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COMPARISON OF PERCEPTIONS OF MAJOR PROBLEMS IN SCIENCE EDUCATION

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The National Science Foundation has stimulated much thought, analysis and assessment concerning the discipline of science education. The three status studies of K-12 science education have attracted national attention and study (Helgeson, 1978; Stake & Easley, 1978; Weiss, 1978). Nine professional groups have had committees analyze the results of these studies from the perspective of their respective memberships. The National Science Foundation also awarded another large research grant to the University of Colorado called Project Synthesis. This project, under the direction of Norris Harms, has attempted to synthesize the status study reports and the recent data from the National Assessment of Educational Progress into a comprehensive report that can be used to chart the future for science education (Harms, 1977).

The science education leadership from graduate centers has sought to extend the assessment to collegiate settings. A status study of major graduate programs, faculty, and centers has been completed under the direction of Robert Yager of the University of Iowa.

As an outgrowth of such status studies, assessment of the perceived problems of professional staff has been an area of interest. A committee of members of the National Association for Research in Science Teaching sought information from 28 of the largest university programs. These results were recorded as a Technical Report at the University of Iowa (Yager, 1979).

Later, James Gallagher of Michigan State University and the authors sought to expand the study to reflect more levels of the profession. One major study was reported by Gallagher and Yager (1980) concerning five surveys. This report is an extension of the study providing a special focus upon the views of Iowa science educators — members of the Iowa Council of Science Supervisors.

Table 1 indicates the top eight professional problems as perceived by 1) Iowa supervisors, 2) graduate faculty from university centers, and 3) a cross-level sampling of the profession, including teachers, supervisors, curriculum directors, graduate students and college faculty.

One of the striking results of the studies is the unanimity of the most important problem — that of defining better the goals and objectives for the discipline. At this time of crisis in science education as we have known it, it is apparent that the profession is clamoring for new directions, a new rationale, a new definition of the discipline, a new framework.

Table 1

Perceptions of Current Problems in Science Education

A. Problems as Perceived by Members of the Iowa Council of Science Supervisors.	%	B. Problems as Perceived by 150 Faculty Members at Major Graduate Centers.	%	C. Problems as Perceived by Teachers, In-Service Supervisors, Workshop Supervisors/Department Chairs, Graduate Students, and College Science Educators.	%
1. Lack of agreement about goals and objectives.	76	1. Uncertainty about goals and objectives of science education.	75	1. Confusion and uncertainty concerning goals and objectives.	71
2. General lack of public support for science and understanding of it as a discipline.	60	2. Declining enrollments in science and science education.	60	2. Lack of vision and leadership in schools and universities.	43
3. Lack of vision and proper leadership among professional science educators.	40	3. General anti-science tenor of society.	55	3. Public and parental apathy towards misunderstanding of science and science education.	40
4. Poor quality of teacher education efforts - pre- and inservice.	32	4. Diminishing financial support for science education.	45	4. Limited budgets and facilities.	36

Table 1 (Cont.)

7. Too many varied teaching assignments; too many re-assignments for teachers.	20	7. Poor quality of teacher education programs.	25	7. Declining enrollments generally.	26
8. Too few new programs for dealing with societal issues; too few examples of "new" science.	20	8. Inappropriate programs (curricula) for all persons.	25	8. Lack of a theoretical base for science education.	25
5. Limited financial support for science in schools and teacher education.	28	5. Lack of leadership in science education.	40	5. Poor quality and low standards of teacher education programs.	30
6. Lack of opportunity for professional dialogue and sustained inservice.	24	6. Lack of theoretical base to guide research and practice.	30	6. Limited scholarly dialogue between researchers and practitioners.	28

Many have begun the task of re-thinking the goals of science education. Donald McCurdy, president of the National Science Teachers Association, has listed this as a major goal for the association for 1980-81. Glen Berkheimer of Michigan State University has visited a dozen centers in an effort to develop a new rationale statement; a first draft of this statement is available (Berkheimer, 1980). In Iowa, the authors are a part of a 15-member task force established a year ago by the Department of Public Instruction to develop a plan for the next five years regarding science education in Iowa. Of highest priority has been the development of a new statement of goals.

It is interesting to review the eight problems cited by 25 or more percent of the respondents in each sample. Seven of the eight problem areas appear on the other lists. Such similarity (though with different rankings) provides a validity check for the current assessment.

It is also interesting to note the kinds of problems cited. Most deal with major philosophical issues. These problem areas include the need for new goals, the need for a theory base, the need for better leadership and the problems related to understanding the interaction of science and society. A second kind of problem exists with respect to administrative/programmatic matters. These problems deal with teaching assignments, teacher education programs and the existence of model materials and approaches. A third kind of problem actually reflects symptoms of the current crisis. These problems are concern for declines in enrollment and financial support for science instruction. Many see these problems as evidence of crisis and reason for change. Few suggest that the problems will be solved by more money or the requirement that students enroll in current courses.

Crises often mean turning points! As we seek new direction by addressing professional problems, all concerned science educators should be actively involved. The current problems of our society demand the best science education possible.

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