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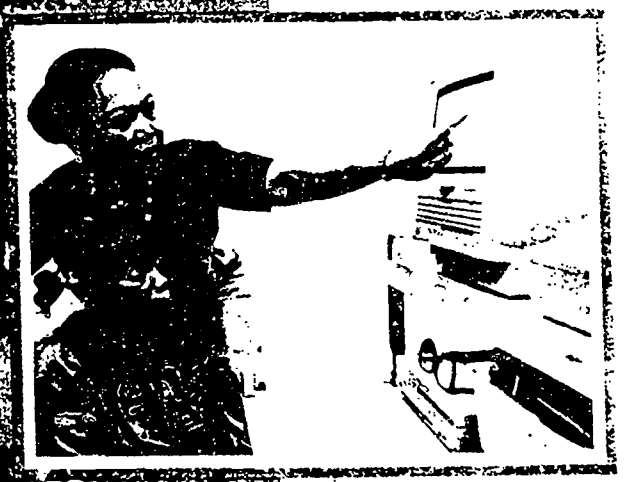
ABSTRACT

This publication relates the experiences of the five McAuliffe Educators in 1994. The projects are profiled in terms of the school and the students, the teacher's philosophy, the Christa McAuliffe Institute (CMI) project, and the project impact and results. The project titles are: (1) "Integrating Multimedia Production and Multicultural Education: A Middle School English Project" (Hazel Lockett, Vernon L. Daley Junior High School, East Orange, New Jersey); "Listening for All Voices: A High School Multicultural History Project" (Robin Wax, Pioneer High School, Ann Arbor, Michigan); (3) "An Elementary School Biliteracy Curriculum" (Jaime Roybal, C. E. Rose Elementary School, Tucson, Arizona); (4) "Multicultural Education and the Underrepresented, Gifted Population" (Arlene Costello, Oakcrest Elementary School, Pensacola, Florida); and (5) "Constructing Multicultural Understanding" (Nana Hill, Academic Competitiveness through Technology Academy, McKinney, Texas). The report includes suggestions as to what teachers need to know and do to serve the diverse population of students in classrooms today. Suggestions include: developing a broad view of multicultural education; exploring a wide array of technology and its applications to multicultural education and adapting teaching methods to the different ways students learn. The report also suggests the kind of professional development useful for helping teachers meet these needs, including making multicultural education a school and district priority; providing equal access to technology across the lines of culture, gender, socioeconomic level, and academic ability; encouraging and supporting collaboration; focusing professional development on curriculum integration; and increasing local access to knowledge and expertise through technology networks. (ND)

Touching THE FUTURE



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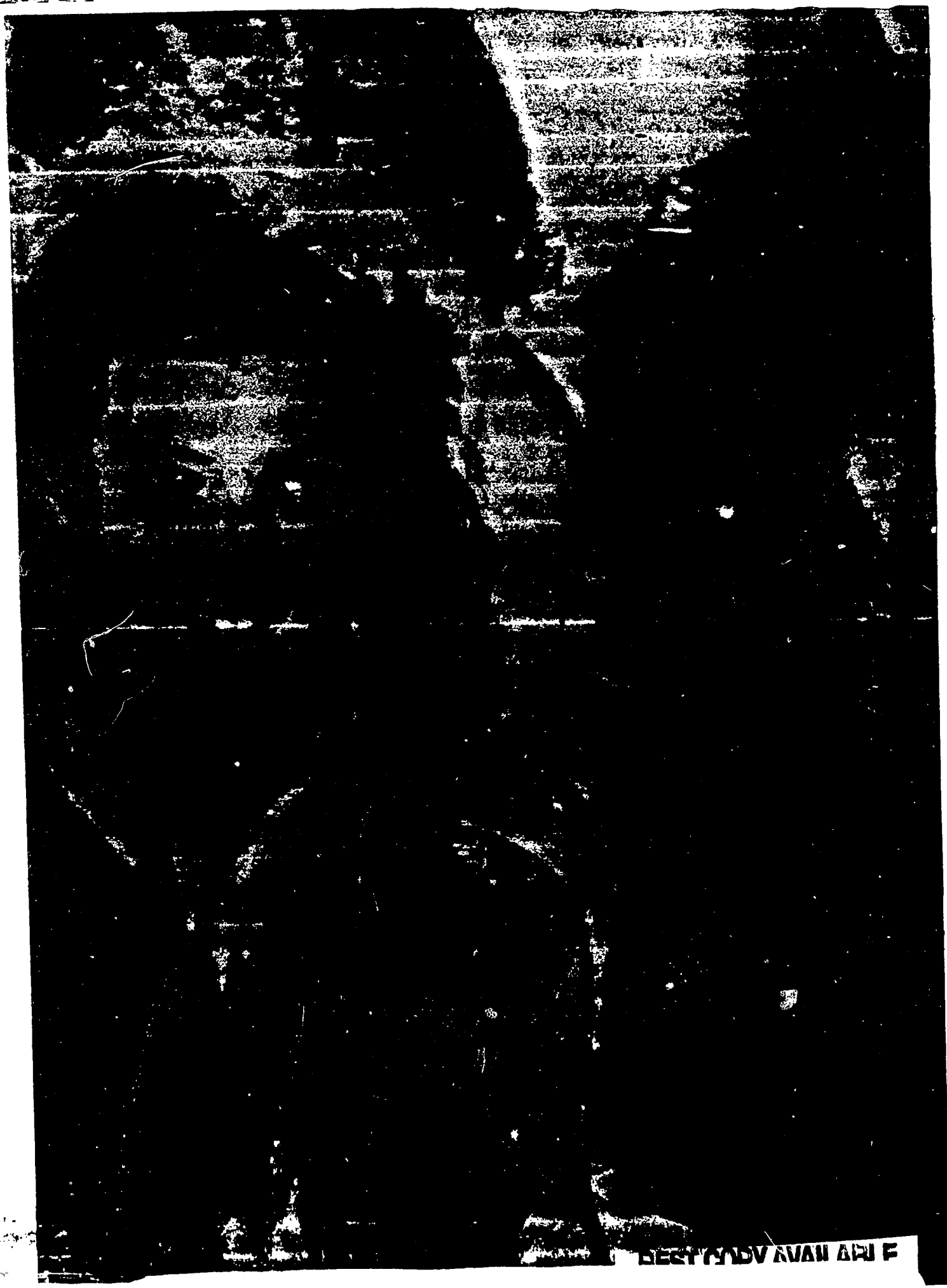

Touching
THE FUTURE

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The Challenge of Teaching and Learning in a Diverse Society

Imagine, for a moment, that you are a forty-year-old math teacher in suburban, northern Virginia, who happens to teach in the same school that you graduated from in 1973. Certain mornings before the buses arrive your mind wanders back 25 years to the Algebra II class you took in this very room. You can picture Mona, your best friend, exchanging glances from the next row, John whispering one-liners from behind you, Gina smoothing her already perfect Mary Tyler Moore flip in front of you—all of them white like you, all children of government workers, engineers, and businessmen. And then your concentration is broken as your own homeroom trickles in. There's Shuang, a Chinese girl who in September could not speak any English and still volunteers very little, although her written work is coming along; Bruno, a boy from Honduras who lives in a crowded apartment with several relatives; Ibrahim, an African American boy and devout Muslim whose family just moved in from Washington, D.C. And once again it strikes you how much more diverse this class is than the class that filled this room 25 or even fifteen years ago.

Today's students—not just in port-of-entry cities, but also in the heartland—come from a wide variety of ethnic backgrounds, economic circumstances, races, and religions. The day-to-day interactions in multicultural classrooms offer incomparable opportunities for students to learn about other cultures and build bonds of understanding. At the same time, these classrooms create new challenges for teachers. Not only must teachers be multiculturally aware and sensitive themselves, but they must also be equipped to provide effective multicultural teaching and learning experiences for students.

The preservice preparation and inservice training that most teachers receive are generally insufficient to enable them to address the challenges of diversity effectively. Some teachers are creating their own approaches to help students develop understanding of and respect for other cultures, overcome stereotyping and bias, and excel in a diverse learning environment.

NFIE Identifies Path-finding Teachers

In 1994, the National Foundation for the Improvement of Education (NFIE) sought to meet this professional development need by providing eight-month fellowships to excellent teachers who were leading the way in this field. NFIE focused its existing Christa McAuliffe Institute (CMI) on projects to improve teaching and learning of culturally diverse students and to explore how technology might further this goal. The Institute selected as CMI Educators five outstanding teachers who, through their teaching practices, had demonstrated innovative approaches to multicultural education that incorporated information technologies. They were:

Hazel Lockett

Vernon L. Daley Junior High School
East Orange, New Jersey

Robin Wax

Pioneer High School
Ann Arbor, Michigan

Jaíme Roybal

C.E. Rose Elementary School
Tucson, Arizona

Arlene Costello

Oakcrest Elementary School
Pensacola, Florida

Nana Hill

Academic Competitiveness Through Technology Academy
McKinney, Texas

About the Christa McAuliffe Institute for Educational Pioneering

When Christa McAuliffe, a New Hampshire teacher and the first private citizen chosen for space flight, died in the explosion of the Challenger spacecraft, educators, parents, and students from around the country sent donations to the National Education Association. These donations were entrusted to NFIE, which in 1987 created the Christa McAuliffe Institute for Educational Pioneering to carry on the legacy of the risk-taking teacher. The initial resources lasted six years, and the Sega Foundation provided support for the last two years of the program.

