opportunities to acquire and practice skills.

Spring 1984 feedback reveals that principals now realize the importance of the pre-conference and limit their objectives for teacher improvement. Together, the principal and teacher identify a workable number of objectives on which to concentrate intensely. Some principals have developed and implemented their own pre-conference format.

The administrators decided that although interaction analysis is a valuable tool, it would be more desirable for one or two people (including an assistant superintendent) to become proficient in its use and thus serve as resource personnel. Less intricate models of interaction analysis are being developed for use by all principals.

In retrospect, principals realized more long lasting benefits from the training sessions and subsequent practice than they thought they would. Superintendent Mackin has communicated his enthusiasm for moving forward in instructional supervision to each school committee.

For more information, contact Allen G. Brown, Assistant Superintendent, Nauset Regional School District and Union No. 54, 78 Eldredge Park Way, Rural Route #2, Orleans, MA 02653.

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Curriculum Abstracts

WILLIAM J. STEWART AND CONRAD F. TOEPFER, JR.

Students Learn Computers by Building Them

In Chicago's Roosevelt High School students in the Computer Centered Technology (CCT) Program know computers inside-out because they build them. They've also saved the Chicago School District $50,000; what costs $1,200 for a student to build sells for $2,600 in stores. And service of the units by students also lessens costs.

Now in its fifth year, the CCT program is taught over four years and covers topics such as computer switching mechanisms, memory banks, programming, and data processing. Each year focuses on one of four progressive units: Introduction to the Computer, Instrumentation and Circuit Analysis, Digital Electronics, and Microcomputer Systems. In the first year, students build a simple computer which is the basis for their later building of a 48-K microcomputer from Heathkit.

Students learn full utilization of the computers with skills adaptable to using larger, commercially built units. Students also write their own curriculum guides and user manuals as well as tutorial programs specifically tailored to individual teacher needs. Enthusiasm for the program among students is very high and demand for the program continues to increase.

See Susan Jarrell, "A School That Builds Its Own Computers," *Electronic Learning* (January 1984): 50–51.

High School Students Gain Through One-to-One Counseling

North High School in Waukesha, Wisconsin, has found its "One-to-One" program successful in coping with a range of student problems. The school feels that the program has resulted in a reduction of dropouts and anti-social behavior coupled with improvement of academic achievement and student self-concept. Organizers of the program and students in it feel that the establishment of caring relationships between faculty and students have resulted in the program's success.

After setting criteria for the program, students identified as needing help were contacted. Interested faculty members voluntarily met with the counseling staff for in-service experiences to help them participate in the "One-to-One" program. Areas considered included the nature of self-concept, techniques of building a caring relationship (listening, restatement, reflection, and emphathetic understanding), and time management. After an initial interview, students interested in the program were selected for it. Fifteen of the school's 87 faculty members worked with 18 students. Fourteen students completed the year's program. Improvement in attendance, grades, and positive changes in attitude toward school and inter-personal relationships were achieved by those students who stayed with the program.

Students feel they now have positive reasons to stay in school and that the care shown them by their "One-to-One" faculty member also caused them to care more about themselves. Six of the 18 students returned to the program for a second year and others were selected to form a second beginning group. Those returning to the program for a second year feel the program helped them meet school responsibilities and improve school-related interpersonal relationships. The "One-to-One" program is continuing this year with hope that the school staff will identify further ways in which staff-student relationships can become more responsive to student needs in positive ways.

See Ryan Champeau, "One-to-One: A Counseling Relationship," *NASSP Bulletin* 67, 467 (December 1983): 124–125.

Enriching Elementary School Mathematics Through Computers

The Rockford, Illinois, School District has developed a mathematics enrichment program using computers to improve mathematics performance in the elementary grades. After a year of planning and a summer workshop for interested teachers, a pull-out program for selected groups of students identified as mathematically talented was organized. The computer was used to help students understand the development of mathematics and its related tools and machines. Parent involvement reinforce-

ment and interaction with children at home was a planned component of the program.

