NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING

47th ANNUAL MEETING

PROGRAM

THE BLACKSTONE HOTEL
CHICAGO, ILLINOIS
APRIL 15-18, 1974

PROGRAM COMMITTEE

Robert E. Yager, Chairman . . . . . The University of Iowa
James J. Gallagher . . . . . Governors State College
Paul C. Beisenherz . . . . . Louisiana State University at New Orleans
Paul Eggen . . . . . University of North Florida
John F. Schaff . . . . . University of Toledo
Stanley L. Helgeson . . . . . Ohio State University
Richard L. Sagness . . . . . University of South Dakota

LOCAL ARRANGEMENTS COMMITTEE

James J. Gallagher, Chairman. . . . . Governors State College
Donald G. Ring . . . . . Township High School District 214
Louis A. Gatta. . . . . Deerfield High School
James P. Hale. . . . . Glencoe Public Schools
Ronald D. Towsend . . . . . Evanston Township High School

FUTURE MEETINGS OF NARST

1975	March 17 - 20	Los Angeles (NSTA)
1976	April 15 - 18	Las Vegas (AERA)
1977	March 25 - 28	Cincinnati (NSTA)

OFFICERS FOR THE ASSOCIATION – 1973 - 1974

President

Wayne W. Welch
University of Minnesota
Minneapolis, Minnesota

President Elect

Robert E. Yager
The University of Iowa
Iowa City, Iowa

Secretary-Treasurer

Paul E. Bell
The Pennsylvania State University
University Park, Pennsylvania

Immediate Past President

J. David Lockard
University of Maryland
College Park, Maryland

Research Coordinator

Stanley L. Helgeson
Ohio State University
Columbus, Ohio

Editor, Journal of Research in Science Teaching

O. Roger Anderson
Teachers College, Columbia University
New York City, New York

Board Members:

Ronald D. Anderson (1974)
University of Colorado
Boulder, Colorado

Eugene Lee (1974)
Emory University
Atlanta, Georgia

Mary Budd Rowe (1975)
University of Florida
Gainesville, Florida

Paul Westmeyer (1975)
Florida State University
Tallahassee, Florida

Marvin Druger (1976)
Syracuse University
Syracuse, New York

Richard L. Sagness (1976)
University of South Dakota
Vermillion, South Dakota

NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING

THE NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING (NARST) was founded for the purpose of promoting research in science education at all educational levels, and for disseminating the findings of this research in such ways as to improve science teaching. NARST is incorporated as a non-profit corporation in the state of Minnesota. The official quarterly publication of the Association is the *Journal of Research in Science Teaching.* The major areas of concern are experimental and analytical research studies (theoretical or applied) encompassing curriculum development and organization, evaluation, learning theory, teacher education, programs for both the talented and underachievers, and methods of instruction in the sciences. Surveys of current practices, enrollments, and course offerings represent other interests.

NARST meets annually on days just previous to the meetings of the American Education Research Association one year, and on days just previous to the National Science Teachers Association meetings the next year. At these meetings research papers in the areas listed above are presented along with symposia on topics of interest to teachers and educational research workers.

NARST cooperates with the ERIC Science, Mathematics, and Environmental Education Information Analysis Center (SMEAC) located at The Ohio State University to conduct and publish reviews of research in science education at the elementary, secondary and college levels and to compile and publish the abstracts of papers presented at the annual meeting. The current NARST Research Coordinator is Associate Director for Science Education at the Center.

The constitution of NARST specifies that membership shall be drawn from those active in research in science education and those outstanding in science educational leadership such as teachers, supervisors and curriculum developers. Associate membership is available to students and to all persons who are interested in and want to support the purposes of the organization. Associate members receive all publications and newsletters of the Association but do not have voting privilege. They may, of course, participate fully in all meetings of the Association.

The Association maintains a Placement Information Service which, each year, provides lists of positions available and of personnel seeking employment. Prospective employees and employers are urged to use these lists to arrange contacts and interviews. Placement information is made available by mail early in each calendar year and at the annual meeting.

Membership dues are $15.00 payable at the beginning of each calendar year. Applications for membership, payment of dues, and correspondence related to the business operations of NARST should be mailed to the Secretary-Treasurer.

