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ABSTRACT

This newsletter focuses on efforts to make math and science more attractive, relevant, and accessible to students, especially limited-English-proficient, minority, economically disadvantaged, female, and at-risk students. "TAAS Math Performance" (Linda Cantu) outlines recent statewide results for the controversial Texas Assessment of Academic Skills and describes Project Pathways, a staff development program to help Texas students, especially minority and disadvantaged students, master the test. "Content in Context: Technology That Makes Sense in Education" (Felix Montes) discusses the trend in educational technology towards engaging students as active creators of knowledge by making an assortment of learning tools available to them in a flexible format. "Texas Statewide Systemic Initiative" (David Hill) describes a collaborative effort among education, business, government, and community to provide Texas communities with the resources to implement contemporary, rigorous, and engaging mathematics, science, and technology education for all students. "Making Math and Science Relevant" (Kate Mahoney, Kirby Gchachu) discusses using a child's home culture as a springboard to learning science and math, and describes the implementation in a Zuni Pueblo school of Playtime Is Science, a program that involves parents in experiencing how everyday activities and chores are related directly to science. In "I'd Never Really Thought about Being a Scientist," Eloy Rodriguez, the first U.S.-born Latino to hold an endowed position in the sciences, comments on his education and experiences. Sidebars profile two IDRA programs: the Engineering, Science and Math Increases Job Aspirations program for minority female middle school students, and the Young Scientists Acquiring English program for content-area teachers of English language learners. (TD)



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IDRA FOCUS:

MATH AND SCIENCE EDUCATION

IDRA Newsletter

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*IDRA is an independent
nonprofit advocacy organization
dedicated to improving educational
opportunity. Through research,
materials development, training,
technical assistance, evaluation,
and information dissemination,
we're helping to create schools
that work for all children.*

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TO THE EDUCATIONAL RESOURCES
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TAAS MATH PERFORMANCE

Linda Cantu, M.A.

The Texas Assessment of Academic Skills (TAAS) test was created to monitor Texas public schools by measuring academic skills acquired by students. The TAAS test established a minimum standard at which all students in Texas are expected to perform. Each year, it is administered to students in grades 3, 4, 5, 6, 7, 8 and 10.

Although over the past three years students have shown some gains on the TAAS test, a significant number of students continue to fail. Research conducted by IDRA found that students who fail the TAAS tend to be minority, limited-English-proficient, overage, economically disadvantaged, and labeled or considered at risk of dropping out of school (IDRA, 1993b).

In 1993, there was significant concern over the number of students failing the TAAS test. There are still many students failing in all areas, but math has the lowest number of students passing the test.

TEA Accountability Test Standards

The TAAS test is highly controversial and tends to elicit strong sentiments among state officials, educators, parents and students alike. Like other standardized tests, its validity in measuring success is questioned. Many students who are successful students and have good grades in school do poorly on the test. Some of these students have thus not been allowed to graduate until they pass the TAAS. Some students take the test as many as seven times in order to graduate.

In 1992, the TAAS exit exam was administered to 11th grade students. In 1993, the TAAS test was moved back to 10th grade to give students multiple opportuni-

ties to pass the exit exam. As of 1995, students have as many as eight opportunities to take the exit test (TEA, 1994). An unfortunate result of moving the exit test to the 10th grade has been that, because of the number of students who fail it, an entire curriculum has been built around the test, and, in fact, many students can be placed in TAAS classes for as long as three years. Rather than having schools be rich in exciting curriculum – schools have created test-driven classes.

The accountability criteria and the passing standards set by the Texas Education Agency (TEA) have changed since the administration of the test in 1990-91. TEA set lower standards in the early years and has gradually increased standards effective up to the year 2000. In 1990-91, the passing standard for the exit exam was 60 percent. In 1991-92, the passing standard for all grades including the 11th grade exit exam was set at 70 percent (TEA, 1992).

In addition, TEA set accountability standards for districts and campuses. The box at the top of page 12 shows how the standards have changed in recent years.

For a school district to be judged *exemplary, recognized* or *academically acceptable*, all students in the district (African American, Hispanic, White and economically disadvantaged) must pass in every subject at the accountability rating standard determined for each category. In addition, TEA stipulates that school districts must meet other criteria: (1) A standard dropout rate set for each category and (2) A standard attendance rate set for all districts at 94 percent. Overall, to achieve a rating of aca-

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The Intercultural Development Research Association (IDRA) is a non-profit organization with a 501(c)(3) tax exempt status. The purpose of the organization is to disseminate information concerning equality of educational opportunity. The *IDRA Newsletter* (ISSN 1069-5672, copyright ©1996) serves as a vehicle for communication with educators, school board members, decision-makers, parents, and the general public concerning the educational needs of all children in Texas and across the United States.

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Popularized in the early 1970s by author Thomas Kuhn, "paradigms" are our models or patterns of reality, shaped by our understanding and experience into a system of rules and assumptions about the world around us. The call for restructuring in education, emerging from a profound sense that education is not working for all children, requires a transformation in how we see schools, students, and their families. If we are to find a new and equitable vision of what education can and should be, new lenses are required to change the way we look at schools and the populations in them – as demonstrated by our "Now" thinkers below.

THAT IS THEN . . . THIS IS NOW . . .

"Science and learning are happily less likely to take a dominating hold of a woman's nature, because they are not along the lines on which it was built."

– Stanley G. Hall, *Adolescence*, 1969

"A woman... cannot afford to risk her health acquiring knowledge of the advanced sciences, mathematics or philosophy for which she has no use. Too many women have already made themselves permanent invalids by over strain at schools and colleges."

– college paper editorial. Quoted in *Failing at Fairness* by Myra and David Sadker, 1994

"[The hard sciences] have very few female worthies."

– Margarita Levin, interview sited in *Backlash* by Susan Faludi, 1992

"A purely intellectual man is no doubt a deformity; but a purely intellectual woman is far more so."

– Stanley G. Hall, *Adolescence*, 1969

"We must merge our traditional sense of schooling with the real world. What we do in school must not insult the child's past but must build upon his past and encourage future learning."

– Sigmund Boloz, workshop handout, 1985

"We still live in a world in which a significant fraction of people, including women, who believe that a woman belongs – and wants to belong – exclusively in the home... The world cannot afford the loss of the talent of half of its people if we are to solve the many problems that beset us."

– Dr. Aaron Yalow, Nobel Prize winner for her invention of the medical tool called radioimmunoassay. Quoted in *Mother of Inventions* by Ethlie Ann Vare and Greg Ptacek, 1987

"Age has not abated my zeal for the emancipation of my sex from the unreasonable prejudice too prevalent in Great Britain against the literacy and scientific education for women."

– Mary Fairfax Somerville, 1874.
Quoted in *Math Equals* by Teri Perl, 1978

"When girls select-out of math, science and computer technology, they are making decisions that will affect the rest of their lives. Without the right high school courses, sciences courses in college are out of their reach; and without college courses, females are filtered out of careers that remain overwhelmingly solidly male."

– Myra and David Sadker, *Failing at Fairness*, 1994

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CONTENT IN CONTEXT:

TECHNOLOGY THAT MAKES SENSE IN EDUCATION

Felix Montes, Ph.D.

Early attempts to use computers to help the educational process – such as the era of Computer Assisted Instruction (CAI) – seem prehistoric today. For many schools, however, CAI is the present. With its emphasis on drill and practice and low computer requirements, CAI – or some new incarnation of it – continues to be one the most prevalent ways many schools use computers today, especially for low achieving, often minority students.

