

Renewal Inspection Report

LAWRENCE FAMILY DEVELOPMENT
CHARTER SCHOOL
LAWRENCE, MASSACHUSETTS

SETTING

The cities of Lawrence and neighboring Lowell, thirty miles northwest of Boston on the rapids and falls of the Merrimack River, were early leaders in the American Industrial Revolution. They became home to successive waves of immigrants from the mid-nineteenth century onward. First came Irish, then Polish, Italians, and French-Canadians; and now Dominicans and Puerto Ricans have come to the city seeking employment in its factories. Today, only Malden Mills remains as a large clothing manufacturer; but other textile businesses continue to operate in a town now fallen on harder times.

Lawrence today is the second poorest city in Massachusetts. Its 70,000 residents experience a poverty rate three times that of the Commonwealth, its unemployment rate is double that of Massachusetts, and its high school dropout rate is four times the state average. Its public schools are currently in state receivership.

Lawrence Family Development Charter School, located in one of that city's commercial districts, began in a donated, renovated building that had been the headquarters of the Blue Seal Feed Company. The just-completed expansion of the school includes a new multi-level building adjoining the original site, an industrial garage converted into attractive, airy classroom space; and a landscaped courtyard and playground enclosed by these three buildings.

The curriculum features interdisciplinary thematic units that are currently being realigned with the Massachusetts Curriculum Frameworks. All instruction uses a two-way language model (English and Spanish). School uniforms are required, and small classes are supported with an aide in every room. Literacy is the foundation skill for learning in all subject areas; and technology, values, and citizenship are integrated throughout the program.

Family development is much more than a part of the school's name; it is a central part of the school's mission. Parent involvement is seen as a major force in improving the academic performance of students. The school's Family Learning Center offers programs and training throughout the day in English as a second language, family literacy, citizenship, and parenting.

INSPECTION TEAM

Alan Fraker, Lead Inspector

Mr. Fraker is Vice President of SchoolWorks and a Senior Research Fellow at Boston University. He was the Academic Dean at Deerfield Academy and Senior Curriculum Consultant to the Modern Red Schoolhouse, one of the New American Schools' whole school reform designs. There he provided implementation training to teachers and schools in New York, Philadelphia, Indianapolis, Memphis, San Antonio, and the Navajo Kayenta reservation.

Susan Miller Barker, Inspector

Ms. Barker is a doctoral candidate in the Urban Superintendents Program at Harvard University. She has just completed an internship in the Superintendent's Office in Charlotte, North Carolina, and was the Assistant Executive Director of the Modern Red Schoolhouse. Prior to that, she was an elementary school teacher and science curriculum project specialist in Indianapolis, Indiana.

Claudia Grose, Inspector

Ms. Grose is a faculty member at Bank Street College in New York City and has taught courses and provided professional support for teachers in the area of early childhood and elementary literacy. She has recently completed a USDOE study of the implementation of an innovative literacy curriculum in an urban New England school district. Until recently, she also served as a literacy consultant to the Boston Plan.

Maria Questa, Special Inspector (Bilingual Program)

Dr. Questa is the Principal of the Bailey International School of Lowell, and was previously the Bilingual Curriculum Coordinator for the Lowell Public School District. Prior to that administrative appointment, she was an elementary bilingual classroom teacher in Lowell after immigrating to the United States from Cuba. She teaches undergraduate and graduate courses in bilingual pedagogy, policy, and curriculum development at her alma mater, the University of Massachusetts-Lowell.

RENEWAL FINDINGS

Is the academic program a success?

1. **Standardized test scores—particularly for those students who began their formal education at the school—demonstrate improvement. Baseline scores from the Massachusetts Comprehensive Assessment System are broadly in line with those of the sending district.**

In both 1996-97 and 1997-98, third grade performance on the Reading section of the Iowa Test of Basic Skills lagged behind the average for Lawrence City Schools. Baseline scores on the 1998 MCAS were also slightly below Lawrence's scores. English and Mathematics average scores were two points below Lawrence's averages, and the Science and Technology average scores were identical.

More encouraging longitudinal trends have appeared on the Stanford Achievement Tests, Ninth Edition, administered in both 1996-97 and 1997-98 to all students at the school. Although the analysis is complicated somewhat by a shift in test construction and score reporting by Harcourt-Brace, students in K-4 in May, 1997 improved, on average, twelve percentile points on the May, 1998 test administration. Academic growth was most pronounced in grades 1-3 (1998), with an average improvement of eighteen percentile points, while grades 4 and 5 (1998) improved six percentile points on average, strongly suggesting that those students who entered the school at beginning and early grade levels profited from its instructional program more than students who entered later.

Narrative References: 9, 10, 11, 12

2. **The first draft of subject-specific standards that outlines the broad domains of student learning is a promising start towards the creation and implementation of a standards-driven curriculum and assessment system.**

During a one-month period last summer a teacher task force, guided by a nationally recognized expert in standards and curriculum, assembled a compendium of standards in the core academic disciplines. The standards identified for the school were adapted from the frameworks of other states and jurisdictions as well as from the Massachusetts framework. The resulting master document, a notebook of several hundred pages, is an organizational starting point for the development of clear standards and benchmarks at each grade level in each subject. The school has developed an extremely well

organized and articulated third-grade Individual Student Learning Plan in Reading as a pilot project using these new guidelines. Much work remains, however, to expand this initiative to all subjects and grade levels. Hundreds of standards in several different formats remain to be culled and re-stated in consistent, measurable terms as a useful guide for the development of classroom curriculum and assessment.

Narrative References: 1, 2, 3, 4, 5, 6, 14, 24

- 3. The school’s particular implementation of a “two-way” language program—among a broad range of acknowledged, endorsed bilingual approaches—lacks sufficient definition and coherence from grade to grade.**

Two standardized assessments, both produced by Harcourt-Brace, measure student progress in the “two way” program. The Brigance Diagnostic Test of Basic Skills measures language performance and dominance in English and Spanish. Aprenda 2 measures overall academic achievement in Spanish in rough correlation with the Stanford Achievement Test, Ninth Edition. Despite this careful measurement of learning and fluency, the full implementation of this program has been slowed by the absence of grade-level benchmarks—either generated by the school or adapted from the external assessments—leading to the school’s objective of “students’ fluency in English and Spanish by their fifth year in school.” While every teacher employed by the school must take one language course per semester in their non-native language until Massachusetts bilingual certification standards have been met, teaching strategies at the school remain inconsistent from grade to grade as teachers progress toward this requirement and as new faculty arrive at the school. Fully bilingual teachers have been extremely difficult to identify, and several instructional models—including different combinations of Spanish and English instruction—are employed.