Each year the Institute selected five CMI Educators from across the nation to pioneer new teaching ideas focused on a special theme for the year. (Reflecting Christa McAuliffe's commitment to creating new visions for teaching and learning, many of the themes have included a technology link.) The Educators received a $5,000 cash award and national recognition and participated in rigorous professional development and leadership activities. With guidance from NFIE staff, the Educators also designed and managed experiments in their own classrooms, with the goal of improving teaching and providing professional development for other teachers.

Since the program's inception, thirty teachers have been chosen as CMI Educators, and 98 teachers, school technology coordinators, and college faculty have participated in summer institutes and seminars designed by the Educators.

The 1994 CMI Educators received a cash award, national recognition, intensive professional development, and ongoing technical assistance and site reviews from NFIE staff. Throughout the eight-month period, CMI Educators regularly exchanged ideas with each other and with NFIE staff in meetings and conferences and over a computer network. With these supports, the five teachers designed their own classroom research projects—known as "action research"—to improve teaching and learning of culturally diverse students and to explore how technology could further the goal of multicultural education. The ultimate aim of the action research was to yield recommendations, practical ideas, and methods that teachers, curriculum specialists, and other educators could apply in their own schools.

Several times during the course of their action research the Educators presented their ideas and preliminary findings to teachers and other educators at national conferences.

This report describes the projects and experiences of the five path-finding teachers designated as 1994 CMI Educators. It also reviews their action-research findings and highlights some of the key components and lessons from their experiences. By presenting this information in this form, NFIE hopes to reach a large number of those individuals who, in the words of Christa McAuliffe, "touch the future" because they teach.

Critical Issues Addressed by the CMI Educators

Recognizing that the five teachers entered the CMI program with varying perceptions and definitions of multicultural education, NFIE encouraged the Educators to examine, discuss, and refine their own concepts and, in doing so, to consider the full range of factors that shape a child's culture, including race, ethnicity, socioeconomic class, home language, and gender. NFIE further encouraged the teachers to contemplate several specific challenges that teachers often face in implementing multicultural education:

- *How to integrate diverse elements of culture into curriculum content;*
- *How to reduce prejudice and promote understanding and respect for all cultures;*
- *How to create educational practices and use instructional tools, including technology, that foster academic achievement among all students; and*
- *How to address the role of culture in shaping knowledge.*

Based on this investigation, the Educators chose to focus on three critical issues concerning diversity that confront teachers today.

Issue One: Encouraging a Broader View of Multicultural Education

Many schools implement multicultural education by adding some simple activities to their regular curriculum, such as projects honoring famous members of ethnic groups, celebrations of special national holidays, or activities featuring ethnic food, dress, and art. These add-ons do little, however, to address the real challenge: to encourage and empower students to think more deeply and critically about culture. Achieving this broader goal may require teachers to transform their own understanding of culture or to rethink and restructure their classrooms and their schools.

Issue Two: Emphasizing the Unifying Aspects of Multicultural Education

Many people view multicultural education as something that applies only to people of color, a view that may marginalize it as an area of study and discourage teachers from addressing issues of culture in the core curriculum. The challenge for teachers is to structure teaching and learning so that multicultural education reaches all students and dispels a "we-they" mentality. Effective multicultural education can be a unifying force; a better understanding of other cultures promotes the broad public interest and extends fairness, equality, and justice to all people.

Issue Three: Using Technology to Enhance Multiple Teaching and Learning Options

While many teachers have successfully used traditional instructional methods to teach about diversity and culture, some are looking for new approaches. New technologies, such as electronic networks or computer-based, multimedia technologies, can facilitate innovative ways of teaching that are especially responsive to diverse student needs. This is a very new area of teaching and learning, however. Neither higher education institutions nor K-12 school districts provide teachers with professional development concerning the integration of technology into multicultural education. Much more research and demonstration needs to be done to create effective applications of different technologies to multicultural education.

It is a fitting legacy to Christa McAuliffe that the 1994 CMI Educators be among the first to produce a range of strategies for addressing these three critical issues. The three issues also provided a framework for analyzing and evaluating project outcomes, as reflected in the next section.

Five Approaches to Constructing Technology-based, Multicultural Curricula

The five CMI Educators, all honored as outstanding teachers, have different personalities and teaching styles; they also work in schools with distinctive geographic locations, student populations, grade spans, curricula, and classroom environments. It is not surprising that the Educators developed five very different approaches to technology-based, multicultural education. The projects varied in purpose, grade level, subject matter focus, and instructional methods.

This section profiles the five projects. The projects represent pathways that other teachers can follow to replicate some of the Educators' achievements and avoid some pitfalls. Among this information, NFIE hopes that teachers in various settings around the United States will find ideas that are inspiring, intriguing, or applicable to their own situations. The experiences of these excellent teachers can also serve as shortcuts in the lengthy process of curriculum development or as starting points for lesson planning.

Integrating Multimedia Production and Multicultural Education: A Mid e School English Project

Cultural differences are not so clearly discerned as they once were. It is not so unusual to witness white suburban youth dressed in the garb or sporting hairstyles some would associate solely with urban black and Hispanic youth. This merging of cultures deserves investigation, so that we might understand when and where and why the mergings start and stop.

Hazel Lockett

The School and the Students

Hazel Lockett teaches English at Vernon L. Daley Junior High, an urban school in East Orange, New Jersey. Like many urban schools, Daley is old and overcrowded. It was built in the 1920s for 500 students but now serves 750 students, many of whom come from economically disadvantaged families and sixty percent of whom receive free lunch. About half of the teachers are African American and about half are white; nearly all of the students are of African descent. The new superintendent is reorganizing the district into a system of "unique schools" specializing in different themes. Daley Junior High has been designated an arts and music school.

One of the most important characteristics of the school is what Hazel Lockett calls its "unobserved" multicultural character. At first glance, visitors to the school might assume that the students are culturally very similar. "On the surface, the classes and school appear to be 99 percent Afro-American," Ms. Lockett said. "Essentially it is just that, but closer examination reveals students who represent many cultures." When Ms. Lockett and her students surveyed the student body last year, they found that at least a quarter of the students were foreign born, from the Caribbean, Central America, South America, and Africa.

The Teacher's Philosophy

Hazel Lockett has long emphasized expressive writing and the study of literature. "My work with writing is important because it gives students something to do with the language that they can be sure to use for the rest of their lives."

Several years ago Ms. Lockett changed the content of her own courses, emphasizing student discussion of short stories, novels, poems, and plays, and implementing a variety of small-group writing activities. She also coordinated with other teachers to establish a writing workshop for students and integrate expressive writing across the school curriculum. "I realized," she said, "that an astonishing majority of students have many creative ideas to contribute, but they often lack the opportunity to offer them, especially in traditional classroom settings."

Ms. Lockett is also convinced that the cultural differences among her students significantly affect how they learn. For example, while students from some cultures are quite vocal in class, others "seem to want to blend in with the background when called on to respond to a question or contribute a personal idea to the conversation." She began looking for a way to ensure that the voices of these "quiet ones" would be heard in her classes. "Many of our young people did not believe they could create anything worthwhile through writing because there were so few examples of black American writers in standard anthologies. The same can still be said for almost all children of Caribbean, South American, and Asian cultures."

To remedy this lack of role models, Ms. Lockett chose literature from many cultures that encompassed a variety of settings, characters, and viewpoints. Finding these resources required her to search extensively beyond the standard textbooks and curriculum guides.

The CMI Project

Shortly after being selected as a CMI Educator, Hazel Lockett began to think about how to design a project that combined several key elements: the power of expressive writing and literature, innovative uses of technology, and a connection to the arts and music focus of her school.

"The project certainly led to a deeper understanding and appreciation of cultures...."

"Students were quiet because they felt culturally excluded, and I wanted those voices brought into my classroom," she said. Ms. Lockett was particularly interested in how students from different cultures interacted with one another. "I wanted to see if they could work through a problem and come to a conclusion as a group," she said. "I wanted to see how they managed to work out their differences." Ms. Lockett also wanted her project to bring her students into contact with each other's cultures as a first step toward greater understanding, tolerance, and acceptance. Finally, she wanted to expose her students to divergent perspectives on multicultural issues through literature and writing.

Searching for a way to combine these elements, Ms. Lockett came across a piece of software called "Hyperstudio." This program allows students to import drawings, video clips, pictures, and sound into multimedia presentations. Using a version of Hyperstudio, she designed a project for a group of twenty students, drawn from the five classes she taught and representing a mix of cultures and achievement levels. The students read *Kindred*, a science fiction novel by Octavia Butler. The book, which is required reading for all eighth graders in Ms. Lockett's district, tells the story of Dana, a modern African American woman, and Kevin, her white husband, who travel back in time to the American South during slavery days. "*Kindred* is an interesting mix of science fiction, 19th century U.S. history, and social commentary on both 19th century and current society," Ms. Lockett explained.

After reading the book, the students brainstormed with Ms. Lockett to isolate four or five key themes involving gender, race, power, and authority. They then began to use Hyperstudio to create a multimedia stack—a computer program combining text, sound, graphics, and video—that would illustrate the novel's themes and offer a resource for multicultural education for future seventh and eighth graders. Assembling the multimedia stack required students to work cooperatively as they mastered the new tools. Hazel Lockett and the students also videotaped many of the meetings in which students resolved classroom conflicts and discovered better ways to communicate.

Technology tools played several roles in the project. Students used a word processor to write about the novel's multicultural themes. "Students

seemed to see the characters in terms of their own cultural backgrounds and preferences," Ms. Lockett observed. "For example, there was much discussion about the way they drew Dana's hair. They only drew pictures of Kevin as a boy, although he progressed to middle age in the novel."