Other schools have moved up just one step. With the availability of multimedia computers, a new breed of educational software appeared just a few years ago. Called, *Edutainment*, it attempted to make all technology-afforded education entertainment and make some entertainment educational. This appeared to be almost the

THE MOST PROMISING TREND IN EDUCATIONAL TECHNOLOGY TODAY IS CONTENT.... WHAT IS EXCITING ABOUT THIS TREND IS THAT IT ATTEMPTS TO ENGAGE STUDENTS AS ACTIVE CREATORS AND CONSTRUCTORS OF KNOWLEDGE.

antithesis of CAI. Students would be taken through a wild video game, and in the process, hopefully, they would learn something. The main assumption of *Edutainment* was that students needed to be sensorially stimulated to keep their attention. This was a corollary of the success of video games, such as Nintendo and PacMan.

It is important to notice that even though, both CAI and *Edutainment* look very different, their underlying assumption is surprisingly similar: that students are intellectually passive recipients of information. The difference is in the method of delivery: CAI, dull and repetitive; *Edutainment*, exciting and repetitive.

Today there is an effort to look at this issue anew. The most promising trend in educational technology today is *Content*. There is not yet a catchy name for this trend, but there are some clear indications that something new is in the making. What is

exciting about this trend is that it attempts to engage students as active creators and constructors of knowledge. Instead of encapsulating a prescribed set of data or information to be delivered in some way, the emphasis is on openness or including as many resources as possible in numerous and flexible formats. My purpose in this article is to outline some of the characteristics of this emerging trend.

Content vs. Presentation

The apparent contradiction between content and presentation is a non-issue in *Content*. Information can potentially be presented in as many ways as technologically possible. Students select the appropriate presentation according to their learning styles or their current needs. There might be, for example, many speeches about a particular subject. Students elect to listen to all or some of them. They might elect to read their textual representation or watch a video about events leading to some of these speeches and listen to a discussion about the video. They can access original versions of events and also tap into critiques of these original works within the same general computer environment. As the students engage in these activities, they can take notes and start developing their own conclusions or support a position that they feel is the most appropriate. They can document their opinions with segments of a speech or quotations taken automatically from original sources.

The idea is to engage the students in the analysis of the information by making an assortment of tools available to them. These tools include *copy*, *paste* and *search* through material that can take a variety of forms, such as regular texts, sounds, pictures, graphics, videos or animation. The main distinction between using multimedia in *Content* and in *Edutainment* is that in *Content* multimedia tools are available to the students, who invoke them as needed in the normal course of an investigation. In *Edutainment*, multimedia is the essence of the experience; it has a life of its own. The intellectual engagement is a mere sub-product of it. In *Content*, the assumption is that science, math and art are exciting things in and of

themselves.

For example in science, the fact that common plants use chlorophyll and sunlight to produce food is amazing in its own right. Even our most sophisticated laboratories cannot match this.

In math, the fact that the sum of the first n integers is easily obtained by the formula $(n+1)n/2$ can stimulate in the students a sense of relationship with the abstract and a sense of wonder once they understand the elegant reasoning behind the formula below.

$$\begin{array}{ccc} \overbrace{1+2+3+\dots}^{n/2} & & \overbrace{\dots+(n-2)+(n-1)+n}^{n/2} \\ & & \left. \begin{array}{l} (n-2)+3=n+1 \\ \dots \\ (n-1)+2=n+1 \\ \dots \\ n+1 \end{array} \right\} n/2 \text{ times} \end{array}$$

In sum, *Content* assumes that students will enjoy the intellectual process of discovery and learning because they are intrinsically motivating and exciting.

Integration vs. Fragmentation

Another significant change in this new approach is a radical departure from itemization toward combining many tools, data bases and systems into a global net of information and tools at the teachers' and students' disposal. In CAI and *Edutainment*, companies developed packages for specific educational purposes. With *Content*'s new approach along with the advent of the Internet and global searching tools such as Yahoo, in a very real sense, the package is the whole world. The new educational technology understands this.

Initially a local, limited data base of content might be provided. However, invariably the system will link students and teachers to various sites through the Internet where either an extended and more updated version of the data base exists or to a chat room where a group of specialists in the area continuously discusses unresolved issues and might provide glimpses of what the future in that area might look like.

The students can also be linked to companies working in the area. Many

Content in Context - continued on page 4

ENGINEERING, SCIENCE AND MATH INCREASES JOB ASPIRATIONS

IDRA's *ES-MIJA (Engineering, Science and Math Increases Job Aspirations)* program is a math and science enrichment program for minority female middle school students. It increases the opportunities of Hispanic sixth-grade girls by increasing their awareness of science- and math-related careers and by encouraging their enrollment in advanced mathematics courses with an introduction to engineering. Currently funded by the National Science Foundation, the program includes curricular, instructional, training and support components.

IDRA provides training to teachers, counselors and administrators about different approaches to mathematics suitable for girls, about gender equity and about school achievement. Parents participate in training and other activities that elicit in them a new understanding of the importance of mathematics and how to support their girls' mathematics achievement.

Girls participate in innovative workshops and activities that are designed – and have been shown – to foster the same content skills outlined by the Mathematical Sciences Education Board. Through role modeling, meaningful direct instruction, participation in math and science conferences, and visits to places where men and women use mathematics as part of their daily activities, girls begin to redefine their relationships with mathematics. Research has shown that, through ES-MIJA, Hispanic girls begin to see themselves as mathematicians, scientists and physicians.

For more information about the ES-MIJA program (formerly the MIJA program) see:

DeLuna, Anna and Felix Montes. "MIJA Girls Getting Excited About Math: Assessing the Outcomes of the MIJA Program," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, February 1995), 22(2), pp. 5-6, 14.

DeLuna, Anna. "Project MIJA: Breaking Boundaries for Young Latinas," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, October 1993), 20(9), pp. 4-5.

Sosa, Alicia, and Yolanda Garcia. "MIJA - Aiming for Higher Ground," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, September 1992), 19(8), pp. 7-12.

or contact Dr. Laura Chris Green at 210/684-8180.

✓ *INCREASING MATH SKILLS*

✓ *INCREASING AWARENESS OF MATH-RELATED CAREERS*

✓ *TRAINING TEACHERS*

✓ *ENHANCING PARENTAL SUPPORT*

Content in Context - continued from page 3

companies maintain World Wide Web sites where they post their most recent innovations. Governmental organizations also provide valuable information in similar ways. For example, NASA has a large presence on the Internet where most of its missions are chronicled. The site includes pictures of the new discoveries, animation of current and planned missions, and interviews with astronauts, among many other things. Thus, using Content, students are taken on a wild ride of sorts. This ride, however, is on the side of reality, not fantasy as is the case in Edutainment.

Hierarchy vs. Sharing of Responsibilities

There is no doubt that no one person can know all there is to know about these technologies. While it is the

responsibility of teachers and the school system in general to keep up with the new technology reasonably well, it is clear that the responsibility of trying new tools and even implementing new systems in the whole campus, if shared with the students, will have a better chance of success.

Some schools are experimenting with a model of shared responsibilities in which students take the lead in learning and implementing the backbone of the instructional information system. In this model, there are one or two adult technology staff members for the campus. Students are organized in teams that implement different aspects of the network under the staff supervision. For example, students develop home pages, setup electronic mail (E-mail) accounts for the other students, develop content for their home pages and maintain

their World Wide Web sites routinely.

In addition to its obvious practical and economic values, this approach has many other advantages. Students work together across classrooms and grades toward something real and non-perishable. They feel their skills and curiosity are valued and rewarded, rather than feared by adults. The multi-age experience helps younger students connect to the larger society by developing friendships with older students.

Teachers assume a facilitator role. They help the students make sense of the wealth of information tapped by these systems. Teachers can provide something that is very difficult to get: Context. This context allows for understanding and connecting the information to a somewhat logical body of reference. Teachers are uniquely qualified to do this because of their own academic preparation and their own experience as informed adults.

