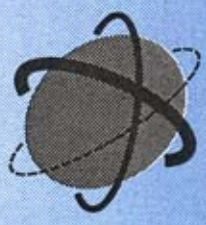
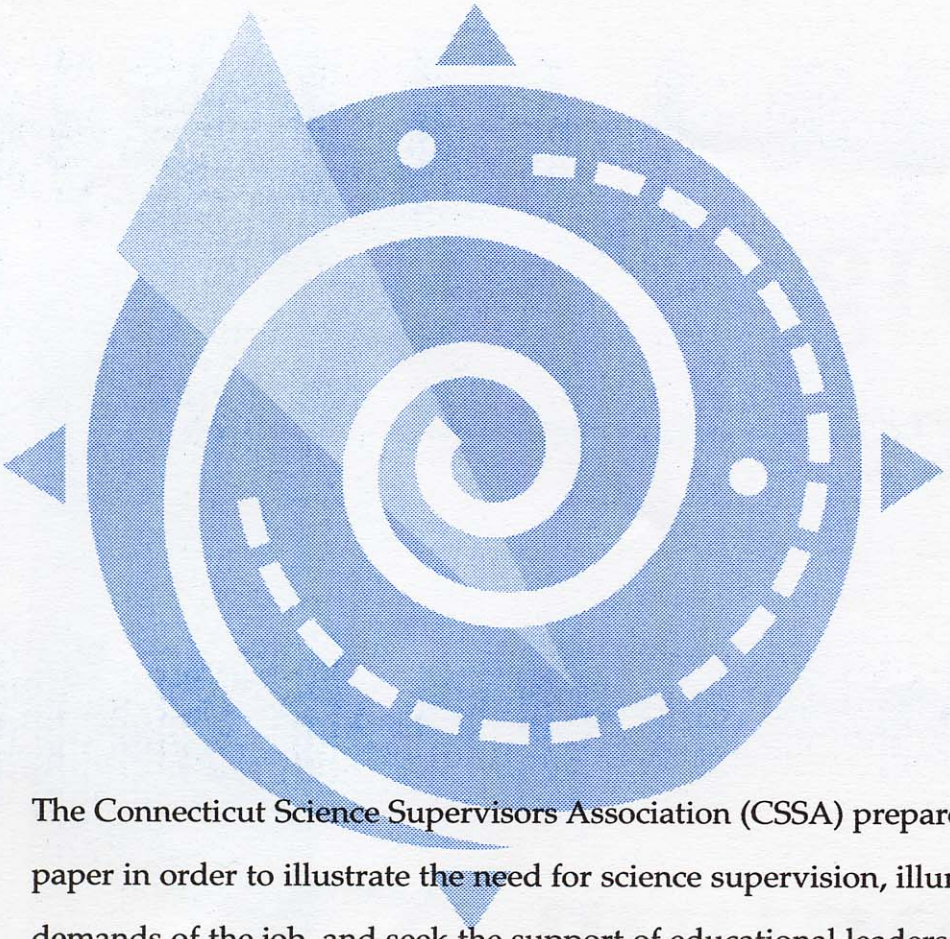
Leading Science in the New Millennium

The Critical Role of the Science Supervisor

A Position Paper presented by the Connecticut Science Supervisors Association







The Connecticut Science Supervisors Association (CSSA) prepared this position paper in order to illustrate the need for science supervision, illuminate the demands of the job, and seek the support of educational leaders, school board members, and the community. The paper begins by describing the various roles and responsibilities of the position, followed by a description of the professional characteristics and credentials needed for effective science supervision.

