FEATURE

Substance, Support, Success or What's In It for the Kids?
by Paula Evans

What is it about the Coalition of Essential Schools that will matter most to our students? What difference will it make in their lives? As educators, we can describe, explain, and justify our plan from any number of perspectives; yet, we know that, in the end, kids pay closest attention to their friends and to the rumored reputation of a particular course or teacher or program. "Only brains take that course." "That program is for the druggies and drop-outs." "She makes you work--but it's worth it in the end." "He's out to lunch--you can cut anytime you want and he won't bug you." While following the crowd and basing judgments on vague generalizations hardly seem like viable strategies for making sound choices, this decision-making process in fact is based on several clear and concrete needs. If we scratch beneath the surface, it becomes clear that most kids want substance, support, and success. Students may not be able or want to articulate those needs, but take away any one or combination of those three essential ingredients and their commitment and energy diminish quickly. It is here, perhaps, that the Coalition can make a difference.

First, adolescents don't thrive on boredom, routine for the sake of routine, or seat-time any more than adults do. They know quickly when a course is a "gut." They know that a 5 lb. textbook is not much of a challenge. However, many will opt for this easier, sleepier route of seat-time and text. They have come to expect minimal activity and have assumed a withdrawn, disinterested stance. Awakening our students' sensibilities to the more lively and engaging exchange inherent in successful teaching and learning will be one of the first challenges for Coalition schools.

Once the veneer is cracked, once students are involved in a substantive program demanding attention and active participation, their attitudes towards themselves, their peers, their teachers, and school change. School becomes more than a social gathering place, more than custodial daycare for adolescents. Going to school comes to mean action in the classroom as well as interaction

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After the introductory year, science courses offered in biology, chemistry, and physics would emphasize a laboratory approach investigating core topics in depth. An alternative plan is to offer two years of introductory science (as described above) to all students and then encourage students concentrating in science to choose appealing course offerings in science. Concomitantly, introductory courses in mathematics skills and techniques would be offered to all students and a similar choice of courses would be available to students concentrating in mathematics.

It appears that I have maintained the status quo regarding science and mathematics being taught as separate disciplines. However, with planning and communication among the teachers of science and mathematics, they can become integrated as a cohesive curriculum core. What is needed is communication and the acceptance of the fact that science and mathematics are both arenas for teaching the life skill of problem solving.

The purpose of this article is to stimulate discussion and debate within the community of the Coalition and thereby plant some seeds for the successful resolution of the questions raised. Let me know if there is a harvest.

Edward M. Mathieu is the Science Coordinator at United Day School in Laredo, Texas.

WESTBURY HIGH SCHOOL

'Horace's Company':
Forging an 'Essential' High School
by Tom Mirga

HOUSTON--By many commonly used benchmarks, Westbury High School, located in a comfortable residential neighborhood, ranks near the top among this city's comprehensive high schools.

Last year, the average Westbury student scored one to two years above his expected grade level on state achievement tests, while districtwide, average student scores were slightly below expected grade levels. The teaching force is experienced, and attendance rates for students and faculty are high.

Westbury's students appear extremely well behaved, hallways are empty during class periods, and teachers seem to be in firm control of their charges. The building shows signs of wear and tear after some 20 years of service, but it is clean and apparently free from the ravages of vandalism.

About two-thirds of the school's graduates go on to postsecondary education--most of them to Rice, the University of Houston, the University of Texas at Austin, or Texas A & M.

All in all, Westbury's would seem to be a success story--a desegregated urban high school that works, the kind of place that one would like to attend, teach at, or administer.

But after three years of soul-searching and few less-than-successful experiments in school reform, Westbury's teachers and administrators concluded that their "very good" school isn't so good after all. Bureaucratic rules and lock-step lesson plans, they say, have frustrated the efforts of teachers and learners alike.

Last month, with the city school board's blessing and $50,000 in seed money, the school embarked on a new experiment that aims to convert Westbury into a model of excellence for the nation by 1985. Westbury hopes to become an "essential" school.

The term is borrowed from Horace's Compromise, Theodore R. Sizer's influential 1984 report on the condition of the American high school. The study was co-sponsored by the National Association of Secondary School Principals and the National Association of Independent Schools.

Its call for a substantial restructuring of the nation's high schools earned Mr. Sizer's treatise a reputation as the most radical of the many reform reports that have appeared in the past few years.

Mr. Sizer, now chairman of Brown University's education department, argues strenuously in the book for a decentralization of schooling that would allow each school to adapt to the needs of its particular students.

At school, students would be allowed to progress at an "appropriate" pace, moving on to new courses and eventually graduating on the basis of "exhibitions of mastery." Age grading and daily schedules consisting of six or seven 55-minute periods would be abolished in favor of a curriculum organized around four broad areas: inquiry and expression; mathematics and science; literature and the arts; and philosophy and history.

Unlike most of the other studies of high schools, Mr. Sizer's includes an experimentation phase in which his hypotheses will be put to the test. To conduct the school-site research, he is putting together a "Coalition of Essential Schools," a loose confederation of public and private high schools across the country that agree to reshape their programs around nine general principles outlined in Horace's Compromise.

Although they are committed to the principles outlined in the book, the schools are being given no specific model to "plug in."

The translation of the admittedly vague principles into workable school programs that fit their own circumstances will be left entirely up to the school's faculties and principals. They will receive technical assistance from the coalition's staff, which is based at Brown, and will share ideas at
Westbury--have been chosen to become part of the comprehensive student body; in many ways it's a select group; according to Mr. Sizer, more than 300 high schools have applied.

Why was Westbury selected for the project? "It's a school with a very comprehensive student body; in many ways it's the prototypical American high school," Mr. Sizer explained in a recent interview. "Furthermore, this is a school where there is true grassroots interest. There's also a recognition of the uncertainty about all of this that reinforces my respect for the faculty. These folks understand how complicated this is, that the answers aren't obvious. Their apprehension signals their wisdom."

Old Approach 'Isn't Right'

Despite some qualms about the magnitude of the task ahead of them, Westbury's teachers and administrators say they would be even more afraid of leaving affairs at the school as they are now.

"That's what I'm hearing from the teachers when I talk with them," says Thomas C. Davis, who became the school's principal three years ago. "There's fear of change, there's concern about all of these details, and yet the one thing that doesn't change is the recognition that what we're doing now isn't right for the kids. It functions, but for the wrong reasons. They're saying, 'What Sizer advocates for kids is right.' Let's try it."