Creating Your Own Tool Box

As integrated packages that include some or all of these features become available, schools can evaluate their effectiveness. In the meantime, below are some ideas to help you create your own tool box today. Some of these resources might already be available in the school or are not very expensive to acquire. Because of the fast pace of technological changes, many schools are hiring a full-time technology person to coordinate the technology plan and work with teachers and counselors in implementing the plan school-wide. Another alternative is to work with independent organizations such as the Intercultural Development Research Association (IDRA) to help the school formulate and implement the plan, including training teachers and other school staff. Whichever route your school takes, here are some tools that can help create the integrated technology approach proposed in this article. The tools have been divided into exploration, development and communication categories.

Exploration Tools

Exploration tools allow students to conduct purposeful searches or to simply browse through a world of interesting information presented in a multiplicity of media. Here are some examples:

- **CD-ROM**—Very large capacity storage. Excellent for data bases, graphics and video collections.

Content in Context - continued on page 5

Content in Context - continued from page 4

Tools: Dictionaries, Atlas, Encyclopedias, Picture clips, Off-line Internet exploration.

- **Library resources** – Your school probably has an automated library based on one of these packages.

Tools: Follet, Infotrac.

- **On-line resources** – Exploring the superhighway is one of the most engaging experiences today.

Tools: Internet Explorer, Netscape, KidsNet, America Online, Prodigy, TENET.

Development Tools

Students use development tools to produce their own work. These are extremely powerful tools ranging from the most basic support for writing to drawing and painting to movie making. Here are some examples:

- **Word processor** – Helps students articulate ideas. Facilitates collaborative group work.

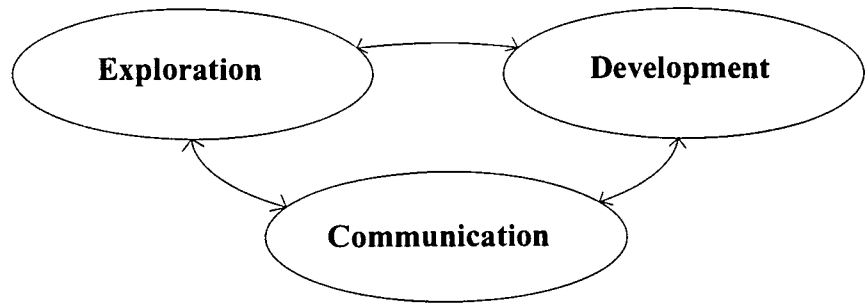
Tools: Amazing Writing Machine, Microsoft Works, Storybook Weaver, Kidworks, WordPerfect.

- **Data base** – Helps students organize data and information to create new information. Create a sense of ownership of the data that allows for synthesis and inference.

Tools: ClarisWorks, Microsoft Works, Paradox, Microsoft Access.

- **Spreadsheet** – Helps students manipulate and experiment with data. Facilitates modeling and simulation that stimulate prediction.

CONTENT MODEL: THE RELATIONSHIP OF THE TOOLS FOR CREATING AN INTEGRATED TECHNOLOGY APPROACH TO LEARNING



Tools: ClarisWorks, Microsoft Works, Quattro Pro, Microsoft Excel.

- **Graph and paint** – Helps students represent ideas, data, concepts and feeling. Stimulates the process of creation.

Tools: Claris Draw, Microsoft Excel, Graph Power, Kid's Studio, KidCAD.

- **Programming** – Helps students represent processes. Stimulates a sense of order and logic.

Tools: LOGO, Basic.

- **Video** – Connects students with the most influential means of communication today: TV and movies.

Tools: QuickTime movies.

provide the perfect means for this to happen. With these tools, students can establish contact with individual peers locally, nationally and internationally. They can also communicate with a more abstract audience through a newspaper to send and receive ideas.

- **Telecommunication** – Helps expand the audiences for students' self-expression.

Tools: Electronic mail (Eudora), World Wide Web (Internet Explorer, Netscape), America Online, KidsNet.

- **Hypermedia** – Helps students organize complex material into reasonable multimedia formats for distribution to other students. Provides a sense of completion and contribution, since these projects can be research material for future students.

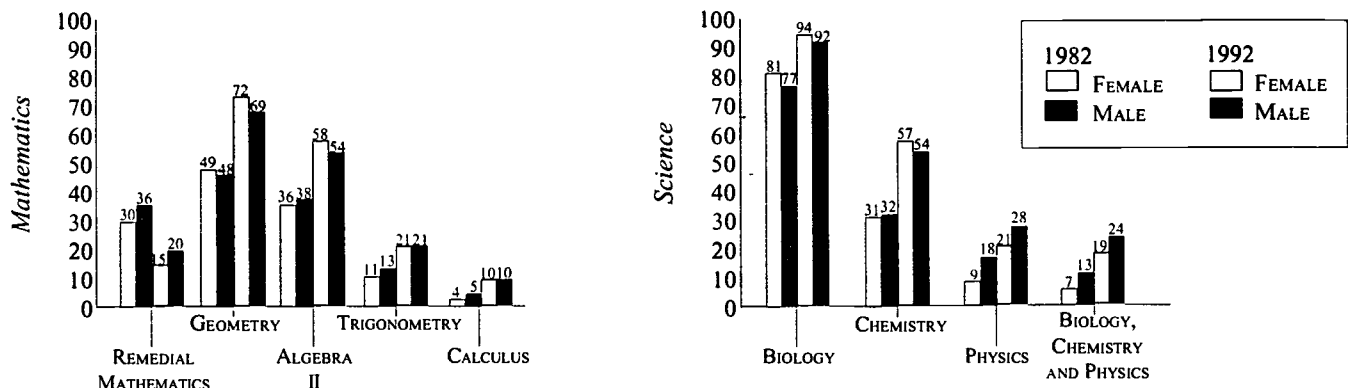
Communication Tools

To be able to make sense of the wonders of science and art, students need to talk about them. Communication tools

Content in Context - continued on page 6

DID YOU KNOW?

PERCENTAGE OF HIGH SCHOOL GRADUATES TAKING SELECTED MATHEMATICS AND SCIENCE COURSES



Source: National Center for Education Statistics. The Educational Progress of Women (Washington, D.C.: U.S. Department of Education, December 1995).

Tools: HyperCard, HyperStudio, AuthorWare.

- **Presentation** – Helps students communicate their results to small groups, such as their classmates.

Tools: Microsoft PowerPoint, Kid's Studio, ClarisWorks.

The Emerging Model

The figure in the box on page 5 shows a way of conceptualizing the relationships of these tools. Students might start by developing (*development tools*) some preliminary ideas about the project they will be working on. Then they might elect to seek (*communication tools*) more ideas about the subject by posting a question on the Internet. They might also want to research (*exploration tools*) the subject in an electronic encyclopedia such as *Microsoft Encarta*. As they receive (*communication tools*) responses to their requests from peers and other people and summarize their own investigation (*exploration tools*), students will begin to create (*development tools*) the product resulting from their project. They probably will have to present and disseminate (*communication tools*) their resulting product to their peers and probably will add (*exploration tools*) the product to the pool of available tools.

Discussion

One exciting aspect about the model we have called Content, is its "uncanness." Although some of the tools included in our tool box are educational software in the sense that they were created for the school market, most of them are generic commercial tools that the students will continue to use as they move on with their education and even when they enter the labor market. There is a striking parallelism between this model and what people actually do, not only at work but also increasingly at home as computer technology becomes one more home appliance available to people.

Even though this is beneficial overall, there are some concerns associated with this model that will need to be addressed:

- The increasing use of educational technology at schools might widen the gap between the technology haves and have nots, as students with access to computers at home, usually the upper-middle and middle classes, come far more prepared to the technology-driven school than those without this access, usually the lower class, minority students.
- The model might increase the tensions already existing between teachers and students, as students strengthen their own relationships and distance themselves from the teachers.
- Issues of control over content might surface as administrators might not have

COMING UP!

In August, the
IDRA Newsletter
focuses on
organizing for schooling.

the ability to completely monitor all that students are posting in their internal network and on the Internet. This might have legal ramifications as new regulations are being considered by congress and cases are heard by courts all over the country.