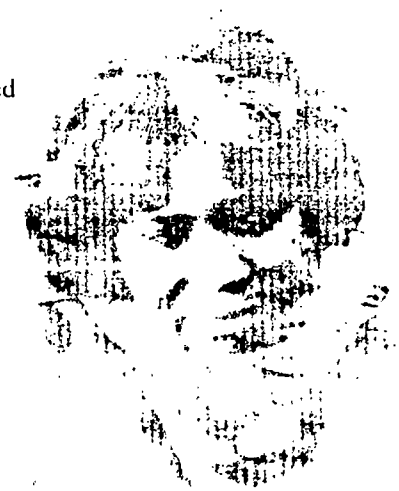
Ms. Lockett also encouraged the students to use technology to present their own cultures to classmates. For example, a girl from a Spanish-speaking family brought in a videotape of her *quinceñera*, or "sweet sixteen" party, a popular part of her culture. The students discussed and compared it to similar events in their own cultures.

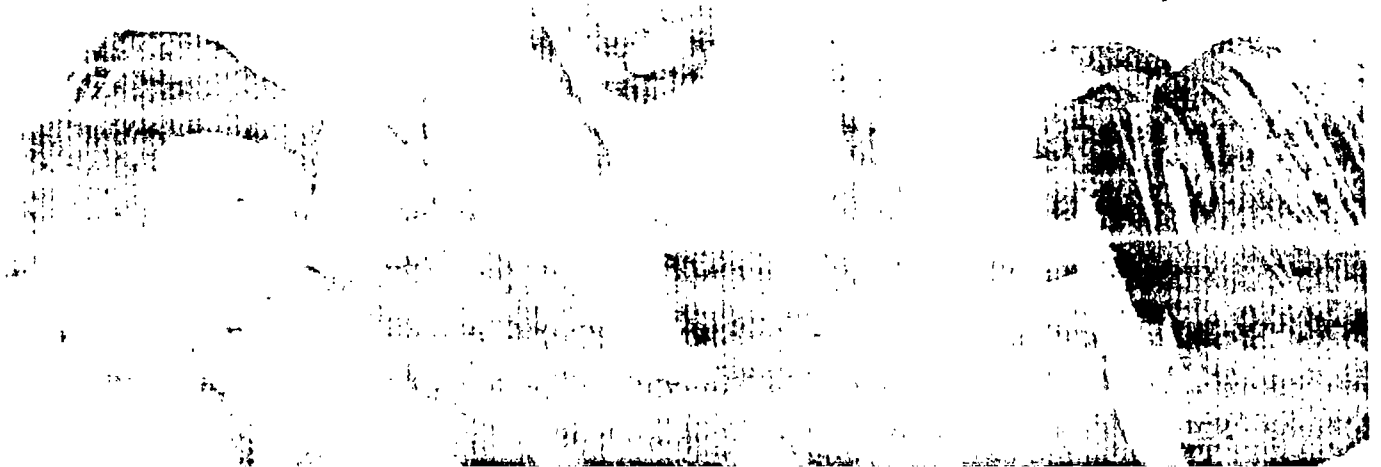
Project Impact and Results

Encouraging a Broader View of Multicultural Education

Hazel Lockett integrated multicultural approaches into the core of her teaching, using expressive writing and literature to encourage students to think more deeply and critically about culture. "The project certainly led to a deeper understanding and appreciation of cultures, both their own and other's," she said. As students examined the themes in the novel and used multimedia technologies to develop written, graphic, and artistic representations, they talked openly and thoughtfully about race, gender, and power.

Ms. Lockett observed a marked change in the patterns of interaction among the students, both in and out of class. By cooperatively examining such issues as cross-cultural





interaction, racial oppression, and culturally defined gender roles, students began to show more tolerance and acceptance of each other's uniqueness. Outside of class, she said, "a lot of the students who had made racist jokes have stopped. There is more cooperation in the classroom and on the playground."

Ms. Lockett also reported that formerly quiet students found their voice. "They speak up more." She described the notable gains in confidence made by one student during the project. In drawing the character of Dana from *Kindred*, most students drew her with her hands held behind her back. Ms. Lockett interpreted this as an image of powerlessness, but one usually quiet student fiercely disagreed, declaring that Dana's pose showed power, strength, and resistance. Ms. Lockett concluded that the project had given this student the self-confidence to challenge his teacher. "[He] would not have said that three months ago," she noted.

Using Technology to Enhance Multiple Teaching and Learning Options

Hazel Lockett and her students learned how to make effective use of hypermedia software, videotape, word processing, and computer scanners to present and address multicultural issues. In fact, said Ms. Lockett, working with new technologies helped her discover new teaching strategies. "Learning about Hyperstudio helped me see how students with different cultural perspectives could express themselves,"she explained.

Improved technological capability was another beneficial outcome for the teacher and the students. Some students began to boast about the many things they could do with technology. Said Ms. Lockett, "Pride in their personal capabilities and interests was talked about freely, eagerly, and openly, and in the presence of anybody around during the project."

Ms. Lockett's experience underscored the need for time and support to learn new technologies. Although she and her students accomplished much in a short time, they were unable to complete the final product that had been planned. Her action research offered insights about why this was so. "My original plans were to include student-produced video clips, scanned photographs, and illustrations in the final product," she explained, but these

plans were constrained for two reasons. The first problem, she said, was a lack of access to hardware and software in her classroom. Ms. Lockett had to wait several weeks to obtain the necessary equipment; most of the district's technology resources had already been committed to schools in which technology was the primary theme.

A second constraint was the need for training. In the spring the students faced a huge challenge of learning how to use new technologies and a complex piece of software to create text, sound, drawings, and video for the multimedia product. Only limited technical training and support was available from the district. Ms. Lockett addressed this dilemma by asking students who were experienced with particular technologies to teach their peers and by encouraging all students to experiment with both equipment and software.

The students did complete a text version of the script and also made drawings, took photographs, and prepared videotapes about the themes in the book. Near the end of the school year, the group was able to use the software to add some of these multimedia elements to the text.

Certain features of educational technology also seemed to facilitate participation and contributions from students who were not outspoken or came from cultures with different attitudes about oral speech. Oral class participation is a conventional avenue to success in American schools. Although quiet students can still demonstrate accomplishment in their written work, the organization of many classrooms—not to mention the logistical challenges of attending to 25 children at once—tends to favor students who speak up in class. With technology, however, it is possible to create a new classroom culture and new avenues of communication that are unlike either oral discussion or traditional kinds of written work.

The privacy and anonymity of working on a computer or communicating over a network can attract introverted students and make them comfortable enough to take risks and express ideas they would not raise in oral discussion. In addition, projects created with technologies tend to be treated differently in the classroom than written papers. Working with a word processor, for example, enables students to go through several iterations of a piece of work, which may make it seem less official and perhaps less intimidating.

Sending e-mail may have less of an air of formality than sending a letter, again providing a comfort level.

Moreover, because of its newness, children and adults tend to approach technology relatively free of preconceived expectations about the capabilities of different racial, ethnic, and social groups or their own potential for mastery. Children who have dreaded writing, for example, may become excited about the chance to write with a computer.

Finally, although technology in and of itself does not promote collaborative work, many of the most current applications, such as educational networking or multimedia projects, do foster small-group interactions. This may provide an excellent outlet for accomplishment among students from cultures that place a high value on group work.

LISTENING FOR ALL VOICES:
A HIGH SCHOOL MULTICULTURAL HISTORY PROJECT

The role of the teacher must change. Education must legitimize the maintenance of cultures and languages other than those of the dominant group. Education must function to bring the margins of society to the center. We must reconceptualize the curriculum to provide equity, integrate content, reduce prejudice, and empower students.

Robin Wax

THE SCHOOL AND THE STUDENTS

Robin Wax teaches at Pioneer High School, which abuts the University of Michigan campus in Ann Arbor. Most of the school's 2,000 students are from middle-class families with high levels of education. "Sixty-five percent of the adults in this university community have at least a college degree," Ms. Wax reported, and the community has shown its support for public education by "voting millages allowing yearly spending of $7,200 per student." Nevertheless, a substantial number of Pioneer students comes from economically disadvantaged families, and many of them are students of color. According to Ms. Wax, a member of the Ann Arbor using Authority estimated that fifteen to twenty percent of the community qualified for subsidized housing.

THE TEACHER'S PHILOSOPHY

Robin Wax has taught history at Pioneer for 26 years and chairs the social studies department. She has always strived to include in her classes the perspectives and voices of key historical figures who are not from the dominant culture and who tend to be excluded from traditional American history texts. "Ever since I studied history at Berkeley in the 1960s," she explained, "I assumed that history, by its nature, had to offer a multicultural perspective."

For part of her day, Ms. Wax teaches American history to advanced, college-bound students, and for the remainder of the day, she teaches students who have been designated "at risk" of not graduating for various reasons, including poor academic skills, discipline problems, learning disabilities, or teen parenthood. "Over the years," she said, "I've been successful in developing good relationships with the students at risk of school failure, but I really struggled to teach them history and develop their academic skills." As a result, she began to look for new approaches.

In 1991, Ms. Wax accepted the offer of a lecturer from the University of Michigan's English Composition Board to provide trained undergraduates as tutors. The university tutors were connected with her high school students via an electronic network that used the Daedalus Integrated Writing Environment. This software combines word processing and computer networking, enabling students to produce written material and send it electronically to readers for comment. It also facilitates electronic conferencing, including real-time discussions online. Working with the university, Ms. Wax restructured her history courses to incorporate the software and strengthen the emphasis on writing activities. The experiment with Daedalus yielded some successes and convinced her of the potential of technology for her subject area. "The students loved the networked computers," she said. "They liked conversing on them, they liked the anonymity, they liked the feeling of being empowered."

