively rich opportunity for students to learn and we describe the features of the instructional designs that promote such opportunities. Unlike other accounts of instructional improvement, we try to understand those opportunities from a classroom perspective, focusing our attention on the experiences of students. This focus on students' experiences include looking at classroom observations to assess students' engagement with more challenging work and also, it includes speculating about what a particular task would lead a student to think about and learn.

Perspectives

We consider students' experiences and the tasks they were asked to do in CSR schools and classrooms from various perspectives, including the cognitive demand involved (Stein, Smith et al. 2000), the framework for authentic intellectual work (Newman, Bryk et al. 2001), definitions of higher order thinking and effort based education (Resnick 1987; Resnick 1995; Resnick and Hall 1998), and insights from various frameworks for thinking (Moseley, Baumfield et al. 2005). In our account, America's Choice and Success for All encouraged teachers to engage in practices that were intended to "ramp" up students' ability to think and to perform, to engage students in more complex thinking, and to challenge them to do more, and more ambitious, work. The assumption seemed to be that traditional methods were not requiring students to use

[1] The Study of Instructional Improvement is housed at the University of Michigan and is part of the Consortium for Policy Research in Education (CPRE). The website is http://www.sii.soe.umich.edu/.

their minds as fully as they could be using them. Thus, indirectly, both designs assumed that students were much more capable than traditional school settings and teachers were expecting of them.

America's Choice and Success for All designed several structures to support more complex student engagement. For example, America's Choice (AC), encouraged teachers to require their students to engage in routines that shape social norms for interacting, like using 'accountable talk', in order to support building understanding with evidence-based reasoning and by following defined standards. Such norms help to cultivate the dispositions to use the thinking skills that were promoted by AC, by enabling students to learn to participate in a social community that values those thinking skills (Resnick 1987). The AC design for teaching writing also included standards-based lessons that specified writing strategies that enabled students to produce more creative and complex writing and enabled teachers to provide objective, criterion-based feedback.

Success for All (SFA) utilized cooperative learning formats, fast pacing, and active learning using multiple research-based instructional practices, particularly in its early reading program. SFA also attempted to promote higher order thinking by encouraging teachers to move beyond text-based questions and to challenge students with more complex questions, such as by using Bloom's Taxonomy to devise comprehension questions. However, not surprisingly, the more demanding elements of this program were less elaborated than the less complex ones.

Each of the CSR's set forth structures and frameworks that helped to guide and enhance students' learning. At the same time, both programs involved learning more content and doing more schoolwork. AC and SFA provided structures to produce more organized and efficient instruction, which enabled more work to occur in a class period. These characteristics helped to create literacy instruction that included tasks, routines, and products that required greater cognitive effort from students than was typically required. So, students were asked to think harder and differently, learn more, and produce greater amounts of work than was expected prior to the implementation of these CSRs.

In our case study schools, such literacy instruction was found to be more difficult to enact, which was also found to be the case in enacting cognitively demanding mathematics instruction in the QUASAR Project (Stein, Smith et al. 2000). However, just as other studies have demonstrated (Stein, Smith et al. 2000; Newman, Bryk et al. 2001), there was evidence that such instruction may have contributed to greater gains in student achievement.

In this paper, we will show how the new instruction looked when the AC and SFA elements mentioned above were employed and how students responded to the increased cognitive demands associated with these models. We considered students' reactions to more demanding instruction from 48 classroom observations of 1st and 4th grade gathered between Fall of 2002 and Winter of 2004 in three AC, three SFA, and three comparison

schools. During another analysis, of instructional change, we reviewed these observations extensively and systematically using an implementation rubric that we devised (Barnes, Khorsheed et al. 2006). It was during that evaluation of instructional change that we began to recognize images of instruction that involved more cognitively demanding tasks and contexts.

We began a process of reading literature about the nature of different academic tasks, about teaching higher order thinking, and about various taxonomies and frameworks for organizing thinking activities. Then we reviewed only the first grade classroom observations, because we wanted our analysis to focus on similar levels of students, engaging in similar types of work.

Repeated readings of the classroom observations was one of our key strategies for analyzing the data (Maxwell 1996; Marshall and Rossman 1999). This strategy enabled us to become deeply familiar with the data and to identify various themes and questions, which we categorized and shared with one another. Eventually we formulated a definition of cognitively demanding tasks and contexts, and identified salient examples from our observations. Then we turned to our logging data (Barnes, Khorsheed et al. 2006) to learn how prevalent particular tasks and practices were in the classrooms.

We also studied the instructional designs of AC and SFA in order to understand how particular literacy practices were intended to be enacted and to understand the designer's rationale for these practices. Repeated readings and systematic searching through teachers' and coaches' interviews also helped us develop a view of their understanding of and experiences learning particular literacy practices. Because of our familiarity with this range of qualitative data we were able to understand the differences, for example, between an America's Choice teacher's reporting of a practice and a comparison teacher's reporting of the same practice. And, we were able to make some generalizations about the nature of particular literacy practices in our CSR classrooms and our comparison classrooms. In the next section we present examples of the literacy practices that represent more cognitively demanding instruction that we found to be quite possible and prevalent in our 1st grade case study classrooms.

Challenging Environments

To begin our discussion we present an example of 1st grade children in an America's Choice school learning strategies for writing 'story starters', or exciting beginnings for stories. These excerpts come from Bonds Elementary, an America's Choice school located in Sunnyside, New Jersey[2]. According to state information, Bonds was a low performing school that received federal money to enact a CSR to improve student achievement. According to SCI[3] and CDI[4] information, Bonds was a school in

[2] All names of teachers, schools and districts are pseudonyms. The states named are the actual states where the schools were located.

[3] SCI were School Characteristic Inventories (SCI) collected for all the Case Study Schools in the Study of Instructional Improvement. SCI collected information about number of students, teachers and administrators among others.

which ninety-six percent of the children were African American, and ninety-one percent of the students were eligible for free and reduced lunch.

More than one-third of the Bonds teachers lacked a teaching certificate. Bonds Elementary also had a teacher mobility rate of 40%, which was considerably higher than our sample's average of 22%. The average mobility rate of teachers teaching in our sample of 120 high-poverty elementary schools was significantly higher than national averages, "which show that 86 percent of all teachers remained in the same school, while 6.6 percent left teaching between 1994 and 1995 (U.S. Department of Education (2002))," as cited by Hanushek (Hanushek, Kain et al. 2003).

Prior to implementing AC in 2000 only twenty-five percent of Bonds students were reaching the state standards, while in the spring of 2003, more than seventy percent of the fourth grade students were passing this state test. In the school year of 2004-2005, the results were even better with eighty-four percent of the students succeeding in the state test. Although this improvement cannot be linked directly to the implementation of AC, the researchers, and most respondents, speculate that the changes introduced with AC contributed to this improvement.