Narrative References: 1, 7, 13, 15, 31, 32, 33

4. **Parent support of the school’s overall mission, broadly defined, is overwhelmingly enthusiastic. However, the school has not yet communicated sufficiently its specific academic objectives.**

Parents delight in the overall rigor and structure of the school and see it as the most important social and educational institution in their children’s lives beyond the family—or perhaps better phrased, “with the family”—given LFDCS’s mission and governance to include parents. In its first three years, the school struggled with the clear definition and articulation of its academic program even as it expanded swiftly and successfully. Now, with a bulging set of discipline-specific competencies, the school has begun to translate its new frameworks into classroom instruction and assessments. Parents, too, need an equally explicit understanding of these standards, as well as a record of their child’s progress toward them. This understanding will help them realize fully the school’s strategy for achieving the “creation of a culture of high expectations and hard work,” within the context of the “immediate outreach to the parents to include them as full partners in their child’s education.” The aforementioned Individualized Student Learning Plan in Reading serves as a model for similar clarity and consistency in all subjects at all grade levels.

Narrative References: 1, 14, 17, 18, 51, 52

Is the school a viable organization?

- 1. The board’s strong, diverse community representation—including a large parent cohort as well as a core of dedicated citizens—has led to considered and effective governance.**

A board membership, balanced between the school’s founding organization—six members of the Lawrence Family Development and Education Fund—and seven parents of children enrolled at the school, provides both dedicated and involved leadership and decision-making. Similarly, the four board offices are equally divided between the founding organization and current parents. In its fourth year, ten of the thirteen board members have served for at least two years; and six are school founders who provide consistency and context for all issues of concern. From performance reviews of all school employees to major expansion of program and facilities, the board has developed a sound set of practices and is beginning to explore long-range issues associated with the school’s steady maturation.

Narrative References: 38, 41, 42, 45, 46, 47, 51, 52

- 2. Acquisition of new facilities and renovation of old ones have been remarkably well orchestrated in support of the school’s mission.**

The deep roots of the Lawrence Family Development and Education Fund in the Lawrence Community have enabled it to “secure capital and property to provide school facilities” with great success but not without a lot of hard work on the part of board and community volunteers. The school’s original facility was donated as a gift in kind by the Blue Seal Feed Company, and nearly \$200,000 was raised for its renovation. The adjoining Family Center was built with volunteer labor. Nearly \$600,000 was raised to construct a kindergarten and middle school, and a seven-figure bank loan was negotiated to complete these projects and associated renovations.

Narrative References: 39, 43, 44

- 3. A largely new and inexperienced teaching staff demonstrates remarkable dedication and commitment to the school and its students. Their open requests for support augur well for the development of a strong learning community with a focused program of ongoing professional development.**

Teachers at LFDCS must address the needs of an economically disadvantaged student population whose first language is Spanish. Their professional development and responsibilities, in addition to successful instruction in the

core academic disciplines of the Massachusetts Curriculum Frameworks, includes pursuing graduate work to insure their own bilingual fluency and their facility with the counseling and human development skills needed to support their students. Only two kindergarten teachers remain at the school from the founding faculty group in 1995-96. When coupled with the staff expansion as a new kindergarten of approximately sixty students begins each year, fully half of the faculty and staff are new to the school in the 1998-99 school year.

Narrative References: 16, 24, 26, 30, 34, 35, 36, 48

4. **Recent administrative reorganization has been received enthusiastically by the entire community. In particular, the school now appears better positioned to pursue its ambitious academic goals.**

The new principal has extensive experience in schools with high academic performance expectations and has been a teacher trainer and evaluator at the collegiate level. A just-appointed assistant principal, a professional social worker in his third year at the school, is responsible for the coordination and direction of the new middle school several blocks away. Their leadership, combined with that of the school's founding director, will enable the school to complete its somewhat delayed but vital academic programming. Eventual faculty stabilization in two years after the first eighth graders graduate will also help. The incorporation of a standards-driven curriculum and assessment system based on the new frameworks is a particularly pressing priority in the pursuit of the school's academic goals.

Narrative References: 38, 41, 45, 54

Has the school been faithful to the terms of its charter?

- 1. The entire school community has created and nurtured a safe, respectful, and diverse learning environment.**

The atmosphere of LFDCS is true to its family mission. Students dutifully go about their learning throughout the school day and parents enter and exit the school freely on behalf of their children and in the spirit of the school's purpose. During the inspection, there was absolutely no evidence of serious disruption or misbehavior within the building. As a general practice, teachers and staff respond swiftly and competently at the first signs of student malaise. Immediate parent contact is made in the event of disruptive behavior, and in-house suspensions address repeat or severe misbehavior. As a consequence of the school's climate and effective practices, no expulsions have been necessary. Additional support staff—a school counselor, school nurse, and Home-School Coordinator—reinforce and coordinate faculty responses to children at all times.

Narrative References: 18, 19, 21, 22, 43

- 2. Students are introduced to basic technological competencies. Additional staff support, new computers, and upcoming Internet capacity suggest an intensification of this communications initiative.**

Every student in the school receives instruction in the use of computers weekly. One computer lab with ten PowerMacs and assorted other computers (fifty in all at the school) serves this purpose. A second computer lab for the middle school will open in September, 1999; and both campuses will be wired for Internet access in the near future. Only a few computers are currently located in classrooms for student use. The school recognizes that its technology plan is still in the early stages of development, necessarily so because of the enormous costs associated with initial plant conversion and expansion.

Narrative References: 40

- 3. The school continues to expand its programs and resources in support of student learning, through a summer school for reading remediation and preliminary discussions about a pre-school program.**

LFDCS already operates a full-day kindergarten with demonstrated literacy success as a consequence of additional instructional time. A Before-School program serves breakfast to 90% of the students, and an After-School program

engages seventy-five students, 20% of the school population. The school has added a new one-year transitional program for those students who require additional time between kindergarten and first grade. The board is also considering a pre-kindergarten. A literacy remediation program will be available to identified students beginning in the summer of 1999, and an expanded program of off-campus enrichment opportunities and field trips for the entire school is already being woven into the curriculum.