The goal for 1st and 2nd graders was horizontal enrichment rather than vertical advancement. Manipulative materials and activities were used to explore counting, learning different bases, and addition and subtraction. Spatial relations proved a difficult concept but teachers succeeded by using hands–on materials. Computer introduction taught keyboarding, how to turn the computer on and off, and loading of simple programs.

The 3rd through 6th grade program considered how computers work, including elements of the computer and basic programming. Strong emphasis was given to developing individual student problem solving capabilities. The program allowed separation into primary and intermediate groups for some vertical differentiation. Visits to large computer facilities were made to observe and discuss applied computer utilization.

Pre- and post-test results indicate the program succeeded in its initial phase. Children were 100 percent in favor of the program at the end of the year. This program is not an endorsement of vertical acceleration but of a pull–out program as a means for enrichment.

See Nancy Bloomstrand, "Kids with Computers: An Enrichment Program for Elementary Schoolchildren," *Arithmetic Teacher* 31, 5 (January 1984): 12–15.

A College High-Tech Program for Junior and Senior High Students

San Antonio College has developed a program to make high tech math and science experiences available to junior and senior high students in the city's schools. Students attend college classes each afternoon after morning studies in their own schools. Credit is given students toward high school graduation with a special certificate from the high tech school.

Students take science, math, and computer courses from the regular college faculty, have access to the college facilities, libraries, and computer lab. The latter is a sophisticated Southwest Technical Products Corp. facility including a 512K central processing unit and a 20 megabyte hard disk. Courses offered in the lab include programming in FORTRAN, COBAL, BASIC, PASCAL, AND "C." Logic and technical writing are also popular courses. Students can select courses based on their own interests.

The school opened last fall with 80 students selected for phase one, a college-bound track which prepares students for college level work through advanced courses. Phase two will open in 1985 and will be designed to prepare students for entry into technical jobs upon high school graduation.

Reaction from students, parents, the college, and high tech companies has been positive. United San Antonio, a local economic development organization, has donated equipment for the program and sees this approach as a model for upgrading high tech skills in students for college preparation as well as employment.

See Barbara Stover, "College Opens High Tech Door to Teens," *Electronic Education* 3, 4 (January 1984): 33–34.

Children Can Write the Day They Enter School!!

Hundreds of visitors from foreign nations have joined the many American educators who are observing the Brooklyn, New York, Community School District 15 writing process technique program. Based on research by Lucy McCormick Calkins suggesting that children can learn to write in the same way they learn to talk, District 15 has experienced great success with this approach. The program encourages young children to write at the level they can and then build skills upon the enthusiasm from their beginning achievements.

The program was initiated after Calkins demonstrated her ideas could work with young children in the District 15 school. The school is a crowded, urban building serving many youngsters who are not native English–speaking children, two-thirds of whom come from poverty and near poverty levels. Following careful in-service preparation of a cadre of teachers, the program began for children and the initiated teachers also served as trainers of other teachers. Over the past three years, the school has organized over 100 writing process classrooms from kindergarten through grade nine.

The kindergarten program begins using the research based "invented spelling" approach which encourages learners to develop a sound-symbol system to spell as they hear, and to codify their narrative writing of stories. Spelling thus becomes a tool rather than an end. Spelling develops as the earlier "drafts" of stories are corrected and youngsters perfect their personal sound-symbol systems. Thus students gain proficiency in both writing and spelling at this early age. Their growth in writing reflects their confidence to express their ideas in written form.

Extending this beginning success requires that teachers schedule at least a daily, hour block of time in the primary grades for students to build their competency. The results of this program have reversed more traditional efforts to delay actual writing by young children until they have a range of skills. In the current climate concerned with improving learner skills, this interesting approach deserves the attention of curriculum leaders. The Chief of the New York State Education Department Bureau of English and Reading describes this project as "the most exciting classroom observations I have made in 20 years."