PRESIDENTS OF NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING

1928 . . . . . W. L. Eikenberry
1929 . . . . . W. L. Eikenberry
1930 . . . . . W. L. Eikenberry
1931 . . . . . Elliot R. Downing
1932 . . . . . Elliot R. Downing
1933 . . . . . Francis D. Curtis
1934 . . . . . Ralph K. Watkins
1935 . . . . . Archer W. Hurd
1936 . . . . . Gerald S. Craig
1937 . . . . . Walter G. Whitman
1938 . . . . . Hanor A. Webb
1939 . . . . . Ralph Powers
1940 . . . . . Otis W. Caldwell
1941 . . . . . Harry A. Carpenter
1942 . . . . . G. P. Cahoon
1943 . . . . . Florence G. Billig
1944 . . . . . Florence G. Billig
1945 . . . . . Florence G. Billig
1946 . . . . . C. L. Thiele
1947 . . . . . Earl R. Glenn
1948 . . . . . Ira C. Davis
1949 . . . . . Joe Young West
1950 . . . . . N. Eldred Bingham
1951 . . . . . Betty Lockwood
1952 . . . . . Betty Lockwood
1953 . . . . . J. Darrell Barnard
1954 . . . . . George C. Mallinson
1955 . . . . . Kenneth E. Anderson
1956 . . . . . W. C. Van Deventer
1957 . . . . . Waldo W. Blanchet
1958 . . . . . Nathan S. Washton
1959 . . . . . Thomas P. Fraser
1960 . . . . . Vaden W. Miles
1961 . . . . . Clarence H. Boeck
1962 . . . . . Herbert A. Smith
1963 . . . . . Ellsworth S. Obourn
1964 . . . . . Cyrus W. Barnes
1965 . . . . . Frederic B. Dutton
1966 . . . . . Milton O. Pella
1967 . . . . . H. Craig Sipe
1968 . . . . . John M. Mason
1969 . . . . . Joseph D. Novak
1970 . . . . . Willard J. Jacobson
1971 . . . . . Paul D. Hurd
1972 . . . . . Frank X. Sutman
1973 . . . . . J. David Lockard
1974 . . . . . Wayne W. Welch

NARST PROGRAM STRUCTURE

This listing of program parts and the following definitions are offered as a means of assisting members with understanding the structure of this program. In addition, all members are invited to make specific suggestions for each of these program parts for future meetings! One HOUR WITH SESSION is scheduled as an opportunity for members to make such suggestions known to the next program committee. Letters to the officers, in particular the president-elect, are always a welcomed means of communicating suggestions as well.

1. *GENERAL SESSIONS* – Researchers of national prominence are asked to address the NARST membership concerning topics and issues of general concern. Such analyses of where we have been and where we are going are features of the annual meeting each year. The presentations will be published in JRST. The expenses for the speakers are provided by ERIC/SMEAC.

2. *SPECIAL SYMPOSIA* – Areas of current research or research needs are identified and members are asked to prepare papers addressing themselves to defined issues. Symposia include persons with varying backgrounds, positions, and research interests. In addition to presentations concerning research in a given area, interaction among the symposium presentors, other discussants, and the audience is anticipated. Varying views, approaches, data reports, and data interpretation are desirable features for Symposia.

3. *CONTRIBUTED SYMPOSIA* – Members can suggest their own topics for symposia. In general, such sessions should follow the guidelines and format described above for Special Symposia. Contribured Symposia shall not be a set of papers from a given Research Center as presented by colleagues or former colleagues.

4. *PAPER SETS* – Several related studies originating from a common research center or line of research can be structured as a set of from three to six separate but related reports. Such a grouping of papers often allows for common elements of design or approach to be presented once instead of several times. A Paper Set grouping can also allow for a division of a single report which represents a major research development in terms of time, number of workers, and/or geography.

5. *DISCUSSION PAPERS* – Some research reports merit more time and consideration by the membership than do others. Discussion papers represent intriguing, exciting, and perhaps controversial reports of research submitted by NARST members. A whole time block on the program will be scheduled where members in small numbers can carefully analyze and discuss the paper. There will be no "presentation" concerning the paper. Instead copies of the

paper will be available at the Registration Table. Members will secure a copy of the paper(s) that interests them, read it, and attend the particular session ready to "discuss" the issues, the analyses, the results, and the interpretations.

6. *RESEARCH REPORTS* – From time to time significant reviews of research in terms of topic area, time, or other parameter are prepared by members. Considering such reviews of research is a desirable activity for NARST members. Hence, provision is made in the program format to include such special research reports, reviews, and/or analyses.

7. *PANELS* – There are many debatable issues in science education. Panels are frequently constituted as a result of positions taken by members. Such Panels provide a mechanism for debating issues and involving interested members in such discussions of views.

8. *CLINICS* – Work sessions during which members can learn certain skills and approaches are often desirable program features. Organizing such Clinics is a means by which individual members or the Program Committee can involve other members in such learning experiences.

9. *HOUR WITH SESSIONS* – A special mechanism for communicating with members regarding issues with respect to the organization, the Journal, future programs, the officers, and/or persons involved with some national program or project is often needed. The Hour With Session provides this opportunity for conferring with NARST officers, committees, other individual members, or special representatives.

10. *CENTER CAUCUSES* – Many times particular research centers are involved with many on-going lines of research while persons are also involved with the formative stages of other activities as well. Often NARST members ask, "What is really occurring at _____ Center?" Center Caucuses provide NARST members with an opportunity for answering such questions within the regular program format.