Narrative References: 19, 20, 21, 22, 23, 47

4. The school maintains a host of productive, reciprocal relationships within the greater Lawrence community.

The second half of the school's motto is "building communities," a promise that extends well beyond the school's boundaries. Board membership includes many such "community builders," and faculty members are, themselves, active in many service organizations, either through the school or its parent organization. Americorps and Marist volunteers help staff a range of school programs. Students enjoy a broad array of opportunities and services within the Lawrence area, including two hours of swimming instruction weekly at the Lawrence YWCA.

Narrative References: 20, 51, 53

5. Faculty members have engaged in a range of professional development activities to enhance their instructional skills, curriculum development, and assessment practices. Nevertheless, lack of a clearly articulated, integrated, and coherent program of professional development has compromised the impact on daily instruction, particularly in light of the varying experience of the teaching staff.

A variety of professional development experiences—including 'best practices' from Lorraine Monroe's Leadership Academy and an intensive summer standards-writing workshop with Susan Pimentel of StandardsWorks—has been afforded faculty members from time to time. Similarly, support for graduate degrees and, particularly, bilingual certification, is readily available. However, there has been insufficient time for follow-up monitoring and evaluation of these initiatives. The need to generate a revised, Massachusetts-aligned curriculum from the school's new set of standards is a most immediate one; but inadequate time and resources have again allowed only partial and preliminary piloting of this framework by a handful of teachers who, themselves, created the standards.

Narrative References: 2, 3, 4, 5, 8, 16, 24, 48, 49, 50

6. **Active involvement of parents at all levels—on the board, as volunteers in the classroom, and on the school site council—is widely recognized by parents and staff alike as vital to the ongoing successful development of all children.**

Parent participation in the life of the school helps realize the first half of the school motto, “strengthening families.” Parents make up more than half of the Board of Trustees; they are represented in significant numbers on the School Site Council; and they serve as ubiquitous volunteers in classrooms, raising funds and helping out in the library and on field trips. Much of the philosophy and program design behind such active parental involvement in every aspect of school life stems from the Parent Mobilization Project which is run by school's parent organization to server the city of Lawrence, not just at the school itself.

Narrative References: 51, 52, 53

If the school’s charter is renewed, what are its plans for the next five years of the charter?

Note: Given the prospective nature of this renewal question, no references to the school inspection and resultant narrative are included.

- 1. The laudable expansion of “learning and cultural enrichment beyond the basic academic curriculum” provides additional opportunities for student growth and success.**

The school, as discussed elsewhere, has expanded its program steadily since its founding—both by original charter design and as an outgrowth of ongoing reflective decision-making at the board level. To sustain its efforts “toward eliminating the experiential poverty of many students,” the school will enter into a partnership with the Division of Science at Northern Essex Community College-Lawrence Campus and will use their science labs regularly. Academic clubs have sprung up in the After-School Program, and several interscholastic teams will begin competition as the middle school fills out. An Orff music program in the lower grades will prepare students for instrumental and choral music in the upper grades. A school-wide publishing center will recognize and support students as creative “authors and illustrators” beginning in September, 1999.

- 2. The new accountability plan recognizes the ongoing importance of professional development and identifies a general architecture for its provision. There is not, however, specific evidence of a detailed, institution-focused, and coherent implementation strategy within this school objective.**

School Objective 1 of the school’s proposed Accountability Plan for the next five years embraces the ongoing need to “generate and evaluate curricula and assessment tools.” A series of seven appropriate strategies to accomplish this task through professional development and monitoring follows. However, institutional targets and timetables are not included—perhaps as an issue of format and available space. Further discussion suggests that no master document, detailing the scope and pace of curriculum and assessment development across disciplines, has been developed at this time. Student Objective 1 indicates that subject benchmark monitoring will be phased in over a four-year period and completed by 2003. This timetable does not address the school’s current practices or intermediate strategies during that transition period. Given staff turnover, the atypically high student attrition rates for two consecutive years, and initial MCAS test results, the swiftest and broadest implementation of such an academic master plan is central to institutional equilibrium and progress.

3. The adoption of a two-year “looping” instructional model and the creation of a separate middle school campus require careful operational planning and ongoing monitoring.

“Looping” requires every teacher in the school to move to a new grade level in a two-year cycle and there develop a new curriculum or adapt a colleague’s materials. Presently, these instructional units exist within plan books but have not been reproduced using a common template. Their transfer is time-intensive and necessitates much study and preparation on the part of the faculty until one “looping” cycle has been completed. Particularly in the middle school, every teacher is new to content and instruction at the grade level in question because of the combined school-wide implementation of looping and the addition of new seventh-grade teachers. Similarly, the coordinator of the middle school, while a three-year veteran of the school, has not taught extensively in the academic program because of his responsibilities as the school counselor. Finally, the middle school is to be temporarily housed several blocks from the main campus. All of this novelty, when combined with new standards for a new curriculum and assessment system across the entire school, demands extraordinary academic preparation and careful and constant evaluation during the 1999-2000 school year and beyond.

I. STUDENT

Lawrence Family Development Charter School (LFDCS) has two primary student goals: the development of multiple competencies in the core academic areas, and bilingual English and Spanish fluency. A third academic goal, competency in communication via technology, has been initiated but is not as well developed because of the associated costs of school expansion. Student performance, in general, has demonstrated steady improvement against national norms and is currently in line with attainment in the Lawrence schools. The school is particularly aware of the individual and cultural needs of its economically disadvantaged student body and offers a broad array of student academic services, within the school, and community services for students and families alike, within the school and throughout Lawrence.

ACADEMIC STANDARDS AND GOALS

- 1** In the summer following its third year of operation, a “teacher task force” at LFDCS spent a month developing a broad and rigorous set of academic standards to buttress and replace the integrated topical units and Learning Themes—e.g., Communities, Energy Sources, Getting to Know You—that had shaped the original curriculum. Standards were developed in the four Massachusetts Curriculum Framework core academic areas: English Language Arts, Mathematics, History and Social Science, and Science and Technology. These standards incorporate every subject of the school’s first student performance objective, except the arts. No separate standards are in evidence for Spanish language proficiency, the school’s second student performance objective through its two-way language program. The school does note in its renewal application that students will be held to “standards established...comparable to English language proficiency for each grade level.” In the same light, none of the standards in any subject area is translated into Spanish, limiting their public dissemination to those who read English with a high level of understanding. The third student performance objective, “competencies in communication, including technology,” is addressed in part within the language program but does not yet have a distinct set of performance benchmarks.
- 2** The new core academic standards for the school, developed under the direction of a national expert in standards-driven curriculum, are largely adapted or transferred from the Massachusetts and California frameworks. They remain in draft form and will require considerable editing before their wholesale adoption by the school. The standards in their present form are exhaustive—between 300 and 400 in each subject for the K-8 grade span. The performance of a third grader, for example, is measured against 168 standards in the core subjects; the performance of a sixth grader is measured against 238. In addition, the standards appear in several different formats and cover various grade ranges. A second step of standards review, consolidation, and reorganization will produce a document that can, in turn, generate grade-level standards more easily applied by teachers and understood by parents. The ensuing narrative discusses the current state of all standards on a subject-by-subject basis.