The frustrations that you read about in Horace's Compromise are very real for teachers," Mr. Davis continues. "He's right on target. More than one teacher read the book and then came in to see me and said, 'I'm Horace,' " he said, referring to the book's protagonist, a composite character representing veteran teachers interviewed by Mr. Sizer who had succumbed to their school's bureaucracies and compromised their standards.

English teachers are frustrated, Mr. Davis says, because they are responsible for 155 to 160 students each. "How can you teach a kid to write when you have that kind of a load?" he asks. "Science teachers are frustrated because their classes are too big for lab experiments and the time we give them is too short. Fifty-five minutes is not enough time for an experiment, 30 kids is too many to do it, and yet that's the way we have to staff the building based on a teacher load of 145 to 150 kids on the average. And the average gets higher for the bottom classes."

Mandated Curricula

From the teacher's standpoint, Mr. Davis says, perhaps the chief frustration of teaching in Houston's public schools is the pressure placed upon them to stick with district-mandated curricula, even if the lesson plans are producing poor results.

Teachers' evaluations, he explains, are based in part on their students' scores on mandatory proficiency examinations that measure "essential learner outcomes" defined by the school district's curriculum specialists.

Failure to play by the district's rules could result in poor student scores on the tests and a negative assessment. Such an assessment, in turn, can block a teacher's movement up the school district's new career ladder, the principal notes. Thus, the pressure to teach from "canned" curriculum guides is great, even if those guides fail to meet the needs of a teacher's students.

"One of the math supervisors who works with us sent over a little critique to all of the math teachers in the school after the year was over," Mr. Davis recalls. "The teacher who got the highest praise was a fellow who got through the algebra curriculum prescribed by the district. The supervisor always knew it could be done and she was proud of his having done that."

"The next time I saw her I asked her if she was aware that 50 percent of his kids had failed. She wasn't. I asked her how we were supposed to balance that out. Here we were, praising this person for doing an outstanding job. He got to the end of the program, but his kids didn't."

Two Sets of Lesson Plans

Mr. Davis admits that many of the teachers at his school keep two sets of lesson plans--"one for show and one for go."

"One plan is for the people who come in and evaluate whether we're doing things the right way," he explains. "The other one is the one they really teach from, the one that's right for their kids."

Sharon Batson, who teaches English to freshmen and sophomores, belongs to that category of teachers.

A huge movie reel in her hands, she explains that yesterday she had planned to show her second-period class a film of the play that they are studying. Warned in advance that her class would be evaluated that day, she shelves the film.

Out of her desk came the Houston Independent School District curriculum guide for the class, which did not call for a movie that day. So she simply waited.

"All of us want this change," Ms. Batson says. "People who have not been in a classroom for 10 or 15 years are making decisions for us. They tell us what to teach and how to teach it and they don't even know the children. We know our students' needs. We can develop a curriculum as well as anyone else. I have no qualms about their defining the ends for the children. But they hired me to teach and they should trust me to do that."


An Assembly Line

Teachers at Westbury say the nature of the system that they work in has given rise to other frustrations as well.

"Right now I have 150 students and it's kind of like an assembly line," says Ms. Batson. "You just move them in here and move them out. It's hard with a class of 30 to 35 to get to know your students. By the time you get to know all of them you have a whole new set."

"When my students write something they always ask, 'Is this what you want? What do you think about this?' And they want an answer right then and there. It's hard to go around to each student in a 55-minute class period when you've already checked roll and dealt with tardy permits. It's hard to go around to each one and give them the attention they need. Sure, you can write them a note on their paper, but that's not the same because even though I've written notes, they still come around, they still seek that personalization."

"Anyone who says the program here is as successful as it might be is being a Pollyanna," says Bill Balch, a chemistry teacher. "They're ignoring the fact that we have many students who come through the program who don't learn as much as they should learn, even in our honors classes."

"I think that we do too much hand-holding, that we allow students to be too passive in their learning," he continues. "We have students in honors classes who are excellent at memorizing, who are very good at finding out what's going to be on the test. But have they really learned to take that textbook by themselves and learn from it?"

Mr. Balch says he looks forward to the changes that the school's entry into the Coalition of Essential Schools will bring because he expects that they will make his work and the work of his colleagues more rewarding.

"I don't think it's hard work that people object to," he explains. "It's the feeling that what you do just doesn't make any difference, that you're just on a treadmill, spinning your wheels, that what you do isn't appreciated."

"We've felt as if our hands were tied," adds Lauren Askew, who teaches English as a second language. "We were demoralized, we were not supported, and we were ready to either do something or forget it all and get out of teaching."

On Mr. Davis's desk, within easy reach and for ready reference, is a copy of Horace's Compromise. He also has two copies of In Search of Excellence, relics of Westbury's earlier exercises in school reform.

Early Experiments

Westbury's most recent forays into reform date back to 1981, when the 9th grade was added to the high school and Mr. Davis came as assistant principal for 9th grade.

"With the addition of the 9th grade, our enrollment immediately went up by 600 students," Mr. Davis recalls. "The 9th-grade students stuck out like a sore thumb. They were failing their classes."

The high failure rate, he explains, was a consequence of the school district's strict attendance policy, which provides for automatic failure after six unexcused absences. Three unexcused tardinesses are counted as the equivalent of an absence.

"Our 9th graders were not accustomed to the kind of freedom of movement allowed in high schools," Mr. Davis continues. "We had given the most freedom to the group least able to handle it, and we sure paid the price."

To address the problem, Mr. Davis and the school's 9th-grade teachers planned a program of team teaching. "We took the four teachers and then gave them a common preparation period--so, for example, if you and I were teaching the same kids, we could plan," he says. "It never really worked well, but it was the first attempt at addressing what we all agreed was a better way of dealing with kids."

The following year, when Westbury was up for reaccreditation, Mr. Davis, who by then had been named principal of the entire school, formed a committee of teachers to develop a new philosophy for the school.

"I told them I wanted something different," Mr. Davis says. "Usually, a team gets together, creates a philosophy with all sorts of educational jargon, and then the thing sits on the shelf. I told them that we needed to write about the school the way we wanted it to be. And that's what they did." The philosophy was approved by a unanimous vote of the faculty.

"The faculty made it real to a degree, but not much," he admits. "But what was important to me was the commitment."

'We Wanted To Be Subversives'

The next catalyst was the appearance in bookstores of In Search of Excellence, a book on successful American businesses that remains on the bestseller lists.

