15. Communication Across the Curriculum

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This chapter explores a communication across the curriculum (CAC) initiative that involved a university, a community college, and an urban school district. CAC focuses on developing writing, reading, and speaking lessons in mathematics, science, and technology, as well as English, classrooms. This initiative, funded in part by the National Science Foundation, was unusual because it included English. The inclusion of English validated: (1) students' writing as the primary method of gauging learning, (2) teachers' communicating across the curriculum as a method of creating integrated instructional modules, and (3) workshop facilitators' demonstrating cross-curricular activities in writing, reading, and speaking as methods of defining mathematical, scientific, and technological literacy.

The following pages review essential principles and practices of sound CAC pedagogy, emphasizing the kinds of communication strategies, especially writing, that generally help teachers obtain evidence of learning among elementary, middle, and high school students. Then the discussion places CAC in the wider programmatic context of the initiative, indicating where teachers experienced the development of their own communication skills. A summary of results indicates how the CAC activities helped sustain curricular integration for participants in the initiative. Finally, there are specific suggestions for future initiatives.

CAC-Related Principles and Strategies

Scholars in CAC have long known that the overall development of successful reading and speaking skills depends on good writing instruction (Barr, 1995; Della Croce & Everett, 1999; Dunn, 1998; Flynn, Remlinger & Bulleit 1997; Hain & Louth, 1999; Quinn, 1995; Tchudi & Lafer 1996). Above all, "writing also affects reading comprehension," the National Assessment of Educational Progress notes in a 1998 reading report card for primary and secondary schools. Students in grades four, eight, and twelve "who said they wrote long answers" to their reading assignments in various subject areas on a weekly basis scored higher than those who said they never or hardly ever did so (National Writing Project & Nagin, 2003a, p. 12; see also S. Andrews, 1997; Freidman, 1997).

The often repeated mantra in CAC is that "writing promotes learning: what we learn through writing we are more likely to retain and more likely to understand" (Law, 2003, p. 4). Although CAC got its start in English studies and spread throughout the humanities (R. Andrews, 1998; Bohan & Davis, 1998; Haust, 1998; Kumar, 1999; Perkins & Kervick 1999; Tucker, 1998), research shows that good writing instruction also yields strong evidence of learning in many of the disciplines known as "hard" or "empirical," such as mathematics (Bolte, 1998; Burton, 1996; Hayden, 1997; Isaacs, 1997; Mazur, 1999; Mower, 1996; Russek, 1998; Taylor, 1999), the sciences (Becker, 1995; Burnham & French, 1999; Chabot & Tomkiewicz, 1998; English, 1997; Jacobs & Moore, 1998; Keys, 1999; Klein, 1999; Moore, 1993; Rorrer,

1996; Sherwood & Kovac, 1999; Winchell & Elder, 1992), and technology (Drexel & Andrews, 1998; Hirt, 1999; Ramey & Hudgins, 1999; Sorenson, 1999; Watkins-Goffman & Dunston, 1994). The multifarious uses of writing instruction include "writing as problem solving; writing as critical thinking, writing within pragmatic contexts rather than [stand alone, i.e., belletristic] themes; writing as a way to individualize instruction for a multicultural and multilingual student body" (Maimon, 2001, p. x).

Advocates of CAC know, too, that improvement in all communication skills only occurs for students when they receive systematically *sustained* "instruction and guidance while they are working on pieces of writing within the context of a specific discipline" (Law, 2003, p. 4). Without such sustained practice, which obtains the best results when connections to students' cultural backgrounds are addressed as well, reading skills *especially* will not advance (see Applebee, 1993). Yet "national studies and assessments of writing over the past three decades repeatedly show that students spend too little time writing in and out of school" at all levels, primary through postsecondary, a situation that profoundly affects the development of reading skills not only in English but in mathematics, the sciences, technology, and other disciplines (National Writing Project & Nagin, 2003a, p.13).