An Image of a Cognitively Demanding Writing Task

In the example below, the teacher presents writing strategies to students that guide them to produce exciting beginnings for their stories. These strategies require students to think creatively; to take a different perspective; and to take up the task of trying to influence their readers' minds by employing particular literary strategies. Such strategies differ from strategies that simply ask students to follow a formula, such as asking students to include a certain number of action words or to follow a story grammar, or to answer the five "w's". In the examples that follow we try to demonstrate that the level of cognitive demand in a task is partially defined by the nature of the thinking that the task requires (Marx and Walsh 1988; Doyle 1991; Stein, Smith et al. 2000)– and that tasks can be strategically designed to induce greater thinking. The cognitive demand is also shaped by the context in which the tasks occur, for example in an environment guided by specific norms for engagement. Additionally, the cognitive demand put forth is likely affected by students' and teachers' schema for understanding the affordances of a task (Spillane, Reiser et al. 2002). Finally, we seek to demonstrate that, though such task design and task enactment may be difficult for teachers, students readily take-up these cognitively demanding tasks.

Our 1st grade case study teacher, Ms. Alma, began her ten-minute mini-lesson by reminding students of what they worked on the previous day. All AC lessons begin with a

[4] The Community Disadvantage Index (CDI) describes the 1990 census tract in which the school was located in terms of the proportion of individuals with less than a high school education, the proportion of working-age adults who are unemployed, the median household income, and the proportions of households with income below the poverty line, receiving public assistance income, and with children that are headed by a single parent.

brief amount of instruction to describe the focus for the work period and to provide students with examples and guidance for their task.

> T: You're writing stories…about something that you did…that you didn't mean to do, but it ended up that you got into trouble. I shared my story about writing on my parents' furniture with a screw... We were doing story starters yesterday. We talked about the different kinds of story starters that we were using and we had examples at the end of work time. We had the dialogue strategy (*teacher points to butcher paper*) where you start with a character talking. Like "Look out, [student name]!" Or "A TV fell on my arm". Who got up here yesterday and shared their dialogue strategy?
>
> S: I did…
> T: Do you remember how it began?
> S: Yes
> T: Something about, "Yeah, [student name]."
> S: Yes, that is me, but I said, "Yeah, [student name], move out of the way."
> T: Oh yes, very good.
> T: Of course, we had a mystery strategy. As an example of what we did yesterday, "Gravity pulled me faster and faster down the hill."

Teacher points to the butcher paper

Butcher paper, referred to in dialogue:
Objective: SWBAT use a variety of opening strategies for narratives.
Openings (story starters)

- Dialogue "Watch out, [student name]!" "Oh no! The TV fell"
- Mystery "Gravity pulled me faster and faster down the hill."
- Middle of the Action "What do you think you're doing?"

(Examples taken from student work)

> T: Who did the mystery strategy yesterday? I think it was [student name]. I think yours was what…do you remember what yours was? It was really strong.
>
> Ss & T: I kicked [student name] in the leg. (*The student name is a student in the classroom, but the teacher builds a tension around interest in knowing more.)* The point is… it made us wonder and we wanted to read more.
>
> Pauses for a student disruption.
>
> T: Here is a combination of mystery and dialogue strategy. I could start a story with this line. "Spit it out [student name]!" That is dialogue because I am talking and it is mystery because you do not know what I'm talking about or what

> [student name] has in his mouth. Don't you want to read more to see what is in his mouth? Do you think it is gum? Who knows? You have to read more.
> …

T: Okay guys, mystery strategy…it should be your first line of your story and we do not know exactly what you are talking about. Middle of the action?

Ss: When my daddy came home, I ran upstairs.

T: Good. We do not know what you are talking about at first. You could be running for any reason. We are going to work very, very hard on this today. We are going to tell a story. We don't want to do this:

A kid threw a snowball at my head and it hurt.

Teacher writes the sentence on the butcher paper.

> T: This is the kind of example when the person tells the whole story in the first sentence.

Analyzing the task

If we look at the task that the teacher is presenting to students in this brief excerpt of an AC mini-lesson we can see characteristics of what we consider to be a cognitively demanding task. For example, consider what it might take for a first grade student to apply the 'mystery strategy' – the student must imagine a statement that would create uncertainty or ambiguity in the mind of the reader. They must imagine being the reader, who doesn't know the story – they must consider a perspective different from their own. The teacher has provided examples and has explained what the mystery strategy accomplishes, but the student must create their own version of it. The student's version cannot be a reproduction of a previous example of using the mystery strategy, because it must fit their story, which is also an original production. So, the task of creating a sense of mystery first requires students to step out of their own perspective and into the readers' perspective to imagine what might be viewed as "mysterious". Then the student must be creative in producing a mysterious image. Such perspective shifting and creative production are identified as examples of high level thinking skills by various theorists and researchers (Moseley, Baumfield et al. 2005).

This task contrasts with a lower level writing task such as one that asks students to simply tell a story without regard for actively engaging the reader. In the example above the teacher asked the student to write a story "…about something that you did…that you didn't mean to do, but it ended up that you got into trouble." A teacher could ask a student to tell that story by reporting the events and describing the setting, the characters, and the problem without a great deal of cognitive demand, because it would

primarily involve providing answers to the question of "what happened?" for which there are ready answers. This is similar to what Stein et al (2000) would call a low level mathematical task, which involves following procedures and lacks the opportunity for devising an innovative solution or application. In contrast, asking students to enhance the beginning of their story with an element of mystery requires students to use their imagination and to create a state of suspense that did not originally exist in the story. This is one reason we suggest that it is a cognitively demanding task.

Furthermore, invoking the mystery strategy requires students to think about their audience and to attempt to deliberately influence the reader's thinking. The creativity and perspective shifting required in this task suggests greater cognitive demand than a simple retelling of a story or event. According to Doyle (1983), "students will learn what a task leads them to do, that is, they will acquire information and operations that are necessary to accomplish the tasks they encounter" – if this is true, then the nature of the two different writing tasks described above afford students very different opportunities to learn. One task asked students to report and to describe, and the other asked students to report and describe while also taking on the reader's perspective, to create with that perspective in mind, and to influence the reader. We feel that this added dimension requires greater cognitive demand and involves higher order thinking.

We consider the insights on higher order thinking by Lauren Resnick (Resnick 1987) and the insights on the cognitive demand of mathematical tasks by Mary Kay Stein and colleagues (Stein, Smith et al. 2000) in this formulation of cognitively demanding literacy tasks. These researchers suggest that engaging in original design or in tasks for which the solution is not readily available, and would require effort to devise, present more cognitive demand than tasks for which a student need only apply a rule or procedure, such as answering the questions of 'who, what, where, etc.?', when writing a story, for example. Additionally, Doyle (1991) explains, in order for students to generate meaning, to gain independence, and to develop higher order thinking skills, the tasks that students are asked to do must be ambiguous enough to lead them to struggle a bit, in order for them to exercise their own judgment.

