THE CSP CONNECTION

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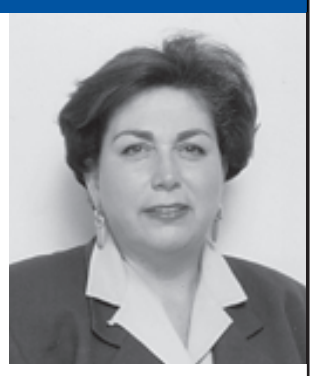
From the Desk of the Executive Director

María Alicia López-Freeman, Executive Director



Welcome back to school…to a class of new students, new programs, and new challenges!! Well, almost new challenges. Many challenges exist that are either "loudly voiced" or remain as a silent part of teacher practice, neither revealed nor shared. However, there are many other professions where challenges are part of ongoing, natural conversations between practitioners -- where experts and more novice practitioners engage with one another to develop expertise and accomplishment. Architects and photographers develop their abilities through "studio classes," where assigned work is presented at different stages of completion to fellow students and professors for review, analysis, and guidance. And architects and photographers know that there are always multiple challenges (some old and some new) on the horizon. Yet they "loudly voice" their concerns, find ways to benefit from the experience of their peers, and apply this shared expertise in their own work and practice.

The CSP is forever learning about ways we have to share, use, and focus teacher expertise. There are many opportunities to connect with others about common problems, concerns, or challenges -- be it face-to-face, through on-line interactions or through group work, sharing our ideas, experiences, failures, insights, solutions, and successes. Addressing a common topic can only help all of us learn more about the practice of teaching science, student learning, and our assumptions about our work. The CSP "studio" is focused on the challenge of connecting teachers; we now present to you some of our solutions!

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From Passive to Active: Cr_p Detection in Science

Richard McCallum, CSP Literacy Specialist, and Arthur Beauchamp, Site Director, Sacramento Area Science Project

Over the course of the last year my CSP colleague, Arthur Beauchamp, and I have been involved in an integrated literacy and science project designed to get kids to think about and engage in the process of science, while also building and strengthening their Language Arts abilities. We have sought to convince the science department at Will C. Wood High School in Vacaville, Calif., that by working together we can develop curriculum and instructional activities that will increase student engagement in science, their knowledge of science content, and their ability to think critically about the world around them. We have embarked on this endeavor for several reasons.

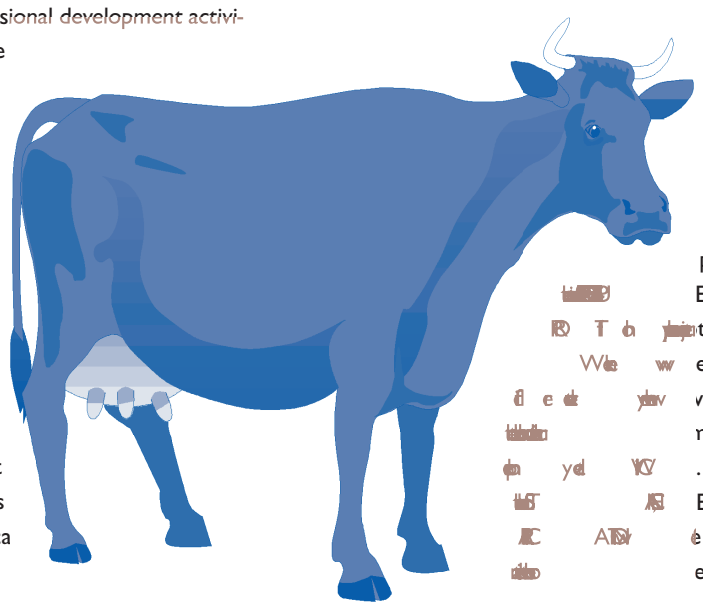
First, we have argued for the last several years that the READING PROBLEM in secondary education is really a THINKING PROBLEM. The vast majority of students are PASSIVE in their approach to text, and to increase comprehension we must get them to be more ACTIVE and engaged with the content. To do this we needed to change our approach to text and, from a professional development perspective, provide teachers with the structure and support they can use to implement change in their instruction.