11. *CONTRIBUTED PAPERS* – Many individual members are anxious to share results of their individual research efforts with other members. A series of concurrent sessions where such Contributed Papers can be scheduled represent a major part of the NARST meetings. Generally such papers are restricted to a fifteen to twenty minute presentation which includes audience questioning as well.

12. *INFORMAL DISCUSSION* – Time is scheduled in the program for members to meet with one another concerning topics of interest. One important function of such sessions is the opportunity for members interested in new positions to confer with faculty members from institutions with staff vacancies.

Forty-Seventh Annual Meeting of the
NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING

April 15-18, 1974
The Blackstone Hotel

MONDAY, APRIL 15

5 – 10 P.M.	Registration	Ballroom Foyer
7 – 10 P.M.	Executive Board Meeting Wayne W. Welch, Presiding University of Minnesota Minneapolis, Minnesota	Patrick
8 – 11 P.M.	Informal Discussion Local Arrangements Committee	Hubbard

TUESDAY, APRIL 16

7:30 - 9:00 A.M.	Editorial Board Breakfast	Blackstone Grill (Reserved Section)
8:00 a.m. - 5:00 p.m.	Registration	Ballroom Foyer
9:00 A.M.	General Session I	Crystal Ballroom
	Presiding – Wayne W. Welch, President University of Minnesota Minneapolis, Minnesota	
	Introductions – Members of Executive Board	
	Speaker – Joseph J. Schwab University of Chicago (on leave) Visiting Fellow The Center for the Study of Democratic Institutions Santa Barbara, California	
	Topic: "The Coming Duty of Science Teaching"	
10:30 A.M.	Special Symposia A. Research Concerning Classroom Environments	French
	Chairperson: Robert K. James Kansas State University Manhattan, Kansas	

"Research on Mathemagenic Behavior: Implications for Science Instruction and Learning"

John J. Koran, Jr.
University of Florida
Gainesville, Florida

"Symposium on Research Concerning Classroom Environments"

Colin N. Power
University of Queensland
St. Lucia, 4067, Australia

"Effects of Elementary and Secondary Classroom Environments on the Training of Preservice Teachers"

William R. Brown
Old Dominion University
Norfolk, Virginia

B. Elementary-Secondary Curriculum Research and Development — English

Chairperson: Bernard W. Benson
University of Tennessee
Chattanooga, Tennessee

"Research Concerning Implementation of USMES"

David H. Ost
University of California, Bakersfield
Bakersfield, California

"Formative Evaluation of the Individualized Science Program"

Leopold E. Klopfer
University of Pittsburgh
Pittsburgh, Pennsylvania

"Human Sciences Programs"

James T. Robinson
Biological Science Curriculum Study
Boulder, Colorado

"NSF: Pre-College Materials and Instruction Development (MID) Section Concerns"

Daniel C. Yohe
National Science Foundation
Washington, D.C.

C. Piaget's Contribution – Applications and Misapplications to Students, Teachers, and Curriculum — Gold

Chairperson: Darrell G. Phillips
The University of Iowa
Iowa City, Iowa

"A Piaget Based Developmental Model for Criterion Based Assessment"
Ronald J. Raven and Robert Guerin
State University of New York at Buffalo
Buffalo, New York

"Implications of Piaget's Theory of Child Development for Curriculum"
Robbie Case
University of California at Berkeley
Berkeley, California

"The Applicability of Piaget to Contemporary Curriculum Reform?"
Barry A. Kaufman
University of Hartford
West Hartford, Connecticut

"Changing Teachers' Perception of 'Learning': An Application of Piaget's Theory and Experiments"
Darrell G. Phillips
The University of Iowa
Iowa City, Iowa

D. Developing and Evaluating Materials for Training Science Teachers — Embassy

Chairperson: James R. Okey
Indiana University
Bloomington, Indiana

"Developing Self-Directed Learning Guides for Process Skills"
David P. Butts
The University of Texas at Austin
Austin, Texas

"Developing and Evaluating Materials for Training Teachers to Use Bloom's Mastery Teaching Strategy"
Jerome L. Ciesla
Florida State University
Tallahassee, Florida

"Individualizing In-Service Preparation for ISCS Teachers"
William R. Synder
Florida State University
Tallahassee, Florida

Discussants: Hans O. Andersen
Indiana University
Bloomington, Indiana

William Capie
University of Georgia
Athens, Georgia

12:00 P.M. *Science Education* Advisory Board Luncheon — Ivy

Host: Joseph Kuney
John Wiley and Sons

1:30 P.M. Contributed Papers I

A. Learning Theory and Processes — Regency

Chairperson: Paul Beisenherz
Louisiana State University in New Orleans
New Orleans, Louisiana

"Science Inquiry and the Development of Classification and Oral Communication Skills in Inner City Children"
Lowell J. Bethel
University of Pennsylvania
Philadelphia, Pennsylvania