To illustrate, one of the high schools involved in this initiative had a strong grasp of the importance of writing. School administrators advised teachers that they must participate in a program that would target all secondary levels – grades 9 through 12 – requiring students to have practice writing paragraph-length pieces that served many purposes, such as concept summaries, class minutes, correspondence, definitions, creative solutions to problems, directions or "how to" processes, and prediction. Teachers had to get students to understand how real-world writing functioned: to inform, clarify, explain, justify, or persuade. Teachers would evaluate the written work with a rubric that included clearly defined criteria for focus, support, organization, and grammatical conventions.

However, the school's administrators advised teachers to require students to write a 150-200 word paragraph *once a month*, with no attention to the kind of instruction that engages all the complex processes of writing: "rumination, investigation, consultation with others, drafting, feedback, [rereading,] revision, and perfecting" (National Writing Project & Nagin, 2003a, p. 11). Moreover, despite their concern about the concurrent development of reading skills, the administrators did not mention (let alone emphasize) writing-about-reading. Instead, they emphasized that the monthly paragraph writing must help students improve scores in the writing component of the Prairie State Tests. Such an impoverished, test-driven approach to CAC – despite its well-articulated premises – was bound to fail. Teachers got the message that no further writing or reading instruction was necessary. Some could not figure out how to make the writing exercises connect meaningfully to course work in their subject areas. Students saw the exercises as repetitive busy-work. No increase in test scores took place.

Moreover, in most classrooms nationwide, two common but fallacious reasons for inadequate instruction in writing recur among teachers in all disciplines (*including* English): (1) teachers often feel that time spent on writing instruction takes away from time needed to cover course material and (2) teachers often feel unqualified to teach writing. This kind of reasoning

undermines the development of good reading skills as well because it ignores the reading-writing connection.

To address these problems, teachers need sustained opportunities for professional development that, according to Maimon's (1992, p.x) "Carlton Plan,"

- Provide writing-about-reading workshops to "create a nonhierarchical setting for real dialogue across the disciplines"
- Encourage curriculum change that emerges from "intellectual exchange among faculty members"
- Offer "a sense of [teacher] ownership" rather than obedience to top-down executive orders or teach-to-the-test imperatives
- Promote collaboration "among faculty members and among students"
- Involve students "in commenting on [their] work-in-progress" at faculty workshops, thereby affording students "a leadership role" in teachers' professional development
- Define "writing as a complex process closely related to thinking"
- Establish that well-informed writing-about-reading instruction "helps students learn subject matter as well as to improve fluency in writing"

As the above principles imply, writing-about-reading workshops for teachers become the vehicle for an emergent "CAC culture."

What follows is a description of writing-about-reading strategies that the mathematics, science, technology, and English teachers in this initiative actually tried. These kinds of strategies promote ongoing development of a CAC culture – although building a strong CAC culture that enjoys the participation of a significant number of cross-curricular faculty still takes a minimum of three to five *continuous* years, and often as many as 10 (National Writing Project & Nagin, 2003a, p. 93). The strategies described here emphasize the high level of interaction and engagement in very specific, classroom-adaptable practices that are crucial to successful professional development in CAC. The strategies include reading challenging texts, experimenting with textual formats, designing and responding to cross-disciplinary assignments, conducting written discussions online, planning and scheduling multiple-stage assignments, accommodating cultural rhetorics, publishing student writing, writing as a means of classroom management, and using and evaluating portfolios of written work.

Reading challenging texts

Teachers read an excerpt from Ricoeur's (1981) *Hermeneutics and the Human Sciences*. A CAC facilitator gave them an objective test that required them to provide answers to multiple choice and true-false questions, after which they immediately received the correct answers and scored their understanding of Ricoeur. Next, a second CAC facilitator asked teachers to read an excerpt from Ragland-Sullivan's (1986) *Jacques Lacan and the Philosophy of Psychoanalysis*. This time, the workshop facilitator provided definitions to several key terms, explained the context from which the excerpt was taken and talked about how Ragland-Sullivan's excerpt applied to his own research. The facilitator then asked the teachers to read the excerpt, encouraging them to underline passages that caught their attention, write brief informal notes

about points they felt they understood, and locate parts of the text that confused them. Afterwards, the teachers got together in groups to share what they had written. In a general discussion, the teachers identified which reading activity most resembled the way they taught texts in their own courses. The teachers recalled how they felt at the beginning and middle of reading each excerpt, identified excerpts they found difficult and strategies they used to make sense of the excerpts, and described what the workshop facilitators did (or could have done) to make the reading experiences easier.