See Hindy, List, "Kids Can Write the Day They Start School," *Early Years* 14, 15 (January 1984): 31–33.

Gifted Classes Serve as Laboratory for Curriculum Change and Adaptation

Westside Elementary School in River Falls, Wisconsin, has developed a program for its Talented and Gifted (TAG) learners which capitalizes upon "learning" by "doing." Projects developed in the TAG program have gained use in the total curriculum development program of the Westside school. TAG classes have adopted a laboratory approach which allows new teaching-learning practices to be tested and for other interested teachers to observe these procedures in action. As a result, many practices which have proven

effective in the TAG classes have been incorporated into other classes with success.

Self-managed reading groups in which students take turns in tasks such as assigning readings, organizing vocabulary lists, and leading group discussions were adapted to the school's fourth grade basal reading series after initial utilization in the TAG program there. This approach, adapted from Joseph Renzulli's work, includes his "curriculum compactor" notion in which students test from materials which they have already mastered. This allows them to work on activities such as advanced-level study projects, enrichment units, and mini-courses. In addition, a program of Learning Centers has been used to display and utilize the results of student independent research projects.

The atmosphere created in the TAG program classes has facilitated the development of many curriculum changes which have had benefit for all classes in the Westside school. Curriculum change has become a more continuous and consistent process. The total curriculum development process at Westside Elementary School can now utilize a laboratory approach to instructional improvement through this project begun in the TAG classes.

See Paul Weber and Judy Freund, "This Wisconsin Program for the Gifted is a Laboratory for Innovation," *Phi Delta Kappan* 65, 5 (January 1984): 366.

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Letters

Leader as Servant

The February issue is excellent. I found the articles on "Leadership and Excellence in Schooling" and "A Team Approach to Instructional Leadership" particularly good. However, I strongly feel that any in-depth study of this topic should include Robert K. Greenleaf's concept of servant leadership, (*Servant Leadership: A Journey Into the Nature of Legitimate Power and Greatness*). I have taught Greenleaf's ideas to future administrators and I have personally applied them. I know that anyone who strives for excellence in educational administration would gain a great deal from reflecting upon and practicing servant leadership.

SISTER MARY LIAM
St. Elizabeth High School
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Principals Who Rock the Boat

The articles dealing with "Leadership Up Close" in the February issue were very helpful, but I have never seen anyone address the consequences to the careers of principals who run effective schools but rock the boat.

I am sure that most principals would happily follow the recommendations in those articles, except that most of them do not have multi-year contracts. If a principal offends someone at the central office level, that principal's job is at risk. School-level administrators' positions should be changed only because of documented poor performance and, as with teachers, the principal's supervisors should have to show evidence that they provided assistance. If this were the case, principals would be more effective instructional leaders.

The things I spoke of do happen to principals. They happened to me!

JACK HOUSEN
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Lorbeer Junior High School
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Teacher-Administrator Relationships

Having recently become an elementary school principal, I found "Managing for Effective Teaching" [February] extremely helpful. Greenblatt, Cooper, and Muth present a practical approach to effective teacher-administrator relationships.

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Surf City, New Jersey

Practicing Memory Skills

It is difficult to determine what purpose was served by "What's the Capital of North Dakota?" in the February issue. Any cursory review of the literature on thinking and problem solving reveals that memory skills are important to success in these areas. The fact that students need something to memorize at a point in time when they are acquiring or practicing these skills creates the circumstances the authors criticize. It is true that the tidbits of information which serve as the vehicles to practice the skills may not be important, but it is also true that one cannot remember in a vacuum.

When children learn facts through memorization, they learn those facts which, at the time, are compatible with their age, achievement level, or interests. As one grows older, these are often replaced with those facts and isolated bits of information that are complementary to what one is doing at a particular stage in life.

If memory skills are important, and research says they are; if we need something to memorize to acquire or practice these skills; if we use memory skills throughout our lives; what do the au-