"Classificational Preference in Young Children – Form or Color"
Douglas R. Macbeth
Lewisburg Area School District
Lewisburg, Pennsylvania

"Relationships of Concrete and Formal Operational Science Subject Matter and the Developmental Level of the Learner"
Anton E. Lawson
Purdue University
West Lafayette, Indiana

"A Comparison of Pictorial and Written Presentation on the Acquisition of Scientific Concepts"
Protima Roy and John J. Koran, Jr.
University of Florida
Gainesville, Florida

B. Teacher Education — Envoy

Chairperson: Paul Eggen
University of Northern Florida
Jacksonville, Florida

"Understanding the Nature of Science as an Outcome of a Professional Education Course"
Edward C. Lucy
Georgia State University
Atlanta, Georgia

"The Effects of Instruction in the Basic Science Process Skills on Attitudes, Knowledge and Lesson Planning Practices of Prospective Elementary School Teachers"
Richard L. Campbell
Florida International University
Miami, Florida

"Assessing of Effectiveness of a Competency-Based Physics Program for Elementary Teachers"
Glenn C. Markle and William R. Capie
University of Georgia
Athens, Georgia

"Effects of Alternative Types of Instruction on the Learning of a Question Asking Skill by Pre-Service Secondary Science Teachers"
Walter S. Smith
University of Kansas
Lawrence, Kansas

C. Curriculum Development — Ivy

Chairperson: John Schaff
University of Toledo
Toledo, Ohio

"A Personalized Approach to Teaching Fifth Graders to Design Controlled Experiments"

Marcia C. Linn and Herbert Thier
University of California, Berkeley
Berkeley, California

"The Effectiveness of Science—A Process Approach in the Development of Problem Solving Skills in 5th and 6th Grade Students"

Frank D. Breit and John Bullock
University of South Florida
Tampa, Florida

"An Investigation to Determine the Effects of a Science Inquiry Program on the Development of the Skill of Classification of Inner City Kindergarten Children"

James F. Galbally, Jr.
University of Pennsylvania
Philadelphia, Pennsylvania

"A Comparison of Montessori and Science—A Process Approach in the Process of Observation"

Joan M. Judge
University of Texas at Austin
Austin, Texas

D. Instructional Procedures — Embassy

Chairperson: Stanley Helgeson
Ohio State University
Columbus, Ohio

"The Effectiveness of the Concept/Process Section of the Assessment Instrument for the Science Curriculum Improvement Study Unit Entitled 'Organisms'"

Glen R. Perry and Dale G. Merkle
Shippensburg State College
Shippensburg, Pennsylvania

"A Preliminary Study of Using Interactive Instructional Television to Promote Statewide Process-Oriented Science in Primary Grades"

Michael Szabo
The Pennsylvania State University
University Park, Pennsylvania

"Science Teaching and Language Usage in Elementary School Classrooms"
Glenn W. Clark
University of Kansas
Lawrence, Kansas

"The Effects of Instruction in the Concept of Speed and Simple Proportions on Children in the Third Grade"
F. David Boulanger
University of Illinois
Chicago, Illinois

E. Evaluation — French

Chairperson: James Joseph Gallagher
Governors State College
Park Forest South, Illinois

"An Interaction Between Student Traits and Methods of Teaching College Physics"
Mary Diederich Ott
Cornell University
Ithaca, New York

"Changes in Teacher Classroom Behavior Following Involvement in Summer Institute Science Content Courses where Instructors Conveyed Methodology by Modeling"
Susan D. Spradlin
University of Texas at Austin
Austin, Texas

"The Effects of an Earth Science Curriculum Revision on Teacher Behavior and Student Achievement"
James R. Orgren
State College, Buffalo
Buffalo, New York

"The Attitudes of High School Biology Teachers to the BSCS Program in Israel"
Pinchas Tamir
The Hebrew University of Jerusalem
Jerusalem, Israel

F. Research Methodology — English

Chairperson: Mary Budd Rowe
University of Florida
Gainesville, Florida

"The Mathematics Skill Test, MAST as Rostering and Diagnostic Tools"
Rita T. Denny
University of Pennsylvania
Philadelphia, Pennsylvania

"An Application of Fishbein's Regression Model to the Prediction of Behavioral Outcomes of Instruction"
Walter B. Boldt
University of British Columbia
Vancouver 8, B.C., Canada

"Managing Misbehavior in the Science Classroom: The Development of a Written Measure"
John T. Wilson
The University of Iowa
Iowa City, Iowa

"Processes of Curriculum Development – A Neglected Research Area"
David Cohen
Macquarie University
New South Wales, Australia

G. Environmental Education — Chicago

Chairperson: William L. Sharp
The University of Iowa
Iowa City, Iowa

"Development of an Instrument to Assess Student's Values with Respect to Environmental Problems"
Rodney L. Doran and Alfred A. Sarnowski
State University of New York at Buffalo
Buffalo, New York