Experimenting with textual formats

Teachers read through a selection of cross-disciplinary excerpts taken from books on how to prepare for the Graduate Equivalency Exam and the Standard Achievement Test. They identified features of the excerpts that would make the reading difficult for their students. Then the CAC facilitator asked the teachers to write informally about an important concept in their discipline, using language they felt their students could grasp. After that, the teachers wrote about the concept in another – perhaps nontraditional – format, such as notes that "talk back" or question the author of a text, a reading log entry, a summary/response paragraph, an interview, a poem, an autobiography, a dialogue, a news release, an advertisement, multiple-choice or short-essay questions, a picture, a scene from a play, or a paraphrase (maybe in a different dialect). Teachers shared what they had written in small groups, and then each group chose someone to perform his or her written work for the whole group.

Designing and responding to cross-disciplinary assignments

Teachers selected or wrote a passage about another important concept in their discipline, this time making an effort to exemplify "textbook language." Then they listed different reading strategies they felt students would need to understand the passage, paying special attention to features of the language. After that, they wrote instructions for a writing activity that they believed would teach a key strategy to help students read their passage (e.g., asking students to define vocabulary, explain how they would teach the concept to other students, design an experiment, compare the concept to a similar or different one, cite a real-world application, speculate about problems the concept would address). Next, the teachers exchanged their instructions with another teacher who taught a different subject. Each responded in writing to his or her partner's instructions. When finished, they evaluated each other's written performances, citing their reasons for evaluating what their partner had done. Teachers volunteered insights about what they learned about making connections between the processes of reading and writing, "decoding" the kind of language textbooks are written in, and designing activities as well as writing clear instructions to assist students in reading comprehension.

Conducting written discussions online

Teachers did a Web search for sites they believed would be useful for their students to access and study for the courses they taught. The teachers copied and pasted the URLs into a WebBoard conference, annotated them, and explained what they thought students might learn from reading and exploring each website. WebBoard is an online writing software that permits a

high degree of interactivity among online writers. (BlackBoard and WebCT provide similar electronic writing environments.) Next, teachers accessed one another's annotated URLs and websites and offered their own impressions of how useful they might be. They also discussed what they had learned from writing about the websites rather than talking about them to one another.

Planning and scheduling multiple-stage assignments

Teachers looked at an online syllabus for a first-year college-level writing course. They examined, in particular, two assignments that required students to find and choose their own books belonging to a specified genre (e.g., autobiography and career-related). The assignment required students to write several practice pieces in stages, first identifying an important topic in the book, then researching and evaluating several sources relevant to that topic and doing textual analysis and, finally, making connections to the sources that amplified their understanding of the topic. They synthesized their work into a 6-8 page essay. The teachers studied how the assignment stages built on one another and targeted different types of writing-about-reading strategies. They then discussed the kinds of reading and writing assignments included in their own syllabi. They compared their assignments with the multistaged ones in the first-year writing course.

Accommodating cultural rhetorics

Teachers looked at lists of rhetorical techniques employed by writers from different cultural backgrounds, such as American deaf culture (Anderson, 1998; Davis, 1995), African American (Balester, 1993; Gilyard, 1991; Gilyard & Richardson, 2001; Smitherman, 1994, 1997; Troutman, 1997); Chinese, Japanese, Middle Eastern, and Spanish (Leki, 1992); and Native American (Lesko, 1996; Raimes, 2003). The teachers speculated about the kinds of difficulties they thought students with different cultural rhetorics might have with reading and writing about American texts in their own disciplines. The teachers attempted to write about a concept in their own discipline, emulating a different cultural rhetoric. A few of them volunteered to read their pieces aloud, while others tried to guess the cultural rhetoric the volunteers were imitating. They discussed the difficulties of reading and writing in another rhetorical tradition. Finally, they examined an assignment calling for the analysis and comparison of two arguments. They read an Afghani student's written response to the assignment. The teachers identified where the student's rhetorical practices differed from those most highly regarded in American academic rhetoric (Crowley, 1994) and debated what written guidelines they would give the student to help him revise.