The CMI Project

For Robin Wax, the CMI project deepened an existing commitment to multicultural education. Her project addressed the critical issues identified by the CMI Educators in several specific ways. First, she encouraged a broader view of multicultural education by opening her curriculum to the voices and perspectives of people who were traditionally marginalized in American history. Second, she emphasized the unifying aspects of multicultural education by focusing on the lives and ideas of historical figures from multiple races and cultures and both genders. Third, she used technology to discover multiple

teaching and learning options by implementing real-time computer conferencing and collaborative work spaces.

Through these activities, Ms. Wax sought to help her students achieve several goals: to become more knowledgeable about often ignored voices and ideas from American history; to take a more active role in the history curriculum and their own learning; and to understand better the continuing legacy of the struggles with issues of race, culture, class, and gender.

Technology was a pivotal tool in her revised approach to teaching and learning. "Over the course of the last eight months I learned that the technology allows students the opportunity to be introduced to a new way of learning within the existing curriculum," she said. "I have a much better understanding of how technology can provide kids access to multicultural education by raising the interest of students, by changing the atmosphere in the classroom, and by supporting different teaching and learning styles."

During the year, Ms. Wax read widely and discussed her insights with fellow CMI Educators, conference participants, and the NFIE staff. As she probed the literature on multicultural education, she became "really intrigued by the concept of marginalized voices," which led her to consider the needs of those students who tend to keep silent or are not heard in traditional classrooms. Often these are students who feel excluded for reasons of race, culture, class, or gender. "I wanted to give opportunity to all students," she explained.

Ms. Wax's readings, critical reflections, and discussions with colleagues led to important ideas for her teaching practice: "I started to think not just about the voices of the students and the voices from history, but the interaction between them." She decided that her CMI project should link the voices of students with the voices of traditionally overlooked historical figures. To accomplish this, she modified the writing-to-learn approach she had been using for the University of Michigan tutoring program to create a "Hearing Voices" curriculum covering different eras in American history. Ms. Wax introduced each era with a lecture, augmented by videos, primary source readings, and class discussions of major issues of the time period. Individual students were then assigned specific figures from that era to research in the library—for instance, W.E.B. DuBois, Ida Tarbell, J.P. Morgan, Jane Addams,

Jeanette Rankin, and Mary McLeod Bethune, all from the Progressive Era. The assignments were made randomly, so that boys sometimes researched women, African Americans researched whites, and so forth.

After completing the research, students participated in an electronically networked discussion, during which they played the roles of the figures they had studied and engaged in a dialogue about issues of the period. After the computer conference, each student completed a piece of writing—a diary entry, journal, or letter—summarizing the experiences of the era.

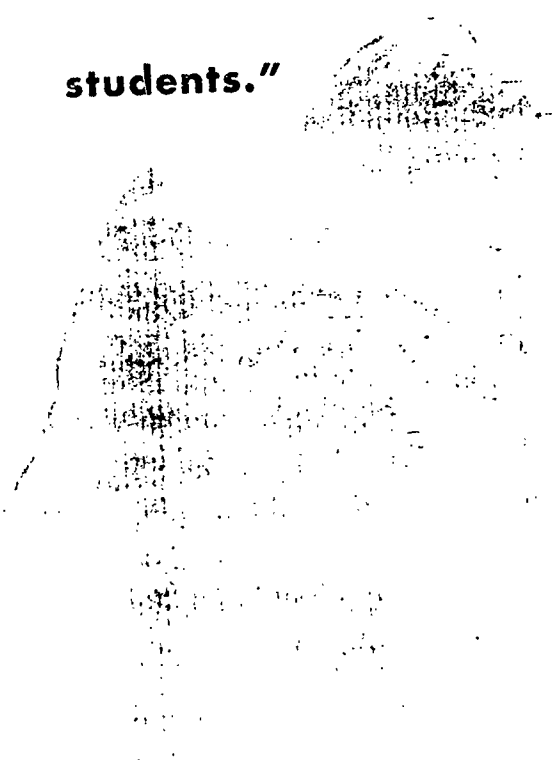
Throughout the project, Ms. Wax encouraged her students to collaborate with each other and develop a strong connection with the material being covered.

"I wanted to give opportunity to all students."

To assess the impact of the course, she interviewed several student participants at the end of the year and administered a questionnaire to all of the students. She also collected and analyzed portfolios of student work and transcripts of student dialogues.

Project Impact and Results

Encouraging a Broader View of Multicultural Education



Robin Wax made multicultural issues the centerpiece of her innovative classroom project. According to her analysis of the student dialogues, writing, interviews, and questionnaires, assuming the persona of an historical figure helped give students an in-depth understanding of the experiences of people from different cultures and eras.

Students reported that they also felt better about themselves. After playing the role of Mary McLeod Bethune, an African American girl said that "it felt so good to be strong and black and female." According to Ms. Wax, the student learned to speak in her own voice "with authority and conviction." After another session in which she played Jeanette Rankin, the same student added, "That white lady was really something; she stood up against all those men and voted against entering the war. I felt proud to be her and be able to put words in her mouth." Another student who seldom spoke in the traditional classroom setting, made frequent contributions in the networked exchanges, whether playing W.E.B. DuBois or the World War I African American leader LeRoy Johnson.

The relationships between teacher and student also changed and became more collaborative during the course of the project. Ms. Wax told an anecdote illustrating this point. The student who played the roles of Mary McLeod Bethune and Jeanette Rankin "started the year angry at the world and at me for being a white teacher. She felt she couldn't relate to most courses because 'they weren't about me.' She was very suspicious that the content of American history would be all white." But the broadly inclusive history content and the networked environment gave her the opportunity to try on new roles in a low-risk setting, and helped transform her understanding of American history and her own place in it.

Emphasizing the Unifying Aspects of Multicultural Education

Robin Wax's project was not directed at or limited to students in any particular ethnic or racial group, nor were the historical figure assignments limited by gender, race, or culture. According to Ms. Wax, the writing samples and dialogue transcripts revealed that the students developed an understanding of people whose gender, race, or class was different from their own or who were given shallow treatment in most history texts.

Her students told her "that when they were asked to be other people, to pretend, walk in someone else's shoes, it felt awkward and good." After a while, said Ms. Wax, a student "would forget about being [herself] and become Ida Tarbell."

By introducing provocative multicultural issues in an historical context, Ms. Wax was able to elicit from her students a range of questions about race, gender, ethnicity, and class that they may not have felt free to raise in a discussion of contemporary issues. Through role-playing, students also began to empathize with characters very different from themselves. As one boy said, "This curriculum wouldn't change everyone, but when I had to be Jane Addams and I couldn't just punch out J.P. Morgan when he was in vogue, it was really hard."

Ms. Wax observed: "No pretense is made that students could ever fully understand the life experiences of another." Nevertheless, she said, her students reported in interviews and questionnaires that "the content of the course and the use of the technology allowed them to understand more fully the voices and experiences of those traditionally marginalized."

Using Technology to Enhance Multiple Teaching and Learning Options

By working with word processing, electronic networking, and computer conferencing, Robin Wax and her students came to understand how technology can bring historical figures to life. She saw how real-time, interactive computer conferencing motivated students by making it easier for them to role play, encouraging interaction with other students, and enabling them to give and receive instant feedback. The electronic simulations added to the students' understanding of history, illuminating the interdependence of events and historic figures. Technology also helped each student to realize the importance of cultural context to the way individuals acted and thought. Furthermore, the anonymity of electronic conversation enabled Ms. Wax to encourage her students to "risk going out on an intellectual limb."

I believe that bilingual software (Spanish and English) is necessary to address the needs of the growing Spanish-speaking population in our public schools. For students to move through stages of cultural development, they need to have positive experiences about their own culture. Providing the students with technology in their language will give them a sense of pride that their home language is valued and accepted.

Jaíme Roybal

THE SCHOOL AND THE STUDENTS

Jaíme Roybal is a Title I support teacher for second and third graders at C.E. Rose Elementary School in Tucson, Arizona. C.E. Rose has 750 students from a broad spectrum of economic backgrounds in prekindergarten through sixth grade. More than 98 percent are Hispanic.

The local Hispanic community is made up of what Mr. Roybal describes as various "subcultures." Many of the local Hispanic families are native Arizonans who have lived in the region for generations; in fact, he said, many students have grandparents and great-grandparents who attended C.E. Rose Elementary. Other families are recent arrivals to Tucson, migrating from other parts of Arizona or from Mexico. These various subgroups have different cultures, including varying fluency in two languages. "Some of the children are monolingual in English," said Mr. Roybal, "and others are monolingual in Spanish, but most of the students are at different degrees of bilingualism, speaking both Spanish and English."

The faculty and administrators at the school have a strong commitment to bilingual education and to the use of technology to support this goal. The teachers cooperate closely—teaching in teams, mentoring each other, and working together on special projects—to help students attain fluency in both languages. The school is well equipped with technology. As Mr. Roybal

noted, "The Tucson Unified School District Board of Education has adopted a policy that all software purchased must have a Spanish as well as an English version or comparable version in the other language."

The Teacher's Philosophy

Jaíme Roybal has been involved in bilingual education since he began his teaching career. He has read widely in the field, taken courses, and attended bilingual education conferences across the country and in Mexico. He has been a leader in his district and his state in promoting bilingual education for all students.

His commitment stems from a strong belief that "a child must do much more than just study another language." It is beneficial to a child's intellectual development and positive self-identity, Mr. Roybal believes, for him or her to become "biliterate," fully fluent and literate in "home" and "school" languages. Furthermore, for many children of color, language is important to cultural identity. As a result, Mr. Roybal has worked with and mentored other teachers, teaching assistants, and administrators to ensure that students in his school and elsewhere are equipped to make sense of the world by speaking, reading, and forming concepts in both Spanish and English.