To be sure, the issues created by this new world of technology in the educational system are not simple or easy to resolve. At the same time, opportunities for creating student-centered schools, and other meaningful changes in the education system, are real. IDRA is a resource schools are using to move into this new era. IDRA helps the school both in ameliorating the negative effects of the technology-driven school environment and in implementing technology solutions that ensure access for all students.

Felix Montes is a research associate in the IDRA Division of Research and Evaluation.

YOUNG SCIENTISTS ACQUIRING ENGLISH

Through the *Young Scientists Acquiring English* program, IDRA helps content area teachers maintain high expectations for the cognitive achievements of all their students as they simultaneously learn to make challenging subject matter comprehensible and accessible to all. IDRA unites teams of content area teachers and campus administrators in integrating the curriculum at three middle schools. The project provides training workshops, on-site technical assistance, task force facilitation, and a summer curriculum development institute. The project is improving the achievement of middle school LEP students through the implementation of model interdisciplinary units that are culturally and linguistically appropriate.

This project is a process for student mastery of challenging subject matter in science, math, reading, English and social studies that does the following:

- Increases staff expertise regarding instructional strategies that foster cognitive and linguistic development;
- Supports the learning styles and cultures of all students through cooperative learning and appreciation for diversity;
- Helps students make connections through the integration of the curriculum within and across disciplines;
- Improves school-wide communication horizontally and vertically through effective academic teams;
- Provides teachers with easy access to high-quality books, supplies, equipment and instructional technology;
- Aligns curriculum and assessment such that learning is authentically documented; and
- Increases the support of parents and the business and general school community.

The Young Scientists Acquiring English program's goal is that all students, including English language learners, will experience success in critical thinking, problem solving and communication skills across the curriculum.

For more information on the *Young Scientists Acquiring English* program see "Accelerating Content Area Gains for English Language Learners," by Dr. Laura Chris Green in the IDRA Newsletter (San Antonio, Texas: Intercultural Development Research Association, February 1995, 22[2], pp. 1, 7-8) or contact Dr. Green at 210/684-8180.

Editor's Note: IDRA is collaborating with the RMC Research Corporation and the Charles A. Dana Center at the University of Texas at Austin to form the STAR Center (the comprehensive regional assistance center for Texas). Using a comprehensive, integrated-programs approach, the STAR Center (Center for Support of Texas Academic Renewal) will provide support and technical assistance services to the Texas Education Agency, regional service centers and local school districts who are implementing state and local education reform efforts funded under the Improving America's Schools Act. The Dana Center has achieved excellence in science and math education and statewide systemic reform. Its Statewide Systemic Initiative (SSI) is described below.

What is the Texas SSI?

The Texas Statewide Systemic Initiative (SSI), a major initiative of the Charles A. Dana Center at The University of Texas at Austin, is dedicated to providing local communities with the resources to implement contemporary, rigorous and engaging mathematics, science and technology education for all their students. The SSI is supported by grants from the National Science Foundation and the Texas Education Agency. Additional support is provided by The Charles A. Dana Foundation and The University of Texas at Austin. Although housed at the University of Texas at Austin, the SSI is a statewide initiative.

What does the Texas SSI do?

The Texas Statewide Systemic Initiative has developed an ambitious and broadly sanctioned strategic plan and has established a close working relationship with the Texas Education Agency (TEA), the governor's office, the Texas Business Education Coalition and the major state professional organizations of administrators and teachers of mathematics and science, as well as the major state and regional entities that constitute the heart of the Texas educational system and policy-making apparatus.

The SSI operates through *action teams*, broad-based leadership groups that affect the ethnic, geographic and political diversity of Texas. These action teams

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("RMC" must be capitalized)

involve teachers, administrators, college faculty, corporate leaders, government representatives, parents and other members of local communities.

The Action Team Operating Model, called ATOM, is the key strategy of the SSI's plan of work. ATOM is a decentralized model for affecting change by promoting entrepreneurial local leadership committed to solving critical educational problems. The SSI's leadership and staff provide the action teams with financial, research and technical assistance to do the following:

- Strengthen the mathematics and science preparation of prospective elementary teachers.
- Support the continuing improvement of algebra instruction in Texas.
- Develop the first draft of the Texas Essential Knowledge and Skills (TEKS, formerly the Essential Elements).
- Create tool kits to support local communities in the implementation of the TEKS.
- Strengthen the continuing mathematics and science professional development of teachers to reach all schools and school systems.
- Disseminate high-quality mathematics and science materials to parents.
- Broaden the coordination between the deployment of Title I funds and improvement efforts in mathematics.
- Promote positive public engagement in mathematics and science education.

What has SSI accomplished?

In its short tenure, SSI has affected mathematics, science and technology education in several major ways:

- Invested over \$500,000 to develop and pilot standards-based preservice mathematics education for prospective elementary teachers in at least 10 two- and four-year institutions for the 1996-97 academic year.
- Invested more than \$1 million in 28 projects statewide to improve student performance in mathematics on Title I campuses.
- Supported the development of the first draft of the Texas Essential Knowledge and Skills.
- Developed five mathematics institutes aligned with the new TEKS for teachers in grade clusters of one to two, three to six and six to eight and in high school algebra and geometry.
- Organized a powerful board that includes leaders of Texas business and industry, the mathematics and science communities, the superintendents of the three largest Texas school districts, a former president of the National Council of Teachers of Mathematics (NCTM), a former member of a university board of regents and others.

The Texas SSI is dedicated to working with local communities to assure access to a high quality mathematics and science education for every student in Texas.

Dr. David Hill is the program director for SSI with the Charles A. Dana Center for Mathematics and Science Education at The University of Texas at Austin.

For more information on the Systemic Statewide Initiative contact the Charles A. Dana Center at 512/471-6190.



Eloy Rodriguez, Ph.D.

I'D NEVER REALLY THOUGHT ABOUT BEING A SCIENTIST...

Eloy Rodriguez, Ph.D., the James A. Perkins Professor of Environmental Studies at Cornell University and a native of Edinburg, Texas, is the first U.S.-born Latino to hold an endowed position in the sciences. In his decades-long quest for organic cures for human diseases, he has developed a new, controversial, discipline that studies how animals use plants as medicine. Since the 1970s, he has traveled to deserts, jungles and rain forests around the world to gather plants to bring back to his lab to analyze because he believes that plants are a virtually untapped source of natural drugs to treat human diseases. (He also served as a technical consultant for the movie, *The Medicine Man*.) Rodriguez has pioneered programs to excite Latino and other minority children about science. Below are some of his comments about education and his experience.

"You know, I used to pick cotton as a kid. Cotton, strawberries, cherries. And I hated it – I hated it! I swore I'd never do it again. It's why you got an education. And look at me now. I've got a Ph.D. and I'm still collecting plants for a living."

– on being one of the world's leading plant chemists

"When I'm tramping about in the bush, I don't pretend that I'll discover the cure for AIDS, that's not the reason I'm passionate about being there. I just continue to be amazed by nature and am driven by an intellectual hunger to better understand it."

– on his interest in biological chemistry

"We were so poor that crime really didn't pay. It really didn't. I mean, who do you steal from in a neighborhood like ours?"

– on growing up in a small frame house on stilts in Edinburg, Texas

"But they [his family] all knew that education was really important. Education would be the way out. And all of us, the kids, we could see that."

– on his family's appreciation of education despite the fact that his migrant-farmer father was in school through the first grade and his mother was in school through the seventh grade

"I know how it feels to be marginalized. It starts in the first grade, when you aren't called upon. It starts early in the game... They [teachers] hit me on my hands and made me write on the blackboard 'I will not speak Spanish.' They had this idea that your brain didn't have the capacity to handle two languages."

– on racial bias and the lack of appreciation in Texas public schools for his home language

"I told her, 'But I don't even know where the engine is in a car.' And I really didn't. I couldn't have cared less about that stuff."