This paper is the third in a series addressing science education issues published by CSSA. The others in the series are: "Science Teachers for the Wonder Years" and "Safety in the Science Classroom".
To obtain copies of the previous position papers or for more information about CSSA, please visit our website at www.cssaonline.net

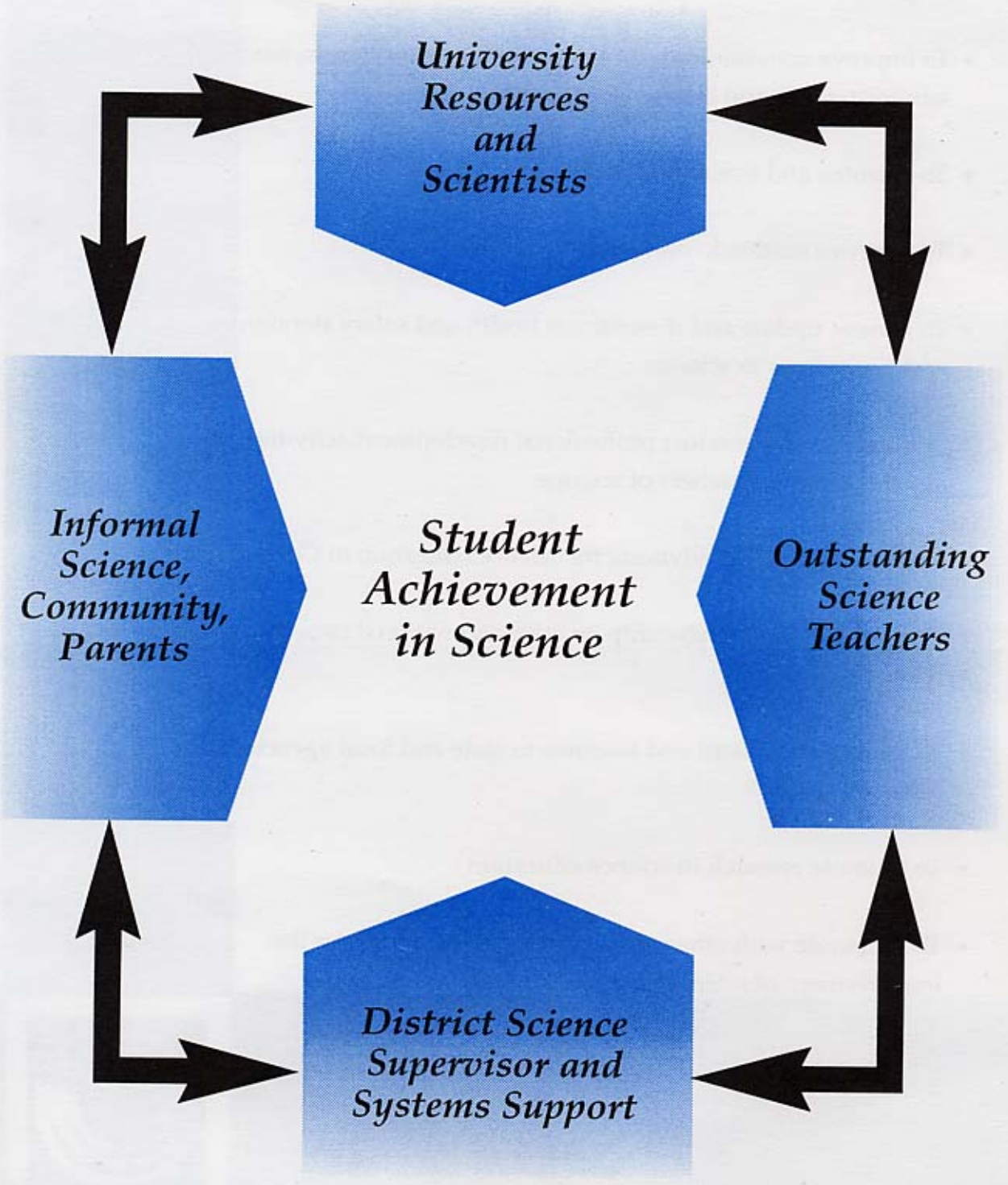
CSSA expresses sincere thanks to The Connecticut Academy for Education in Mathematics, Science & Technology, Inc. for its support, clear advice and true council.