- 3 Approximately sixty pages of mathematics standards are the most consistently and intelligibly presented, although they run only through the sixth grade. They are organized grade-by-grade so that any teacher can find *all* of the curriculum requirements in that subject in one section of the notebook. There are five major learning areas, or *strands*, in mathematics, roughly paralleling the Massachusetts Curriculum Frameworks with supplementary standards from California and the National Council of Teachers of Mathematics. A fifth strand, *Problem Solving*, has been added in this way. Standards within each strand are consistently numbered from grade to grade for ease of reference and planning. The addition of standards for the incoming grade seven and grade eight will complete this model document.
- 4 Standards in English Language Arts are neither organized by grade nor aligned with the Massachusetts Curriculum Frameworks. There are four strands—Listening and Speaking, Oral and Written Language, Reading, and Writing—with standards for each grade level in each strand thereafter. The school’s standards *in toto* correspond generally with Massachusetts’ strands two and four, Language and Composition, and are presented in much more detail. Massachusetts strands one and three, Literature and Media, are not included in the LFDCS standards, although an extensive and thoughtful required reading list supplements the standards (without corresponding performance levels).
- 5 Science and Technology standards are also organized by strand with standards for each grade level subsumed under each strand. The five strands, themselves, align quite closely with the Massachusetts Curriculum Frameworks although LFDCS has added Investigation and Experimentation to the Massachusetts Inquiry strand. Within each strand, the standards, themselves, are not articulated in parallel from grade to grade; and different scientific domains have been assigned to different grade levels in considerable misalignment with the Massachusetts schema. Physical sciences are to be studied in grades 1, 4, 7, and 8; life sciences, in grades 2, 5, and 8; and earth and space sciences, in grades K, 3, 6, and 8. However, the school does not appear to be following this draft domain distribution at this time.
- 6 The History and Social Science standards appear to be a fusion of Massachusetts and California frameworks. The LFDCS framework borrows Historical Analysis Skills, presumably from California, and uses both the five Massachusetts Content Strands and Core Knowledge Scope and Sequence. Organization is also by grade level for ease of individual teacher use. However, the order of the five content strands changes from grade to grade, making overall articulation more difficult. For example, the order of standards in grade 1 is Civics, Geography, History, and Economics. The grade 3 order (grade 2 standards are incomplete) is Geography, History, Civics, and Economics. The Massachusetts Content Strands are abandoned entirely in grades 4 through 7, and no standards appear for grade 8. In their place, Core Knowledge topics guide the curriculum. Historical Analysis Skills are clustered K-4 and 5-8, with no performance level distinctions within each grade span as in every other core academic subject framework. Finally, although the grade 5 Core Knowledge standards follow Massachusetts recommendations, this study of early American history in grade 5 may be

too early for a grade 8 MCAS test three years later with approximately 80% of its items set prior to 1877.

- 7 LFCDS standards in Spanish, although not formally established within a framework, are generalized in the school’s accountability plan to hold students to a demonstration of “bilingual skills in all areas of language arts,” not just speaking and listening. Students are expected to “speak, read, and write English and Spanish with increased proficiency/fluency and a measured increase in vocabulary at each grade level.” It is not clear how these accountability plan standards are incorporated into the curriculum and internalized by the various teachers at each grade level.

ATTAINMENT AND IMPROVEMENT

- 8 In a city with discouraging socioeconomic demographics, LFDCS has the highest low-income student population of any school, 83%, a figure 10% higher than the city average. The student population is 95% Latino, 17% more than any other school in town. Without making any excuses for the lower educational starting points of many of its students, the school has set out to help them achieve in school and overcome any other disadvantages they may experience.
- 9 The Iowa Test of Basic Skills has been administered to all third graders as a reading measure for the last two years, 1996-97 and 1997-98. In just one year, the number of proficient readers more than tripled and the overall national percentile ranking rose by 50%. But the school remains concerned enough about its low overall national standing, the 25th percentile, to take bold steps in its reading program as discussed later in the narrative.

Iowa Test of Basic Skills (Reading)

| Year | Students Tested | National Percentile | At or Above Grade Level | | | |
|-------|-----------------|---------------------|---------------------------------|--------------|-------------------|-----------------|
| | | | Below Grade Level Pre-Reader | Basic Reader | Proficient Reader | Advanced Reader |
| 96-97 | 40 | 17 | 43 | 39 | 11 | 4 |
| 97-98 | 37 | 25 | 33 | 24 | 39 | 3 |

- 10 Similar growth in student attainment on the Stanford 9 Achievement Tests (Basic/Partial Battery) occurred in the same two year period. The earlier a student enrolled at LFDCS, the stronger both attainment and improvement were likely to be. Students in grades 1-4 attained, on average, a national percentile ranking fourteen points higher than the previous students in the same grade in the two-year comparison. First and second graders tested in 1997-98, a group who began kindergarten at LFDCS, *attained a full twenty percentile points ahead of their predecessors*. Attainment of students who did not attend kindergarten at LFDCS, third and fourth graders in 1997-98, averaged nine national percentile points higher, *less than half the attainment growth of those who did attend kindergarten at the school*.