Expanding the image

To develop a full view of the cognitive richness of a task one must look at how the task is situated in relation to other elements of the lesson and to the broader course of study, which Newman and colleagues describe as instructional program coherence (Newman, Smith et al. 2001). In the next excerpt, after students had a lengthy period of time to work on their story starters, we see students publicly sharing their efforts to use one of the strategies presented during the mini-lesson. Here students are given the task of identifying the strategies which students used in their writing and providing feedback on that writing. This AC sharing time is called Authors Chair. Notice how the teacher has structured how to give feedback using the acronym CCQ (comments, compliments, questions):

S: Me and [student name] had knives.
T: Stop there. That's your opening. Let me write that down.

T: When [student name] showed me his journal, I thought it was going to be a boring story because it started with 'me'. When I saw the word knives, it was like, 'Oh my God! This is really interesting.' Seeing the word knives made me want to read more. It made me wonder. What strategy is that?
S: Mystery
S: Mystery
T: Mystery strategy. [student name] read the rest, so we are not in suspense.

(Another) student begins reading her story. It is hard to hear her.

The teacher begins to write down the student's story on the butcher paper and rereads the story to the class using expression.

Bump. Bump. Bump. Bump. That's the sounds of my heart when I'm scared. And I could feel it right now because I was really, really scared. My mom was going to whip me because I was talking in class.

T: What kind of strategy did she use [student name]?
S: Mystery strategy.
T: Who thinks she used mystery strategy? [student name] You think she used the mystery strategy? How did she use the mystery strategy?
S: The sound that the heart makes.
T: Yes, bump, bump, bump….more CCQ?
S: How did you…
T: Do you have a comment or a question?
S: Comment
Teacher disciplines a child.

T: Next up is [student name].
S: One day me and [student name] went to the park.
T: [student name], the reason I selected your beginning… because we are going to take your beginning and work on it. Do you mind? This is a story about going to the park and having fun. Any ideas about how we could make it more exciting? [student name]
S: One morning we went to the park to go play.
T: That is what it already says. It is pretty much the same thing. I want you to really start thinking in terms of the strategy—mystery or middle of the action.[student name?]
S: Wow!
T: Adding 'wow' might help.
Teacher pauses to settle class. Students are moving around on the carpeted area.

T: This is your homework assignment. You will take [student name]'s opening line and make it more exciting using a strategy. Thank you for volunteering [student name]. Once you have an exciting opening the rest of the story tells itself. All right everybody. Return your source book (writing journal).
Ms. Alma 1st grade, Bonds, W04

A Cognitively Rich Context

Several things are notable in the Authors Chair excerpt. Because of the teacher's explicit instruction during the mini-lesson, these children shared a common knowledge of particular writing strategies that could be used to enhance story beginnings – dialogue, mystery and middle-of-action. Ms. Alma could ask children to name the kind of strategy used in the student's writing and she could ask them to name the kind of strategy that might help improve a piece of writing because children had a repertoire of strategies to consider.

Ms. Alma also established a culture of collective work in her classroom that enabled her to ask her students to work on another student's opening line for a homework assignment. Such an assignment seems to suggest a number of things about the purpose of learning, the purpose of writing, and the role that classmates play. For example, Ms. Alma's suggestion for students to take their classmate's writing home and "make it more exciting using a strategy" gives them something authentic to which they can apply their knowledge.

By having her students use a classmate's writing to practice with she is implying that the writing done in her class is working text and it is fair game – it can be used as the raw material for everyone's development as a writer. Finally, by asking everyone to help improve a classmate's opening line, she is sending the message that everyone is a learner, that everyone can become a better writer of opening lines. As illustrated earlier, the writing task involved increased cognitive demand, but as suggested here it also involved learning the norms and the disciplinary knowledge for engaging in a discourse community of writers. The norms included how one gives feedback to another, using comments, compliments, or questions. The disciplinary knowledge involved learning the types of strategies that good writers use to create interesting beginnings to a story. Therefore, we also characterize the AC design for Writers Workshop as a cognitively rich context for promoting students' thinking, productivity, and engagement. The AC instructional design was much more than a collection of cognitively demanding tasks, rather it involved changes in the norms for schooling and in the social interactions between students and between students and the teacher (Spillane 2000).

It was also a design that scaffolded teachers in learning how to teach writing, which nearly all of our AC case study teachers noted.

"They are so dead on with how to teach writing." (Ms. Alma, 1st gr AC teacher)

Ms. Alma, whom we have highlighted above, was very supportive of the AC design for teaching writing. She embraced the organizational structures of the lesson format, such as beginning with a 10-minute mini-lesson, conferencing with students during the lengthy writing practice, and guiding students through a criteria-based evaluation of writing during Authors Chair. She utilized the Standards Book and instructional resource guides to shape her lesson planning, and she attended literacy meetings and relied on the literacy coordinator for help.

Contrasting Cases of Providing Feedback on Students' Writing

In all of our classroom observations of AC teachers conducting Authors Chair, we saw teachers providing feedback that was based on criteria that was set during their mini-lessons – this was one way that the coherent nature of the Writers Workshop design was visible. It also represented AC's concern with accountability. The work that students did was expected to be linked to defined standards, objectives, or criteria. Students were held accountable to these stated objectives, thus when they shared their writing it was assessed accordingly. During class discussions, students were expected to use 'accountable talk", in which they supported their statements with evidence from text and justified their comments with references to standards or other criteria.

Implementing these practices and norms was not easy, and sometimes enactments that we observed represented a somewhat routine or systematic use, where the teacher attended closely to the presence or absence of criteria without offering other qualitative feedback. However, we hope to illustrate that even routine use of standards in providing feedback within the AC Writers Workshop design created a more cognitively demanding context for teaching writing than using no frameworks to guide feedback on student writing. Following is an example of providing criteria-based feedback in a somewhat mechanical manner, however this is a fourth grade AC teacher, also at Bonds Elementary. Afterwards, we present an example of a comparison teacher asking students to share their writing, but providing no feedback to them.

Mr. Osar, Bonds, 4th grade, Fall 02

> The teacher circulates around the room working with students. He sits down with individual students and listens to them read their stories. For each student he takes a sticky note and divides it into four sections. He makes plus or minus marks in the sections and at times writes comments. After listening to the student read, he leaves the sticky note with the student.