CSSA Description

CSSA is an organization of more than 140 science leaders in education who work together to achieve the following goals:

- To improve communications among science supervisors, teachers, administrators, and boards of education.
- To examine and evaluate curricula in science.
- To improve academic standards.
- To review, update and disseminate health and safety standards and procedures in science.
- To promote and conduct professional development activities for supervisors and teachers of science.
- To serve as a public advocate for science education in Connecticut.
- To represent the membership on state and national issues in science education.
- To act as a consultant and resource to state and local agencies on science issues.
- To promote research in science education
- To cooperate with other professional organizations for the improvement of science education.

A Stable Platform for Building Science Education Reform



Introduction

Preparing scientifically literate citizens for responsible and productive living in the 21st Century is surely a crucial goal for a society so shaped by and dependent upon scientific and technological advances.

Achieving this goal will depend in large measure on the quality of the science education we provide American youth.

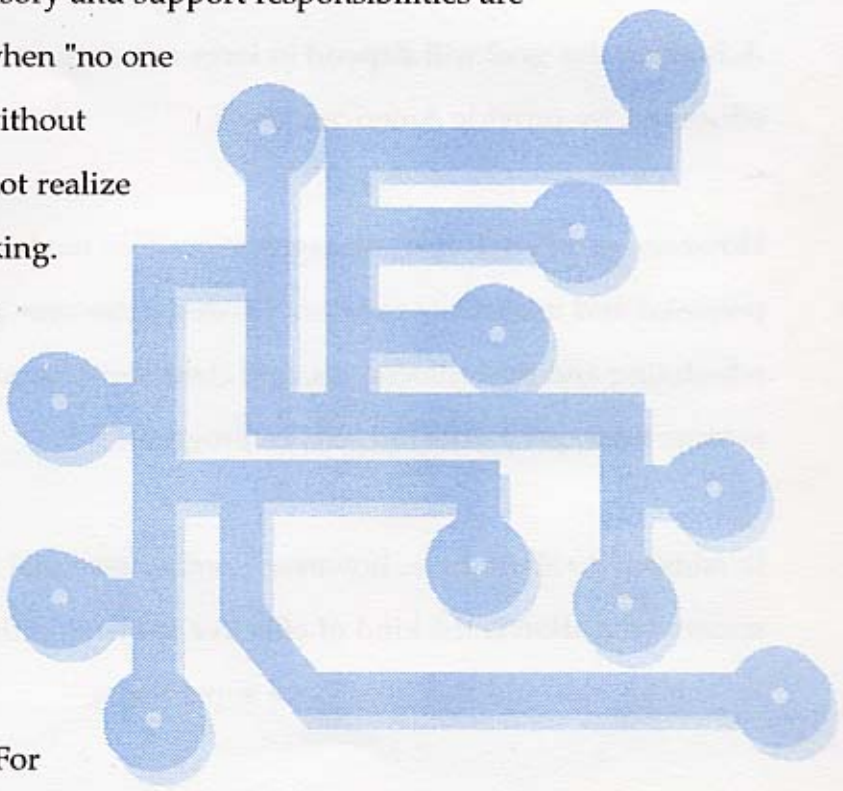
However, excellence in science education does not just happen. It requires well-prepared and up-to-date teachers, modern resources and facilities, intelligent scheduling and time allocations, and class and laboratory sizes that enable and nurture an inquiry oriented science program.

In addition to all of these, however, another essential ingredient for excellence in science education is the kind of effective leadership that can be provided only by knowledgeable and skillful science supervisors.

Indeed, in a recent article in the Science Educator (Hounsell & Madrazo, Spring, 1997) the authors include an organizational chart derived from a presentation by Dr. Bruce Alberts, President of the National Academy of Sciences, which depicts science supervisors as one of the four major cornerstones of student achievement in science.