"The Design of a Modified Semantic Differential Instrument for Determination of Changes in Environmental Attitudes"
William DeLucia and Donald Parker
East Syracuse-Minoa Schools
East Syracuse, New York

"An Analysis of College Students' Interpretations of Some Possible Environmental Catastrophes"
Frank Fazio
Indiana University of Pennsylvania
Indiana, Pennsylvania

"The Development and Evaluation of an Elementary Environmental Attitudes Program"
Sylvia Leith
University of Manitoba
Winnipeg, Canada

David P. Butts
The University of Texas at Austin
Austin, Texas

H. Teacher Education — Gold

Chairperson: Jerry Underfer
University of Toledo
Toledo, Ohio

"A Competency-Based Science Education Program for Third Through Sixth Grade Level Elementary Teachers Utilizing Training Modules with SCIS Environmental Education Materials in an Urban University – School Cooperative Field Project: A Final Report"
Jerrold William Maben
Herbert H. Lehman College
Bronx, New York

"The Effects of an ISCS Workshop on Attitude Changes Toward Science Teaching"
Joy S. Lindbeck
University of Akron
Akron, Ohio

"A New Approach to Teacher Selection and Education for Inner-City Schools"
George C. Turner
California State University
Fullerton, California

"The Development and Evaluation of a Televised Science Inservice Program"

Martha K. Piper
University of Houston
Houston, Texas
and
David P. Butts
The University of Texas at Austin
Austin, Texas

3:00 P.M. Contributed Symposia

A. Classroom Verbal Interaction Analysis — French

Chairperson: Burton E. Voss
University of Michigan
Ann Arbor, Michigan

"Classroom Interaction in High School Biology"

Alex Pogirski
Huron High School
Ann Arbor, Michigan

"Neglected Aspects of Classroom Interaction: A Study of Pupil Participation in High School Biology Classes"

Jal Parakh
Western Washington State College
Bellingham, Washington

"MACROANALYSIS Patterns – A Step Toward Continuing the Development of Teaching Cycles and Toward Synthesizing Instructional Models"

James R. Campbell
University of Pennsylvania
Philadelphia, Pennsylvania

"Interaction Analysis in ISCS Classrooms"

Clyde Powell
Emerson Junior High School
Livonia, Michigan

"A Critique and Look Ahead"

Ned Flanders
Far Western Regional Laboratory for Educational Research and Development
San Francisco, California

B. Curriculum Research and Development Efforts at the University Level — English

Chairperson: James E. Maffett
El Paso Community College
Colorado Springs, Colorado

"College Curricula and Programs at Western Washington State College"
Levon Balzer
Western Washington State College
Bellingham, Washington

"Curriculum Research and Development in Higher Education"
George T. O'Hearn
University of Wisconsin-Green Bay
Green Bay, Wisconsin

"Curriculum Research and Development in Science at a New Senior University"
James Joseph Gallagher
Governors State University
Park Forest South, Illinois

"Science Education at the Evergreen State College, Olympia, Washington"
Lawrence Eickstaedt
Evergreen State College
Olympia, Washington

"The National Science Foundation – Its Stake in Curriculum Change"
John L. Snyder
National Science Foundation
Washington, D.C.

C. Three Approaches to Instrumentation and Data Gathering for Evaluation and Research — Regency

Chairperson: Richard M. Bingman
Mid-Continent Regional Educational Laboratory
Kansas City, Missouri

"Descriptive and Judgmental Data – Some Lessons from a Formative Evaluation"
Robert M. Bridgham
Stanford University
Stanford, California

"Measuring Teacher Competence"
James R. Okey
Indiana University
Bloomington, Indiana

Co-Author, Donald W. Humphreys
Indiana University
Bloomington, Indiana

"Analyzing Item Response Behavior as a Means to Estimate the Level of Cognitive Performance"
John T. Wilson
The University of Iowa
Iowa City, Iowa

Discussant: Leopold Klopfer
University of Pittsburgh
Pittsburgh, Pennsylvania

Organizer: John T. Wilson
The University of Iowa
Iowa City, Iowa

D. Research in Teacher Education — Embassy

Chairperson: Ronald D. Townsend
Evanston Township High School
Evanston, Illinois

"Formative Evaluation of a Competency Based Program"
Robert K. James
Kansas State University
Manhattan, Kansas

"Continuing Clinical Experiences as a Part of a Four-Year Teacher Education Program"
Vincent N. Lunetta
The University of Iowa
Iowa City, Iowa

"Research Data as a Base for Development of Teacher Education Programs"

William R. Brown
Old Dominion University
Norfolk, Virginia

"Changes in Self-Concept of In-Service Teachers"

James P. Hale
Glencoe Public Schools
Glencoe, Illinois

"Development and Use of a Science Teaching Competencies Checklist and Teaching Philosophy Inventory with Pre-Service and In-Service Teachers"