Here is an excerpt of an exchange he had with a student:

T: Lets see what you got.
T reads and writes a few comments on the sticky note. The student waits quietly. There is little direction from the teacher about the specifics of what needs work and changing in the story.
T: When I went to… Where?
S: Georgia.
T: You went to Georgia !!
S: Yeah!
T: Put this on your paper. Check your spelling. Ok. Lets see. Engage reader? Did you engage the reader?
S: No.
T: Ok fix that too.

As we can infer from the observation, Mr. Osar was checking the writing of students using previously shared criteria. Although he did not give an elaborated feedback, it is clear to the researchers that he was using some benchmark to assess students' writing. Furthermore, it is clear that students were aware of those standards when they were working on writing. The four categories that Mr. Osar evaluated on the sticky note, including 'setting' and 'engage the reader', provided students with some sort of framework to guide their writing.

We know from the interviews with Mr. Osar that he did not particularly like AC and the rigidity and planning that came with AC implementation, although he suggested that overtime he gained a deeper understanding of the design and recognized that on-going coaching would be helpful to him. From the interviews with him, we know that he was not a regular participant of grade level meetings and other opportunities to learn, which might explain why his use of the model was rather routine-like. Nonetheless, we argue that his mechanical use afforded students more guidance for learning to write than no guidance would provide, as the next example illustrates.

In this example of a 1st grade comparison teacher, Ms. Bere, we see students sharing their writing without receiving any feedback from her, possibly due to the fact that there was no criteria given to guide the writing task. The students were simply instructed to summarize the story that the teacher read aloud to them, as their 'response to literature' activity.

The teacher says to the class, "I need someone who will volunteer to read your response to the story." Several hands are raised and she calls on N.

N reads his story from the rocking chair in the front of the room (the author's chair) "Hedgie stuck his nose into a woolen sock, then the sock got stuck on his nose. Then the little girl came to pull it off of him."

> The teacher asks him if he has a picture, which he holds up and several students applaud. After this, the teacher calls up students in rapid succession to read their very short stories out loud. They read their stories, show their pictures, then sit back down in their own chairs:
>
> "My favorite part is when the….When the little girl took the …..when the little animals took the clothes off the line." He sits. Teacher calls up J to read.
>
> "My story is about Hedgie. He put his nose in the sock and it got stuck." Scattered applause.
>
> Teacher calls on K. "When he stuck his nose into a stocking and then animals copied."
>
> Teacher calls J. "Hedgie stuck his nose in a woolen sock. The girl pulled out the sock. The end."
>
> The teacher concludes the sharing by saying that in the future students will learn how to add details to their stories.

Even though this comparison school was identified as a standards-based school, it did not have the instructional guidance for teachers to know how to use standards that a program like America's Choice provided. Ms. Bere knew that she was expected to read the Book of the Month and to ask students to write a response to literature, but she did not know how to do either of these tasks in ways that were productive of creating a cognitively rich opportunity for students. She provided no space to discuss the story or the students' writing or to help students' to conceive of writing as an evolving activity that might improve over time through the exchanges with others, or through the use of standards. She did not have the opportunities to develop an understanding of the theory behind the use of standards or to learn how to enact the practices associated with Standards-Based literacy instruction. Indeed, when asked whether she thought Standards-Based instruction was the right approach for her students she reported that she didn't understand it:

> "Well, I mean, I, I didn't grow up on Standards, and I think I turned out okay. You know? But I do think that with me if, if I was to get--by, by this year, you know, touching on it, and getting more into it, and understanding it, then I would have a different opinion about it. But far as, you know, as right now more or less of I, I'm going through a learning stage with it, so it's hard for me to really say for sure if it really works." Ms. Bere, Fall 02, comparison school

Presenting evidence that cog demand tasks were more prevalent in AC writing instruction than in other classrooms

Consistent with the AC design, and with our qualitative data, the quantitative information gathered through instructional logs[5] suggest that AC first grade teachers focused their lessons on writing 61 percent of the time while comparison teachers focused their lessons on writing 47 percent of the time. Our data also suggest that 1st grade AC teachers reported asking students to share their writing during 29% of their lessons, while comparison teachers reported asking students to do so only half of that time. Furthermore, in an AC classroom, sharing writing, as well as teaching writing, was much more than our simple log item implies. As described above, it is called Author's Chair and it is the culminating event of the Writers Workshop session, which is divided into three segments: a mini-lesson, a work session, and the closing. The mini-lesson is the site in which the teacher presents criteria and examples for students to use to guide the writing task that they will do during the long work session. The work session provides the opportunity for teachers to provide just-in-time guidance as the teacher observes and confers with students, and students have the opportunity to practice applying the criteria to their own writing. The closing, called Author's Chair, is the opportunity for teacher and students to jointly assess the writing task using the established criteria, and to provide and receive feedback to inform subsequent revisions. Thus, "sharing writing" is intended to be much more than a time for students to simply read aloud their stories to others.

The cycle of instruction, described above, represents a cycle of formative assessment. We use the definition of formative assessment presented by Black and Dylan (1998) and Sadler (1989) in which teachers and students make on-going judgments about student work, based on criteria, and use information about the gap between students' work and the criteria to inform subsequent instructional decisions and student actions. Embedded in this process are multiple practices that concern such things as, establishing the criteria, presenting clear examples, and employing appropriate corrective actions. The elements that comprise the America's Choice Writers Workshop correspond to the definition of formative assessment and attend to these concerns.

We conclude that qualities of the instructional design determine its potential for promoting cognitively rich contexts for student and teacher learning. For example, the nature of the task and the kind of thinking it leads students to do (Resnick 1987; Marx and Walsh 1988; Doyle 1991; Moseley, Baumfield et al. 2005), the curricular coherence present (Allington 1991; Newman, Smith et al. 2001; Schmidt, Houang et al. 2002), and clear goal setting for the tasks set up front, used to provide useful feedback to guide improvement (Marx and Walsh 1988; Black and William 1998) were all qualities of the America's Choice design for teaching writing, which we describe as contributing to the development of a cognitively rich context involving cognitively demanding task.

[5] The instructional log may be viewed on the SII website at http://www.sii.soe.umich.edu/.

SFA: Cognitively demanding in different ways

The SFA design for teaching early reading skills, called Reading Roots, is comprised of tasks that we found to be cognitively demanding in ways that are different than the opportunities afforded by the AC writing design. Where AC tasks required original thinking, perspective shifting, and adherence to discourse norms and literacy standards, the SFA tasks for learning to read were demanding in part due to the pacing and the curricular coherence (Allington 1991) of the instructional design. The differences in the cognitive processes used in writing and those used in reading, and the differences in the purposes of each, also naturally contribute to task differences – though, this paper does not address these processes.