Publishing student writing

Teachers read work by students who had reviewed books on Amazon.com, students who had evaluated websites in an exercise posted on a WebBoard conference, and students who had published personal essays in a textbook used for a first-year writing course. The teachers discussed how they thought these forms of public writing might have been affected by the students' awareness of a larger reading audience. Then the teachers posted their own ideas on the

WebBoard, brainstorming assignments that would invite students to publish written work in courses they taught. They reviewed what ideas they and their colleagues had written.

Writing as a means of classroom management

Teachers described a class they had recently taught in lecture format. Then they revised it by introducing written activities. The teachers shared their alternative plans with one another, explaining their rationales for designing the activities and justifying the amount of time they allotted to writing. Written activities included students (1) reviewing the most important points about a previous class, (2) responding to a mini-lecture, (3) commenting on a reading assignment, (4) preparing questions for a class discussion, (5) reflecting on newly introduced material, (6) explaining contributions to a small group activity, (7) appraising or interacting with another student's piece of writing, (8) arriving at a consensus or articulating reasons for disagreement on a controversial issue, (9) suggesting how to apply an important concept to a real-world situation, and (10) forming an hypothesis. The teachers talked over the ways that they thought the class might have turned out if they had tried these exercises. They speculated about how they would evaluate such writing.

Using and evaluating portfolios of written work

Teachers reviewed directions for students to assemble a portfolio of their best work in a biology class. Then the teachers read generic directions that could be adapted for students to assemble a portfolio in a course they taught. As follow-up, the teachers read through a collection of student work in an online portfolio, comparing the changes among drafts. Then the teachers discussed revision as a neglected kind of reading skill. Applying a rubric that had been designed for a first-year writing program, the teachers ranked the online portfolio.

We employed these strategies in several different venues: (1) daylong workshops held in an atrium at a high school, where cross-disciplinary participants brought their own laptops; (2) breakout sessions in daylong conferences at the university or a community college, where small groups of cross-disciplinary participants went to a computer lab; (3) daylong or half-day workshops held in a networked research facility at the university, where only middle and high school English teachers consulted with the CAC facilitator and other professorial writing faculty.

All strategies emphasized how CAC pedagogy helps teachers to address writing and reading skills that transfer across content areas. That is to say, none of the strategies gave more weight to specific course content in English or any other discipline. We expected that if teachers could augment their classroom techniques to help students discover how to learn through writing and reading, mastery of specific course content would follow.

CAC in Programmatic Context

Our initiative drew CAC into its professional development plan at a time when CAC took hold as a program in the partnering university. The director of this initiative asked the university's CAC coordinator, *not* the same person who helped organize and facilitate the writing-about-reading activities described above, to help the teachers build and reinforce literacy broadly. The director felt that it was a strategic necessity to encourage English teachers from the target school district

to participate in the initiative because they could: (1) reiterate the convention that writing generates valid evidence of learning, (2) provide additional peer support in the workshops where teachers designed modules, and (3) bring their knowledge of instruction in reading, writing, and speaking into the purview of developing mathematical, scientific, and technological literacy.

During a two-year pilot program funded by the state, forerunner of the NSF-funded initiative, this CAC coordinator introduced teachers to the theoretical principles of CAC and encouraged them to apply the principles to instruction that resonated with real-world practices in the teachers' respective disciplines. The teachers readily accepted the CAC principles, but many (including a number of English teachers) struggled to translate the principles into classroom practices. The director of the initiative identified teachers who successfully implemented CAC in their instruction and asked them to join her core team. Then the CAC-savvy team held focused workshops to help the other teachers develop the writing, reading, and information-retrieving skills that they needed to design effective performance tasks for their modules. The pilot program identified a proven, effective model for professional development: *teachers teaching teachers*.