Second, we knew that change happens at the SITE level and, while our large group professional development activities have been well received, if we wanted to insure the transfer and change in teachers' practices we needed to embed our work into their daily classrooms.

Third, we knew that in order for teachers to understand how Language Arts can act to introduce, extend, and reinforce content learning we had to show teachers this THROUGH STUDENT WORK. To make it real we had to take it to the kids and assist teachers as they wrestled with the theoretica and logistical issues involved.

We have approached this task with a simple goal: Increase student's ability at what we call "crap detection." We've taken our lead from Postman and Weingartner[1] who've argued that: "One way of looking at the human group is that there has been a continuing struggle against the veneration of 'crap.' Our intellectual history is a chronicle of the anguish and the suffering of men who tried to help their contemporaries see that some part of their fondest beliefs were misconceptions, faulty assumptions, superstitions, and even outright lies. The mileposts on the road to our intellectual development signal those points at which some person developed a new perspective, a new meaning, or a new metaphor. We have in mind a new education that would set out to cultivate just such people – experts at 'crap detecting.' "

In order to operationalize this variable, we have asked students to become active agents in their education – we've sought to develop instructional activities that REQUIRE students to engage in the EVALUATION and APPLICATION of the science content presented in the high school science curriculum. These tasks had to meet some very simple requirements. First, kids had to take a STANCE or position relative to the material presented, a concept we have borrowed from Rosenblatt[2]. Stance is critical because implicit in it is the notion of evaluation – that is, taking a position or perspective on a concept or idea is the product of our evaluation of the event or issue. Second, these activities must require students to defend and support their positions or stance. Defense provides students the opportunity to exercise and practice the process of science and EVIDENCE and SUP- theses or conjectures. e had to do something hen we examined naterials currently . Wood. Through E, EVALUATION, and e found our current ely wanting. The materials seemed to foster a PASSIVE STANCE to the material presented – too few activities REQUIRED students to take a STANCE and wrestle with the EVALUATION and APPLICATION of the content. In short, the textbooks were not providing the training in crap detection that we sought.



As Arthur has shown all of us involved in the project, the writing process provides the perfect vehicle for the melding of our goals for students and our requirements as teachers of science content covered in the California Content Standards for grades 9 - 12. So what have we been doing?

The science department at Will C. Wood has developed a series of instructional activities that use reading, writing, and critical thinking as a vehicle for having students engage science content. As a group, we developed 10 writing prompts based on science content that sought to meet the

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Prompt 1: The Tapeworm Diet

The United States is facing an epidemic of child and adult obesity. The author of the article below claims that there is an organic solution for this problem that does not require drugs, surgery, or intense exercise. Given the information provided in the article and your knowledge of the human body, the biology of life (and any other relevant experience or knowledge) is this reasonable?
Your assignment is to write an in-class essay that supports or denies the claims made by the author. In your essay, be sure to take a clear position and provide evidence to support your claim. Use the attached "preparing your essay" handout to think through and structure your position. Good luck!

TAPEWORM DIET SWEEPS HOLLYWOOD!
50-foot parasites are latest weight-loss craze

AMERICA'S celebs have found a new ally in the battle of the bulge: Tapeworms!

The latest fad to strike the diet-crazed citizens of Beverly Hills consists of ingesting larval tapeworms in raw pork, beef, and fish dishes at trendy Los Angeles restaurants.

"You can eat whatever you want and never worry," confides one dieter who claims to have lost 73 pounds in eight days.

"It's like the fad diets, only much, much easier. Plus, I feel like I have my own little diet coach deep down inside."

The parasites lodge themselves into a host's intestines, feeding off the body's food intake and growing up to 50 feet in length -- the bigger they get, the more you lose!

According to biologist Dr. Egbert Honziger of the U.S. National Parasite Board, side effects can include vomiting, diarrhea, constipation and, most importantly -- weight loss.