Stanford 9 Basic/Partial Battery (Grade-by-Grade Attainment)

| Year | 1996-97 | 1997-98 | Change |
|--------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Grade | National Individual Percentile Rank | National Individual Percentile Rank | National Individual Percentile Rank |
| K | 32 | 28 | -4 |
| 1 | 22 | 46 | +24 |
| 2 | 24 | 40 | +16 |
| 3 | 21 | 46 | +7 |
| 4 | 18 | 28 | +10 |
| 5 | N/A | 23 | N/A |

- 11** Longitudinal individual improvement over the same two-year period continues the previous trend. Students in grades K-4 in May, 1997 improved, on average, thirteen percentile points on the May, 1998 test administration. Academic growth was most pronounced in grades 1-3 (1998) with an *average improvement of eighteen percentile points* while grades 4 and 5e (1998) improved six percentile points on average. Students who began their education at LFDCS in either kindergarten or first grade *tripled*, eighteen percentile points against six percentile points, the improvement of those who started at the school later.
- 12** The strong positive effect of the school’s instructional program on both attainment and improvement is clear. Administrations in May, 1999 will provide further data for this study.

Stanford 9 Basic/Partial Battery (One-Year Improvement)

| Year | 1996-97 | 1997-98 | Change |
|-----------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Grade to Grade | National Individual Percentile Rank | National Individual Percentile Rank | National Individual Percentile Rank |
| K-1 | 32 | 46 | +14 |
| 1-2 | 22 | 40 | +18 |
| 2-3 | 24 | 46 | +22 |
| 3-4 | 21 | 28 | +7 |
| 4-5 | 18 | 23 | +5 |

- 12** The school’s baseline MCAS test averages for grade 4 were broadly in line with those of the Lawrence School District and well below state averages. (A Donahue Institute-University of Massachusetts study of “value-added” student performance on the 1998 MCAS administration suggests that Lawrence Schools, when “non-school” factors such as income and parent background are considered, perform “effectively” beyond score expectations projected from these demographics.) LFDCS has not performed an item analysis of its own to see which areas of the assessments indicated particular strengths or weaknesses. However, with the further development of the new curricular frameworks, a

more detailed comparison of test results with internal curricular measures of student learning is possible.

Overall MCAS Average Scores by Subject (1998)

| Subject | LFDCS | Lawrence City | Massachusetts |
|-----------------------|--------------|----------------------|----------------------|
| English Language Arts | 220 | 222 | 230 |
| Mathematics | 217 | 219 | 234 |
| Science/Technology | 225 | 225 | 238 |

- 13** Evidence of student attainment and improvement in the two-way English-Spanish program is not provided. The school administers Aprenda, a Spanish language achievement test closely aligned with the Stanford 9, but has not reported comparable student results in either its 1997-98 annual report or its renewal application. (There was insufficient time during the site visit to request these scores and conduct this analysis.) The school does provide, however, in both of the aforementioned reports, the results of the 1997 administration of the Brigance Diagnostic Test of Basic Skills. The school has reported the results of linguistic function only with regard to the percentage of students who are fully bilingual, those for whom one language or the other predominates, and those who are monolingual. Surprisingly, the school fails to provide longitudinal data for 1998 as it did for all other external assessments. Consequently, there is not sufficient data to determine the school's progress toward its bilingual proficiency objective for all students who attend the school for at least five years.

Brigance Diagnostic Test of Basic Skills—Linguistic Function (1997)

| Grade | Bilingual | Predominant English | Predominant Spanish | Mono-English | Mono-Spanish |
|---------------|------------------|----------------------------|----------------------------|---------------------|---------------------|
| 1 | 57 | 8 | 29 | 5 | 2 |
| 2 | 46 | 19 | 25 | 7 | 4 |
| 3 | 58 | 30 | 5 | 8 | 0 |
| 4 | 67 | 21 | 13 | 0 | 0 |
| 5 | 54 | 23 | 21 | 3 | 0 |
| Totals | 55 | 19 | 20 | 5 | 1 |

- 14** LFDCS has been, with the Brigrance test exception just noted, extremely diligent in measuring student attainment and improvement on external assessments. However, given its recent codification of new standards in all of the core academic areas, internal measurement of student performance is necessarily incomplete. A few of the teachers at the school, mostly original members of the standards task force, are using check lists to indicate whether or not a student has mastered a particular standard in a particular subject, with little or no qualitative judgment thereto. One or two others have developed several rubrics along the same lines, and one teacher uses guidelines and rubrics for English Language Arts that parallel the reporting categories of the Iowa Test of Basic Skills. There is little school-wide evidence of grade-level or vertical cooperation in what appears to be largely idiosyncratic practice at this time.
- 15** Some student portfolios at all grade levels were reviewed with similar findings. Most work was unsupported by either instructional guidelines or rubrics that provided feedback linked to the school's standards, old or new. Teacher annotation was also minimal; many assignments lacked any teacher response, save a grade or a single adjective or expression. Student work in English Language Arts was most prevalent in student portfolios, followed by mathematics (usually sheets from workbooks). There was limited evidence of work in history and social science and almost no evidence in science. None of the work assembled in student portfolios was in Spanish.
- 16** At this point, a distinction needs to be drawn between the formal and informal record of student progress. While portfolio record keeping and progress appear in a nascent stage, teacher grade books were replete with evaluations and comments about student performance. Teachers, in conversation, could discuss individual students and their strengths and weaknesses at great length, but not with direct reference to standards and performance levels. There is a strong oral tradition within a classroom and at a grade level during a school year, but the transmission of this information from grade to grade and year to year has been compromised by high staff turnover and the reconfiguration of academic benchmarks over the summer.
- 17** The school is fully aware of these assessment limitations and has begun a pilot project in third-grade English Language Arts during the spring of the current school year. A clear, coherent Individual Student Learning Plan with Language Arts Benchmarks for Reading is being used to qualify and quantify student demonstration of competencies. It has been greeted most favorably by students, teachers, parents, and a large audience at a national conference. Plans are in place for its expansion across the curriculum over a four-year period. However, given the press of MCAS assessment and the ambitious scope of the school's draft standards, further refinement of priorities and timetable is suggested beyond this promising first step.