"It appeared to me that some of the concepts in the book applied directly to schools," Mr. Davis says. "As I looked at our school philosophy, talked to our department heads, and watched the operation of the school, it became clear to me that if we were going to make that philosophy real, we would have to get out from under the structure of the city. It was all top-down regulation."
Mr. Davis says that he began working with his department heads and members of the executive board of the school’s parent-teaching association to develop a proposal for a three-year project in school-based management based on the principles outlined in "In Search of Excellence."

"In essence, we wanted the city’s blessing to allow us to be subversives," he says. "We wanted the chance to do right by kids."

The proposal was approved by Billy R. Reagan, the school district’s general superintendent, who was pursuing a similar project of his own. That project, however, "became bogged down in local politics and never really got off the ground," Mr. Davis says.

It was during a discussion of the ill-fated project that Mr. Davis was introduced to Mr. Sizer’s work.

"There was a meeting in February 1984 of the principals of the 22 schools selected for the project," Mr. Davis recalls. "One of the things that came out of that meeting was a letter that Ted Sizer gave to Billy Reagan. They had given speeches at the same conference and Sizer gave Reagan a copy of the prospectus for the Coalition of Essential Schools. Reagan hinted that he wanted a Houston school to join up."

"I read through the prospectus and really got excited," he continues. "I sent Sizer a copy of the proposal on site-based management that we had drawn up. He wrote back and said he found it interesting but couldn’t quite make the connection between what we were doing and what he was planning."

As Mr. Sizer recalls the report, "It had a business-management approach that made me skeptical. Schools have to do with the hearts and minds of kids. I wrote him back and told him that."

Mr. Sizer looked more kindly upon a long letter Mr. Davis wrote back to explain why the proposal was written the way it was, Mr. Davis says. "Then he wrote back and said our proposal looked very promising, ‘a meeting of the minds,’" Mr. Davis says. "He said he was planning to come to Houston in November and wanted to visit the school."

Horace’s Company

After receiving the second letter, Mr. Davis bought 20 copies of "Horace’s Compromise" and began distributing them to his department heads. "I had talked to some teachers about the possibility of our making an application to the coalition, but I hadn’t made a big push," he recalls. "When I gave them the books, I said ‘Read these, guys. He’s coming soon and we need to figure out where we are.’"

"Well, as the books began to get passed around, a group of teachers just surfaced," Mr. Davis continues. "They’re the ones who would come in a say, ‘My God, I’m Horace.’ They came in saying, ‘We want to help. This is not something one person should or can do all by himself.’"

"At the time of the first faculty meeting about the coalition, only about 20 people had read Horace’s Compromise," says Margo Kendrick, a speech teacher and member of the group that eventually became known as Horace’s Company. "Everyone else was saying ‘Who is Sizer?’ That week, a few of us went through the teacher list to pinpoint teachers who would be likely to put in extra time to work to get our membership in the coalition. We held our meetings in my room because I have the coffeepot. About 20 people showed up for the first one."

According to Ms. Kendrick, the primary goal of Horace’s Company was to educate the rest of the faculty about Mr. Sizer’s theories.

"We knew that it was essential for everybody to know enough about the program to be able to vote yes or no on it," she says. "So our first task was to inform ourselves fully. Our second task was to talk to people on a one-on-one basis to find out their concerns and hopefully to educate them. We knew that if we were to have a shot at this, one of the questions would be, ‘Is your staff committed?’"

Before approaching the city’s school board with the proposal, Mr. Davis asked Westbury’s faculty to vote on participation in the coalition. Seventy percent fully supported the project, 6 percent completely opposed it, and 24 percent voted against it but said they would support the coalition’s principles if they were adopted.

After several delays the school board voted 6 to 1 on April 12 to approve Westbury’s participation in the coalition. As an added bonus, it voted 5 to 2 to provide the school with $50,000 in order to help get the project started.

Mr. Davis says it will take at least $100,000 in the next year alone to get the project off on the right foot. The school board’s appropriation, he says, “will make it a whole lot easier to get local corporations and businesses to make donations.”

The first year’s funds will be earmarked for travel expenses, materials, inservice training, and stipends for teachers who will begin the process of revamping the school’s curriculum next summer.

"Exactly how much we’ll need beyond that is an unknown," Mr. Davis says, adding that under the coalition’s principles, the cost of the program is to be no greater than 10 percent above the cost of operating the school at present.

Late last month, Westbury’s faculty members elected 28 of their colleagues to a steering committee that will become the school’s governing body. According to Mr.
Davis, it will be their responsibility "to decide what direction we will move in--what will be the project's design, what do we need to do in the area of curriculum, what kind of framework will give us the best shot at putting the nine principles into practice."

"I have my own thoughts on those subjects, but the direction we move in is all contingent on what the steering committee says," Mr. Davis says. "That's kind of scary if you're used to running the show."

"I've set things up," he adds, "so I keep a veto, which I have to justify in one of two ways--either because what the steering committee decides falls outside of the nine principles, or because if by doing one thing they agree upon we eliminate the possibility of doing another thing. I also set the agenda. Basically, I'm taking myself out of a dictatorial kind of role and will move in the direction of 'He leads best who follows most.'"

Mr. Davis acknowledges that the path the school is taking is fraught with unknowns. Nevertheless, he says he is as convinced as ever that it is the right one to follow.

"I don't exactly know how to answer why I believe in it," he says. "You believe in it because of all the things that you are and all the things that you have done. I love what I do. It's all the corny stuff that's all true. We're not doing right by kids, we're not.

"When you look at what Sizer is advocating, you sit back and you say, 'It's right.' To do things this way is right because it addresses what kids need. But what you don't know yet is how to do it. That's frightening, and yet your instinct tells you it's right. There's got to be a way to do it because it's right."

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ESSENTIAL SCHOOLS: A SYNOPSIS

Adelphi Academy
Clinton Vickers, headmaster
8515 Ridge Boulevard
Brooklyn, NY 11209
Adelphi was one of the first two schools to join the Coalition last September. 265 students are enrolled in the upper school. The "Adelphi Plan" restructures the school day into lecture blocks, workshops/labs/seminars, and tutorials.

Bronxville High School
Judy Codding, principal
Pondfield Road
Bronxville, NY 10708
Bronxville High School in Westchester County, NY, just joined the Coalition this summer. A public high school, Bronxville enrolls 600 students, approximately 98% of whom continue their education.

Central Park East Secondary School
Deborah Meier, principal
1573 Madison Avenue
New York, NY 10029
Central Park East, an elementary school which will be adding a grade a year until it becomes a high school, is an ambitious project in East Harlem. This fall, 90 7th graders will be taught by a new staff of 6--including Deborah Meier, the principal. Elementary school enrollment is 59% Hispanic, 39% black, and 2% white. Central Park East joined the Coalition in March.