Doctors also see tapeworms as beneficial as they collect "extra" appearance in their clothing, bedding or

James, Biology, Period 3
Score #1: 4 Score #2: 4

The tapeworm parasite is not new. It's damaging qualities are well know. No human should ingest a tapeworm simply to lose weight. A tapeworm takes essential nutrients from a body, and it irritates and damages the intestines. Losing weight by a tapeworm is worse that starving yourself. A tapeworm is a serious disease that causes pain and discomfort. Wight loss shouldn't justify purposely damaging your body. Furthermore, the tapeworm diet method has not been studied long enough to find long-term effects.

Maybe some don't have the integrity to eat healthy and exercise. However, the cons of allowing a tapeworm to grow inside you far outweigh the pros. As for the weight loss effect, perhaps the parasite takes more than you wish. This article does not claim that tapeworms can be controlled after they enter the body. As you can see, it would be a very unwise decision to willingly ingest a tapeworm for weight loss.

requirements outlined above. Our first task (see sidebar on left) was the tapeworm diet. We asked students to take a position on a topic (in this case the benefits of a tapeworm diet), and then defend that decision utilizing their knowledge of biology, their experience, and any other relevant knowledge. Students read the prompt and passage, met in small discussion groups to discuss pros and cons that they collected on a graphic organizer, and then in the remaining 25 minutes they wrote essays to present their views.

Student papers were scored by the entire science department in after school meetings held on minimum or reduced days. Papers were scored based on a rubric developed by the teachers (see sidebar, bottom of this page) and refined over the course of the school year to achieve a range of instructional objectives consistent with the California Science Content Standards. A student score of 4 was considered as passing.

Logistics and scoring. Students completed these assignments approximately every three weeks on minimum or reduced schedule days. After school, the science department would meet and score papers. Each paper was read twice and two scores were given. A discrepancy of more than 1 (for example 2 and 5) would be read by a third reader. Teachers did not read their own papers during the scoring sessions. The scoring rubric was developed by the teachers, over time, and in light of the student work. Each item on the rubric had to be agreed upon and linked directly to aspects of students' papers. Together we scored approximately 300 papers in an hour and a half session.

The tapeworm diet. The first student paper is taken from our very first attempt at designing our writing argumentation activities. When we provided an article about a tapeworm diet and wrote this prompt, we sought to give students an opportunity to do some "crap detection." As you can see from James' paper, we were able to stimulate what we began to call EVALUATIVE or CRITCAL thinking. James provides background and a link to the content, an analogy, and examination of the unstated implications of such a diet. What James doesn't have yet is a full mastery of the essay form and those smooth, well rounded sentences that English teachers love. But, for an on-demand writing assignment that he had little preparation for, our group was happy to find essays like James'.

When we began the project, the science department predicted the percentage of kids scoring a 4 or 5 (designated as passing) on the rubric might only be 5%, based on the assumption that students are rarely, if ever, given chances to do this kind of work and would therefore fail or resist. As it turned out, approximately 30% of the kids were good crap detectors in their responses to the first assignment. Another 50% were 3s – that is, they were close and perhaps amenable to instruction.

Cow Emissions. As we moved across the school year, our group got better and better at finding articles, writing prompts, and scoring papers, along with linking directly to the content at issue in Earth science, biology, and chemistry. A cow emissions article tied directly to a unit on gases and

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Prompt 4: Volatile Organic Compounds in California's Air

Pollution is steadily increasing in central California communities like Vacaville. Child and adult asthma in our city is at an all time high and rising. According to the article, bovine emissions, i.e. Cow farts and burps, are a major contributor to air pollution and smog. A recent news story stated that farmers want the government to subsidize programs developing technologies to capture and convert these gasses into a usable energy source.

California Cows Fail Latest Emissions Test

Dairy Cows can Provide Usable Energy Sources
Chelsea, Chemistry Period 2
Score # 1: 4 Score # 2: 4

With global warming and childhood asthma increasingly dangerous, scientists have come to the realization that cattle are a big part of the problem. A single dairy cow releases 20 pounds of smog-forming gases a year and between 400-5000 liters of methane a day. In the San Jaoquin Valley, with 2.5 million cattle, these gases have doubled scientist's previous estimations. This is a major problem, but with the right solution this crisis can be reduced and even add to the nation's economy.