Mr. Roybal has also been a leader in promoting technology in his school and district, serving as a district technology trainer. He set up a biliteracy lab at C.E. Rose Elementary, where students can use computer software in either English or Spanish. In this lab, he worked with a team of two second-grade and two third-grade teachers to help four groups of students become biliterate. Two of the groups consisted of students who were fluent in Spanish, while the other two groups were fluent in English. The Spanish-dominant students worked with computer applications in Spanish, and the English-dominant in English. Those students who were bilingual could choose software in whichever language they preferred. Mr. Roybal and the classroom teachers worked together to plan integrated units for the lab and the students' regular classrooms.

THE CMI PROJECT

Jaíme Roybal's CMI project evolved from his commitment to biliteracy and technology and his conviction that biliteracy and multicultural education are closely connected. His project sought to emphasize the relationship between multiple language acquisition and culture, encompass the interests and needs of the subcultures in his community, and provide equitable access to technology and Spanish and English software.

Mr. Roybal developed a project that used technology and his biliteracy approach to help children express and share their cultures. He used telecommunications technologies to provide a cross-cultural experience. For several years, his students have participated in Project *Orillas*, an online link that allows students to communicate with long-distance peers by computer or mail. Mr. Roybal established communication with a sister classroom in Puerto Rico. The two groups of students exchanged cultural packets consisting of letters, autobiographies, stories, pictures, and other items portraying their culture and lives. "When the packets arrived," he said, "the students were surprised to discover that all the materials were in English." Mr. Roybal and the students discussed why the Puerto Ricans had chosen English and how the Tucson students might respond. They decided to reply by creating a composite of their lives in Tucson, with all the components written in both Spanish and English.

For example, Project *Orillas* students compared home remedies for colds and discovered that some of their families used the same kinds of herbal treatments. An exchange of photographs of their home environments led to discussions about ecological differences between the Arizona desert and the Puerto Rico beaches.

As another component of the CMI project, Mr. Roybal asked his second and third graders to write stories on the computer about their lives outside of school. The goal was to help them become familiar with and accepting of the different subcultures represented among Tucson's Hispanic families. Some of these stories were also tucked into the cultural packets that were sent to Puerto Rico.

"Students who have more than one language experience and are literate in that experience are more multicultural in their focus...."

Mr. Roybal chose students to participate in the project who represented different cultures and various degrees of fluency in two languages. "Some students were English-dominant, others were Spanish-dominant, and others were bilingual," he said. To produce their stories, the students could choose from several kinds of bilingual software, including the Bilingual Writing Center, ClarisWorks, Print Shop, Book Bound Template, and Easy Book. Mr. Roybal chose this particular array of software because it "would allow the students to easily edit their work, produce it in the form of a book, and import pictures and other graphic elements to produce a finished copy of the book to share."

Mr. Roybal met with the students and demonstrated how the various kinds of software worked. In the first meeting, each child chose the software he or she wanted to use. Once they became comfortable with the software, they wrote short compositions about important events in their lives in the language of their choice. Among the events described in the stories were a trip to Disneyland, a baby shower, a camping trip, holiday celebrations, an encounter with new friends in a new neighborhood, and other experiences. After completing their first drafts, the students met as a group to share what they had written. As they listened to each other, they wrote questions on cards and gave them to the writer. The writers then edited their stories to respond to the questions.

One of Mr. Roybal's objectives for his project was to provide Spanish-speaking students with equal access to new classroom technologies. "Prior to joining CMI," he said, "we had very limited software for most Spanish speakers. Students who spoke English could easily use the computer labs, but the Spanish-speaking students were given simple activities like drill and practice and were not able to function as well in the computer labs." He wanted to ensure that all students would be able to write stories in their native language and work in the biliteracy lab independently without the difficulties of translation.

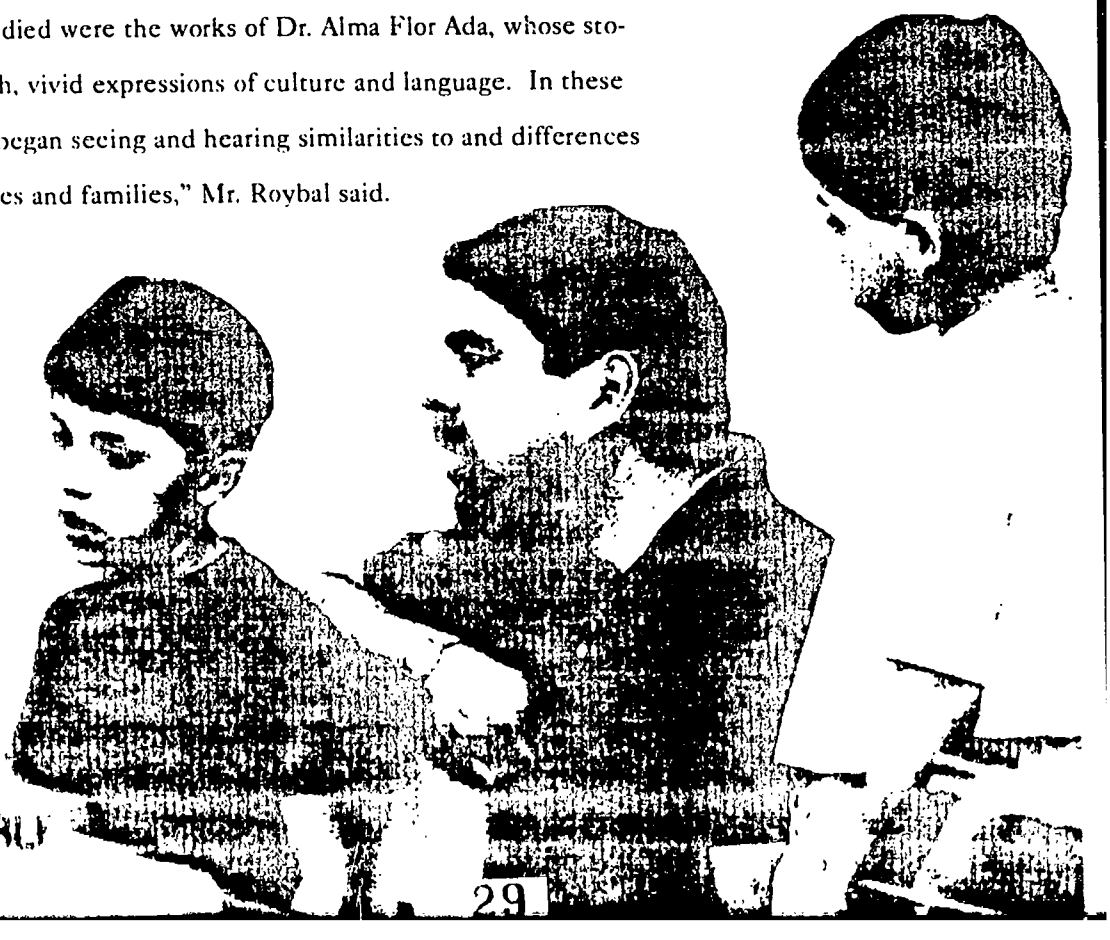
Mr. Roybal's interest in expanding the range of bilingual software coincided with the interests of many other school districts, which created a critical mass of districts that could pressure software vendors to develop multilin-

gual and culturally responsive products. Although vendors are becoming more aware of school demographics and somewhat more responsive to the growing market for multilingual software, Mr. Roybal's experience suggests that districts may still have to be assertive or creative to obtain the variety of software they need. He, for example, volunteered to serve as an advisor to a software vendor and to pilot new bilingual software, an offer that the company accepted. He also met with software publishers and distributors to help heighten their awareness of the vital need for software in languages other than English.

Project Impact and Results

Encouraging a Broader View of Multicultural Education

"Students who have more than one language experience and are literate in that experience are more multicultural in their focus, more accepting of other cultures," Mr. Roybal asserted. Throughout the project year, he and his students read and discussed children's literature in two languages. "Having good-quality literature in Spanish and English allowed the children to learn, appreciate, and promote their own cultures and other cultures." Among the stories studied were the works of Dr. Alma Flor Ada, whose stories are filled with rich, vivid expressions of culture and language. In these stories the children "began seeing and hearing similarities to and differences from their own cultures and families," Mr. Roybal said.



The children also learned more about other cultures by writing and sharing their own stories and participating in the Project *Orillas* exchange. "When we allow children to voice their thoughts in books with illustrations, it empowers them," said Mr. Roybal. "This gives them a sense of approval and cultural validation when they share their stories."

Emphasizing the Unifying Aspects of Multicultural Education

A goal of the project was to help students become familiar with and tolerant of the different subcultures within Tucson's Hispanic culture. By writing and sharing stories about their daily lives, the students, who came from different cultural and linguistic backgrounds, learned more about the cultural experiences of their classmates. For example, Mr. Roybal reported that in a story called "*El* Baby Shower," the student writer used the term "*pachanga*," which refers to an informal party. Most of the students had never heard the word before, and the story "allowed them to expand their vocabularies," he explained. As the students discussed the word, they realized that they had similar types of parties in their own neighborhoods.

Writing and sharing stories also helped students develop tolerance and empathy. "Seeing a picture of how other kids lived helped the children appreciate multicultural diversity," Mr. Roybal said. "The students could see the differences and similarities of the stories to their own lives and cultures. They started thinking that what had happened to them could also happen to anyone else. They saw the commonalities, the common ties within their own community."