Hope High School
Paul Gounaris, principal;
Albin Moser, head teacher
324 Hope Street
Providence, RI 02906
Hope High School formally joins the Coalition this September. A school-within-a-school will be planned during this school year. A grant from the Hearst Foundation is making the planning and portions of the initial staffing of the school possible. Also involved in the Hope High School project are the Brown Master of Arts in Teaching Program and the Brown Institute for Secondary Education.

R.L. Paschal High School
Radford Gregg, principal;
Larry Barnes, coordinator
3001 Forest Park Boulevard
Fort Worth, TX 76110
Paschal High School joined the Coalition last February and is developing an Essential school-within-a-school. This fall 100 9th and 10th graders will be involved in the program.

Portland High School
Barbara Anderson, principal;
Betsy Parsons, coordinator
284 Cumberland Avenue
Portland, ME 04102
Portland High School joined the Coalition in May, and staff members will be spending this year developing a school-within-a-school program for the fall of 1986, initially to involve 80 students and five teachers.

Saint Xavier Academy
Sister Teresa Foley, ssj, principal
225 MacArthur Boulevard
Coventry, RI 02816
Saint Xavier Academy joined the Coalition in April. It is a small (130 students) Catholic girls' school known for its nontraditional education since the early 70s. The faculty hopes to focus on curriculum issues this year.

Thayer High School
Dennis Littky, Principal
43 Parker Street
Winchester, NH 03470
Thayer joined the Coalition last September, and has been working on entry and exit level skills, team teaching, and curriculum. A goal for this year is tackling the "student-as-worker" principle. Some teachers will be teaming together all year to explore curriculum possibilities.

United Day School
Charles Como, headmaster
1601 Clark Boulevard
Laredo, TX 78043
United Day School joined the Coalition in February and is becoming an Essential School by adding grades gradually to the existing elementary school. The school currently enrolls 240 students, 90% of whom are Hispanic.

Walbrook High School
Sam Billups, principal
2000 Edgewood Street
Baltimore, MD 21216
Walbrook High School just joined the Coalition this summer. Staff members will spend the next nine months planning an Essential School and working with small groups of ninth graders in a transitional program.

Westbury High School
Tom Davis, principal
5575 Gasmer Road
Houston, TX 77035
Westbury High School joined the Coalition last April. Its 2300 students and 100 teachers will be involved in large-scale planning and reorganization activities during 1985-86, with a gradual "phasing-in" of an Essential School program to begin in the fall of 1986.
ASSOCIATE SCHOOLS

During the next few months, the Coalition staff will be selecting the initial 12 to 20 schools for membership in the Associate Schools network. A Prospectus has been written (below) defining the nature of membership in this network. Associate Schools will be active participants in the overall Coalition effort, going well beyond the role of sympathetic supporter. Robby Fried, a new staff member, has been named Coordinator of Associate Schools, and will be working with members on an individual and regional basis. Readers interested in learning more about this effort should write to the central office for more information.

ASSOCIATE SCHOOLS PROSPECTUS

The Coalition of Essential Schools has the following expectations with respect to Associate Schools.

1. School faculty and governing boards agree in general with the aims of the Coalition as described in the Common Principles of the Prospectus.

2. School faculty should commit themselves in writing to one or several aspects of the Common Principles for special study, research, experimentation, or pilot-testing within the school itself. In this way, each Associate School contributes to the Coalition as a whole.

3. Associate Schools should document Coalition-related discussions and activities. Each school will therefore designate a person or a committee to keep a record of key issues discussed, findings reported, action taken, and will maintain a collection of Coalition reports and literature.

4. Associate School staff members participate in the annual Summer Symposium and the Regional Symposia held during the academic year. Staff members of the Associate Schools will be the designers and presenters of the Regional Symposia with assistance from the Coordinator of Associate Schools.

5. Associate Schools cover the costs of participating in the Coalition, particularly those expenses associated with running the Symposia. Such costs include travel room, board, and conference fees.

6. The Coalition is committed to expanding communication between schools. The central staff of the Coalition will publish newsletters, will visit Associate Schools when possible, and help to facilitate conversation among Associate Schools in each region.
The Coalition of Essential Schools became a true coalition this summer when teachers from Essential Schools worked together at the Coaching Workshop and Essential School principals met one another and some 120 interested schoolpeople from around the country during the Summer Symposium. The bustle of July signalled the near end of the first phase of work—establishing a core group of Essential Schools, and heralded in phase two—working through the substantive issues that are embedded in the nine common principles.

As of September 1985, eleven schools are formally aboard. Brief descriptions of the schools appear on page 15. A few others are nearing the end of planning and negotiations with their governing boards, and they will comprise the rest of the core group of Essential Schools.

There are perhaps three dozen schools who are considering "Associate School" status (see Prospectus for Associate Schools), and we would like to hear from all of them in order to plan for the regional and annual symposia.

We are delighted to welcome Grant Wiggins to the Coalition. Grant will be the chief contact here at Brown for those Coalition schools in the Northeast. As a staff development and research specialist, Grant will be responsible for overseeing and organizing working parties on each of the subject areas of the curriculum. In addition, Grant will consider the impact on and support services for teachers implied in curricular changes. Because of his own work on the subject of "thoughtfulness" in students, Grant is particularly interested in the relationship between how we teach and its impact on the moral and intellectual growth of students.

Research projects are underway. This past summer, graduate students at Brown, under the guidance of Ted Sizer, Holly Houston, and Grant Wiggins worked on the following projects:

1. Assessment and Remediation programs for students entering the Essential high school.
2. College admissions for the Essential School graduate.
3. Coaching in the classroom. We engaged the services of Rick Cowan to film examples of coaching in a variety of settings. That film was shown at the Coaching Workshop in early July and has been made available to the Essential Schools for continuing discussion.

We have also engaged the services of two "portraitists" who have written narrative accounts of two of the Essential Schools. Helen Eccles wrote a description of Thayer High School in Winchester, New Hampshire, and Barbara Powell drew a verbal portrait of Saint Xavier Academy in Coventry, Rhode Island.

Arthur Powell continues his work on exhibitions for mastery; this fall a discussion paper will be available for review prior to a Coalition-wide meeting on exhibitions tentatively scheduled for January.

Holly Houston is continuing her work on pedagogy, with a special emphasis on coaching in the classroom, and will be in regular contact with those teachers in partner schools who are experimenting with and refining their teaching styles.

Ted Sizer is planning a budget study using several examples of how existing funds could be reallocated in ways that make sense to the Essential School.