Methane traps 21 times as much heat in the atmosphere as carbon dioxide, and in rural areas as much as 50% of this methane comes from livestock. After recent natural disasters and with the growing US population, gas prices are becoming higher and higher. If this gas from the livestock was successfully contained it would solve both problems.

Sufficient funding would allow buildings to be built in which cows could live. Vents in these buildings would remove the potentially harmful gas emitted by the cattle and suck it into a container. With these gases now safely contained they could be converted into usable energy sources. This would also remove them from the air and reduce global warming as well as health problems in the area.

If these gases are contained it will be a win, win situation. This is a very worthwhile as well as potentially profitable plan that, in the end, should benefit everyone.

Scoring Rubrics

Scores reflect an evaluation of three aspects of student work: readability, structure, and reasoning. The characteristics of these three domains are listed below. Each paper is scored on a 1-5 scale with 5 being the highest. A score of 4 is considered to be passing or proficient.
Papers are scored twice (but not by student's own teacher) and student's final score is the sum of the 2 scores (final scale 2-10).

Readability
Grammar
Handwriting and legibility
Spelling and usage
Flow and transition
Voice

Structure
Follows rules for essay form
Uses paragraphs and other discourse structures
Includes an introduction and conclusion
Takes a clear stance presented in a thesis
Information is presented in a coherent v. disjointed manner

Reasoning
Clearly states a position – takes a stance
Logical approach with reasonable inferences and conclusions
Provides evidence from multiple sources (prompt, article, prior knowledge)
Develops argument based on evidence
Argument reflects insight into the topic and knowledge of the basic ideas presented

A paper with **the score of 5**, was found to have the following characteristics:
Clear and concise
No grammatical problems or readability issues
Evidence from a variety of sources with reasonable conclusions or implications
Critical application of evidence
Complete essay structure, i.e. intro/conclusion, thesis and stance
Engaging
Plus all aspects of a 4

A paper with **the score of 4,** was found to have the following characteristics:
Limited grammatical and readability problems (not enough to impact meaning)
Majority of structural features of an essay: intro/conclusion, clear thesis, title
Provides multiple examples and evidence from the passage
Draws reasonable conclusions from evidence presented
Limited factual problems with presentation

A paper with **the score of 3**, was found to have the following characteristics:
Occasional misuse of words and concepts
Readability problems: legibility, brevity, coherence
Some structural problems: Position not clearly stated, lack of essay structure, no intro/conclusion
Presents evidence from the article with limited extension or examination
Provides opinion v. evidence (I believe this)
Some insight into issues, but not communicated due to readability, structure or reasoning

A Teacher's View About Online Professional Development

Suzanne Nakashima,
CSP Teacher Liaison

Why online mentoring? When I first approached this question, I thought how could online professional development be effective? How could the learning experience I had through the Sacramento Area Science Project fifteen years ago studying matter, heat, and energy for four weeks with Wendell Potter, Mike Shea, and Pam Castori ever be replicated with online mentoring? The answer is, it can't.

The professional development that teachers experience through the subject matter projects is a different type of professional development that expands teachers' content knowledge through active participation in experimenting, questioning, wondering, and collaborating on science phenomena. It is not something that is "taught," rather it is experienced actively as well as observed in the ways the learning experiences are structured and modeled to promote thinking. Teachers become "learners" by receiving excellent teaching as well as participating in rigorous content-rich activities. Learning is a collaborative, interactive effort similar to the "joint productive activity" advocated for English Learners.

For me, the "impact" (the degree of transformation in practice) from participating in the science project was measurable, and I did not think that any professional development could be as powerful as that experience in changing my classroom practice and attitude about science.