– on his high school counselor's recommendation that he apply to a technical college for mechanics even though he was in the college-prep program in high school

"I'd never really thought about being a scientist. It wasn't something many Hispanics seemed to do. I always say I saw my first snowflake before I saw my first Hispanic scientist."

– on being introduced to biological sciences by mentors in college

"All along, I was very aware that I was the first this, the first that, and I knew, I knew these guys were waiting for me to slip up... I was going 18 hours a day, living in the lab, so there was no way I could have gotten married – that would have been disastrous."

– on being the first U.S.-born Latino to teach biological science at his university and his efforts to win tenure

"Most of the kids have never met a scientist. They know nothing about what they do, or why you would want to be one... There is a critical mass of really good kids out there. Now is the time to bring them in [to the sciences]."

– on deciding, after the birth of his children, to encourage Latino and other minority youths in science

"The topic of how animals use plants, and of herbal medicines in general, allows me to connect to the public. That's very important to me. There isn't anything scientists are doing at research universities that they shouldn't be able to communicate to the average person the street. There's no excuse; I don't care how brilliant they are. If they cannot communicate what they're doing, we've got a major

I'd Never Really - continued on page 15

MAKING MATH AND SCIENCE RELEVANT

Kate Mahoney and Kirby Gchachu

Sigmund Boloz brings to mind the struggle that many students experience daily upon entering the school grounds:

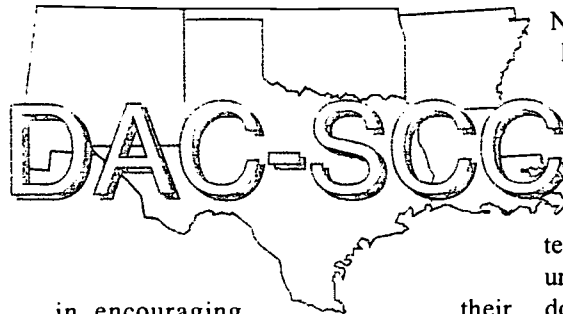
Learning does not come from one source, nor is it best learned from behind a desk, hands folded, feet flat on the floor and eyes front. Before the child entered school, he learned language actively, by interacting with his environment. He used language purposely to get things done. As educators, we must go back to the roots of his learning, to use language to get things done. We must merge our traditional sense of schooling with the real world. What we do in school must not insult the child's past but must build upon his past and encourage future learning (1985).

A child's home culture can and should be used as a springboard to learning science and mathematics. Building on a child's background creates a wealth of information that can be used to increase the knowledge base of all students. If one child's background remains untapped, all students miss out on this valuable information. Language, history and cultural perspectives on environment and family structure should be used to enhance science and mathematics learning for the entire class.

The classroom teacher has tremendous power. The teacher can empower a child to become a critical thinker who is proud of his or her heritage and has high self-esteem. On the other hand, the teacher also has the power to destroy aspirations by not allowing a child to recognize and celebrate the importance of his or her own culture. Recognizing a student's culture and using this to create a positive learning environment takes a great deal of energy and resources.

Recruiting parents as a source of this energy and these resources is one way of enhancing the learning environment for a second language learner. Parents can create a bridge between home and school to help ease the transition for many students.

Recently, A:shivi Elementary School in Zuni, New Mexico, hosted a workshop on the *Playtime Is Science* program. This involved parents in experiencing how everyday activities and chores are related directly to science. It was designed specifically to increase parents' confidence



in encouraging their children's interest in science. Having parents present also gives teachers more opportunities to apply cultural values to science and math concepts used in the classroom.

Playtime Is Science was developed by Educational Equity Concepts, a non-profit organization in New York City. A:shivi Elementary provided this workshop with support from SIMSE (Systemic Initiative in Math and Science Education), a five-year state initiative funded by the National Science Foundation, as well as the Title IV desegregation assistance program,

New Mexico State Department of Education, and IDRA's Desegregation Assistance Center - South Central Collaborative.

One of SIMSE's foci is equity in education. More specifically, SIMSE provides relevant math, science and technology for children from New Mexico's unique cultures, such as *Playtime Is Science* does. A:shivi Elementary School has been a part of the SIMSE process for two years. The Zuni Public School District is located in the extreme western part of New Mexico. The nearest town is Gallup, located 35 miles north of Zuni Pueblo. Albuquerque, the largest city in New Mexico, is 160 miles to the east. The present pueblo has occupied this site since 1692. Because of their remote location, the Zuni people have maintained a strong traditional religious, linguistic and cultural heritage. The Zuni language is unique among the seven Native American languages spoken in New Mexico. It is

Making Math and Science - continued on page 10

USING THE STUDENT'S HOME LANGUAGE EXPANDS ENGLISH LANGUAGE ACQUISITION

Concept	Zuni	English Interpretation
Attribute	ko'hol inak'yanna	what it may look like
	yahoni	thick
	bisse	thin
	luyayanne	soft to the touch
	k'yallo	slippery
	otda	rough
	k'yaba	wide
	mulukdanne	narrow or trim
	ukdi	heavy
	lubabanne	fly away
	lushayanne	soft/fragile to the point
dashanna	long (length)	
Compare	ani:de'chu	equalize, view objectively check it out view carefully
	hawi:ninikk'ya	
	andehha-i	
	el'una	
Cycle	idulla:bi	to encircle
	i:lohk'ya	to turn around
	ik'ohbu	to return (cycle)
Schelera	ishho'mayaba	schelera--wavy distortion

Making Math and Science - continued from page 9
 predominant in homes in the community and in all tribal government, religious, social and cultural interactions. The Zuni people value education and have made communication with parents and the community a priority. The *Playtime Is Science* workshop enabled parents and teachers to interact, and it has encouraged building bridges and maintaining ties between families and schools.

Science concepts are the same across cultures; it is just the way in which we interpret the utilization of these concepts that differs. However, to use a child's language to provide a bridge for better and faster understanding is powerful. The *Playtime Is Science* workshop provided science and mathematics concepts that are used every day in the Zuni world, as well as being expressed in national benchmarks.

Using both the Zuni and English languages is very important. Specific expressions used during any class session

do not have to constitute a deliberate lesson, but their use should be timely and within the context of the activity.

For example, when teachers and students explore the concept of "cycle" many activities that are relevant to the child's environment can be utilized and opportunities to include language that expresses the child's thought and extends it to a higher level can be provided. Rather than using pictures or CD-ROM programs that have no relationship to the child's background, experiential activities can tie this background to the academic world. The list in the box on page 9 gives an example of how rich such an experience can be with the inclusion of the child's home language. This dual language not only extends to the child's home language experience, but also expands the child's English language acquisition.

As educators, we must go back to the roots of the child's learning. The roots are at home, in the grandparents' house, in the community, in the culture. Use the power of

the child. See through the eyes of a child. Experience the world through a child.

Resources

Boloz, Sigmund. Stated in a workshop handout (1985).

Kate Mahoney is a Northwest SIMSE associate field specialist and Kirby Gchachu is a Northwest SIMSE field specialist. SIMSE is the Systemic Initiative in Math Science Education.

The IDRA Desegregation Assistance Center - South Central Collaborative has been working with Educational Equity Concepts (EEC) to implement the Playtime Is Science curriculum in Region VI, which includes Arkansas, Louisiana, New Mexico, Oklahoma and Texas. Playtime Is Science was created to help give all children - regardless of race, ethnicity, sex, disability or income level - equal access to the study of science. The program's motto is that science is for everyone - not just a privileged few! For more information on Playtime Is Science see "Playtime Is Science Expands in Region VI" by Bradley Scott (IDRA Newsletter, February 1995, pg. 13) or contact IDRA at 210/684-8180.