Unfortunately, around the time the two-year pilot program ended, the university CAC coordinator moved on to another institution. A two-year interval occurred before CAC again entered the picture. On the other hand, the director and her team discovered that the efforts to introduce and implement CAC had not been wasted. When the sponsoring university hired a new CAC coordinator, the director invited him into the initiative, along with other university English faculty. These new facilitators found that many teachers who had been introduced to CAC had not forgotten or discarded what they learned. Building upon the earlier CAC foundations, the new coordinator and other English faculty facilitated writing-about-reading workshops that expanded upon what many teachers knew as they continued to participate at higher program levels. These experienced teachers were then able, to a certain extent, to pass along and reinforce the principles that guided what the CAC strategies again brought to the initiative.

A surprising side note: except for the new CAC coordinator and the university facilitators from English, hardly any cross-disciplinary facilitators (in mathematics, the sciences, or technology) expressed familiarity with CAC.

CAC re-entered the initiative when a principal from one of the participating high schools invited the CAC facilitators to meet with cross-disciplinary teachers for an in-service day. The schedule included two breakout sessions: one that outlined how to set up a high school writing center and one that featured many of the workshop strategies described above. Following this in-service, the same school hosted another daylong writing-about-reading workshop for cross-disciplinary teachers from other schools in the district. Many cross-disciplinary teachers participated in the fully dedicated CAC "refresher" workshops.

On other occasions, the full assembly of participating teachers heard CAC briefly mentioned during cross-disciplinary seminars on (1) state standards, (2) university requirements and expectations, (3) and profession-related requirements and expectations in industry, business, medicine, and civic service. However, only English teachers went on to participate in sustained workshops with the CAC facilitators, because the initiative then scheduled sessions for teachers in each discipline to spend intensive time with the university facilitators from their respective disciplines.

A cautionary observation: in settings such as this, cross-disciplinary teachers *may* get the impression that CAC is an English concern and that English teachers should take the primary responsibility for writing or reading instruction, while teachers in other disciplines should focus on helping students master content. However, the mathematics, science, and technology teachers in the initiative did *not* succumb to this false impression. The pilot program had laid too firm a foundation, and CAC received ongoing validation at important moments.

Moreover, the whole cross-curricular endeavor remained intensive in reading, writing, and speaking. The teachers searched and read extensively for new information that they could teach, and they infused their teaching modules with reading beyond the textbooks that the district supplied. Teachers individually practiced a process of writing-about-reading as they wrote lesson plans, developed lesson materials, and made choices in teaching strategies, including assignment-specific rubrics. Throughout the preparation of the teaching modules, the teachers inevitably engaged in a prolonged discussion on four crucial levels: (1) students' need to master diverse writing and reading tasks, (2) teachers' need to build common expectations for good writing and reading, (3) schools' need to develop fair and authentic writing and reading assessments, and (4) administrators' need to accept multiple approaches to teaching writing and reading (National Writing Project & Nagin, 2003a, pp.13-16).

The initiative also gave the English teachers opportunities to develop vision and leadership by working with CAC facilitators to:

- Debate what kinds of "long-term plans for improving writing" might be most useful, vis-à-vis reading
- Learn about policy statements that "articulate a rationale for why writing matters and why improving it should be a focus of the entire school community," vis-à-vis reading
- Discuss "the status of writing and of teaching it in [their] individual schools," vis-à-vis reading
- Train more intensively as reading instructors and as "advocates for improving the teaching of writing in all classrooms"
- Devote time to learning about necessary resources and "research-proven classroom strategies" (National Writing Project & Nagin, 2003a, p. 88)

Teachers could not always apply what they learned. They spent much time discussing the considerable impediments they faced – including, in some cases, no encouragement to put their leadership training in CAC into practice, unreliable access to technology, inflexible faculty, administrative attitudes and administrative structures that resisted change, and distrust from the school community.

Results and Inroads to Curricular Integration

Teachers of mathematics, science, and technology infused their teaching modules with many opportunities to sustain course-relevant practice in writing, reading, and speaking. English teachers, on the other hand, had a more formal, conscious understanding of CAC's potential to make a significant impact on the overall curriculum.