INDIVIDUAL NEEDS AND DEVELOPMENT

- 18** A school founded by a parent mobilization organization with a board majority of parents necessarily takes an unusual interest in the overall development of its student body. With its cheerful, bright atmosphere and cordial tone, the institutional setting reflects this commitment to the whole child. All students wear uniforms and speak courteously to one another and to adults at school without fail. Each school day begins with a musical selection during homeroom—often Mozart, Brahms, Beethoven, or another classical composer—followed by a period of sustained silent reading to ready each student for the classroom setting after the trip from home and to focus on the academic tasks at hand.
- 19** A Counselor and Assistant Counselor, as well as other support staff and a Home-School Coordinator, help individual students with adjustment problems and concerns. In particular, counseling strategies are developed for children coping with divorce and separation, parent-child conflict, and socioeconomic complications. Workshops for parents include discipline, children’s behavior, homework help, and testing. The counseling staff conducts a “Self-Esteem Day” annually and provides many links to and partnerships with Lawrence’s social service agencies, particularly the Community Mental Health Center.
- 20** Students “participate in the life of the broader community” through a broad range of community service options appropriate to their age and grade level. A food collection bank at Thanksgiving, under the auspices of C.O.R.E., provides more than 2,000 items to 225 needy families. Third graders regularly visit senior citizens at the Mary Immaculata Nursing Home. Mufflers knitted through the Scarves Knitting Project are donated to Lawrence’s Lazarus House, a shelter for homeless families. Almost a ton of paper is collected in a recycling project, and one community initiative or another is underway almost constantly, its progress prominently measured by a thermometer or bar graph in the school's reception area.
- 21** Improving the quality and quantity of homework submission has been another school initiative—as prominently advertised by the “Homework Heroes” display in the lobby. A Homework Club now meets in the first hour of the After-School Program and serves seventy students. Teachers report a 30 to 80% increase in the amount of homework submitted during the first year of this concentrated academic effort.
- 22** Students who continue to struggle academically or personally, despite the aforementioned staffing and programs, are most often referred to a Teacher Assistance Team by the classroom instructor or advisor. This team, comprised of the school’s Special Education Administrator, teachers, and appropriate support staff, meets to design and monitor an Action Plan for the student in question. This team meets several times a month, sometimes weekly, on behalf of its students and serves approximately 4% of the school’s population in any given academic quarter.

- 23** Parent-teacher conferences are held quarterly to review student work and progress. Parents may schedule additional conferences at any time, and the school often meets more frequently with the parents of students experiencing academic or personal difficulties. Conference times are arranged to meet the needs of working parents and all written reporting is in both English and Spanish. During meetings with parents, translators are provided for those faculty members who are not yet fully bilingual.

II. CLASSROOM

Teaching and learning at LFDCS continue to take place in integrated thematic units; but a massive realignment of these units, better to prepare students for MCAS examinations, has just begun. Consequently, a significant part of the curriculum is being revised, with a concomitant review of instructional materials. Recent renovations and construction expand instructional space and provide new and attractive learning environments. Increased technological and library resources bring more variety and creativity to the academic program.

CURRICULUM AND ASSESSMENT

- 24** The school's new standards are just beginning to influence instruction and assessment, especially among those teachers who were part of the standards task force and who have been at the school for more than one year. There is only limited use of the frameworks for rubrics and other types of guidance and feedback to students. Reconfigured thematic units aligned with the new standards are similarly undeveloped, existing in large part as first drafts in teachers' lesson plans with no time yet available for uniform formatting and reproduction.
- 25** Mathematics instruction is a daily, steady feature of the academic program as one of the two core disciplines assessed by the Stanford 9 examinations since the school's opening. Teachers rely heavily on the "Math in Action" textbook series, an applied, hands-on mathematics program that makes extensive use of manipulatives. There is also limited use of GEMS (Great Experiments in Mathematics and Science), another set of mathematical inquiries from everyday experience, developed at Lawrence Hall at the University of California-Berkeley.
- 26** The history and social science curriculum is topical and introductory for the first three grades, consistent with the Massachusetts frameworks. However, the amount of time devoted to the discipline varies from teacher to teacher and grade to grade. Some teachers dedicate time to history daily while others alternate between history and science on a daily, weekly, or instructional unit basis. A McMillan-McGraw Hill series is used with world history and geography beginning in fourth grade; United States history, in fifth grade; and ancient and world history, in grades six and seven. A local history course about Lawrence, developed by the Department of Environmental Management, is featured in eighth grade.
- 27** The science curriculum is less well organized and supported than either the mathematics or history curriculum. The school currently uses the third edition of the Science Curriculum Improvement Study (SCIS), an activity-centered curriculum developed to interest elementary science students in the world around them. There is one life science and one physical science unit for each grade level, each designed to last one semester. The structure of this program is in general alignment with the Massachusetts Frameworks

(a bridge document links the two), but clearly not in alignment with the school’s new science standards. Moreover, many of the kits lack the necessary perishable supplies; and many teachers at the school do not understand how to use them. As with history, science instruction is scheduled inconsistently from grade to grade and room to room. First graders explore science daily, using a learning center approach; but second and third graders generally have only one formal science lesson a week. The same experiment, “Sink and Float,” is observed at three different grade levels; and a seed-planting experiment occurs at both second and fifth grade, without clear reference to science standards at either grade level.

- 28** The English Language Arts program is undergoing a dramatic conversion in the 1998-99 school year. Over the summer, every faculty member was trained by Project Read, a phonics and decoding approach to reading; and a Reading Specialist was hired in April, 1999. As discussed elsewhere, every day at the school now opens with a fifteen-minute silent reading period, a project that enjoys 100% implementation in grades K-4. It is also used, as needed, approximately 25% of the time in grades 5-6.
- 29** The reading program, in general, follows the McGraw-Hill basal reader series, although there is growing sentiment among the faculty that many of the texts are too difficult for bilingual readers. Reading materials also often relate closely to history or science units as part of the school’s Learning Themes approach. Charts and pictures relating to wetlands are labeled and read, for example; and students meet in small groups to discuss the “facts” in a story about the rainforest, “The Great Kapok Tree.” In lieu of free-choice silent reading, students often meet in homogeneous, guided reading groups to read stories and novels associated with a theme—for example, “children of courage” —as recommended by the Massachusetts Curriculum Frameworks.
- 30** Literacy development is the major focus throughout the school. This is evidenced in the displays on the walls, in the written descriptions of classroom objectives sent to parents, in the daily homework expectations requiring increasing amounts of independent reading above and beyond other assignments, and in the comments of parents who note their children’s accomplishments in reading in both English and Spanish. This articulated and demonstrated emphasis is important and well meaning, and students are responsive to reading and writing tasks. Nevertheless, uneven and often inexperienced teaching practices and limited print resources in classrooms and in the library (particularly in Spanish), including a basal reading series that most teachers feel is too difficult, may impede progress for a number of students.
- 31** During the 1998-99 school year, the “dual language” or “two-way language” program at LFDSC is also under review by a Dual Language Task Force that includes the Principal and Assistant Principal, a parent, and several faculty and staff members. This group has already created partnerships with Francis Parker Charter School, Phillips Academy, and a senior center to bring Spanish speakers into the school frequently. It has identified new resources for the library and instituted more Spanish reading and speaking at the upper-grade levels. Perhaps most important, the task force is charged with identifying and retaining fully bilingual teachers.