DESEGREGATION ASSISTANCE MODULES AVAILABLE

Recognizing Cultural Differences in the Classroom

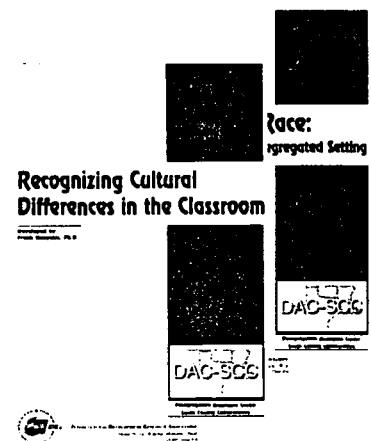
by Frank Gonzales, Ph.D.

This training module is designed for trainers to familiarize classroom teachers with cultural elements that some national origin minority populations may bring to the school environment. Use this tool to help participants define culture and the categories of culture. Participants can become familiar with elements of surface culture and deep culture from several ethnic groups. Participants can also generate ideas for validating the culture of their students. This 45-page module comes with session outlines, a pre/post test, and handout and transparency masters (ISBN 1-878550-62-4; 1996 Revised).

It's a Matter of Race: Race Relations in the Desegregated Setting

by Bradley Scott, M.A.

This training module is designed for trainers to familiarize classroom teachers with key issues regarding interpersonal race relationships in the desegregated setting and to review suggestions on how to handle these relationships effectively. Participants will establish an appropriate context for examining race relations in the desegregated setting. Use this module to familiarize participants with important related race relation terms and to analyze examples of racism or other forms of discrimination. Participants can also apply a process for dispelling rumors and myths that affect good race relations. This 52-page module comes with session outlines, a pre/post test, and handout and transparency masters (ISBN 1-878550-17-9; 1996 Second Edition).



Each module is \$8.50 and is available from IDRA at 5835 Callaghan Road, Suite 350, San Antonio, Texas 78228-1190; 210/684-8180; fax 210/684-5389; E-mail: cgoodman@txdirect.net.

NEW BOOK PRESENTS A GENERATION OF ADVOCACY

The Intercultural Development Research Association (IDRA) and Ginn Press announce the publication of a new book on multicultural education. The book, *Multicultural Education: A Generation of Advocacy* by Dr. José A. Cárdenas, is a compilation of 92 articles on multicultural education published over a 25-year period. Dr. Cárdenas is the founder of IDRA, was its executive director for 20 years and now serves as director emeritus of the organization.

The contents of the book provide a historical overview of the author's involvement in the most significant issues in multicultural education as a teacher, administrator and an active advocate for children. It is being distributed by Allyn & Bacon as a reference textbook on this subject.

The book includes a preface and introduction, and a timely foreword by Dr. María "Cuca" Robledo Montecel, the present executive director of IDRA. In the foreword, Dr. Robledo Montecel states, "What is needed is a place to stand, a place to come from as we create workable solutions. In this compilation and examination of 25 years of advocacy, Dr. José A. Cárdenas offers such a place... The premise is simple: all children are valuable and schooling must acknowledge, nurture, and build on that value. This book is an urgent and always insightful call for clarity of purpose."

The dates of the various articles included in the textbook range from 1970 to 1992, though some of the material dates back to the middle 1960s. Articles are organized into 10 chapters dealing with each of 10 major issues in multicultural education. Each chapter is accompanied by a bibliography and appropriate discussion questions. The book also contains five cumulative indices of authors, court cases, legislation, organizations and topics.

The first chapter, "**Minority Education**," addresses problems in the education of minority children encountered by the author during a 42-year period and terminates with recommendations for the creation of culturally democratic learning environments in our nation's schools.

Chapter 2, "**Bilingual Education**," provides a historical perspective on the development and implementation of bilingual education programs in the United States. One article, "The Role of Native Language Instruction in Bilingual Education" (1986), may be the most frequently published rationale for bilingual education in the country. This chapter provides insights into the history of legislation and litigation, attacks on

bilingual education by individuals and organizations, issues of segregation and financing, and ends with an extraordinary article on contemporary problems in the implementation of bilingual programs.

Chapter 3 deals with the **education of undocumented children**. The recent enactment of Proposition 187 in California make these articles on past court cases extremely relevant today.

Chapter 4, "**School Dropouts**," has a shorter time span, covering the period between the first Texas study on school dropouts conducted by IDRA in 1986 and current successful, and unsuccessful, approaches to the problem.

Chapter 5 contains seven articles on **retentions in grade** and the implication of this practice on the subsequent school performance of children.

Chapter 6, "**Early Childhood Education**," presents a rationale for early intervention in the education of minority and disadvantaged children, the success of early childhood education and current problems in the implementation of such programs.

Chapter 7 presents four articles on **science, math and technology** in the schools, and its relationship to equal educational opportunity.

Chapter 8, "**Standardized Testing**," presents various articles on the use, and misuse, of standardized tests. The 1972 article on intelligence testing of bilingual children is an excellent rebuttal to contemporary literature which maintains that IQ tests are valid and contain no cultural biases.

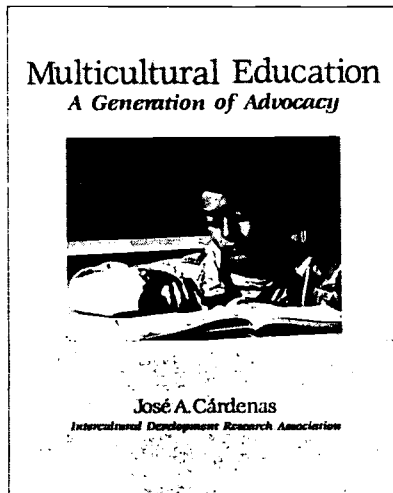
Chapter 9 contains 13 articles on **school reform**. The author identifies many of the current

attempts at school reform as being dysfunctional, and even counterproductive, for minority and disadvantaged children.

The last chapter, "**A New Educational Paradigm**" (1992), brings closure to the book with several hundred specific recommendations for cultural, language, socioeconomic, geographic, psychological and gender equity in our country's schools.

Multicultural Education: A Generation of Advocacy is a reading imperative for teachers, administrators, teacher trainers and policy formulators interested in providing equal educational opportunity to all segments of the school population.

At the request of the author, all royalties from the sale of this book will be used as stipends for school youth participating in IDRA's dropout prevention program. The price through IDRA is \$38.



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demically acceptable or higher, school districts or campuses must meet at least 21 different standards set by TEA (TEA, 1995).

TAAS Performance by 10th Graders

In every category – reading, writing and math – White students scored higher than the state passing rate and in some instances scored above the state standard. African American, Hispanic and disadvantaged students scored lower than the state passing rate by as much as 24 percentage points. In most cases, passing rates for African American, Hispanic and economically disadvantaged students were significantly lower than White students by as much as 39 percentage points.

- ❖ During 1993, 51 percent of all 10th grade students not in special education classes passed all sections taken. Using TEA's TAAS accountability standards, Texas would be categorized as *academically acceptable*:
 - 72 percent of students passed the reading section,
 - 81 percent of students passed the writing section, and
 - 56 percent of students passed the math section (that is 16 percentage points less than in reading and 25 percentage points less than in writing) (TEA, 1995).

CHANGES IN TEA ACCOUNTABILITY STANDARDS

Category	TAAS Performance			
		1994/1995	1996	
Low performing	less than	25%	30%	passing
Academically acceptable	at least	25%	30%	passing
Recognized	at least	65%	70%	passing
Exemplary	at least	90%	90%	passing

Source: Texas Education Agency

- ❖ During 1994, 52 percent of all students passed all tests taken.
 - 76 percent of students passed the reading section,
 - 81 percent of students passed the writing section, and
 - 52 percent of students passed the math section (this passing rate was significantly lower than in reading by 24 percentage points and in writing by 29 percentage points) (TEA, 1995).
- ❖ During 1995, 54 percent of all students passed all tests taken.
 - 76 percent of students passed the reading section,
 - 86 percent of students passed the writing section, and
 - 54 percent of students passed the math section (that is 24 percentage points less than in reading and 32 percentage points less than in writing) (TEA, 1995).