Melton E. Golmon
University of Maryland
College Park, Maryland

E. New Research Models for Science Education — Gold

Chairperson: Robert B. Collagan
Morgan State College
Baltimore, Maryland

"Philosophical Analysis Applied to Problems of Science Education: A Promising Alternative Approach to Research"

Douglas A. Roberts and Thomas L. Russell
Ontario Institute for Studies in Education
Toronto, Ontario, Canada

"Implications from Thomas Kunh's *The Structure of Scientific Revolutions* for Research in Science Education: The Need for Paradigms"

Barbara L. Bowen
IACC Day Care Center
Ithaca, New York

"Path Analysis as a Tool for Science Education Research"

Lee T. Bryant
State University College at Geneseo
Geneseo, New York

"A Path Analysis Model for Physics Enrollment"

Rodney L. Doran
State University of New York at Buffalo
Buffalo, New York

4:30 P.M. Research Reports

A. Review of Teacher Behavior Research — Gold

Chairperson: Eugene Lee
Emory University
Atlanta, Georgia

Presentor: Patricia E. Blosser
Ohio State University
Columbus, Ohio

B. Review of Research in Science Education – 1972 — Embassy

Chairperson: Paul Westmeyer
Florida State University
Tallahassee, Florida

Presentor: Joseph D. Novak
Cornell University
Ithaca, New York

C. Forty Years of Research in Science Education — English

Chairperson: Ronald D. Anderson
University of Colorado
Boulder, Colorado

Presentor: Willard J. Jacobson
Teachers College Columbia University
New York, New York

D. Research in Environmental Education — French

Chairperson: Marvin Druger
Syracuse University
Syracuse, New York

Presentors: Felicia E. West
American Association for Advancement of Science
Washington, D.C.

Dean Bennett
Maine Environmental Education Project
Yarmouth, Maine

Barbara Clark
Minnesota Environmental Sciences
Foundation, Inc.
Minneapolis, Minnesota

Kay David
Fernbank Science Center
Atlanta, Georgia

Donald Cook
Environmental Protection Agency
Washington, D.C.

7 – 10 P.M. Center Caucuses

A. Indiana University — Embassy

Chairpersons: Hans O. Andersen
James R. Okey
Donald W. Humphreys
Linda Knight
Paul Repicky
William Stucky
Indiana University
Bloomington, Indiana

"Research in Science Teacher Preparation in Indiana University: Experimenting with University-School Cooperation, Field Based Instruction, Competency Based Instruction, and Process Product Research"

B. The University of Georgia — Ivy

Chairperson: John W. Shrum
The University of Georgia
Athens, Georgia

"Involvement with Modular, Self-Paced, Competency-Based Instruction in Both Methods Courses and Science Courses for Elementary Teachers"

C. University of Northern Colorado — Envoy

Chairperson: Robert Sund
University of Northern Colorado
Greeley, Colorado

"Research Relative to Piaget's Theory: Creativity; and Self-Evaluation Inventories as a Means of Assessing Student Achievement"

D. The Pennsylvania State University — Gold

Chairpersons: H. Seymour Fowler
Paul E. Bell
The Pennsylvania State University
University Park, Pennsylvania

"Testing of Theories of Learning" e.g., Snyder Prototheory; Comparison of Alternative Strategies for Instruction"

E. Michigan State University — Regency

Chairperson: Julian R. Brandou
Michigan State University
East Lansing, Michigan

"The Science and Mathematics Teaching Center: Michigan State University; Theoretical and Empirical Investigations of the Relations Between Conceptual Systems and Inquiry Strategies; Implementation and Dissemination Impact Studies"

F. The University of Texas at Austin — Chicago

Chairperson: David P. Butts
University of Texas at Austin
Austin, Texas

"Curriculum Development and Evaluation, Teacher Education"

G. University of Maryland — French

Chairperson: J. David Lockard
University of Maryland
College Park, Maryland

"Teacher Education, Assessment and Evaluation Studies, Programmed Materials, Curriculum Evaluation"

H. The University of Iowa — English

Chairperson: George W. Cossman
The University of Iowa
Iowa City, Iowa

"Piagetian Studies, Kinetic Analysis of Verbal Discourse, Teacher Education, Classroom Behaviors, CAI and Other Programmed Materials, Attitudinal Studies, Implications of History and Philosophy of Science"

I. The Ohio State University — Flower (Board)

Chairperson: Robert W. Howe
The Ohio State University
Columbus, Ohio

"Research Concerning National Surveys, Teacher Behaviors, Computer Assisted Instruction, and Instruction"