For instance, a visit to a sixth-grade classroom in a middle school revealed students at work on a unit in careers, after they had read about some unusual jobs (e.g., a woman who did a promotional drive across the United States for the Maxwell Briscoe Motor Company in 1909). Students were preparing to interview professionals in careers that interested them. They did two practice interviews – one with the school principal and one with the CAC coordinator – to see how they might approach other professionals to ask about duties, educational preparation, salary expectations, and so forth. The teacher asked the students to compose suitable interview questions beforehand, conduct the interviews, write a report on their interviews, and then write an application letter in response to a similar job opening that they had to find advertised in the newspaper, on the Internet, or elsewhere.

Visits to a ninth-grade classroom yielded even more compelling evidence of CAC implementation. Students reading Dickens's *Great Expectations* had prepared and mounted flowcharts documenting events that influenced the development of characters in the novel. They were in the process of scripting and planning commercials that they would videotape to urge other classes to read the novel. The teacher also arranged for the students to correspond by email with an overseas business expert to understand some of the economic conditions that influenced English society at the time the novel was written.

Later, the teacher of this same class had the students read Shakespeare's *Romeo and Juliet* and set up a trial to determine if the lovers' parents had any legal culpability for their deaths. Students vied for the roles of prosecuting and defending lawyers, criminal investigators, psychologists, defendants, witnesses, and so forth. A criminal lawyer came into the classroom to inform students how such a trial and its investigation were conducted. A judge later came in to preside over the trial, with a jury composed of the school librarian, another English teacher, and the university CAC coordinator. The jury determined whether the parents were guilty and the type of sentence.

An eleventh-grade teacher in another school decided to set up a pilot writing center. After discussing the experiment with administrators and members of his department, he consulted with the CAC coordinator about recruiting and training peer tutors among the students he taught. Once the teacher had assembled and trained his staff, the CAC coordinator brought in peer tutors from the University Writing Center, who helped the high school tutors review student writing samples from various disciplines. The two groups of tutors exchanged ideas about helping the writers improve their work in classes where the formats and conventions of writing varied significantly. The teacher then arranged periods during the week when the high school peer tutors would be available to assist students from two specific classes – both English – whose teachers had expressed interest in supporting the experiment. At the end of the semester, all teachers and students involved in the experiment were pleased with the impact that the tutors had made on students' writing, but the high school administrators decided to abandon the idea because they wanted to use the space where the writing center had been set up for a study hall instead. No other space was apparently available.

This same teacher set up an electronic correspondence between students in one of his high school classes and students in a professor's English education class. The two classes exchanged information about their assignments, course materials, and actual written work. They used the interactive electronic writing environment of WebBoard, also an extensive exercise in

technological pedagogy. High school students received the opportunity to receive commentary on their drafts from advanced composition students in college, and the college students could exercise what they had learned about effective writing.

Additional evidence of a sustained impact of CAC resides in two important outcomes. First, many of the performance-based teaching modules in mathematics, science, and technology demonstrated similar implementations of CAC. For example, a science teaching module on the toxicity of the river that ran through the school district's city required students to read about what kinds of tests should be conducted. The students then gathered data, drafted a lab report, and composed a "results" document that would persuade a board of city directors to act. The students had to rehearse such a presentation. Like the activities the English teachers designed, these performance-based, real-world tasks yielded solid evidence that students (1) learned content, (2) found the experience relevant and fun, and (3) achieved an understanding of how to apply interdisciplinary concepts and integrate communication skills across mathematics, science, technology, and English.

A second outcome involved further collaboration with the ninth-grade teacher mentioned above. The teacher told the CAC coordinator about the administration's recent decision to launch a district-wide CAC initiative in response to repercussions from the federal Leave No Child Behind legislation. The school district was conforming with the rest of the state, according to a highly regarded study of writing assessment in five states: Illinois, Kentucky, New York, Oregon, and Texas (Hillocks, 2002). That is, the district's students had 40 minutes in a standardized test to produce a "stand-alone" essay not related to any course, whereas by contrast, students in the most competitive state, Kentucky, had a full year to produce course-related drafts for a portfolio. Assessment scores had no impact at all on the students' academic progress, whereas by contrast, low scores in two of the other states (New York and Texas) prevented students from graduating. Many teachers (70% statewide in Illinois) were pressured by the nature of the 40-minute test to instruct students in a form of writing that only engendered "vacuous writing" unconnected to disciplinary reading and conducive only to low standards for teaching (National Writing Project & Nagin, 2003a, p. 75-76). Therefore, the district's administration was eager to find ways to focus on teachers' professional development in writing-about-reading instruction.