Using Technology to Enhance Multiple Teaching and Learning Options

Jaime Roybal's project achieved one of its key objectives: to make Spanish-language software and other technology tools more available to elementary students. In addition, students dramatically increased their facility with various kinds of software, hardware, and peripheral multimedia equipment. As the students became more confident with the technology, Mr. Roybal said, they also gained self-assurance and wanted to show other students, teachers, and parents what they were learning. For example, using

ClarisWorks software, students made a slide show presentation that combined graphics, text, and sound. The audio portion of the slide show included both English and Spanish, with a menu that permitted students to switch between the two languages. By projecting the slide show with an LCD (liquid crystal display) panel, the entire class was able to see this multimedia presentation.

Certain features of the technology made it particularly suitable for a biliteracy project, according to Mr. Roybal, and allowed him to implement specific instructional strategies that would not be possible otherwise. The computer technologies gave children greater control over their choice of language and access to instant translation. Students could switch easily between two languages and reinforce their skills in both. Also, he noted, students whose first language was Spanish gained pride when they saw Spanish on the screen, a positive cultural side effect.

Multicultural Education and the Underrepresented, Gifted Population

I believe that each child who lives in a multicultural, pluralistic society, regardless of racial, ethnic, gender, socioeconomic, language, and cultural backgrounds, should have equitable access to excellent learning experiences that meet his or her learning needs.

Arlene Costello

The School and the Students

Arlene Costello teaches at Oakcrest Elementary School in Pensacola, Florida, located in the western part of the Florida panhandle. Pensacola is the site of a large naval base whose personnel are ethnically and culturally diverse and whose children have brought new diversity to the schools. The student body includes white, African American, Hispanic, Asian, and Native American children. Many of the students who attend Oakcrest have limited English proficiency, and many come from low-income families. The aging school facilities have been supplemented with trailers that serve as classrooms.

The Teacher's Philosophy

A native Filipino, Arlene Costello spent most of her life in the Philippines before coming to the United States in 1983. She is a veteran teacher with several years of experience in the Escambia County Schools, where she teaches gifted and talented children in a multigrade class (grades 3-5). Ms. Costello has long believed that children of color and limited-English-proficient children are vastly underrepresented in most gifted and talented programs. In her own school, only four students from these cultures, which comprise a substantial part of the student population, were identified as gifted and talented using intelligence test scores, the traditional selection method for such programs.

Ms. Costello and others in the school district are convinced that "there are more students who are gifted and are not identified because of inade-

quate assessment strategies." To help these students, she became a leading advocate for a policy that used a broader system to assess children for gifted programs. The school district created a Gifted Underrepresented Committee to develop criteria and design a program to be piloted at an elementary school. As part of the school district's Florida Goals 2000 improvement plan, the committee chose Oakcrest Elementary to pilot the Gifted Underrepresented Program and asked Ms. Costello to launch it. "When the committee asked me to teach the class," she said, "I jumped at the opportunity."

Based on guidelines developed by the district, the pilot program selects students using several criteria in addition to IQ scores, including creativity, motivation, work samples, and ability to work with others. The program uses curricular materials adapted from two other Florida counties with similar pilots and addresses language development, thinking skills, creative arts, self-awareness, and cultural awareness. The program guidelines stress individualized instruction within the basic curriculum framework. Students report daily to Ms. Costello for two or more hours of individualized instruction aimed at helping them to reach their full potential and develop an intrinsic desire to learn.

The CMI Project

As Arlene Costello's understanding of multicultural education and technology deepened, she began searching for a way to combine these issues with the core elements of her district's Gifted Underrepresented Program. She decided to initiate a pilot project that would expand students' cultural awareness through independent study and would use technology to create multiple options for students to present the results of their study.

Ms. Costello produced an independent study guide to enable students "to use technology as a tool to develop deeper levels of multicultural understanding." She called her pilot project CREATES: Creativity, Culture, Excellence, Academic Talents, and Technology to Empower Students.

Working with four of the students—an African American boy, an African American girl, a white girl, and a white boy—Ms. Costello began her pilot project after completing a class-wide unit on global issues. As a part of

CREATES, she prepared an "independent study learning center" equipped with books, vocabulary lists, pictures, and various software. She introduced the independent study by outlining the steps they would undertake—pre-study, independent study, project presentation, and post-project reflection and discussion.

During pre-study, Ms. Costello and the four students brainstormed possible topics. She encouraged them to pick an issue related to their own culture or to the culture of another group in the school. One student elected to study the Chinese New Year. Another decided to compare the lives of Mahatma Gandhi and Martin Luther King, Jr. A third wanted to investigate what fourth graders at Oakcrest were learning about culture and diversity. The fourth student decided to interview African American boys at Oakcrest to discover their perceptions and insights about their own education.

Once the students had chosen their topics, Ms. Costello held individual student conferences to develop a study plan. Students decided which questions would be examined, how the research would be conducted, how the findings would be presented, and when different drafts would be completed. She also advised her students about the different forms of technology they could use. Once a study plan was completed, both she and the student signed it. Before beginning the actual study, the students engaged in a "pre-project peer dialogue." Ms. Costello believes there is value in the students presenting their plans to other students. "The students met in pairs and talked about their projects," she explained. "They used their independent-study plan as a guide for discussion."

During the independent-study phase, students recorded their information in computer-based journals. Ms. Costello checked on her students' progress every day by looking at their study logs or checking their computer entries. She convened a formal conference with each student midway through his or her study to "talk about the progress of the study and discuss the student's plans to present the completed project." Throughout the study phase, the students accessed research material from CD-ROM and through the America Online computer network. They also wrote their reports on computers and

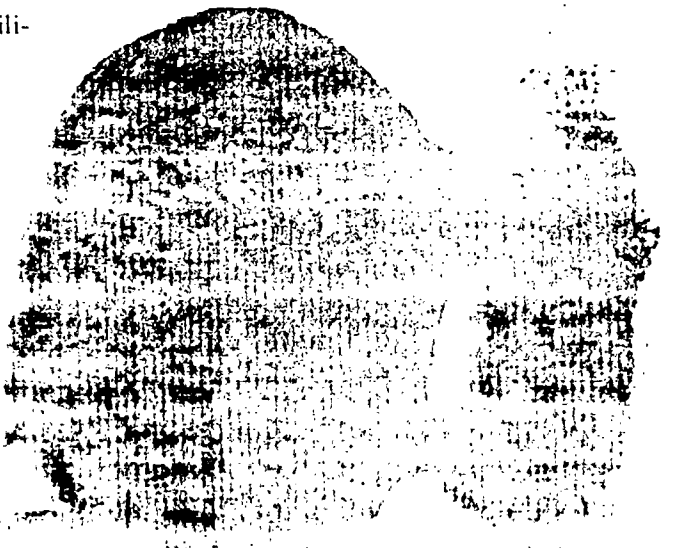
used hypermedia technology to prepare multimedia presentations that combined text, graphic images, and sound.

The students completed their independent studies in five weeks and presented their projects during the sixth week. The student researching the Chinese New Year wrote a book using the Story Weaver software. "She presented her independent study using the slide show in the ClarisWorks," said Ms. Costello. The other students used Hypercard to create stacks, developed another slide show with ClarisWorks, videotaped interviews, and created a database containing survey data.

After the four students presented their findings to the core group, Ms. Costello encouraged them to share what they had done with the other students and with outside audiences. They presented findings to a church youth group and kindergarten classes. As a final activity, Ms. Costello and the students held a post-project discussion to analyze and critique CREATES.

Impact and Results of the Project

As a result of the CMI experience, Ms. Costello concluded that the keys to a successful independent study program are thorough preparation and a willingness on the part of the teacher to relinquish some control. The teacher must be very clear about what goals he or she wants the student to achieve. Teachers must be familiar with the resources available and with techniques, such as the use of open-ended questions that facilitate dialogue. At the same time, she said, "teachers have to know that their students are capable of designing their own study. That means the teachers have to release some control, resisting the temptation to tell their students what to do."



"In general, the students have become more tolerant, understanding, and respectful toward each other."

Encouraging a Broader View of Multicultural Education

Arlene Costello's pilot project showed how an independent-study approach could be a vehicle for integrating a reflective, critical study of multicultural education into a gifted and talented program.

The students in the pilot learned more about their own cultures. "I am proud to be an African American," one student declared after completing his study. "In general," said Ms. Costello, "the students have become more tolerant, understanding, and respectful toward each other. They have even begun to mentor one another." Ms. Costello said she also deepened her own understanding of multicultural education through her preparatory readings, discussions with her CMI colleagues, and observations of the students as they carried out their studies.

Emphasizing the Unifying Aspects of Multicultural Education

Arlene Costello's project was an interesting example of how independent study, as opposed to small-group or large-group instruction, can be a viable method for overcoming prejudices and deepening multicultural understanding. The independent-study approach had certain advantages, particularly for this group of gifted and talented students from diverse backgrounds. First, it offered students the opportunity to be introspective, to examine biases and deep-seated feelings that they would not reveal to others. Second, it bolstered the self-confidence of students whose special gifts and talents might have gone unrecognized and reaffirmed their capabilities to complete a challenging project. Third, the presentation stage of the project spurred students who might have been reticent in a larger classroom of gifted and talented peers to express their opinions and defend their research.

Using Technology to Enhance Multiple Teaching and Learning Options

Arlene Costello made effective use of hypermedia, videotape, word processing, CD-ROM, and other technology tools to teach her students about multicultural issues. According to Ms. Costello, technology "gave the students easy access to information and to new resources, both human and electronic." The students also improved their technological capabilities.