- 32** The current “two-way” program, lacking significant definition without standards and effective measurement strategies, varies significantly from grade to grade and teacher to teacher, depending on the degree of bilingual fluency represented by the classroom instructional cohort. The kindergarten program comes closest to a full “two-way” program, one with equal instruction in Spanish and English. Currently, Spanish is the instructional language on Monday, Wednesday, and Friday while English is employed on Tuesday and Thursday, effecting a 40 to 60 ratio of English to Spanish. The kindergarten teachers are fully bilingual and have been at the school longer than any other grade group, insuring the program’s vital introductory success.
- 33** In grades 1-6, however, the ratio of English to Spanish instruction is generally 80 to 20; there is one Spanish class each day instead of the alternating day kindergarten approach described above. Itinerant Spanish teachers move from classroom to classroom and match previous instruction in English. For example, students read and discuss concepts from “The Great Kapok Tree” in English one day and repeat the activity in Spanish the next. This model, most visible in third through fifth grade, is frequently described as “sheltered English,” a transition to English with maintenance of Spanish. In these classrooms, staffed with either an aide or a teacher fluent in Spanish, instruction is mostly in English with Spanish support as needed. Some teachers permit students to respond to instructions or questions in either language; others require responses in the language that the teacher is using at the moment. While basic literacy in both languages is maintained using this model, it is not as clear whether or not higher level cognitive development is taking place in both languages or, in some cases, either.

TEACHING

- 34** Teaching integrated thematic units that are simultaneously undergoing standards realignment is, itself, a daunting task, compounded by the school’s evolving dual language approach and the personal needs of its student body. Furthermore, ten of the school’s fifteen core classroom instructors are new to the school in 1998-99 and are still trying to assimilate these many evolving guidelines into one coherent learning experience for their students—all under the direction of a new principal. Not surprisingly, instruction is uneven and inconsistent. Some classes are characterized by lively, engaged, carefully structured learning; others are marred by loud, somewhat unruly, and less productive moments.
- 35** Students are reviewing for an examination in one large classroom. Lights have been turned off to project overhead slides; and the darkness does not permit students to take notes, read, or review homework easily. The resulting uneasiness and student misbehavior drive the teacher’s voice to a higher and higher range while student after student drifts away from the assignment. Several remove themselves from the group physically to sit alone at a desk or on the floor.

- 36** In contrast, students in another classroom answer questions about a previous night's reading assignment with great enthusiasm, frequently competing for the teacher's attention. Instructions and guiding questions are carefully framed on the chalkboard; and when attention is momentarily distracted by a newcomer to the room, order is restored by the teacher's counting backwards from five with a hand in the air. Discussion of challenging material continues for almost an hour at a difficult time of day with little student deviation from the task. The activity concludes with a complex analogy drawn between the subject matter under study and experiences in the students' own lives.
- 37** The faculty employ a wide range of teaching strategies in their collective quest towards the school's goals. Over the course of three days, visitors observe direct instruction, guided practice, "share pairs," independent group work, centers, problem solving, phonics, and whole language, among others. Two fifth-grade teachers collaborate effectively by rotating teaching units—one instructing both classes about early Native Americans, and the other introducing both fifth grades to colonial American life.
- 38** During the current school year, the board voted to adopt "looping" —teachers remaining with the same set of students for two grade levels and then "looping" back to the original grade. All current fourth grades are with their previous third-grade teacher (or replacement) and 50% of them have completed both a 1-2 and a 3-4 loop. Current fifth graders will continue with their teachers as sixth graders next year; and one fifth grade class, by the end of next year, will have had the same teacher for three years—from grade 4-6. The school has studied its external assessment results and believes that multi-year professional contact with the same students, when combined with anecdotal impressions and parental feedback, promotes more effective diagnosis of student needs and subsequent individualization of instruction and support.

RESOURCES

- 39** The bright, modern interior of the renovated feed mill office complex, the converted garage and the new addition all belie their once-industrial exteriors. Out of a former agricultural supply center, the school has fashioned an extremely attractive, multi-level learning space with a community room and a family learning center. A 4000-volume library is in its second year of operation, staffed by a highly visible librarian who is constantly teaching students rather than collecting books and preserving order. Volunteers from a local community college, as well as parents, serve as her assistants. The librarian has also developed a set of library standards, skills, and competencies that fit easily and cleanly into the broader, more detailed English Language Arts framework.
- 40** Every student receives computer instruction every week, and a total of fifty machines scattered throughout the school provide access to a wide range of software and multimedia collections, mostly in CD format. Bilingual writing centers are in every classroom starting in the third grade; and in the fall of 1999, the school will open a Publication Center to foster student creativity. Atlases, encyclopedias, and almanacs, as well as bilingual books and games related to the various subject areas, are all available as

CDs. Now that the expansion of the school campus is temporarily abated, the three K-4 buildings will be wired for Internet access during the summer of 1999.

III. SCHOOL

The school was founded by a community-based non-profit organization with taproots throughout the Lawrence community, particularly among the Latino majority. Its relationships within the city are many and strong, leading to unusual support and good will citywide. The program has expanded steadily, and the trustees have kept apace with the expansion of campus buildings and resources. The identification of bilingual teachers has been more difficult than anticipated, though, forcing the school to modify its original language approach. Once the addition of a middle school and the reconfiguration of the curriculum are complete, greater faculty and institutional stability will permit all of the school's ambitious programs and opportunities to mature and themselves take root.

