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Research on BSCS Biology Programs

In the January issue of *The American Biology Teacher*, James Shymansky of the University of Iowa reports the findings of a "meta-analysis" of "47 measures of student performance in BSCS programs." In reviewing 25 years of research Shymansky found the Biological Sciences Curriculum Study (BSCS) biology programs to be the most effective of all of the new high school science programs developed in the 1960s. Revisions of the BSCS textbooks are still in use today and continue to be selected as a student text for high school biology. The study compared BSCS programs to other traditional programs by examining achievement, attitudes, process skills, and analytic skills. Overall, BSCS students outperformed the students in traditional biology classes by 24 percentile points. Specifically the student in BSCS

biology classes scored consistently well above their counterparts on all measures: attitudes toward science-88%, process skills-81%, analytic skills-77%, and achievement-72%. Students with higher IQ, ability, and socioeconomic status seemed to do even better, although all students regardless of these factors, did better than comparable students in traditional classes. BSCS teachers with more than five years of experience or a masters degree had higher student scores although again all BSCS teachers as a group showed a higher level of student achievement. The author concludes this report with a warning not to rush out to adopt BSCS programs blindly but rather examine these programs to determine the attributes that made them successful and incorporate those characteristics into existing or new programs.

Images of Science

Writers of national reports calling for increases in mathematical and scientific literacy will be supported by a recent report that 17-year-olds' science scores have declined steadily since 1973, but pleased that overall interest in science careers and activities has picked up. The Science Assessment and Research Project, supported by the National Science Foundation, released the data in *Images of Science: A Summary of Results from the 1981-82 National Assessment in Science*.

The Project, formed at the University of Minnesota to conduct periodic assess-

ment of students' knowledge and attitudes toward science, tested 18,000 9-, 13-, and 17-year-olds, and compared this data to studies conducted by NAEP in 1976-77.

The study found that 17-year-old white students outscored black students by 15 percentage points. Males outscored females by 3.3, but this was less than their 1977 lead of 4.2.

For 13-year-olds, collective attitudes toward science classes, teachers, careers, and the value of science were down 2.6 percentage points. At the same time, students reported participating in more science activities, due mainly to the burgeoning use of computers in schools. Students' perceived ability to help solve science-related social problems was down 2.3. And males again outperformed females, differences increasing slightly to 3.4.

9-year-olds' scores on 30 achievement items improved 1 percentage point since 1977, notably the first positive change at any age level in four science assessments. Differences between white and black students dropped from 15 to 12.5.

Images of Science is available from the Minnesota Research and Evaluation Center, 210 Burton Hall, University of Minnesota, Minneapolis, MN 55455 at \$9.00 per copy.

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Supervision

ROBERT J. KRAJEWSKI

Helping Principals Become Instructional Leaders

School officials at Jackson (Mississippi) Municipal Separate School District are aware that while most districts expect principals to carry out the functions of an instructional leader, they fail to provide staff development programs for them. Moreover, few universities offer classroom observation, diagnosis of instructional problems, or teacher evalua-

tion in their principal certification programs. Thus, the Jackson district developed a program designed to make principals effective instructional leaders, with the ultimate aim of enhancing student achievement.

The school district expects principals to pursue a plan of personal improvement, and provides direction and training in that pursuit. District personnel identified three essential interrelated ex-

pectations for the principal as instructional leader;

- Principal and teaching staff need to know what the district considers a standard teaching performance and how to identify and objectively measure that performance (performance evaluation system).

- The instructional leader and the teaching staff need to know what the district expects to be taught in each

grade and subject area (curriculum definition).

• The instructional leader needs to know what administrative behaviors promote effective instruction (administrative skills development).

A shared governance ad hoc committee composed of principals, teachers, parents, and central office staff developed a performance evaluation system and instrument, which identifies both the behaviors that constitute good teaching and the method to be used to determine the presence or absence of those behaviors.

A videotape was developed to give principals intensive training in observing and evaluating teachers, with the goal of reducing the variability of scores given to an individual teacher by several evaluating principals.