The SFA Reading Roots program incorporated multiple strategies identified by the National Reading Panel as strategies shown to improve reading in young children (NRP 2000). Some of these strategies include using cooperative learning formats, phonemic awareness instruction, and varied vocabulary instruction, teaching children to self-monitor comprehension, to answer questions about the text, to summarize, and to use story structure to help recall story content (Madden 2000; Madden, Slavin et al. 2000). The specified and fast paced schedule of the Roots program is also an organizational design feature that promoted high rates of active engagement and production (Marx and Walsh 1988). Each of the many strategies that SFA promoted took place within a structured reading period that was defined by specific routines and tasks that were deployed across all classrooms, thus enabling students to change reading groups and easily recognize the formats in different reading classrooms. A quote from a fourth grade SFA teacher reflects the value that she sees in the structures that shape students' engagement in SFA reading instruction:

> "Because by the time they know the program, by the time we get them to know the program then it's like, we can work on the reading, not on the structure". Ms. Camp Fall 02

In the next paragraphs, we present a description of the implementation of Roots Reading instruction in a 1st grade classroom at Nightingale Elementary. Nightingale Elementary was located in Freightville, a school district in the state of New Jersey. Like Bonds, Nightingale was strongly influenced by Abbot and the increased role of the state in education. According to SCI and CDI data, Nightingale Elementary was a school of 500 students, in which ninety-nine percent of them were of minority status of Spanish origin. Eighty-five percent of the students were eligible for free and reduced lunch. About 30% of Nightingale teachers did not have a permanent or standard teaching certificate. The teacher mobility rate at Nightingale was 32%, which, like Bonds Elementary, was higher than the sample average mobility rate of 22% and was double the 2000 national average of approximately 16% (Provasnik and Dorfman 2005).

Nightingale started implementing the SFA Reading Programs in 1998. After three years, Nightingale started showing positive progress, increasing from only five percent of their students achieving at or above state proficiency level to thirty-four percent of their students in the spring of 2001. Thus, in the view of leaders and many teachers, the school was making valuable improvements with SFA. Once the three years of formal contract with SFA ended, the school continued its improvement trajectory, reaching levels of proficiency beyond eighty percent in both reading and writing. The school year of 2004-05 was the seventh year of implementation and proficiency levels were beyond eighty percent. Below is a description of an SFA reading lesson in a 1st grade Nightingale classroom. This Roots lesson occurred in the spring of 2003 when the school was in the fifth year of implementation.

An Image of Cognitively Demanding Reading Instruction

Ms. Goff, a lower grade Nightingale teacher, began the ninety-minute Reading session with twenty minutes of guided story retelling and choral reading of the previous day's story. Then she led the students through twenty-seven minutes of multiple fast paced phonemic awareness and vocabulary activities, including reading words from lists posted on the wall, drawing letters in the air, enunciating letter sounds, generating words with common beginning sounds, differentiating between similar sounding letter sounds, and reading vocabulary words from the day's story. Following this lengthy period of interactive tasks, the teacher dismissed teams for partner reading, in which students sat side by side, but facing opposite directions, so that their voices could be directed toward their partner's ear.

Students took turns reading and helping one another read for fourteen minutes, until the teacher called students together to discuss the story, which they were reading in pairs. During this time the teacher asked questions about the story and invited students to talk to their partner before answering the questions. SFA promotes the ideas that knowledge is socially constructed, that students' achievement increases when they work cooperatively, and that teachers can learn more about their students when they actively observe them engaging in cooperative activities. Ms. Goff was observed frequently utilizing cooperative learning formats in her classroom. Based on our logging data, Ms. Goff asked students to discuss text with one another in 42% of her lessons. Comparison teachers did so only in less than one third of their lessons.

Below is an excerpt of the story discussion following partner reading.

9:44 Comprehension Check

T calls the Ss attention to her at the front.
T: Why do they have to dress so warmly?
S: It was fall…..It was cold.
T: They had a list of what they had to wear. What did they have to put on?
S: Hat, jacket, mittens

T: Why did Dad ask Vick to help him rake the leaves?...I should see every hand up…Share with the person next to you.
Ss discuss quietly. T calls on SS.
SS: needed help
T: Give me a better sentence.
SS: He needed help.
T: Good. Did Eva help?...Tell me your answer and then tell me why you think so. Talk to your partners…..good you are doing a nice job sharing…SC?
SC provides a long, long description of what happened in the story.
T: So was she really helping? How did she put the leaves in the bag?
Several Ss have hands up.
SJ: one by one
Ms. Goff SP03 Nightengale 1st grade

What is notable about Ms. Goff's example of instruction is the level of engagement and activity that spanned the Reading session. The students and the teacher were active throughout, engaging in multiple tasks supported by the National Reading Panel (2000), including opportunities for classmates to confer with one another about their thinking about text. We argue that the Reading Roots design created a cognitively rich context for students due to the fast pacing, high activity level of multiple research-based practices, and the curricular coherence of the design. These elements worked together to promote student learning. For example, frequent feedback on one's learning (Bransford 2000) quickly emerges in the fast paced, coherent set of activities that comprise Roots – because success on one task is dependent on success on another, and the verbal and immediate nature of various tasks such as identifying letter sounds and words make it easy for teachers and students to evaluate success. Furthermore, opportunities for transferring knowledge and skills are embedded in the coherent design of the schedule of activities for each day.

Comparison Cases of Reading Instruction

When we look at classroom observations of 1st grade comparison teachers we notice that the Reading session, though on average five minutes longer than SFA sessions, is 'thinner' in instructional practices for teaching early reading than instruction in SFA classrooms. For example, in Ms. King's comparison classroom she spent eighty-eight minutes focused on two objectives: teaching children the function of the silent 'e', essentially teaching children how to apply the rule; and secondly, how to differentiate between questions, exclamations, and 'telling' sentences. There was no reading, except for reading isolated sentences; no comprehension instruction; no vocabulary instruction; and word analysis instruction was limited to reading words with the silent 'e' and rereading them when the 'e' was covered up. We equate these types of 'procedural' tasks to the mathematical tasks described as low-level demand procedures without connections (Stein, Smith et al. 2000), because these tasks involved limited ambiguity and were not

connected to more complex tasks that would enable application for the purpose of deepening students' thinking, such as improving comprehension of text.

In another comparison school, Ms. Bere, who was highlighted earlier, read aloud the Book of the Month, which their standards-based district was requiring all elementary schools to do. She did so without any comprehension instruction or modeling, nor any follow-up questions or scaffolding for the subsequent 'response to literature' assignment. Instead, the teacher directed the students to write a summary of the story. Students were given twenty-five minutes to write their summaries and draw a picture and then students shared their brief summaries and pictures with the class. As described earlier, unlike the AC Author's Chair practice, there was no feedback or discussion about the children's writing. For the final forty minutes of the session, students were asked to draw a picture of a hat, because it was hat day, and then read The Foot Book, by Dr. Seuss, in unison. The teacher regularly prompted students at each page or two to 'get ready, set, go'. This session was notably thin on instructional practices, especially practices supported by research (NRP 2000).