Math Scores

For all students, including White students, math passing rates are lower than for those of reading and writing. However, White students as a group would fall in the *recognized* category if judged alone. White students surpassed the statewide passing rate for math in 1993, 1994 and 1995 by as much as 14 percentage points, while African American, Hispanic and economically disadvantaged students have scored consistently lower than the state passing rate.

There have been significant gains, particularly in the area of reading and writing, on the TAAS test. And although math has seen some slight gain, in 1995, approximately 41 percent (80,133) of students failed the math portion of the exit exam the first time they took it. For the writing section, 27,815 students failed the exit test the first time they took it.

In 1995, 10,862 students in the 12th grade still had not passed the math portion of the TAAS test (TEA, 1995). Students as a whole have been unable to reach beyond the *academically acceptable/low performing* categories. In particular, African Americans, Hispanics and economically disadvantaged students are lagging far behind even the state average, which is below state standard by 11 percentage points.

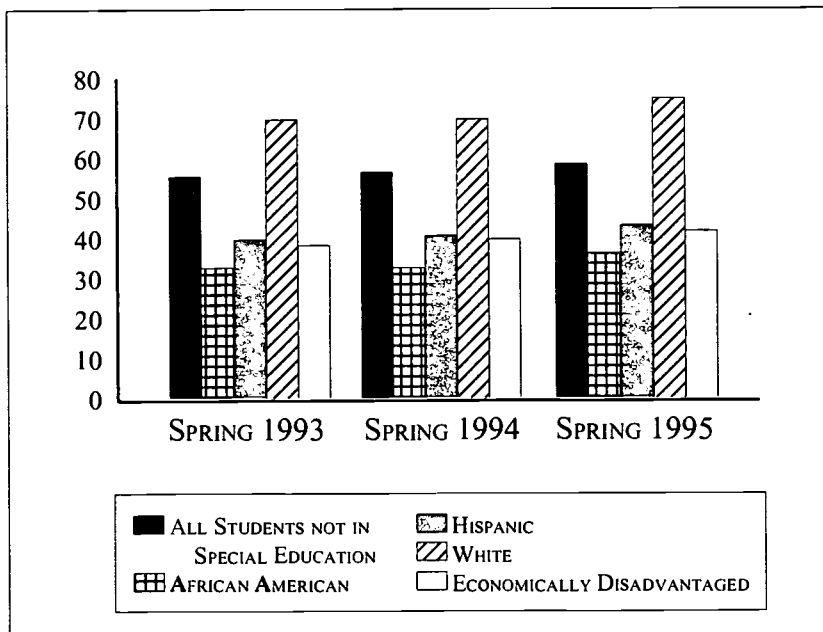
In math, schools need to do the same things that have helped students succeed in other portions of the test:

- Make math part of an interdisciplinary plan and make all teachers responsible for math,
- Do daily (DOL) or weekly activities that focus specifically on math, and
- Provide TAAS training for all teachers in math.

Project Pathways

Project Pathways was developed to help Texas high schools meet the needs of students who have not mastered the TAAS test. Project Pathways is a staff development program based on the premise that

PERCENT MEETING MINIMUM EXPECTATIONS: TAAS MATHEMATICS GRADE 10



Source: Texas Education Agency, 1995

students, including limited-English-proficient, minority and economically disadvantaged students and those in at-risk situations, can achieve (IDRA, 1993b).

Project Pathways was a statewide collaborative formulated in 1993 between the Intercultural Development Research Association (IDRA); the Center for Success and Learning (CSL); the Texas Association for Supervision, Curriculum and Development (TASCD); and Educational Services Centers I, IV, X and XX, funded by the Texas Education Agency (TEA), designed to address the needs of the students at the secondary level who do not pass the TAAS (Adame-Reyna, 1993).

IDRA created seven Project Pathway training sessions emphasizing strategies that better prepare minority students to be successful on the TAAS test. Each training

session is directed at teachers and students in the following critical areas:

- Reading,
- Writing,
- Mathematics,
- Metacognitive strategies,
- English as a second language (ESL) strategies,
- Test-taking strategies, and
- TAAS test overview.

The first five topics are designed as six-hour sessions and the last two are designed as three-hour sessions. In addition, IDRA reported research results and developed a nine-step restructuring framework, a decision-making model, examples of programs that work and guides for resources for administrators.

The training session "Understanding the TAAS Test: Mathematics" is designed to assist participants in preparing their stu-

dents for the math TAAS test at the exit level and includes the components for participants listed below.

- Learn important information about TAAS for the current school year (who will take it, when they will take it, etc.) and any changes in focus of the math portion of the TAAS test.
- Become familiar with the objectives of the math portion of the TAAS test and identify the prerequisite skills and prior knowledge that students must have in order to answer correctly.
- Become familiar with the general specifications of the math TAAS test at the exit level.
- Practice developing TAAS-like math items.
- Participate in group activities that can be useful in the classroom.

TAAS Math - continued on page 14

PERCENT MEETING MINIMUM EXPECTATIONS: TAAS SPRING 1993, SPRING 1994 AND SPRING 1995 GRADE 10

	Percent Meeting Min. Expectations			Gain/Loss	
	1993	1994	1995	1993-1995	1994-1995
Reading					
All Students Not in Special Education	72%	76%	76%	4	0
African American	56%	61%	60%	4	-1
Hispanic	55%	62%	62%	7	0
White	85%	88%	88%	3	0
Economically Disadvantaged	51%	59%	59%	8	0
Mathematics					
All Students Not in Special Education	56%	57%	59%	3	2
African American	33%	33%	36%	3	3
Hispanic	40%	41%	43%	3	2
White	70%	70%	74%	4	4
Economically Disadvantaged	39%	40%	42%	3	2
Writing					
All Students Not in Special Education	81%	81%	86%	5	5
African American	71%	69%	78%	7	9
Hispanic	70%	70%	76%	6	6
White	91%	90%	93%	2	3
Economically Disadvantaged	67%	68%	75%	8	7
All Tests Taken					
All Students Not in Special Education	51%	52%	54%	3	2
African American	29%	29%	32%	3	3
Hispanic	34%	35%	37%	3	2
White	66%	67%	70%	4	3
Economically Disadvantaged	31%	33%	35%	4	2

Does not include year-round education results

Source: Texas Education Agency, 1995

- Review test-taking strategies.
- Review common mathematical errors made by students.

In 1994, IDRA formed a task force to develop a strategy with a particular school district in south Texas for improvement on the TAAS, particularly in reading. Part of the strategy involved an intensive effort for the improvement of instruction and learning at the 10th grade level and included Project Pathways training. As a result, the number of students meeting TAAS reading standards jumped from 31 percent to 60 percent in one year. The improvement in reading performance was matched by similar drastic improvements in other areas of the TAAS: mathematics increased from 21 percent to 54 percent and writing from 41 percent to 68 percent. TAAS performance showed a similar increase for limited-English-proficient (LEP) students as a result of the pilot program (Robledo Montecel, Ramos and Cárdenas, 1994).

To inform the development of the Project Pathways program, IDRA set out to identify the characteristics and needs of students and schools with poor TAAS performance by studying diverse school districts (rural and urban, small and large, high and low minority student enrollment, high and low performance on the TAAS) from four regional education areas. Among other findings, the results of the study indicated that students who perform poorly on the TAAS test display many positive characteristics *inconsistent* with the general school perceptions of these students. The study also found, "Students from groups expected to perform poorly on the TAAS, performed surprisingly well in schools with overall high performance" (Robledo Montecel, Supik and Cárdenas, 1994). This indicates that effective leadership and high expectations in schools can create excellence for all students.

Conclusion

Looking at the last three years of student performance in all tests taken, the state of Texas remains at *academically acceptable/low performing* standards. In 1995, White students met the standard for all tests that would have rated them as *recognized*, but African Americans, Hispanics and economically disadvantaged students remained at *academically acceptable*.