Concurrently, the district developed a uniform, districtwide curriculum called the Common Body of Knowledge. Under the leadership of an Instructional Council composed of teachers, principals, and central office administrators, teachers wrote the design and objectives for each grade and course. The curriculum was instituted in the 1982-83 school year, revised during the spring and summer of 1983, and is now in its second year of implementation. With this program, principals now know what should be taught in each grade and subject area, in what order, and how long it should take to teach each unit of the curriculum.

The Jackson district believes that appropriate administrative behaviors promoting effective instruction have to be identified and implemented. It is now defining those behaviors and will develop training sessions that demonstrate those behaviors. Follow-up activities will also provide practice in specific skills.

Other program outcomes are an administrative performance evaluation instrument based on the identified behaviors and a potential administrator program to identify and provide appropriate training to persons interested in becoming administrators.

For more information, contact Robert N. Fortenberry, Superintendent, Jackson Municipal Separate School

District, P.O. Box 2338, Jackson, MS 39205.

Assessing Supervision Needs in Tennessee

In July 1982 a Tennessee ASCD task force was appointed to study the status of supervision in Tennessee. Chairperson Patty Vittetoe and her committee conducted a statewide needs assessment of superintendents, supervisors, principals, and teachers from 50 school systems across the state to determine "the supervisory issues most critical in 1982."

Each member of the task force was assigned to interview a group of these individuals using a structured, open-ended questionnaire. Usable data were received from 20 superintendents, 24 supervisors, 15 principals, and 14 teachers. Although the limited number of returns did not allow far-reaching generalizations, consistency of findings did lead to the conclusion that the concerns identified were valid topics for further study.

Areas for concern of the 14 groups of questions on supervisory issues were: inservice, statewide curriculum development, in-class supervision of teachers, research on teaching, personnel evaluation, SACS accreditation, testing programs, classroom management, managing instructional materials, coordination of special programs, time management, and public relations.

School personnel interviewed were asked to pick three of the major concerns that they believed would or could have the greatest impact on instructional programs in their schools in the next five to ten years. Based on the results of the questionnaire, the task force selected public relations, in-class supervision of teachers, state curriculum development, and systemwide curriculum development as priority areas for further study.

For more information, contact Dr. Margaret S. Phelps, Administration and Supervision, Tennessee Tech University, Box 5032, Cookeville, TN 38501.

Merit Pay for Administrators: Hoping for Better Supervision

Superintendent G. Edward Smith and the school board of West Harvey-Dix-

morr School District (Illinois) have organized a plan that links administrators' salaries to the academic performance of the districts' 2,300 students, grades K-8.

Implemented last August, the plan combines the traditional methods for evaluating school administrators with student scores on standardized tests to determine how much of an annual pay raise, if any, an administrator deserves.

The merit plan, says Smith, "is a means to an end—part of a five-year project to improve the academic achievement of our students. The school board has said it no longer wishes to reward administrators with higher pay while they're presiding over an academic graveyard."

Smith believes that effective administration is knowing what's going on in the classroom. All building principals must spend a certain number of hours teaching students. The plan is still so new that it is difficult to determine the results. But positive development has already occurred—teachers feel good about the administrator's paying regular visits to the classroom. Superintendent Smith adds that the emphasis "is on helping teachers do a better job. They've been neglected too long."

Biting the Bullet with Clinical Supervision

Nauset Public Schools in Orleans, Massachusetts, has an excellent plan for supervision and teacher evaluation. Principals are responsible for observing tenured teachers a minimum of twice each year and untenured teachers more. Superintendent Michael M. Mackin, however, sensed that the supervision skills of the staff needed updating. Evaluation ratings seemed to be consistently too high.

In fall 1983 a consultant met with the entire administrative team on two separate occasions. Participants received both knowledge base information and skill training. A pre-conference format was developed and practiced, several objective analysis instruments were presented, practice time was allotted for their use, and strategies were suggested for analysis and subsequent post-conference activities. Each participant, including the business manager, received

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 empathetic 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-

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