Those were my thoughts when I attended an April 2006 National Science Teacher Association (NSTA) workshop, in Anaheim, where a second year high school science teacher and her experienced high school science teacher e-mentor, met each other for the first time face to face, and shared their online experiences of this past school year. This is when I realized the power of an online mentor for a beginning science teacher. They are part of a National Science Foundation (NSF) funded project: eMentoring for Student Success (eMSS) that is a partnership between the New Teacher Center, at the University of California, Santa Cruz, NSTA, and Montana State University.

The "mentee" had struggled the previous year (her first year) even with help from the Beginning Teacher Support and Assistance (BTSA) program. (Her BTSA coach was not a high school science teacher.) In stark contrast, this year she participated in the eMSS program and was supported and guided by her "mentor," an experienced high school science teacher who taught the same science courses as she did.

The story of this "mentee" teacher who faced challenges and developed skills and strategies to meet them with the support, experience, and knowledge of her superb "mentor" was exciting. This second year teacher appreciated the ongoing support of her mentor who was available quickly via the computer. A recent report from Harvard on online professional development states that "a lack of day to day professional support leads to a 50% attrition rate among new teachers in their first five years of teaching." This te y professional supp ve needed it.

The eMSS online mentoring program supporti teachers who car v resources often n a locally. They receive just-in-time knowledge creating opportunities for collaboration and

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The Science Administrator as Teacher Coach

Eric Burtson, Teacher, Math and Science, Serra High School
Co-director SEASAND Geo Institute, 2006

From the late 90s through the early 00s, San Diego Unified School District was engaged in a serious effort to reform itself from the top down. District management was restructured and new curricula were adopted. But, the most innovative and yet controversial change was the establishment of *site content administrators*.

Upper management charged this new layer of administration with the dual role of *evaluating* AND *coaching* teachers. Some people questioned the logic of bundling critic and coach into one job description; yet, having been a resource teacher the year before, I became science administrator. I learned the title made a difference. Teachers took my suggestions more seriously when I was science administrator. As my central office supervisor said, "think of yourselves as principals of your departments." In our district, principals are supposed to focus on instruction above all else, but they often complain about having too little time to drive instructional improvement. I, however, had plenty of time to do exactly that.

My principal and the district science office gave me freedom to structure my coaching as I wished, but they did have some preferences about coaching emphases. The science office had been committed to the 5E inquiry process. At the site level, our school was phasing in small learning communities, emphasizing rigorous questioning as one of the featured pedagogical techniques. On top of that, my internal compass was strongly influenced by my reading of Stigler and Hiebert's *Teaching Gap*. The authors show that both Germany's and Japan's math instructors tend to ask questions that encourage the development of concepts 80% of the time, versus questioning for skill practice 20% of the time. In America, that 80/20 ratio is inverted, which, they say, results in the international performance gap.

Since *inquiry*, *questioning for rigor*, and *questioning to develop concepts* are all intimately related to students' abilities to answer and raise interesting questions, I found a center for my coaching: questioning and discussion. The science department and I jumped right into rigorous questioning in our coaching cycles.

I began with Jim. Jim was a second-year physics teacher who knew his content very well. He was also an ex-lawyer, so he was good at explaining concepts. When I spoke to him about questioning for rigor, he at first seemed a little hesitant. He felt he already did a good job with it, which was true. Yet, from my point of view, if anyone were to make a good first effort at really developing rigorous questioning as an intentional technique, it would be Jim. As always, I introduced the task by modeling it first. So, I planned a sample lesson with Jim, which I would then deliver in his class the next day.

While planning the lesson, I explained that it would be important to identify a couple of teacher questions that could invite more discussion and welcome student questioning. I made a point of maintaining long wait times at critical points during the lesson, especially around these pre-selected questions. When this resulted in good student answers, the dialogue went deeper.

On the debrief, Jim mentioned that he was impressed by the results, which would affect how he would question the next day. When I came to observe him, I brought my principal. We used a tally tool that would show the teacher how many questions he asked at each level of Bloom's Taxonomy. Jim was relentless. After a short set-up, he kept the questioning going all period long. His questioning got to higher levels. Near the end of the period, students were making excellent connections conceptually. For example, one student made a connection to an earlier activity using a broom that pushed different massed balls across the floor. He recognized that this was similar to the present scenario, in which a falling weight horizontally accelerated an attached cart. Around the same time another student mentioned, "It's not only gravity that affects it (the falling/accelerating mass); it's the lab cart." Through extended questioning, Jim brought about a deeper understanding of Newton's Second Law to this 9th Grade physics class.