The Development Office at Brown and Ted Sizer will be sponsoring a fundraising meeting for interested Essential schoolpeople on December 2-3, 1985.

There will be a joint Advisory Committee and Principals' Council on October 6-7.

The press—both local papers and national publications—have featured Coalition schools recently. Tom Mirga, a reporter for Education Week, wrote a rich series of articles on the Coalition recently. We have been granted permission to reprint the article on Westbury High School in this issue of "Horace." In addition, The Baltimore Sun has granted permission to reprint an article focusing on Central Park East School.

The next two books emerging from A Study of High Schools (Horace's Compromise was the first) will be published this year. The Shopping Mall High School by Arthur G. Powell, Eleanor Farrar, and David Cohen will be available in September; The Last Citadel by Robert L. Hampel will appear in the spring. Houghton Mifflin (2 Park Street, Boston, MA 02108) is the publisher of all three volumes.

Molly Schen is Coordinator of the Coalition of Essential Schools and Editor of this newsletter.
The Essential School promises to bring student and teacher commitment and energy to the study of literature, mathematics, history, and art. We will shift the position and role of teacher from "front-center stage" actor, director, and producer to coach; and the role of the student will change from passive recipient of facts to active learner who practices, explores, and experiments with knowledge, skills, and ideas. As the program develops, high school students will appreciate the Essential School goals as demanding and rigorous, individualized and student-centered. There is no substitute for substance.

Adolescence is a notoriously difficult time. High school students are beset by uncertainty, ambivalence, and fluctuating self-esteem. They are constantly seeking assurance of their value as human beings with legitimate skills, knowledge, opinions, and feelings. In large schools particularly, numbers militate against a consistent and thoughtful support system. Consequently, in the large secondary school, one of the prime lessons becomes learning to manipulate the system.

In contrast, the Essential School's attention to reasonable teacher-student ratios, honest assessment of each student's achievement, and broad definition of the teaching role and responsibilities will encourage the building of community within the school. Community does not imply the absence of risks for individuals or groups. It does imply a certain degree of responsibility on the part of students and teachers and a willingness to consider the needs and priorities of others. As members of an Essential School program, students will receive support from faculty and staff to fulfill the goals of the program. Teachers in the program, as student advocates, will push, provoke, challenge, guide, and care for them, all at the same time.

While we communicate the seriousness of our academic program to our students, we will also convey our on-going support to students to ensure their growth and development. The program will be the vehicle for reaffirming students' competence and addressing students' concerns. The message to all must be: "Our standards are indeed high and we will do everything possible to help you to achieve them."

Finally, the proof of the educational pudding is student success. High school kids, like all of us, thrive on success. They also know the difference between the pretense of success--empty rhetoric and ceremony--and genuine achievement. Students who enter ninth grade on a second grade reading level must learn how to read before they begin to grapple with "World Cultures" or "French 1." Students who are still struggling with multiplication division and division must master these concepts and skills before approaching algebra and geometry. All students—albeit at different rates—must learn to ask good questions, synthesize complex ideas, make reasonable hypotheses, and exhibit their knowledge in a variety of subject areas.

Essential Schools will allow for many small, individualized increments of success. No one will make assumptions about a student's mastery based on age or years spent in school. Instead, students will master basic skills and then attempt to broaden and deepen their knowledge base and thinking skills. Such a structure is particularly important to those students whose school life has been a series of failures and social promotions. Finally teachers are saying, "We take you and your education seriously."

On another level, success that derives less from test scores and class rank and more from the personal satisfaction of completing a difficult piece of expository writing or solving a complicated set of mathematical problems or creating a plausible set of hypotheses from a biology experiment is central to the Coalition's goals and philosophy. Encouraging adolescents to experience and nurture that kind of success and rewarding the struggles and "messiness" of hard-won achievement will enhance the value of the Essential School experience for teachers and students alike.

What's in it for the kids? A balance of substance, support, and success. Some high school students—usually those who are labeled "special"—already have access to challenging programs in supportive learning environments. The vast majority of students, however, have rarely been offered fewer than five or six teachers and seven periods a day, classes of between 25 and 30 students, a curriculum purchased and/or prepared for all students across the community or state, and a commitment to see them through twelve 180-day years of schooling. It may be that the Coalition already has a corner on the market.

Paula Evans, formerly a teacher at Newton North High School in Massachusetts, directs the Institute for Secondary Education at Brown University and is a staff member of the Coalition of Essential Schools.
Who is Affected When Students Are Active Learners?
by Dr. Clinton J. Vickers

Adelphi Academy—its faculty, administration, trustees and parents' groups—endorsed the principles of the Coalition of Essential Schools because the goal of active student learning was valued by each of these constituencies. This impetus for change from the school community met initially with anxiety from students, however. And soon it became apparent that everyone would be affected by the school's commitment to the Coalition. Teachers would have to change their behavior to help students learn independently. Parents would have to alter their expectations and measurements of what their children are learning. Instead of asking "What (facts) did you learn today?" the parental emphasis would need to shift to "What did MQU learn today?" Administrators, too, would have to resist easily quantified measures of student achievement and begin looking at alternate methods of evaluation.

When a student is more responsible for his or her own learning, the quality of that learning is essentially altered. What remains is to develop ways and means to demonstrate this newly-won learning without letting the demonstration become the goal in itself. We should be weary of repeating the error in much of traditional schooling where learning for the test is more important than learning as a process of continuous inquiry.

Clinton Vickers is Headmaster of Adelphi Academy.

A survey conducted in 1982 by the Association of American Colleges disclosed that the great majority of the country's undergraduates had "only slight exposure to global issues during their college careers" and that "they do not know enough to live and work effectively in a global network." The recent National Institute of Education report on American higher education confirms the fact that the deficiency remains acute. For financial and other reasons the watchword at many colleges has become retrenchment rather than innovation or experimentation. Consequently many of the disciples of educational reforms have begun to look to the secondary schools, both public and private, for signs of efforts toward curricular renewal.

At Adelphi, under its new plan, the last year of senior history bears the title of this article. Conceived as a discussion of some of the major historical developments of the twentieth century and a series of reflections on those developments, it utilizes both a standard text in contemporary history and a book of selected readings. At the outset of the course, readings from Darwin, Nietzsche, and Marx precede a consideration of international rivalries, domestic programs and policies in Europe and the United States, and the Russian Revolution. Later on, readings include Freud, Sartre and McLuhan, thus combining historical narration with thought about history's cause. At Adelphi such a practice makes good sense because in the upper school the curricula for history and literature are designed to parallel one another.