WEDNESDAY, APRIL 17

8:30 A.M. Discussion Papers

A. The Proper Experimental Unit: Comparative Analyses of Empirical Data — Ivy

Chairperson: Frank X. Sutman
Temple University
Philadelphia, Pennsylvania

Authors: J. Dudley Herron
Purdue University
West Lafayette, Indiana

Thomas Luce
Purdue University
West Lafayette, Indiana

Van E. Neie
Purdue University
West Lafayette, Indiana

B. The Cooperative Teacher Education Project: Pre-Service Outcomes — Envoy

Chairperson: Carleton W. Knight
University of Delaware
Newark, Delaware

Author: Orrin E. Gould
University of Illinois
Urbana, Illinois

C. An Evaluation of a Performance-Objective Based High School Chemistry Curriculum — Gold

Chairperson: J. David Lockard
University of Maryland
College Park, Maryland

Author: Louis A. Gatta
Deerfield High School
Deerfield, Illinois

D. On Using Qualitative Data to Evaluate Two Chemistry Courses — Chicago

Chairperson: Paul Westmeyer
The University of Texas at San Antonio
San Antonio, Texas

Author: Glen S. Aikenhead
University of Saskatchewan
Saskatoon, Saskatchewan, Canada

E. Formal Operational Thought and the High School Science Curriculum — Regency

Chairperson: Harold H. Jaus
Purdue University
West Lafayette, Indiana

Author: Ann C. Howe
Syracuse University
Syracuse, New York

8:30 A.M. Contributed Papers II

A. Curriculum Development — Embassy

Chairperson: Michael L. Agin
Michigan Technological University
Houghton, Michigan

"Reading Comprehension and the Measure of Science Achievement Using the 1968-1969 ISCS Test and the Revised ISCS Test"
David W. Allen
Philadelphia Board of Education
Philadelphia, Pennsylvania

"Factors Concomitant with Approach and Avoidance Behavior with Respect to Enrollment in High School Physics Courses"

Jewerl P. Laurence
Detroit Public Schools
Detroit, Michigan

"An Analysis of Reinforcement and Feedback within an Auto-Tutorial Plant Taxonomy Module"

John D. Hunt
University of Northern Colorado
Greeley, Colorado

"A Study of Predictors of Success in Ninth-Grade Science and Mathematics and Its Relationship to a Racial Desegregation Project"

Violet R. Strahler
Dayton Public Schools
Dayton, Ohio

B. Academic Achievement — French

Chairperson: Fred DeLuca
Iowa State University
Ames, Iowa

"Predictors of Achievement in an Audio-Tutorial Physical Science Course"

John W. Butzow and Roland R. Pare
University of Maine
Orono, Maine

"Pupil/Science Teacher Interpersonal Compatibility and Science Attitudes"

Robert A. Vargo
Syracuse University
Syracuse, New York

"Performance Versus Verbal Ability: Implication for Curriculum Building?"

Glenn H. Crumb
Western Kentucky University
Bowling Green, Kentucky

"Student Misconceptions in Chemical Equilibrium as Related to Cognitive Level and Achievement"
Alan E. Wheeler and Heidi Kass
University of Alberta
Edmonton, Alberta, Canada

C. Evaluation — English

Chairperson: Louis A. Gatta
Deerfield High School
Deerfield, Illinois

"A Study of the Effects of a Teacher Training Program on the Attitudes of Elementary School Students Towards Science"
Francis X. Lawlor
Florida State University
Tallahassee, Florida

"A Study of Planetarium Effectiveness on Student Achievement, Perceptions and Retention"
Robert W. Ridky
University of Maryland
College Park, Maryland

"Analysis of the Role of the Planetarium in Education"
Dennis W. Sunal
University of Maryland
College Park, Maryland

"An Analysis of Factors Successful in the Implementation of Innovative Science Programs in the Elementary and Secondary Rural Schools – Part II, Secondary"
Will L. Selser and Don Q. Milliken
Northeast Missouri State University
Kirksville, Missouri

10:00 A.M. Discussion Papers

A. A Comparison of Structured and Unstructured Modes of Teaching Science Process Activities — Ivy

Chairperson: James P. Hale
Glencoe Public Schools
Glencoe, Illinois

Authors: Robert K. Crocker
Memorial University of Newfoundland
St. John's, Newfoundland
Canada

Harry G. Elliott
Memorial University of Newfoundland
St. John's, Newfoundland,
Canada

Kevin R. Bartlett
Memorial University of Newfoundland
St. John's, Newfoundland,
Canada

B. A Comparison of Predicted Science Teaching Behaviors with a Theoretical Construct — Envoy

Chairperson: Richard L. Sagness
University of South Dakota
Vermillion, South Dakota