At the same time, the CAC coordinator and other university faculty in English were working with the state coordinator of the National Writing Project (NWP) to set up a regional site. The NWP is a professional development organization that has trained "more than 100,000 teachers, grades K-16, in all disciplines" at more than 175 sites in 50 states, and it does a strong job of addressing the reading-writing connection (National Writing Project & Nagin, 2003a, p. xi). The NWP also insists upon a teachers-teaching-teachers model, where participants demonstrate and discuss their expertise in classroom practices, read research, and become immersed in writing. Afterwards, participants return to their home institutions and offer workshops for colleagues. Inverness Research Associates (2002), an independent reviewer, found that NWP-trained teachers outperformed others in terms of effective classroom practices, and the Academy for Educational Development discovered that high percentages of third- and fourth-grade students (73-89%) taught by NWP-trained teachers showed consistently strong achievement in persuasive writing and strong control of usage, mechanics, and spelling.

The ninth-grade teacher and the CAC coordinator notified the school district administrators that they would organize a demonstration workshop led by NWP representatives and jointly sponsored by the NWP and the university. Some 26 participants showed up, mostly English teachers, although the NWP aggressively encourages involvement among teachers from *all* disciplines. After the workshop, all agreed that they wanted to see a regional NWP site established. They nominated the ninth-grade teacher as one of the first co-directors. The CAC coordinator later met with the director of the district's reading and writing department, instructional specialists, and instructional council to inform them of plans to bring the NWP to the region. If all goes well, the first summer NWP institute – a four-to-five-week intensive program that the U.S. Department of Education funds – will take place in 2005, and at least two more interim workshops will occur beforehand.

Based on evidence of the initiative's implementation and impact, the following suggestions would enhance the inclusion of CAC in future initiatives and assure improved results:

- Thoroughly inform all participants – especially university facilitators – about up-to-date CAC theories, research, and pedagogy, perhaps through distributing and using a resource such as *Because Writing Matters*, by the NWP and Nagin.
- Hold a minimum of one or two workshops on CAC, where well-informed university facilitators from specific disciplines work with teachers in those *same* disciplines, offering reading and writing activities that transfer to the classroom and relate to the formats and conventions *of those particular disciplines.*
- Invite teachers who have had time to develop and implement material they have learned from the initiative's seminars and workshops to provide teaching demonstrations at follow-up seminars.
- Invite students whose trained teachers have introduced them to new materials to join seminars and workshops and describe their work in progress.
- Hold a CAC workshop on designing forms of assessment in writing and reading that can fill the learning gaps that commonly used standard exams do not address.
- Provide exemplary teachers the opportunity to publish studies on the impact that participation in an initiative such as this has made on their classroom practices. The reflectivity involved in such a writing exercise would show that *teachers' efforts and voices count.*

In conclusion, an initiative that targets professional development for teachers in mathematics, science, technology, and English should not emphasize new content material without suggesting as well the pedagogical strategies that will most effectively convey the content material to students (and teachers). CAC strategies prove by far the most effective because of CAC's intense integration of reading, writing, and speaking practices that lead to salient, writing-based outcomes. Teachers may agree with CAC strategies in principle, but unless they experience those strategies themselves as readers, writers, and speakers, they may not acquire the confidence to incorporate them into their lesson plans and teaching modules. Including English teachers with their colleagues in mathematics, science, and technology opens

the door for collaboration and the emergence of peer leadership in CAC. Not only students but also teachers benefit when teachers implement writing-about-reading and performance tasks that provide students with the opportunity to apply what they have learned from their exposure to new concepts, knowledge, and information. CAC strategies yield outcomes that compensate for the significant assessment gaps that standardized tests simply cannot fill because written outcomes tend to be more valid, reliable, and *authentic*.

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