I had not expected Jim's questioning to go on as long as it did, but two interesting results appeared. First, his questions clearly rose from lower to higher levels in the taxonomy. Second, more and more of the questions came from the students themselves. This experience motivated me to be more confident in having other teachers dedicate a significant period of time for asking rigorous questioning in coached and observed lessons.

Indeed, not all teachers were as ready to make the same gains Jim did in questioning for rigor. With new teachers, we often worked on classroom management strategies. With others, we sought to engage students in thoughtful activities from bell to bell.

Whatever the need, I found that an effective way to get teachers trying something new was through *coaching cycles*. These cycles use a "to," "with," and "by" format. In a cycle, the coach models a technique by teaching a lesson in the coached teacher's classroom. This method could be guiding a discussion after students respond in writing to a warm-up question or demonstration. Or, it could be modeling fair and consistent discipline throughout a lesson—whatever meets the most critical needs of the teacher. The next day the coach co-teaches a lesson with the teacher, who tries the strategy with the support of the coach. On the last day, the teacher attempts the technique alone, with the coach watching and taking notes. These three lessons are embedded within four teacher-coach meetings. The first meeting establishes the coaching point collaboratively, based both on the coach's earlier observations and the teacher's perceived needs. Teacher and coach also plan the first lesson together. The following meetings include reflection on the lessons and planning for the next ones. Ideally, the coach and teacher

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Cr_p Detection continued from page one

to a range of other environmental issues covered in the curriculum. It also had a local appeal since Vacaville is in the San Joaquin Valley and kids knew about the cattle feed lots and linked to the content.

Chelsea's essay (see sidebar on right, page two) is a good example of how kids were asked to wrestle with the information provided and APPLY the science content presented in their classes. While we didn't expect elaborate and well-engineered solutions, what we hoped for was that kids could make clear arguments for action based upon the data provided. Though we're not sure how Chelsea's vented buildings might work, her rationale for the buildings is what we were seeking.

Closing comments. These two student writing assignments are but a snap shot of the work we've done this year at Will C. Wood High School. In total we were able to develop 10 assignments, mainly in Earth science. Our goal next year is to develop and administer 12 assignments in Earth science, biology, and chemistry. In this broader project we'll be able to more closely evaluate the impacts of the program.

While there have been many benefits of this work, perhaps the greatest impact has been on the science department. Teachers agreed the collegiality was most rewarding and empowering. We couldn't have done this unless we all did it together. Any one teacher would drown under the weight of the scoring required. There were many light and funny moments in these scoring sessions when teachers would read aloud the "crap" (we mean this in a good way) that students would generate. As one teacher noted, "There's no way that the English Department is having this much fun!"

(Footnotes)
1. Rostman, N. & Weingartner, C. (1969). Teaching as a Subversive Activity. Dell Publishing Co. New York, New York, p. 2-3
2. Rosenblatt, L. M. (1982). The literacy transaction: Evocation and response. Theory into Practice, v. 21, 268-277

Online Professional continued from page three

support. Mentor-mentee pairs work together and in small groups on topics such as Effective Labs, Using Technology in the Classroom and Looking at Student Understanding. They have access to resources such as NSTA's SciLinks and ongoing communication with scientists as well. The mentee-mentor pair is nested within a community of educators, new and veteran, who are passionate about teaching science. eMSS allows immediate access to veteran science teachers and scientists in facilitated discussions that promote the articulation and exchange of practical knowledge and create unique opportunities for collaboration and support.