It is imperative that schools teach

students in ways such that they can all reach *recognized* and even *exemplary* status. In speaking of the pilot program in the south Texas school district, Dr. María Robledo Montecel, IDRA's executive director, commented:

Equally important is the finding that affirms that all students can learn though appropriate instruction. The students [of this district], who are predominantly Mexican American, limited-English-proficient and economically disadvantaged, have succeeded because of administrative leadership, school effort and the belief that they can – and will – learn (Robledo Montecel, Ramos and Cárdenas, 1994).

Such initiatives will bring all students up to the highest standard and promote academic excellence for all students.

Resources

- Adame-Reyna, Ninta. "Project Pathways: Innovative Teaching Strategies for Improving LEP Students' TAAS Scores," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, October 1993), pg. 3.
- Robledo Montecel, María and Mercedes Ramos and José A. Cárdenas. "Rio Grande City: A Case Study in TAAS Performance," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, August 1994), pp. 4-5.
- Robledo Montecel, María, and Josie Danini Supik and

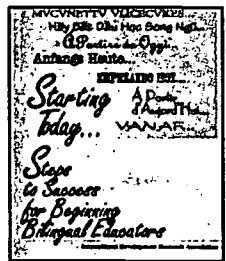
IN 1995, APPROXIMATELY 41 PERCENT OF STUDENTS FAILED THE MATH PORTION OF THE EXIT EXAM THE FIRST TIME THEY TOOK IT.

- José A. Cárdenas. "Improving Student Performance: Study Identifies Better Approach," *IDRA Newsletter* (San Antonio, Texas: Intercultural Development Research Association, October 1994), pp. 1, 14.
- IDRA. *Project Pathways, Volume One: Research* (San Antonio, Texas: Intercultural Development Research Association, 1993), pg. 23.
- IDRA. *Project Pathways, Volume Six: Administrators Resource Guide* (San Antonio, Texas: Intercultural Development Research Association, 1993), pg. 2.
- Texas Education Agency (TEA). *1996 Accountability Criteria and Standards* (Austin, Texas: Texas Education Agency Department of Planning and Research, December 1, 1995), pp. 1-3.
- Texas Education Agency (TEA). *Snapshot 1991: 1990-91 School District Profiles* (Austin, Texas: Texas Education Agency, Spring 1992), pg. 9.
- Texas Education Agency (TEA). *Texas Assessment of Academic Skills: Student Performance Results 1992-93 and 1993-94* (Austin, Texas: Texas Education Agency, Fall 1994), pg. 16.

Linda Cantu is a research associate in the IDRA Division of Research and Evaluation.

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MAGNET SCHOOLS: POCKETS OF EXCELLENCE IN A SEA OF DIVERSITY

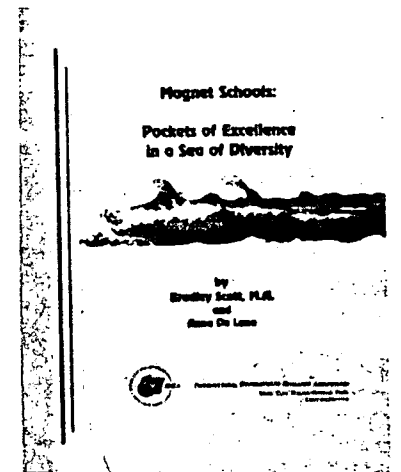
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- ✓ Strategies for student support
- ✓ Strategies for race relations
- ✓ Strategies for parent and community involvement
- ✓ Strategies for magnet and non-magnet school collaboration



Pockets of Excellence reports on 11 magnet school campuses in four school districts in federal Region VI involving the states of Arkansas, Louisiana and Texas. In addition to the information for magnet schools, *Pockets of Excellence* also offers recommendations about effective strategies in the operation of magnet schools that might be adopted by non-magnet schools in desegregated settings as a part of their school improvement and restructuring efforts.

Wherever students may be found — irrespective of their race, sex, national origin or economic circumstance — they can succeed. What *Pockets of Excellence* demonstrates is that schools with diverse populations can produce success.

Price is \$25 and includes shipping and handling. To place an order, send a check or purchase order to IDRA at 5835 Callaghan Road, Suite 350, San Antonio, Texas 78228-1190; 210/684-8180; fax 210/684-5389.

I'd Never Really - continued from page 8

problem. After all, the public invests in scientific research and education through their taxes. The least we can do is explain to them the importance of their investment."

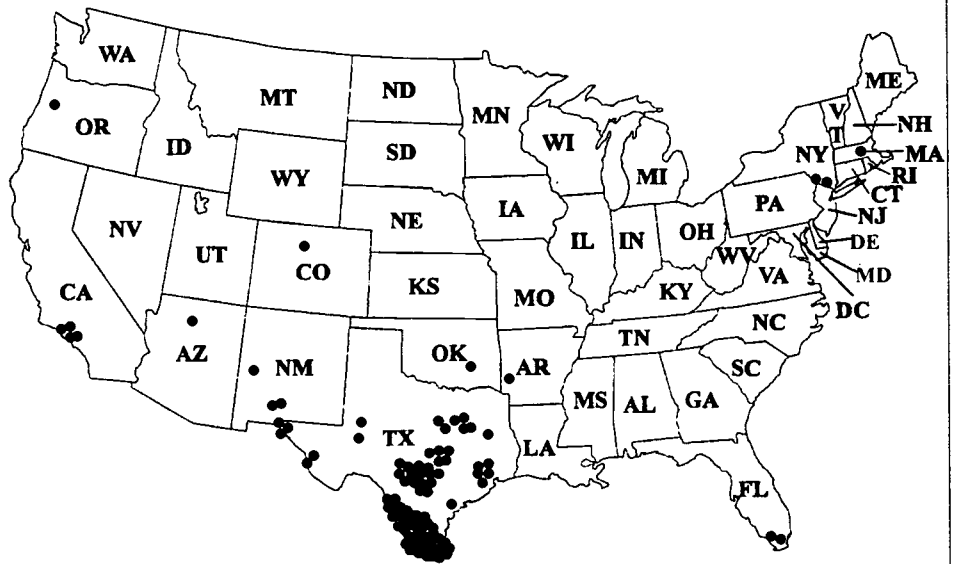
—on travels to lecture two to three times each week about conservation and biomedicines of the rain forest and on his fluency in both English and Spanish, which means he can talk directly to half a billion people in the Americas

Remarks excerpted from "The Really Secret Life of Plants" by Virginia Morell in The New York Times Magazine (December 18, 1994), "Organic Cures Marginalized Kids" by Julie L. Nicklin in The Chronicle of Higher Education (July 7, 1995), and "Cure's Medicines" by Metta Winter in Cornell (Volume 5, Number 1, 1996) with permission from Dr. Eloy Rodriguez.

HIGHLIGHTS OF RECENT IDRA ACTIVITIES

In April, IDRA worked with 4,460 teachers, administrators and parents through 42 training and technical assistance activities and 72 program sites in eleven states. Topics included:

- ◆ *Young Scientists Acquiring English*
- ◆ Technology in the Bilingual/ESL Classroom
- ◆ Higher Order Thinking Skills
- ◆ WOCAM (World Class Achievement in Math)
- ◆ Effective Bilingual Communication through Cultural Sensitivity
- ◆ Alternative Assessment



Participating agencies and school districts include:

- ◆ Dallas ISD
- ◆ Northside ISD, San Antonio
- ◆ Alambra City School District, California
- ◆ El Paso ISD
- ◆ Texas Education Agency
- ◆ Cobre Consolidated School District, New Mexico

IDRA staff provides services to:

- ◆ public school teachers
- ◆ parents
- ◆ administrators
- ◆ other decision-makers in public education

Services include:

- ◆ training and technical assistance
- ◆ evaluation
- ◆ serving as expert witnesses in policy settings and court cases
- ◆ publishing research and professional papers, books, videos and curricula.

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