This course is in its first year and is, inevitably, experimental in character. But amid much academic sound and fury, we, at Adelphi, are allowing ourselves to enjoy a small sense of accomplishment in having taken a step toward rethinking our curriculum.

Dr. James O'Connell is Chairman of the History Department at Adelphi Academy.
Teaching Less--But Teaching Better
by Will Englund

In East Harlem, a small group of teachers is building a new school--a public school--with a few simple ideas. They are ideas that anyone can grasp, that are rooted in the earliest schools known to history, and that go against the grain of virtually everything that is done in American public education today.

Schools try to cover too much, so let's teach less, but teach it better.

Let's have a staff all of teachers, rather than secretaries, guidance counselors, assistant deans, sports coaches and department heads, and use them to cut the size of classes.

Because students won't be able to hide in small classes, let's teach them to think, and to write.

And because we can teach every student when classes are small, let's expect the same of every one of them--that they master the course work.

"And it's no more expensive to do this than not to do this," said Deborah Meier, who in September will become director of the new Central Park East Secondary School. Her school will be an experiment amid the broken glass, soot-stained tenements, crowded streets and bright colors of Manhattan's East Harlem.

Central Park East and a few other schools are at different points in planning and acting, and each is seeking its own way, but they have banded together in something called the Coalition of Essential Schools, sponsored by a large-framed Ivy League professor named Theodore R. Sizer.

Those are Dr. Sizer's ideas--not prescriptions, but ideas--about paring away the curriculum and getting down to the essentials, and they are attracting more attention among people who believe that American schools are not succeeding.

His insight, if correct, is this: Small classes, teachers as coaches rather than lecturers, clear expectations for all students, courses that delve into a subject rather than teaching it--these can work just as well for the typical American high school, and may even work better, than for the blue-blazerred boarding-school student on his way to a prestigious private college.

And that is why the success or failure of Dr. Sizer's ideas will be found not in his quiet office in Providence, R.I., but at places like Walbrook in West Baltimore, and at Central Park East in Harlem, where the wheels are already in motion and the school is getting ready to open.

Central Park East will start with 90 seventh-graders and five teachers, in an old junior high building that it will share with several other programs. Each year afterward, it will add a new class, and five more teachers. There will be a librarian and the director, Mrs. Meier, who will also teach, and that will be it for the staff.

The teachers will spend more time with each student than in most schools, but the tradeoff--central to Dr. Sizer's ideas--is that with fewer students to worry about, a teacher can know them better, can better decide how to teach them, and can require more written assignments from them. And students won't be shuffling every 45 minutes randomly from biology to art to history to algebra.

The school is getting no more money than any other school in New York. But it will "buy" small class size by using everyone to teach one of just two subjects offered.

There will be two classes every day, each with 45 students and 3 teachers. One will be in mathematics and science and the other will be in the humanities. (Spanish will be offered before or after school.)

The teachers will juggle the size of the groups within a class. For instance, 35 students might hear an introductory lecture in biology, or watch a television science program, while two other groups of five each work intensively on something else.

"You're requiring people who are more willing to be generalists," Mrs. Meier said, and also people prepared to do a tremendous amount of planning and coordinating.

"That is both the difficulty and the heart of it," she said. "I think the collegial model is important to attract the people we need. But secondly, it's important for the kids, to see adults who take the subject matter seriously. That notion--that adults have a stake in ideas--is something that I think kids are not exposed to."

Mrs. Meier has been able to pick the people she wants as teachers, and what they are doing now is paring the curriculum, deciding on the few things they want to teach well. It is better, Mrs. Meier believes, to learn how to do biology or history than to skim hundreds of races off the surfaces of those subjects.

"But I can't bear it," she said, with a laugh, of the decision to jettison parts of the standard curriculum. "It's very painful for adults to let a thought go by. But it doesn't stop at 18. What's important that happens here is that it will continue to 91."
Central Park East is in an innovative district within the New York City system. There are no zones, for instance; any student in the district, which serves 15,000, can go to any school. That fosters competition, and planning based at each school, that the district leaders believe to be healthy.

The way to succeed, said Sy Fliegel, deputy superintendent for the district, is to fight off the middle-level bureaucracy, articulate a philosophy, and "get people who will die for that philosophy. And you go. You go."

"And there has to be a clear message from the leadership that they support it and that they will stand behind it through thick and thin," said Carlos M. Medina, district superintendent.

The district took Mrs. Meier's proposal last year (she is now director of an alternative elementary school in the district and set up a task force--with people from the teachers' union, from the various subject disciplines, from the city bilingual program, from some traditional schools and alternative schools, as well as parents and principals. After seven or eight months, the task force felt happy with the idea of a small-scale experiment, which is the intent of Central Park East.

In Mr. Fliegel's words, it won't be a revolution, it is not radical, it is just a choice--a choice for a school dedicated purely to teaching.

And that's a reminder," said Mrs. Meier, "that teaching can be the most extraordinarily wonderful career in the world. Sometimes I can't understand why everyone doesn't want to be a teacher."

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**PASCHAL HIGH SCHOOL**

**What's New at Paschal**

by Larry Barnes

We are currently in the planning stages for the Essential High School as a School-Within-A-School. We are trying to schedule three daily time blocks, referring to one block as "Humanities," one block as "Lunch/Individual Project," and one block as "Science/Mathematics."

We plan to begin and end our day along the established bus schedule, but teachers will be on hand both before and after school for coaching, counseling, and conferencing.

The four essential curricular areas will be the basis for the Humanities and the Science/Mathematics time blocks. ("Humanities" will include Literature & the Arts, History & Philosophy, and Inquiry & Expression; "Science/Mathematics" will include Science & Mathematics and Inquiry & Expression.)

**Schedule of the school day**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
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<tbody>
<tr>
<td>8:00-9:20</td>
<td>Tutorial</td>
</tr>
<tr>
<td>9:20-11:25</td>
<td>Timeblock I</td>
</tr>
<tr>
<td>11:25-1:00</td>
<td>Lunch and physical education; teachers get together</td>
</tr>
<tr>
<td>1:00-3:00</td>
<td>Timeblock II</td>
</tr>
</tbody>
</table>

Those students who are involved in sports after school will take foreign language in place of physical education; their state mandated physical education requirement will be satisfied by after-school athletics.

Revamping the schedule of the school day should help students learn better by providing the time for concentrated work and teacher guidance and coaching.

**Recruiting Students for a School-Within-A-School...**

To recruit students for the fall of 1986, we first created a brochure explaining the basic differences between the requirements of the comprehensive high school and the Essential School program. The brochure included the procedure for making an application to the Essential School.