Ms. Costello plans to refine the Independent Study Guide for the CREATES program to integrate additional forms of technology and enhance the discussion of multicultural themes.

I believe our society must not perpetuate oppression of any kind or foster passive thinking. Only when we move our students from keeping people in their places, will we have true multicultural understanding. Technology can enhance this move.

Nana Hill

THE SCHOOL AND THE STUDENTS

Nana Hill teaches at the ACT Academy in McKinney, Texas, a small, onetime rural town that is rapidly becoming a Dallas suburb. The Academy opened its doors in September 1993. It was created after the school district won a five million dollar grant from the U.S. Department of Education to develop a pilot school for the 21st century. The school is very well equipped with advanced technological tools. "We have world-class technology," Ms. Hill said, "with laptops for every student and faculty member and multi-media equipment in every classroom." The school also has a full-time technology coordinator.

The Academy's 250 students in grades K-12 represent a cross-section of the community. About seventy percent are white, while the remainder are predominately Hispanic, with some African-American students and a sprinkling of Asians and Native Americans. The students are grouped in cross-age learning clusters. Their classrooms are structured as large, open learning areas.

The school is strongly committed to a constructivist approach to learning. "We take children where they are," said Ms. Hill, "allowing them the time and space to construct their own knowledge." This approach holds that learners actively construct their own knowledge, rather than passively receiving it, by building on a base of prior knowledge, attitudes, and values. The staff strives hard to make the school into a community of learners. Teachers—called "facilitators" at ACT—often work in teams and emphasize cooperative learning with their students. Before starting at ACT, all of the

teachers underwent seven months of team training in technology and new pedagogical approaches.

The Teacher's Philosophy

Nana Hill brings a wealth of technological experience to her school, having worked with technology since her teenage days as a computer assistant. In her 22 years of teaching, she has always used computers, and she has mentored other teachers in her district in technology use. Ms. Hill has also had a long-standing interest in multicultural education. Her entire teaching career has been spent working in small school districts. "The thing that bothered me most," she said, "is that it seemed that only the needs of certain students were addressed." She became "a crusader" to ensure that her schools taught literature and other subjects in a way that recognized the ideas and contributions of all cultures.

Ms. Hill, who is the only African American teacher at her school, has continued to advocate for the needs of children of color at ACT Academy. Despite her concern about multicultural education and her expertise in technology, it was not until her selection as a CMI Educator that she really combined the two interests. "Before the CMI experience," she said, "I had been sitting in my school with all this technology, but I had never thought about putting it to use in a multicultural context. After I was chosen and began working with the other Educators and the NFIE staff, I started looking at different, creative ways I could use technology."

The CMI Project

Nana Hill wanted to do a technology-based project for multicultural education that would be rooted in her school's constructivist approach. She decided to develop a project that would bring together students of different ages in a series of knowledge-construction activities aimed at broadening their thinking about multicultural issues.

The basic goal of her project was to identify and compare how children of different ages perceived issues related to age, gender, race, and religion. She

assembled a group of five students, ages 14 to 17; five students, ages 11 and 12; and two students, ages six and seven. Ms. Hill saw this as a first step toward learning how students' thinking about culture and diversity evolved as they matured. She designed a project whereby students could freely express their views, engage in dialogue, and gain a better understanding of their own and other cultures. She structured the project to provide the students with significant opportunities to contribute their own ideas and amplify them in a series of dialogues with the teacher and each other.

Ms. Hill first met with each of the three age cohorts to generate a list of multicultural topics they wanted to discuss. The topics were broad-ranging, including prejudicial attitudes, biracial families, celebration of holidays, judgmental people, playmates, cultural background, age, gender, cultural and religious beliefs, popularity, family traditions, and the American school environment. After the students developed their lists, she merged them into a manageable list of questions about multicultural issues.

All of the participating students met to discuss the questions. Next, each student was asked to reflect on what had been said and to prepare a written analysis, which served as a basis for a conference with Ms. Hill. Upon completion of these conferences, the students wrote about their personal thoughts on the issues, illustrated with events from their own lives.

The project used several kinds of technology. All the discussions were videotaped, and students used laptop computers to write their stories. A team of three students, one from each age group, viewed the videotaped discussions. Based on their responses to the tapes, Ms. Hill and the group put together a matrix to help students analyze and draw conclusions about their data. One plane of the matrix displayed the age groupings, and the other showed the beliefs and attitudes of each group about culture and race.

Some of the students' insights about culture, race, religion, and family were quite revealing. The very young students often focused on family and friends, with such comments as, "Is it okay for girls and boys to play together?" and "Sometimes it is hard coming from a [racially] mixed family." Said one child: "As long as my parents love me, it doesn't matter what other people say or think." The middle school students focused on issues of cultural identity in school and religious differences. Among the comments were: "It is difficult being me in this American school culture," and "We wish it wasn't frustrating being culturally different, but it is." A student whose parents are from India said, "Because our religious beliefs are different, we don't always celebrate the big holidays in this country and that can be frustrating." The high school students focused on topics of cultural heritage and identity: "We are comfortable with our cultural heritage and think everyone should be," and "If you know who you are, it's okay." The entire group of students then discussed the matrix, again videotaping the discussion.

As a final exercise, Ms. Hill asked the students how they wanted to communicate what they had learned to others. They decided to create multimedia "brochures" by combining text, video, and student drawings.

"We take children where they are, allowing them time and space to construct their own knowledge."

Project Impact and Results

Encouraging a Broader View of Multicultural Education

Nana Hill developed a way to integrate multicultural education with the constructivist philosophy of her school. The students who took part in the project were already accustomed to contributing their own ideas, taking responsibility for their own learning, and working cooperatively, methods commonly used by the ACT facilitators. But before the project, said

Ms. Hill, student thinking about multicultural education "did not go much beyond ethnic holidays."

Ms. Hill said that the students who participated in the project became "very much more tolerant at the end." For example, at the outset of the project, some of the students teased a boy who was a vegetarian for religious reasons. After the project, the others accepted his choice. She also reported that other facilitators in her school have noticed a difference in the children who participated and have asked her for more information about what she did.

Ms. Hill now has a base of information about changes that occur in children's thinking about their culture as they mature. Although formal study of this topic was not the main goal of her project, these findings may be useful for future research on multicultural education. Furthermore, they imply that children may go through several developmental stages in their ability to understand multicultural issues, much as they pass through several stages when they learn to read. She is already using the information to modify her own teaching.

Ms. Hill learned other lessons about culture from her students that informed her teaching. She was particularly affected by a story written by a Vietnamese girl about growing up in her culture. "Before, I just regarded [Vietnamese children] as quiet kids," she said. "After listening to her dialogue, I discovered her quietness has a purpose. It's about respect; it's what is taught in her culture. I no longer push her to speak louder. I changed my whole teaching method with her."

Using Technology to Enhance Multiple Teaching and Learning Options

Nana Hill found several effective ways to apply technology tools to multicultural education. During their initial brainstorming sessions, students used laptop computers equipped with MACSIDE software to compile a list of topics electronically. The dialogue sessions were videotaped, and several student stories were scanned into the computer to be incorporated into the final product. As a result of this experience, said Ms. Hill, these students "can use various forms of technology to capture and analyze what they are learning" in a variety of subjects.

She said she received strong support from her school and district. The district provided her with a grant to purchase materials, and other facilitators in the school were available to help her. The school's constructivist philosophy provided a strong foundation on which she could build her project. The school's status as a "21st century school" afforded unique benefits that would be difficult for other schools to duplicate. The multimillion dollar federal grant served as seed money for a major restructuring of the whole school, which included remodeling the physical plant, assembling a faculty that spent a year to design the reformed school, significantly changing the curriculum, and providing regular opportunities for professional development.

The Christa McAuliffe Educators engaged in intensive professional development to deepen their knowledge and understanding of multicultural teaching and learning and technology applications. From their experiences, the Educators developed recommendations—practical ideas to assist their colleagues around the country. Their suggestions provide answers to two related questions: What do teachers need to know and be able to do to address issues of multicultural education and technology effectively? And, what are some of the components of a professional development program to help teachers develop this understanding?

WHAT TEACHERS NEED TO KNOW AND BE ABLE TO DO TO IMPLEMENT MULTICULTURAL EDUCATION

1. *Teachers need a broad view of multicultural education.*

Each of the Educators found that the concepts of multicultural education they held at the beginning of the project were insufficient to meet student needs. Over the eight-month Institute, each teacher deepened and expanded his or her understanding of multicultural education in several ways. They broadened their definitions far beyond issues of race and ethnicity. "When I walked into [the January seminar] that first day, I thought I knew what multicultural education was," Nana Hill said. "And afterwards, I really pondered it. I thought, we're not just talking about race. We're talking about gender. We're talking about socioeconomic level. We're talking about religious beliefs."

Jaíme Roybal highlighted the links between language and culture. "Everything I do, I think in Spanish and English. I find educators deal with a lot of cultures and have no connection with the language the culture is in. If you can't understand the language, it's harder to understand the culture."

For Arlene Costello, multicultural education means equity. "Multicultural education means education reform," she said, "so that all students of varying educational styles, diverse populations, ethnic groups, have equitable access and will have equity in education. All children should be able to learn, should have the environment they need for learning."

After the 1994 Christa McAuliffe Institute, Robin Wax concluded that multicultural education should include active steps to reduce prejudice among young people. "Some multicultural theorists go to the extent of saying that the curriculum, activities, and people in the school need to challenge racism, teach an antibias curriculum, essentially teach them morality and activism," she noted. "I now feel it is appropriate and necessary to really push kids in the classroom to be antiracist, to challenge other kids to examine their own behavior, to understand why they're doing what they're doing. And I didn't feel that way in January."