Roles and Responsibilities of the Science Supervisor

The demands placed on science supervisors are exceedingly complex and time-consuming, not only because of the sheer number of responsibilities that must be addressed, but also because of the variety of roles that the science supervisor must assume. In fact, a great many supervisory and support responsibilities are often poorly done or not done at all when "no one is minding the shop." Communities without effective science leadership often do not realize what a valuable resource they are lacking. Helping new teachers become master teachers and ensuring that experienced teachers continue to grow and remain up-to-date, are primary and perhaps obvious responsibilities for the science supervisor. However, there are many other important concerns and issues. For the purposes of this paper the roles and responsibilities of the science supervisor have been grouped into four broad, but frequently overlapping categories: instructional, administrative, leadership, and collegial. These roles and responsibilities are basic to effective science supervision, regardless of how individual school districts structure the position(s).



Instructional Roles and Responsibilities

- Provide leadership in the development, implementation, monitoring, and evaluation of a comprehensive, balanced, and carefully sequenced and articulated K-12 science curriculum based on the Connecticut K-12 Science Framework and the Connecticut Academic Performance Test (CAPT).

- Share developments and trends in science and science education with teachers, parents, and administrators.

- Be an active member of professional and scientific associations and foster teacher participation (e.g., Connecticut Science Teachers Association, National Science Teachers Association, Connecticut Science Supervisors Association, and the National Science Education Leadership Association).

- Publicize upcoming science conferences and programs and secure funding to support teacher participation in such activities.

- Work with library/learning center personnel to ensure a professional library (journals, books, web sites, equipment and supply catalogs, etc.) for science teachers.

Administrative Roles and Responsibilities

- Provide professional expertise by making regular classroom visits with follow-up, to observe the science program in action, to offer guidance and advice, to demonstrate effective inquiry-oriented teaching strategies, and to provide model lessons.

- Assist in the recruitment and selection of prospective teachers of science, and in the growth and retention of experienced teachers.

- Assist in the selection, acquisition, and maintenance of science equipment and supplies.

- Assist in the preparation, articulation, and implementation of science budgets.

- Design and monitor comprehensive safety procedures for classroom, laboratory, and field studies.

- Assist in the development, implementation, and monitoring of a Chemical Hygiene Plan.

- Assist in the development of a K-12 Science evaluation program that uses a variety of appropriate assessments, with emphasis on performance assessments.

- Assist administrators in preparing schedules and teaching assignments for teachers of science and in making sure that teachers are certified properly for courses they teach.

Leadership Roles and Responsibilities

- Serve as liaison, spokesperson, and strong advocate for quality science education with administrators, school board members, parents, and community leaders.

- Develop sharing, exchange, and other cooperative endeavors with the Connecticut Academy for Education in Mathematics, Science, and Technology and the National Science Teachers Association's Building a Presence for Science, as well as with colleges, universities, regional educational service centers, businesses, museums, nature centers, and other science-rich institutions.

- Provide leadership, support, and encouragement for science events such as science fairs, invention conventions, and Olympiads.

- Promote the recommendations of contemporary reform initiatives (e.g., The National Academy of Sciences' National Science Education Standards, the American Association for the Advancement of Science's Benchmarks for Science Literacy, and Connecticut's K-12 Science Framework) and work to incorporate them into the science curriculum.

Collegial Roles and Responsibilities

- Support and encourage teachers in their efforts to be creative and innovative life-long learners.

- Strive to build pride, esprit de corps, and morale for teachers of science and the entire school community.

- Provide counsel and support to all teachers of science.

Professional Characteristics and Credentials

The effective science supervisor must possess the appropriate preparation and experience necessary to gain the confidence and respect of colleagues and administrators. It is also imperative that the science supervisor has the credentials needed to address the complexities and challenges of science supervision.

Thus, the effective science supervisor should:

- Be an outstanding teacher with at least five years of classroom experience.

- Have a solid preparation in science, including at least a major in one area of science and course work in each of the other areas – biology, chemistry, physics, earth science, as well as mathematics (including statistics) in order to provide a balanced curriculum in life, physical, and earth/space science and to model science as an active way of knowing.

- Have formal graduate preparation in supervision and administration (at least six semester hours in instructional supervision and school administration and six semester hours in curriculum development) as mandated by the Connecticut State Department of Education.