ORGANIZATION AND MANAGEMENT

- 41** The school was founded by a non-profit organization, the Lawrence Family Development Center, as a logical corollary of its Parent Mobilization Project within the Latino community. This organization identified a founding Director/Superintendent who had been a former elementary school teacher and administrator and who was, at the time, Executive Director of Lawrence Youth Commission.
- 42** Before the school's fourth year of operation, a new Principal was chosen based upon the needs of the school as crafted into a new job description by the Director/Superintendent. The trustees approved the position's qualifications and responsibilities, as well as the recommendation for a ten-member parent/staff search committee to choose a new principal. A member of the Administrative Support Team chaired this committee, and a ten-week search ensued in the summer of 1998. Two finalists were interviewed by the board in mid-August: and the new principal, a former principal in Swampscott and a faculty member at Northern Essex Community College, began her work at LFDCS in mid-September, 1998.
- 43** The school's present climate accentuates behavioral moderation and social responsibility for all students as discussed elsewhere. Given the school's rapid growth from 180 to 360 students in four years and its almost constant plant expansion at the same time, the calm, steady tone of the campus is no mean feat. The new principal, in her words, aims to maintain and institutionalize still further this "climate of cooperation and receptivity."
- 44** The board has been extraordinarily active throughout the school's history, making decisions with strong community representation on the one hand and an equal parental voice on the other. In its first three years, the school acquired two and one-half acres of land with five industrial buildings. It tore down two of these warehouses and converted the other three, including a nine-bay garage that is now entered in a national architectural competition. An adjoining multi-level building was added to the reconfigured industrial complex, and the current campus was complete.

- 45** The board, in close collaboration with the school's leadership team, is extremely active in the area of the academic program. Disappointing early third-grade scores on the Iowa Test of Basic Skills led to a decision to intensify the reading program through a variety of strategies. These have included the adoption of a phonics-based reading program, reading training for the entire faculty, and the certification of a reading program leader, as well as the retention of a full-time reading specialist.
- 46** Other standardized test scores have undergone similar scrutiny. The decision to "loop" teachers and students in two-year cycles discussed elsewhere (pp. 10, 22), was made after a close examination of those students' Stanford 9 scores who had been looped on a pilot basis in previous school years. Similarly, baseline scores on the MCAS have been subjected to additional analysis by outside experts to determine the progress made by different cohorts at the school over a two-year period. This careful examination of assessment data and subsequent program refinement and modification have already helped the school revamp major curriculum components
- 47** The school's new accountability plan, prepared jointly by the board and the leadership team, continues the school's ambitious agenda into the next millennium, including consideration of a possible pre-school program (less than half of Lawrence's children receive any pre-kindergarten instruction). The board has also laid out a skeleton schedule and process to implement a new curriculum and assessment system, based on identified standards. This accountability objective, while necessary and central to the school's academic progress, is judged insufficient in both scope and sequence at this time.

FACULTY AND STAFF

- 48** In its first year of operation, the school was able to attract an entirely bilingual faculty. As in all charter schools, the composite pressures of teaching in a new school, with so many new and unformed programs, lead to a high degree of turnover, one that has not allowed the school to replace fully bilingual teachers with their linguistic equals. All monolingual and partially bilingual teachers, however, begin language training immediately in pursuit of bilingual certification. Just the same, turnover remains unusually high; and a generally young, relatively inexperienced, and not fully bilingual faculty is the unavoidable consequence.
- 49** In the 1998-99 school year, ten of the fifteen core classroom teachers, including two Marist volunteers completing one year of voluntary service, were new to the school. Only three teachers in this group have more than ten years experience, and ten have been teaching for three or fewer years. This core group of fifteen averages six years of overall experience and just over two years at the school. Entering kindergarten students, fortunately, encounter the school's most experienced teachers, all of whom are also fully bilingual, with an average of three years at the school and nine years of teaching experience. At the other extreme, in the upper grades of the emerging middle school, three of the four teachers at grades five and six are new to the school, to be joined presumably by more new seventh-grade teachers next year. Grades 1-3 are staffed by

teachers with two years experience or less at the school on average, and four years or less in education.

- 50** Professional development expectations and opportunities extend well beyond language training for the faculty. Everyone on the faculty has recently undergone classroom organization training provided by Dr. Lorraine Monroe's Leadership Academy. John Collins' Writing Program introduced the Focused Corrections system to the faculty. Project Read trained everyone on the faculty; and a summer task force, including several new faculty members, worked with Susan Pimentel on the development of the school's current standards corpus. The entire staff meets one hour each week to continue these one-time introductions, although everyone freely admits that not enough follow-up and monitoring have taken place, given the overall demands of the school in this transition year. Similarly, grade-level teachers share two hours of common planning time each week.

PARENTS AND COMMUNITY

- 51** Because of its origins within Lawrence's community service structure and Latino neighborhoods, the school has had exceptional relations with all non-school constituencies. Parents are an integral part of their child's education and serve the school as volunteers, members of the Site Council, and an elected majority of the Board of Trustees. Some parents even volunteer for a Substitute Teacher Training Program, which requires attendance at ten Saturday workshops and two days of "supervised practicum" in the classroom. The Home-School Coordinator and the Family Support Team offer a series of workshops for parents to help them expand and improve the role they play in their child's education. Offerings include English as a Second Language, Citizenship, Health and Nutrition, Discipline and Decision-Making, Parent Leadership, and Test Taking. A number of these programs are also televised on the local cable access station.
- 52** The important decisions—particularly those relating to the academic program—made by the board in the last several years were considered and voted with considerable parent input and discussion. For example, the number of students leaving the school in its second and third years of operation (thirty-six in 1996-97, and forty-one in 1997-98) was a clear expression of parent dissatisfaction. Much of this attrition came "from classrooms where teaching competence or classroom management was not satisfactory," and four staff members were not renewed as a consequence. Another major program change, a comprehensive new set of curriculum frameworks, has also been communicated to parents at the opening of the school year in abbreviated form. A fuller, more detailed and systematic communication of these evolving standards, especially when translated into Spanish, will engage an already active parent body still further.
- 53** Beyond the many individuals who volunteer time and resources to the school, LFDCS has an active and growing reciprocal commitment to and from the greater Lawrence area. All children spend two hours every week swimming at the Greater Lawrence YWCA. Artists and teachers from the Essex Art Center come to the school weekly; and once a

month, students journey to the center, itself, for work in a studio and tours of the gallery. A small group of students in the upper grades participate in a partnership with the Phillips Academy Music Department, including performance in the annual Christmas concert at Cochran Chapel. Lawrence Heritage State Park, a site of the Massachusetts Department of Environmental Management and the Merrimack River Watershed Council, provides an environmental program emphasizing watershed preservation, especially salmon spawning. The eighth-grade history curriculum focuses on the history of Lawrence and makes extensive use of the park's resources. Just this year in the After-School program, an engineer supported by Hewlett-Packard has begun a series of "Youth Expeditions in Science."