CMI Educators further broadened their definitions of multicultural education to include "subcultures": smaller groups within the populations generally called "Hispanic," "African American," and "Asian." As both Jaíme Roybal's and Hazel Lockett's projects demonstrated, the richness of subcultures should be mined to deepen multicultural understanding.

2. ***Teachers need to explore a wide array of technologies and their vast array of applications to multicultural education.***

At the January seminar, in conference presentations, and through conversations with NFIE staff and each other, the CMI Educators explored a wide variety of new classroom technologies, including online communication, Hypercard, CD-ROM, laser disk, multimedia presentation software, and others.

These technologies helped the Educators in several ways. First, they helped teachers and students to engage others in conversations about multicultural issues without barriers of time and space. As Nana Hill said, "I realized that through the Internet, I could connect my class just about anywhere on this earth." Jaíme Roybal used an online computer network to link his classroom to one in Puerto Rico.

The CMI Educators were also enthusiastic about using computer networks to collaborate and connect with other dynamic teachers and resource people in the field of multicultural education. Second, electronic networking brought together a collegial faculty that regularly learned from each other. As Mr. Roybal explained, between the January seminar and the end of the school year, the CMI Educators "were able to communicate with each other and find out what each of us was doing in our own buildings. We

would read materials and 'talk' to each other about them online. For example, after an NFIE staffer gave us an article, I posted twenty questions online and asked for my fellow Educators and others to respond."

The CMI Educators also found that technology could facilitate new instructional strategies. According to Hazel Lockett, some students responded better to classroom material when they worked on the computer than they did with traditional textbooks alone. Technology offered alternative ways for students to organize material or solve problems and required constant engagement. In a hypermedia environment, for example, students could link from one resource to another in a nonlinear fashion, an approach that may be better suited to how they learn. Furthermore, technology promoted learning-by-doing and constructivist learning.

Technology seems to give children of color a special sense of empowerment. When Robin Wax asked her history students to play the roles of historical figures online, she saw how the devices captivated students who had been alienated by more conventional teaching techniques. "The student who feels disenfranchised in his or her life for whatever reason, on the computer feels empowered by being a historic figure," she said. "It gives students an articulate voice. They use their ideas, play with the roles." Arlene Costello observed that "with technology, my students' work-products became more sophisticated. I also noticed a sense of ownership and pride."

Technology also offered an opportunity for teachers and students to create a new, less judgmental school climate, freer of preassigned expectations about the abilities of children from different cultures and socioeconomic backgrounds. The connections between technology-based learning and culture are far from clear, however, which suggests a need for future research.

A major unresolved issue related to technology is where schools and teachers will find the time, resources, expertise, and training to learn to integrate technologies effectively into the classroom. Adding a multicultural dimension creates an even greater challenge because there are few appropriate software products or models for curriculum design and lesson planning. This places an even greater responsibility on the teacher to design technology-based multicultural instruction.

3. *Teachers need to work collaboratively.*

The design of the Institute encouraged the Educators not only to collaborate with each other electronically, but also with peers in their schools. The CMI Educators see collaboration as an essential condition for teachers' work on multicultural education and technology use. They stressed the importance of building trust among people engaged in professional development by respecting and acknowledging the values, beliefs, cultural perspectives, and professional competence of all members of the group. Commitment to this kind of collaboration leads to productive dialogue and reflection.

The teachers indicated that many of their peers are inclined to work alone. Exploring new ideas without support or a safe place to share ideas can seem like too great of a risk for some teachers. One CMI Educator felt it was especially true in her work on multicultural education. "The thinking, reading, and discussing I have done this year in CMI opened my door. I have been hiding in my classroom. In fact, I avoided discussing issues I feared would lead to confrontation or disagreements. The characteristics of a multicultural curriculum are not just important to me in my classroom. They must be discussed and embraced by all."

4. *Teachers need to adapt their teaching to the different ways that student learning can be mediated by culture.*

Most of the CMI Educators agreed that the CMI program showed them how culture often influences learning approaches. Armed with this insight, many came to believe that an effective multicultural educator addresses not only the diversity of cultures from which students emerge, but also the diverse approaches to learning that they can carry with them to the classroom.

For years Hazel Lockett had sought an answer to the question of how teachers can draw some students out of their silence. In her CMI project, she concluded that students' cultures often hold keys to their learning styles, classroom behavior, and reaction to the teacher. In one instance, she discovered that she was having trouble reaching one of her female students because "in her culture women were not authority figures."

As noted above, technology can facilitate these adaptations. For example, through electronic networking students and teachers can have access to a "virtual faculty" far outside the boundaries of the school. With this kind of resource, students in less diverse schools can expand their opportunities to interact with peers from different cultures. Teachers whose on-site learning community is small can gain added collegiality and intellectual stimulation from distant colleagues.

5. *Teachers should engage in ongoing reflection and research about their practice.*

The CMI Educators agreed that they benefited enormously from conducting action-research projects in their classrooms. Preparing for the projects encouraged teachers to read the academic literature on multicultural education and gave structure and focus to their professional growth. Arlene Costello noted that the "articles, books, and magazine studies I have read...have increased my knowledge and understanding of multicultural education." She added that she was "confident that [she] will be able to use many of the ideas" learned from her reading. Several of the Educators concurred that their review of the research literature gave them new insights about skills

they had gained informally from their years of teaching. Robin Wax said, "All of a sudden, I got verification for instincts I had. Everything that I had tried in the classroom someone else had researched, tried out, and said why it was or wasn't working."

Action research also helped the teachers structure their projects in a way that was likely to yield results: they identified the issue that they wanted to address in the context of multicultural education; determined qualitative and quantitative ways to measure the outcomes; assessed the results; and drew conclusions that could form a basis for future research. "My examination of what was occurring in the classroom and the data I collected and analyzed with colleagues were all a result of CMI asking that I conduct an action-research project," said Ms. Wax.

COMPONENTS OF A STAFF DEVELOPMENT PROGRAM THAT WOULD HELP TEACHERS IMPROVE THEIR UNDERSTANDING OF MULTICULTURAL EDUCATION AND THE USE OF TECHNOLOGY

1. *Make multicultural education a school and district priority.*

Each of the Educators found that if a teacher confines his or her efforts—no matter how sophisticated or well intentioned—to a single classroom, multicultural education will never become truly effective. All of them found that they had to take leadership roles in their schools and sometimes in their districts if they wanted to see real change. Arlene Costello was typical. "I took more of a leadership role and created a multicultural education training cadre with my district. I formed an action-research group at my school, because teachers became interested in what action research is all about." Robin Wax said, "I called meetings with the superintendent and the principal to tell people I had come to realize that multicultural education was more than just curriculum; it is the whole setting of the system."

2. *Provide equal access to technology, across the lines of culture, gender, socioeconomic level, and academic ability.*

As the CMI Educators grew to understand the important role new technologies can play in multicultural education, they realized how important it is that all students and teachers have access to these tools. One Educator

discussed the equity issue in terms of her own experience. "One of the real issues of technology is who gets it and who doesn't and why," she said. "At my school, we could have done wonderful things if we had the technology, but getting the technology was a major problem." Another Educator wrote, "All the things about multicultural education—content, atmosphere in the classroom, teaching and learning style—are going to be affected in the next years by technology. Unless we make sure access is there for everybody, we're going to marginalize students even more than we have now."

3. *Encourage and support collaboration and establish cadres and teams in local schools.*

While the CMI teachers praised NFIE for recognizing individual accomplishments, their joint work as a team was even more important. All five agreed that collaboration on the topics of multicultural education and technology enhanced their awareness and understanding of the issues. "The interaction among the five Educators was an education," said Arlene Costello. "They got to experience my Asian culture at the same time I was picking up African American culture. The interaction contributed strongly to my professional development. It pushed me to read more and do more research."

Creating teams or cadres at the local level would be an effective way of encouraging cooperation among other teachers who want to promote multicultural education. One Educator said, "We need action-research teams. These action-research teams could study the issues, and then train and educate the local staff." Another suggested creating small cadres in schools to "discuss, plan, and implement change in organized, small ways."

4. *Create opportunities for sustained inquiry for teachers.*

The CMI Educators praised the program for its emphasis on research, concurring that the development of a deep understanding of multicultural education requires long-term, sustained inquiry. The Educators expressed appreciation for the opportunity to come together in professional development seminars and meetings. Readings in academic literature and conversations with experts and with each other stimulated ideas

and raised questions about their beliefs and teaching practices.

5. *Focus professional development on curriculum integration.*

Professional development activities for multicultural education and technology should be integrated with all elements of the curriculum. One Educator spoke for the group by recommending that public schools "integrate multicultural education elements into everyday teaching rather than treating them as an appendage of the curriculum."

6. *Increase local access to knowledge and expertise through technology networks.*

The CMI Educators believe that electronic computer networks and video conferences are effective tools and settings for professional development. These technologies offer teachers the opportunity to engage in dialogue with researchers, software developers, curriculum planners, and other educators. The Internet gives teachers access to multicultural education databases throughout the world. Improved videoconference technologies now make it more feasible for teachers and others to participate in professional development between schools in local districts as well as across the country.

In summary, the experiences of participants in the 1994 Christa McAuliffe Institute for Educational Pioneering offer a range of approaches that other teachers could adopt to apply technology to issues of multicultural education and classroom diversity. When technology is used wisely, it can expand the horizons of students and teachers to the diverse world we inhabit. When multicultural understanding and respect is present, it can strengthen the bonds among people of all backgrounds. Together these two objectives can touch the future by building a more harmonious world.

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