Finally, at a third comparison school, Ms. Howe celebrated the 100th day of school by reading One Hundred Hungry Ants, and using popsicle sticks to represent the ants' base-ten marching formation. She struggled to tape the sticks and to manage the materials and the students as she read the story. The observer noted that the students were inattentive and disruptive for the twenty-five minute story and continued so during ten more minutes of reviewing the story's sequence of events on a flow chart. The final fifteen minutes of the session involved students working in teams to generate the longest list of words or non-words that rhymed with their assigned rhyme: FIT, SUN, NET, PIN, CAT, RAN.

By our assessment, none of these comparison classrooms involved cognitively demanding tasks or represented a cognitively demanding context. Students were not presented with demanding questions, materials, or tasks, nor were they asked to do very much work at all. Also, the reading sessions lacked coherence among the activities, which was a central feature of the SFA reading program.

Evidence that cognitively demanding tasks were more prevalent in SFA Roots classrooms than in comparison classrooms

The qualitative evidence describing relatively thinner instructional contexts in comparison classrooms coincides with more extensive quantitative accounts of comparison and SFA teachers. As noted earlier, we found that a first grade SFA teacher spent an average of 92 minutes on Language Arts, as the model expect them to do, whereas a comparison first grade teacher spent 97 minutes on Language Arts. However, as our analysis of classroom observations above illustrated, there were differences in the way these 1st grade teachers filled the minutes in a Language Arts period. By analyzing

teachers' instructional logs, we found important differences between the instructional practices reported by SFA and comparison first grade teachers.

Through analyses of specific instructional practices of first grade teachers, the researchers found that on average first grade SFA teachers did more comprehension work than comparison teachers. This work included more activities related to answering questions that have answers directly stated in the text, answering questions that require inferences, and explaining how to find answers or information. SFA teachers reported these practices in 46% of their lessons versus comparison teachers who reported these practices in 34% of their lessons. In a similar way that SFA teachers reported doing more comprehension, they also reported using more direct demonstrations i.e. teachers demonstrated or explained a skill, teachers demonstrated or explained how to use a reading strategy and teachers explained why or when to use a reading strategy.

Consistent with recommendations by the NRP (2000), first grade SFA teachers promoted comprehension by regularly asking students questions and providing feedback. This involved students answering brief oral questions posed by the teacher, answering multiple-choice questions, completing sentences filling in blanks and writing brief answers to questions. The SFA design promoted active questioning by providing students multiple formats for answering questions and SFA teachers reported these practices in 58% of their lessons, versus 42% by comparison teachers.

SFA teachers also engaged students in more reading fluency activities (such as partner reading) and more vocabulary activities (such as the word wall activities). Additionally, SFA teachers also taught word analysis more often than comparison teachers, which when combined with the increased work on fluency, vocabulary and reading comprehension, they provided students with an integrated and coherent program for teaching reading with practices supported by the NRP. Finally and according to the SFA design for cooperative learning, first grade SFA teachers encouraged more discussion among students, involving activities such as discussing text with peers, doing a think-aloud, or explaining how they applied a skill or strategy, and generating questions about text. SFA teacher reported these practices for 51% of their lessons and comparison teachers reported them in 28% of their lessons. The comprehensive approach to reading instruction within a fast paced, rigorous, and coherent design constitutes a context that is more cognitively demanding than the instruction we observed in comparison schools and reported by comparison teachers on their logs of instructional practices.

Students' engagement in cog demanding tasks

Asking students to engage in more demanding work may suggest to some that this would lead to student resistance or misbehavior. On the other hand, some may argue that more demanding work may lead to greater student interest and engagement. However, from an analysis of all of our classroom observations in AC, SFA, and comparison schools, we observed that students readily cooperated in doing more demanding work, as well as in less demanding work. We observed examples of student engagement and examples of student misbehavior in CSR schools and comparison schools fairly equally.

Classrooms with different levels of demand were equally well behaved which suggests that students' patterns of participation were not necessarily associated with the level of complexity in instructional tasks. It may be that a teacher's ability to motivate and to support students to engage in work is a more important factor - it doesn't matter so much if the work is high level or low level, if the teacher creates incentives and structures to cooperate, students will cooperate and engage in the work that they are asked to do.

The students in Ms. King's class, described above, were very cooperative and engaged throughout the session, despite the fact that we consider the tasks to be low level and the session to be thin with only a limited number of literacy activities. She used active learning strategies such as asking for group responses using thumbs up or thumbs down signals and consistently asking questions or presenting tasks that could be quickly answered or performed. Likewise, students in Ms. Bere's class were also cooperative, (or maybe compliant), though interactions between teacher and students and among students were more limited than in Ms. King's class. Ms. Bere's comments were more redirective and less like the invitations to engage that Ms. King used, yet students in both classrooms accomplished the tasks that teachers asked them to do – tasks which were less cognitively demanding than we observed in CSR classrooms.

In our CSR case study classrooms at times we observed students cooperatively engaging in challenging tasks and functioning with ease using specific norms for working in their classrooms. For example, in an AC 1st grade classroom the researcher noted several examples of students demonstrating independence and responsibility for learning. During students' writing time the researcher observed students helping one another solve problems, which suggest that students learned that classmates can serve as resources to one another and that the teacher did not need to be the only source of assistance. One example to illustrate students' cooperation in helping one another follows:

> A boy asked a girl how to spell a word. She told the boy to look the word up in the dictionary. He told her that he did not want to look the word up in the dictionary. At this time a second boy at the table got up from his chair, walked over to the bookshelf by the door, grabbed a dictionary, walked back to his seat, and gave it to the boy. The girl, and the boy who got the dictionary, then proceeded to look in the dictionary with the boy who wanted to know how to spell a word. (Ms. Acta, Westwood, F02)

As illustrated above, young students in our 1st grade case study classrooms did at times function independently and quite responsibly in ways that supported their classmates' learning and demonstrated their own sense of agency. However, these students could also be disruptive and inattentive, which was often evident at various times during the lessons that we observed. For example, in Ms. Goff's SFA classroom, presented earlier, she

moved students quickly from one activity to the next and the majority of her students were engaged the majority of the time. However, just like Ms. Bere, whose lesson was much thinner and less active, Ms. Goff also had to periodically redirect students' behavior. So, despite our initial hypothesis that student behavior would function as a barrier to more cognitively demanding instruction, we found that student misbehavior was unrelated to the complexity of instruction. At times it was a barrier to cognitively demanding instruction, but student misbehavior was, at times, also a barrier to lower level instruction. Likewise, students were observed engaging cooperatively in demanding instruction, as well as instruction that was less demanding.