We distributed the brochure to students in the seventh grade at feeder middle schools. At this time, I explained the workings of the program to the students; interested students discussed the program with their counselors and parents and returned their applications.

I gave a very brief presentation about the Essential High School program to every ninth grader at Paschal, and all interested students received a brochure.
To further generate interest, I spoke to Parent-Teacher groups on various campuses and held orientation meetings at Paschal to give incoming students and their parents a glimpse of the building, the various programs available, and student life.

Our estimated enrollment for the fall is 50 9th-graders and 50 10th-graders. Beginning in the fall of 1986, the Paschal Essential School will enroll an additional 50 9th-graders.

**Being Creative with State Regulations...**

We all work under certain "givens" from state law, state education agencies, school district policies, and individual school procedures. However, there usually exists leeway to allow for innovative programs.

In Texas, under the requirements of recently adopted House Bill 72 and Chapter 75 of the Texas Education Code 21.101, there are established Essential Elements for curriculum and accepted processes for operating schools. In establishing an Essential High School program, one needs to be well-versed in these "givens." Yet one must not hesitate to be creative in planning alternatives to the often fragmented approach to curriculum and pedagogy.

At Paschal, we will be fusing curriculum wherever possible by following the guidelines established in the Essential Elements of Chapter 75. For example, it is quite defensible to use a short story in an American literature book to teach a concept/idea of the colonial period in American history. This type of "fusion" serves to make two separate elements come together to make the objective vivid and meaningful.

We need to be at once sensible and creative in our planning for the Essential School curriculum, meeting the needs of the students while abiding by the policies of the state and district.

Larry Barnes is Coordinator of the Paschal Essential School in Fort Worth, Texas.

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**PORTLAND HIGH SCHOOL**

The Plan for Portland
by Molly Schen

Portland High School will be spending this year planning an Essential school-within-a-school to open next fall. Eighty students will be enrolled the first year, and they will attend classes on the third floor of the high school building. Four teachers will team together devising the curriculum in the four curricular areas outlined in the Prospectus.

The third floor houses a library, science labs, a small theater, computer room, conference area, darkroom, and classrooms, as well as facilities for music, art, and home economics. Facilities in the arts are important at Portland: the school is surrounded by cultural organizations, and the Essential School will emphasize the performing arts as synthesizing and culminating activities for each major level of student objectives.

Portland has created a document drafting initial steps for becoming an Essential School, organized around the nine principles and backed in almost every instance by explicit philosophy and/or rationale guiding the planning. For example, expanding on the "student-as-worker" principle, Portland faculty have written, in part: "Allow the student to confront failure and thus realize that it takes hard work to achieve success." About attitude, the staff has agreed to "train parents as tutors and helpers both at home and at school. We hope to involve parents in refining the curriculum..." These early decisions need further elaboration, but some groundwork has been laid for the planning sessions this coming year.

Molly Schen based her article on Portland High School's proposal to the Coalition.

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**ST. XAVIER ACADEMY**

Saint Xavier Academy: A History
by Sister Teresa Foley, ssj

St. Xavier Academy, a small parochial school for young women in Coventry, Rhode Island, began its journey toward Coalition partnership more than a decade before the Coalition was established. In 1971, St. Xavier's (then in Providence) established a program that emphasized the student as worker. Students were motivated to learn at their highest potential through a program of total saturation ("less is more") and a self-paced learning environment. Letter and number grades were replaced with written narrative reports.
Failure was not an option. Graduation could be accelerated. Students worked with the help of teachers as quickly or as long as it took until they met at least the minimum objectives of each course. Control of the program was solely in the hands of the principal and staff. The cost of the program was absorbed, initially, by grants from the government and religious community.

In the late 70s and early 80s, several factors influenced a shift at the school. Dwindling financial resources, the trend away from alternative and open classrooms, and the "back to basics" movement all caused the school to re-evaluate some aspects of its program. While still committed to the personalization of education, we individualized less, moved to a co-saturation schedule, de-emphasized learning activity packets and combined letter grades with written narratives for guidance reports. Failure returned as a possibility for the unmotivated student.

In 1982 the sponsorship of the Academy was transferred to a new, non-profit corporation, and the school moved to Coventry. That same year Theodore Sizer spoke at Brown University about his work on the Study of High Schools that led eventually to the publication of Horace's Compromises. His talk gave new hope to the Academy in its quest to maintain a program that addressed the individual differences of students, while also providing an environment where students were challenged to achieve their highest potential. In the spring of 1984, St. Xavier's administration and staff decided to pursue the possibility of membership in the Coalition.

After corresponding with the Coalition staff, the faculty spent weeks discussing the common principles. At the same time, constituency groups were consulted (parents, board of directors, feeder elementary schools and diocesan officials). All groups were supportive.

We submitted our plan of action to the Coalition and have been graciously received into their company. We join the Coalition with a spirit renewed: the vision shared by staff in the 1970s will find new relevance and a new means of expression because of our work within the Coalition and the knowledge that other schools are also working to implement the common principles.

The evolution of the St. Xavier program...

In the past fifteen years we at St. Xavier Academy have learned a great deal about the need for flexibility in students' schedules to allow for time to learn. In the late 60s and early 70s, the staff studied a number of models which would make the school's program more individualized. The staff decided on a type of saturation learning: students would take only one course at a time until they had successfully achieved an agreed-upon set of behavioral objectives. The program was self-paced through learning activity packets that the teachers created.

Our hope was that by increasing the amount of time students spent on one content area and by providing one-on-one conferencing with teachers, we could allow for both uniform content "coverage" and greater achievement. Our hope for universal achievement became policy: there should be no failures, only an increase of the time and activities to ensure that all students complete all the objectives of a course.

We encountered several difficulties with this original scheme. The student-teacher ratio was ever-increasing (from 11:1 to 19:1). To decrease per pupil costs, class sizes grew, and individualized instruction became more difficult. As a result, we slowly imposed limits. First we limited the time for the completion of courses. Then we reduced the amount of self-paceing that students could control (and thus reduced incentives for students to work efficiently). Students were given 9-12 weeks to complete two courses. Each course met for two and one-half hours per day.

Through all of this, we discovered that increasing the time spent per day on a course did not necessarily increase the amount a student could learn. Students in many courses such as geometry, shorthand, and languages did not require more time per day, but a greater number of days in order to develop full understanding and skill in its application. It was becoming increasingly apparent that some content areas needed "incubation" time—time when a corollary, a new set of vocabulary, or symbols could be used, practiced, and applied before another new concept was introduced. Some concepts need to be pondered, slept on, and lived with for significant periods of time. A nine-week course time, even though saturated, does not always allow for that.