Often, we experienced teachers do not realize the isolation and challenges that beginning teachers feel. Recently, a potential mentee commented to me, "Many programs have good intentions, but they don't go beyond that. The intention of the program (eMSS) is what I am looking for…to have experts in the field of science refresh me in areas of science that I have forgotten or don't have a firm grasp on."

eMSS not only allows immediate access to university content specialists, it also promotes the articulation and exchange of practical knowledge, and creates opportunities for collaboration and support. Through this experience the mentee realized that some things she thought were so important bothered her and weighed her down exactly because they were not fruitful…both in selections for what/how to teach, and what/how to assess. She sent a note to her mentor not long ago about how she is finally understanding that…" teaching is a balance of fun and effort, caring, and responsibility."

A strength of the mentor/mentee relationship is that it is a "safe" relationship. This allows the mentee to voice concerns without fear of being evaluated. Teachers want to be seen in a positive light and having a neutral resource to access is critical.

The mentor who shared his experiences at the NSTA conference shared some additional thoughts:

"The mentee experience seems to depend on two things: the mentor and administrative support. In eMSS there is not the closeness of being right there in the school culture…however, for many that is a great benefit…there are teachers from ALL over who represent the best of school cultures, and give perspective on what goes on. We've found that the sooner the feeling of being overwhelmed is quieted down and put into perspective 'Here's a hundred people who got through it and love their jobs, and are ready to help you,' that teacher stops complaining and gets more efficient in how to problem solve."

Online mentoring promotes a culture of professional learning, and it fosters the intellectual development of teachers. It is a powerful force in providing beginning teachers with the day to day and continued support they need. While it may not replicate that experience I had at the science project fifteen years ago, it has the power to support beginning teachers so they continue in the profession.

In 2006-07, 500 mentees and over 400 mentors from 16 states are participating in eMSS. The California Science Project is joining in this online program to further support beginning science teachers in the many districts CSP collaborates with. If you are interested in learning more and possibly joining the project, please visit: www.emss.nsta.org

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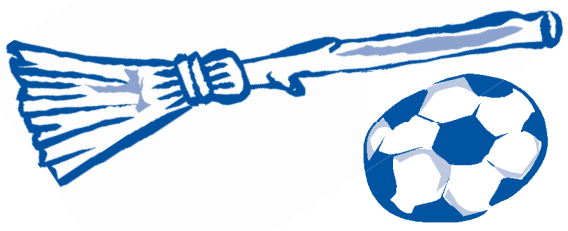

can work thro[illegible]our more cycles throughout the year, either addressin[illegible]he same strategy, or trying something else.

As the year progressed, I grew in my commitment to the work we were doing with questioning. In another coaching cycle emphasizing questioning, another teacher, Glenn, made the surprising realization that some of his more dependably off-task students were deeply engaged in the rigorous dialogue. Some of these students had been notorious disruptors school-wide, yet, in this environment, behaved like college grad students. Clearly, students are hungry for the right kind of stimulation.

During the 2004-2005 school year, I was looking forward to the 2005-2006 year, hoping to build on gains we made as a department. However, as often happens, a newly elected school board pressed the reset button on the outgoing superintendent's reform plans. All site content administrator positions were eliminated.

Did these positions make a difference in growing teacher effectiveness? Was the science administrator position worth the expense? I asked these very questions of the people I coached. The teachers, responding anonymously, thought so -- with the majority answering in the strong affirmative to both questions.

Test scores confirm the position's value as well. Our school had a literacy administrator for a long time. Not surprisingly, English CST scores exceeded those for math and science several years in a row. However, in 2004-2005, the year our school finally received a math. and a science administrator, our API jumped 42 points—the highest among the 17 high schools in our district. Analysis shows that these gains came from improved CST scores in math.

Map of California Science Project Sites

1. **Bay Area** (510) 643-3478
2. **CSP at Irvine** (949) 824-6390
3. **Central Coast** (805) 756-0292
4. **Central Valley** (559) 278-0239
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12. **Sacramento Area** (530) 752-8467 or (530) 752-5876
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14. **San Gabriel Valley** (909) 869-4743
15. **South Coast** (805) 893-5663
16. **UCLA** (310) 825-1109
17. **UCSD** (619) 849-2204
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