Discussion

We began this paper by suggesting that CSRs were developed with the expectation that they would help disadvantaged schools produce more challenging forms of instruction, contrary to the past opportunities provided and contrary to the past low expectations held of these schools' capabilities. Our study confirms that these CSRs did help our case study schools produce more challenging instruction. Indeed, writing instruction in our 1st grade America's Choice case study classrooms was found to be more cognitively demanding and provided more cognitively rich opportunities for children than writing instruction in comparison classrooms, and it occurred with greater frequency than in comparison schools. Early reading instruction provided in SFA Roots classrooms was found to be more active and full with multiple research based practices than reading instruction in 1st grade comparison case study classrooms. Others have also documented instructional change in these CSR schools compared to comparison schools (Correnti and Rowan 2006). Also, across all schools, we observed that students cooperatively participated in more demanding tasks with similar ease and willingness as students who were presented less demanding tasks. Likewise, student misbehavior was similarly present across case study classrooms.

Our observations suggest that students in disadvantaged settings are very capable and willing to engage in challenging instruction. Students in disadvantaged settings react positively to demanding instruction with no intellectual or social limitations preventing them from doing so. When the opportunities to engage in rich forms of instruction were available and supported, students regularly committed to challenging instructional tasks. This evidence suggests that students attending school in disadvantaged settings can be exposed to challenging forms of instruction and progress through them.

Barriers to producing cognitively demanding instruction

So, just as the designers of CSRs had expected, challenging instruction can be produced in disadvantaged settings and children will productively engage in it. But, just as an earlier study revealed (Barnes, Khorsheed et al. 2006) producing more demanding instruction is a very challenging task for teachers; it is labor-intensive and resource-intensive. The majority of our case study teachers in AC and SFA schools reported that the demands of learning and implementing these programs was at times overwhelming

and frustrating. Preparing for lessons, preparing students to succeed on tests, collecting student achievement data, keeping records of instruction, and attending meetings were often cited as burdensome aspects of implementation. Below is a quote from one teacher expressing her frustration at the demands of the CSR:

"Two teachers quit on my floor because they couldn't take it. I don't blame them. I couldn't face it the first year of teaching…and the teacher across the hall from me is out on health related things. I'm not venturing any guesses, but this is just so high pressure. I have an ulcer this year… And, all the record keeping. Uh. It's ridiculous! It's really ridiculous, it's insane. These people need to be in classrooms themselves with no support and try to do that." Alma W04 Bonds

Discontinuance of the CSR program after teachers invested so much effort to learn the program during the first three years of funding, compounded these teachers' frustration:

"We're a SURR school, so we were told that we had to be on this program for three years in order to see success. We see success and now in the fourth year they're changing it. So we feel like there is no continuity you know, they really need to, we felt they really need to keep it and we've begged people in administration to talk to the district office, but I don't think they have much of a voice." Cone F02 Doris

Both CSR programs offered resources and opportunities to engage teachers and students in more demanding instruction, but teachers and students were the ones in charge of mobilizing the resources and producing those demanding forms of instruction. This required conceptual and practical understanding, unlearning past practices, extended expert support, and repeated opportunities to practice. For teachers, the instructional materials, the coaches, and peer meetings were some of the resources available to enrich instruction. Students relied on the capabilities of their teachers to model and reinforce the practices and norms needed to engage in more demanding instruction.

We expected to find that student misbehavior was a significant barrier to enacting cognitively demanding instruction, which it was, in some cases. The majority of case study teachers in our CSR schools and in our comparison schools cited student discipline as an on-going problem in their school or in their classrooms. Even those teachers whom we observed successfully enacting instruction and whose students successfully engaged in instruction, reported that student discipline was at times a barrier to successful teaching and learning in their classrooms. However, students' misbehavior did not seem to be related to the increased demands of the CSRs. Students equally misbehaved and equally cooperated in CSR classrooms enacting cognitively demanding instruction and in comparison classrooms enacting lower demand instruction. Instead, students' misbehavior seemed related to teachers' inability to engage and motivate students in instruction, whether it was low-level instruction or demanding instruction. Students readily took up the practices and norms for engaging in instruction when they were

supported and motivated by a capable teacher, who was also supported and motivated by adequate resources for enacting the work of the CSR. Yet, there were still some examples of students displaying a level of disruptive behavior that seemed to exceed even the most capable teachers' expertise and these occasions required outside intervention or prevented instruction from proceeding in both CSR and comparison classrooms.

The capacity to expose students to richer forms of teaching and learning varied within and across schools. Some teachers were capable of using the CSR models in very demanding ways like AC teacher, Ms. Alma, and SFA teacher, Ms. Goff. While others, like Mr. Osar faced more barriers enacting the more demanding forms of instruction with agility. Both models offered fairly rich opportunities for teachers to learn at the beginning of implementation, but they provided fewer resources to grow over time. For example, teacher mobility was an impediment for the accumulation of skills because coaches were largely committed with training incoming teachers instead of furthering the skills of those teachers who were mastering the basic CSR components, as the quote from an SFA facilitator reflects below:

> **I:** We talked a lot about the teacher mobility, as well. Has that been helpful or a hindrance to your implementing SFA?
>
> **R:** A hindrance, definitely! Because like I said, here you trained all these people; we had two teachers last year who came with us to a conference in [far away state], who when we came back, I think, in April were gung-ho sort of thing. (They)got a job in [another area of the state]. Then we came back in September. So that hurt. Not that it's bad for that person, but people being trained and then they leave – that hurts. It hurts the commitment to the program because now we have to train new people… (Ms. Lane, SFA facilitator, Doris Elementary, Spring 2002)

So, access to support from coaches and facilitators varied from school to school and this impeded teachers' learning. Also, teacher union contracts frequently precluded schools from consistently providing time for teachers to meet for instructional development meetings, because such meetings were often scheduled during teachers' preparation periods. Using prep periods for meetings was particularly stressing to teachers because the new programs required significantly more prep work, paper work, and data collection. Few schools were able to provide a satisfactory balance between providing teachers adequate time to prepare for teaching and adequate professional development time with coaches and peers. Such variability in access to opportunities to learn affects teachers' capabilities to adopt and implement new practices with facility (Cohen and Hill 2001; Barnes, Khorsheed et al. 2006).

As the designers of SFA state below, facility with the design elements were critical to effective implementation:

> "Effective implementation of Success for All involves several assumptions about the nature of enduring change in schools. First, SFA assumes that some of the power of this program comes from the curriculum and methods themselves, but essential additional power comes from the intelligent adoption and adaptation made by skilled professionals" p. 2.4, (Madden and Cummings 2000).

This statement, from the SFA Principal's and Facilitator's Manual, suggests that the SFA treatment, then, does not come just from the tangible elements of the design, successful treatment requires a specific type of use of these elements. The challenge then, is to enable teachers to become the mindful, agile users that the designs require (Barnes, Khorsheed et al. 2006).