This fall we plan to move to a 3-course, 2-semester schedule:

Courses A, B, and C from September-January
Courses D, E, and F from February-June

We hope that 100-minute periods and 18-week semesters will give both the flexibility in daily schedules and the number of days needed for a full understanding of the subject matter. We realize now that as we increased the amount of time students spent in class, we did not sufficiently reorganize course content. The next step for us is to rearrange and reorganize content so that the "100" minutes will indeed be a time when students are fully engaged in their learning.

Sister Teresa Foley is Principal of Saint Xavier Academy in Coventry, Rhode Island.
Thayer's Two Week Thing
by Liz Colpoys

What began as a vaguely-formulated idea tossed out at a faculty brainstorming session after reading Horace's Compromise evolved into an exciting two week program which will help shape the future of education in Winchester, New Hampshire.

Thayer High School's "Two Week Thing" involved the suspension of regular classes from April 8 to 19, 1985. In their place were eleven team-taught, interdisciplinary courses which teachers had developed, based on their own interests, throughout the preceding five months. In planning, teachers focused on basic skills. Junior and senior high school students chose one of the following courses for intensive two week study:

Junior High
A Week in the Life of New Hampshire: An historical and sociological look at the students' home state--past, present and future
Who Art Thou? What are the connections between art, architecture and nature? Students study fine arts and create their own "master work"
For Girls Only: A health education course designed specifically to meet the needs of adolescent girls
Young Inventors: After an initial trip to the Boston Museum of Science, students designed and built their own inventions

Senior High
Full-time Apprenticeship and "My Future, My Choice" Students "tried out" a profession or specific job at a local work site for two weeks
The Re-Creation of the Olympics, 1896: An historical overview of the Athenian games through research and Student Olympians
On the Road Again: A study of local authors coupled with explorations of students' own creative potential through poetry, writing, sketching, photography
Remember When: Through experimental activities such as quilting, wall stenciling, and hand-hewing lumber, students glimpsed New England life in the 1800s.
Walk on the Wild Side: A re-enactment of the original settlers' journey into Winchester, using only the clothes, food and utensils available to the 18th century pioneers.

The goals of the Two Week Thing were designing and building Olympic equipment, reading Emily Dickinson--all of these were means to the end of basic skill development. Teachers experienced the ups and downs of team teaching. Happily, most experiences were very positive as trios of professionals from different disciplines cooperatively designed and taught courses which drew from the strengths of each team member. "Young Inventors," for example, was devised by teachers of science, math and English. They provided a wealth of information for students involved in the designing, building, and reporting of their own inventions. Finally, rather than the fragmented six, seven, or eight-period day, students and teachers worked together for six hours a day over two weeks. Admittedly, most were exhausted by the program's end, but they were refreshed in other ways.

The results of the program were illuminating. For some, learning had "come alive" as never before:
"In regular school they tell you and tell you, but here we discovered it on our own...kinda." - 7th grade journal entry
"This is the way learning should always be. I never liked history before, but now I'm actually experiencing things they did in the 1800s." - 10th grader evaluating her two-week course

Principal Dennis Littky found the program successful in that it helped outline next year's schedule at Thayer: "This opened up a lot of exciting things. It showed teachers they could integrate curriculum; and they could adjust to a more flexible time schedule."

Seventeen of Thayer's twenty-five teachers will be involved in some kind of teaming this coming year. They will team-teach two periods a day and have a planning period together. This will facilitate the integration of curriculum and give teachers and students more time together to concentrate on mastery of basic skills.

The Two Week Thing afforded an important glance at what Thayer may look like in the future. It gave teachers the support and confidence to move ahead with reform. It sparked excitement for both students and teachers by showing that school need not be strictly routine. While not problem-free, perhaps one student best summarized a feeling held by many: "This was great, but I'm only getting started..."

The Two Week Thing has provided an excellent start for successful educational reform at Thayer High School.

Liz Colpoys is a recent graduate of the Master of Arts in Teaching program at Brown University. She completed her student teaching at Thayer High School last spring and has accepted an English teaching position there.
thoughts on Science and Mathematics

by Edward M. Mathieu

The notion of a subject area called "Mathematics and Science," proposed by Theodore Sizer in Horace's Compromise, challenges traditional ideas of curriculum organization. Sizer briefly outlines a rationale: "Mathematics is the language of science, the language of certainties. Science, of course, is full of uncertainty, as is much of higher mathematics, but for beginners it is the certainties that dominate. . . I would merge the traditional departments of mathematics and science, thus forcing coordination of the real and abstract worlds of certainty" (p. 132).

We in the Coalition must go further in defining how mathematics and science can be described as a "merged" subject area. What, specifically, are the common threads between them? One can respond quickly: scientists use mathematical formulas to model their discoveries; mathematicians provide the fodder for much scientific research. So, science and math are inextricably linked. End of discussion, next topic.

I think we need to probe deeper. How do we go about designing the curriculum for mathematics and science? What are similar concepts in math and science that can be usefully linked to benefit the student? Consider the following:

Introductory courses in science and mathematics could be offered in a manner that presents the problem solving nature of science and mathematics using the scientific method as the framework for the course. For example:

<table>
<thead>
<tr>
<th>Science</th>
<th>Mathematics</th>
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<tbody>
<tr>
<td>observe</td>
<td>identify problem</td>
</tr>
<tr>
<td>hypothesize</td>
<td>propose solutions</td>
</tr>
<tr>
<td>experiment</td>
<td>attempt solutions</td>
</tr>
<tr>
<td>conclude</td>
<td>verify solutions</td>
</tr>
<tr>
<td>communicate</td>
<td>communicate</td>
</tr>
<tr>
<td>further questioning</td>
<td>further questioning</td>
</tr>
<tr>
<td>(experiments)</td>
<td>(problems)</td>
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</tbody>
</table>

The introductory high school science course could be a laboratory course which provides instruction in the basic laboratory and skills/techniques required for science courses in biology, chemistry, and physics. It could provide a base of common experience for all science students and act as an orientation for first year students to the "style" of the Essential School and the expectations placed upon the students (and faculty). The course could be taught by a team (biologist, chemist, and physicist) throughout the year, further exposing the students and staff to the expectations within the Essential School. This course would be a perfect forum for coaching as a teaching style. The student would have numerous laboratory experiences which provide opportunities for the teacher to direct the progress of the student through coaching. The introductory mathematics course could follow the same pattern.

Continued on page 10