- Exhibit skill in effective problem solving and decision-making.

- Have interpersonal and communication skills that enable the science supervisor to be perceived by others as approachable, friendly, sincere, helpful, and creative.

- Possess thorough preparation in educational and developmental psychology.

- Possess operational knowledge of curriculum design and inquiry-based instruction using modern laboratory techniques, equipment, and instruments.

- Promote the use of current instructional technology in a variety of ways in the science classroom.

- Ensure that teachers and students use appropriate safety procedures and equipment in classroom, laboratory, and field settings.

- Promote and model a variety of instructional strategies that accommodate different student backgrounds, cognitive abilities, and learning styles.

- Recognize the great importance of equity, especially emphasizing the role of females and other underrepresented minorities in science and mathematics.

- Be able to create science assessment instruments, including performance-based models, to gather diagnostic information on student achievement, and then use such data to inform instructional decisions and practices.

- Recognize the importance of communicating and cooperating with parents and utilize community resources (e.g., individuals and agencies that can provide guest speakers, information on careers in science, training, and supplemental and enrichment materials).

- Provide experiences in science for students, colleagues, and administrators that nurture habits of mind such as curiosity, logical reasoning, and drawing conclusions based on evidence.

- Demonstrate a genuine commitment to work with all students, colleagues, and administrators as a member of a "community of learners" and be able to implement contemporary approaches to science education.

Final Thoughts

An effective science supervisor is a vital component of any comprehensive education plan. Indeed, effective leadership is the most essential ingredient for success in virtually all human endeavors, including business, industry, the military, politics, and, of course, education. By recognizing the pivotal importance of the science supervisor, and by seeking science supervisors possessing the preparation and attributes described in this position paper, school systems can more effectively respond to the renewed interest and urgency in improving science education for all citizens of the twenty-first century.

This position paper was prepared by the Connecticut Science Supervisors Association and incorporates recommendations of the American Association for the Advancement of Science, the National Research Council, and the National Science Teachers Association.

Names of Science Supervisors by District

Avon	Eugene Bourquin
Beacon Falls	Jill K. Ferris
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Branford	Marilyn C. Odell
Bridgeport	Dr. Kenneth Martinelli
Canton	Craig A. Cappiello
Cheshire	Edwin M. Lisk
Clinton	James E. O'Brien
Colchester	Tom Harrington
Danbury	Helga S. Jensen-Ruopp
East Hampton	Clive K Tucceri
East Hartford	Richard Agne
East Hartford	Michelle Hacker
Enfield	Steven T. Olson
Fairfield	Babu George
Farmington	Myra Morgan
Farmington	Fred Myers
Glastonbury	Dr. Kenneth Roy
Greenwich	William Peltz
Greenwich	Truxtun Southworth
Greenwich	Joseph C. Wesney
Guilford	Bruce Faitsch
Hamden	Paul Massey
Hartford	Robert V. Borello
Hartford	Susan Matthews
Hartford	Avi Ornstein
Hartford	Steven Weinberg
Ledyard	Bruce Douglass
Litchfield	Edward O'Connell
Manchester	Lesa A. Milas
Meriden	Dr. David Gilmore
Middletown	David P. Lopath
Middletown	Dr. Robert A. Rosenbaum
Middletown	Wilma Toney
Milford	Kathleen Daly
Milford	Christine Noel
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New Britain	Joseph M. Bosco, Jr.
New Britain	Thomas Menditto
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North Branford	Tammy Mockus
North Haven	Sue Hillinski
North Haven	Karen Papeika
Norwalk	Dr. Muriel Gerhard
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Rockville	Peter D. Ramsdell
Rocky Hill	Stephen Donnelly
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Southbury	Jose Martinez
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Southington	Dale A. Riedinger
Southington	Joseph A. Schrank
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Storrs	Sandra Justin
Storrs	Julia Sherman
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Stratford	Tracy Andersen
Stratford	Mary Jane Edwards
Stratford	John J. Uss
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