We conclude that the designs provided structure to previously unstructured environments, and because the program structures were so coherent and rich, they could enhance students' experience and teachers' capabilities, which, in some cases, resulted in instruction offering greater cognitive demand than was observed in comparison schools. But, this was more likely to occur when a teacher had ample opportunities and resources for learning. What constitutes the cognitive demand placed on a child is found in the tasks they are asked to do and in the context in which they do them. The teacher must engineer these opportunities, and our examination of enacted CSR designs strongly suggests that the architecture and resources for enabling teachers to do so exists.

Allington, R. (1991). Effective Literacy Instruction for At-RIsk Children. Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom. M. S. Knapp and P. M. Shields. Berkley, McCrutchen Publishing Corporation.

Ball, D. (1990). "Reflections and deflections of policy: The case of Carol Turner." Educational Evaluation and Policy Analysis **12**(3): 263-275.

Barnes, C. A. (2006). "Progress on Trial." (Unpublished draft): University of Michigan.

Barnes, C. A., K. Khorsheed, et al. (2006). Learning by design: developing the know-how to improve teaching and learning in high poverty schools. American Educational Research Association, San Francisco.

Black, P. and D. William (1998). "Assessment and Classroom Learning." Assessment in Education(5(1)).

Bransford, J. D. e. a. (2000). How people Learn: Brain, Mind, Experience, and School. Washington D.C., National Academy Press.

Carrol, T. G., K. Fulton, et al. (2004). Fifty Years After Brown V. Board of Educaton: A Two-Tiered Education System, National Commission on Teaching and America's Future.

Cohen, D. (1990). "A Revolution in One Classroom: The Case of Mrs. Oublier." Educational Evaluation and Policy Analysis **12**(3): 311-329.

Cohen, D. and H. Hill (2001). Learning policy: when state education reform works. New Haven, Yale University Press.

Correnti, R. and B. Rowan (2006). Changing Literacy Instruction in Schools: Consequences of CSR Program Participation on Teachers' Classroom Practice.
Cuban, L. (1984). How Teachers Taught. New York, Teacher College Press.
Doyle, W. (1983). "Academic Work." Review of Educational Research **53**(2).
Doyle, W. (1991). Classroom Tasks: The Core of Learning from Teaching. Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom. M. S. Knapp and P. M. Shields. Berkley, McCrutchan Publishing Corporation.
Elmore, R. (1996). "Getting to Scale with Good Educational Practice." Harvard Educational Review **66**(1): 1-26.
Elmore, R. F. and M. McLaughlin (1988). Steady Work: Policy, Practice, and the Reform of American Education. Santa Monica, The Rand Corporation.
Hanushek, E. (2006). Low Performing Schools and the Market for Teachers. Society for Research on Educational Effectivenss. Lansdowne, VA.
Hanushek, E., J. f. Kain, et al. (2003). "Why Public Schools Lose Teachers." Forthcoming, Journal of Human Resources.
Madden, N. (2000). Success for All: Reading Roots Teacher's Manual, Volume 1, Success for All Foundation, Inc.
Madden, N. and N. Cummings (2000). Success for All: Principal's and Facilitator's Manual, Success for All Foundation, Inc.
Madden, N. A., R. E. Slavin, et al. (2000). Reading Wings Teacher's Manual and Training Book, Success for All Foundation, Inc.
Marshall, C. and G. B. Rossman (1999). Designing Qualitative Research. Thousand Oaks, CA, Sage.
Marx, R. W. and J. Walsh (1988). "Learning from Academic Tasks." The Elementary School Journal **88**(3): pp.207-219.
Maxwell, J. A. (1996). Qualitative Research Design: An Iterative Approach. Thousand Oaks, Sage Publications.
McLaughlin, M. (1991). The Rand Change Agent Study: Ten Years Later. Education Policy Implementation. A. Odden. Albany, NY, State University of New York Press**:** 143-156.
Moll, L. C. (1991). Social and Instructional Issues in Literacy Instruction for "DIsadvantaged" Students. Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom. M. S. Knapp and P. M. Shields. Berkley, McCrutchen Pulbishing Corporation.
Moseley, D., V. Baumfield, et al. (2005). Frameworks for Thinking: A Handbook for Teaching and Learning. Cambridge, Cambridge University Press.
Newman, F., A. Bryk, et al. (2001). Authentic Intellectual Work and Standardized Tests: Conflict or Coexistence?, Consortium on Chicago School Research.
Newman, F., B. Smith, et al. (2001). School Instructional Program Coherence: Benefits and Challenges. Improving Chicago's Schools. Chicago, Consortium on Chicago School Research.
NRP (2000). Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction, National Reading Panel.

Peterson, P. (1990). "Doing more in the same amount of time: The case of Cathy Swift." Educational Evaluation and Policy Analysis **12**(3): 277-296.

Provasnik, S. and S. Dorfman (2005). Mobility in the Teacher Workforce. The Condition of Education 2005. N. C. f. E. Statistics, U.S. Department of Education.

Resnick, L. (1987). Education and Learning to Think. Washington D.C., National Academy Press.

Resnick, L. (1995). "From Aptitude to Effort: A New Foundation for Our Schools." Daedalus(124(4)).

Resnick, L. and M. W. Hall (1998). "Learning Organizations for Sustainable Education Reform." Daedalus(127(4)).

Rowan, B., E. Camburn, et al. (2004). Benefiting from Comprehensive School Reform: A Review of Research on CSR Implementation. Putting the Pieces Together: Lessons from Comprehensive School Reform Research. C. Cross. Washington, D.C., The National Clearinghouse for Comprehensive School Reform.

Sadler, R. D. (1989). "Formative Assessment and the Design of Instructional Systems." Instructional Science(18): p.199-144.

Schmidt, W., R. Houang, et al. (2002). "A Coherent Curriculum: The Case of Mathematics." American Educator(Summer 2002).

Spillane, J. P. (2000). "Cognition and Policy Implementation: District Policymakers and the Reform of Mathematics Education." Cognition and Instruction **18**(2): 141-179.

Spillane, J. P., B. J. Reiser, et al. (2002). "Policy Implementation and Cognition: Reframing and Refocusing Implementation Research." Review of Educational Research **72**(3).

Stein, M. K., M. S. Smith, et al. (2000). Implementing Standards-Based Mathematics Instruction: A Case for Professional Development. New York, Teachers' College Press.

Stein, M. K., M. S. Smith, et al. (2000). Implementing Standards-Based Mathematics Instruction. New York, Teachers College Press.

Wiemers, N. J. (1990). "Transformation and accommodation: A case study of Joe Scott." Educational Evaluation and Policy Analysis **12**(3): 281-293.