Author: Carl F. Berger
University of Michigan
Ann Arbor, Michigan

C. Learning Interference and Imagery Considerations Associated with Science Diagrams and Prose Media — Chicago

Chairperson: John F. Schaff
University of Toledo
Toledo, Ohio

Author: William G. Holliday
The University of Calgary
Calgary, Alberta, Canada

D. The Use of Film-Mediated Models to Prompt Children's Scientific Process Activities: A Pilot Study — Regency

Chairperson: Joseph D. Novak
Cornell University
Ithaca, New York

Authors: John J. Koran, Jr.
University of Florida
Gainesville, Florida

Linda R. De Ture
University of Florida
Gainesville, Florida

E. The Science Education Doctorate: Competencies and Roles — Gold

Chairperson: Calvin Gale
Michigan Technological University
Houghton, Michigan

Author: Ronald D. Anderson
University of Colorado
Boulder, Colorado

10:00 A.M. Contributed Papers III

A. Instructional Procedures — French

Chairperson: Charles A. Wall
Salisbury State College
Salisbury, Maryland

"The Effect of Prior Knowledge and Critical Thinking on the Interpretation of a Biological Concept Using an Advance Organizer"
George P. Toth and H. Seymour Fowler
The Pennsylvania State University
University Park, Pennsylvania

"Preconditions for use of an Advance Organizer in Teaching the Principle of Natural Selection"
H. Craig Sipe and James H. Houghton
State University of New York at Albany
Albany, New York

"Interaction Patterns and Their Relationship With Outcomes in Australian Science Education Project Classrooms"
Colin N. Power
University of Queensland
St. Lucia, 4067, Australia

"The Effect of Questioning Upon Various Cognitive Levels of Student Performance"
Alexandria Martikean and Larry Guthrie
Indiana University Northwest
Gary, Indiana

B. Instrumentation and Test Construction — English

Chairperson: James P. Barufaldi
University of Texas at Austin
Austin, Texas

"The Development and Field Testing of a Science Classroom Observation Form"
Richard L. Butt
McGill University
Montreal, Quebec, Canada

Marvin F. Wideen
Simon Fraser University
Burnaby 2, British Columbia

"A Search for Subscales in the *Science Process Inventory*"
Gary C. Bates
Harvard University
Cambridge, Massachusetts

"The Development of an Instrument to Evaluate Chemistry Laboratory Skills"
Robert J. Hearle
University of Maryland
Beltsville, Maryland

"A Factor Analysis and Partial Validation of the Moore Sutman Inventory of Scientific Attitudes"
Marvin F. Wideen
Simon Fraser University
Burnaby 2, British Columbia

Richard L. Butt
McGill University
Montreal, Quebec, Canada

C. Teacher Characteristics — Embassy

Chairperson: Bill Tillery
Arizona State University
Tempe, Arizona

"Relationships Between Progressivism, Traditionalism, Dogmatism, and Philosophical Consistency in Science, English and Elementary School Teachers"

Lewis M. Brown
New Mexico State University
Farmington, New Mexico

"Concepts of Science and Scientists Among Prospective Elementary Teachers"
R. G. E. Mitias
Ohio University
Athens, Ohio

"Path Analysis of Selected Teacher Variables from Public Elementary Schools of the New England, the Mideast, and the Southwest Regions of the United States during the 1970-1971 School Year"
Bess J. Nelson
The Ohio State University
Columbus, Ohio

"The Prediction of Subject Matter Bias Related to Science in the Elementary Schools"
Fred L. Prince
University of South Florida
Tampa, Florida

11:45 A.M. Annual Luncheon, Business Meeting, and Awards — Mayfair

Wayne W. Welch, Presiding
University of Minnesota
Minneapolis, Minnesota

1:15 P.M. Paper Sets

A. Evaluation of Teacher Education in Science at The University of Iowa — French

Chairperson: William L. Sharp
The University of Iowa
Iowa City, Iowa

"Effectiveness of Science Teacher Education Programs Prior to 1970"
Leon Zalewski
The University of Iowa
Iowa City, Iowa

"The Iowa-UPSTEP Program: Evaluation of Program 1970-72"

Edward L. Pizzini
The University of Iowa
Iowa City, Iowa

"Iowa-UPSTEP: Current Program Evaluation"

John T. Wilson
The University of Iowa
Iowa City, Iowa

"The Projected Iowa-UPSTEP Model"

William L. Sharp
The University of Iowa
Iowa City, Iowa

B. Comparative Studies of Affective and Cognitive Learning Under Two Quantitatively Defined Teaching Strategies: Student Structured Learning in Science (SSLS) and Teacher Structured Learning in Science (TSLS) — Gold

Chairperson: Alan M. Voelker
Northern Illinois University
DeKalb, Illinois

"Student Structured Learning in Biology"

"A Five Year Study of Development and Implementation of Two Quantitatively Defined Teaching Strategies for Elementary and Secondary School Science: SSLS and TSLS"

"A One Year Study of Comparative Effects of SSLS and TSLS Teaching Strategies on Student Classroom Behavior"

"A Study of Cognitive Development Levels of Children in Grades 1-5 and the Effects of SSLS and TSLS Teaching Strategies on Cognition"

"A One Year Study of Comparative Effects of SSLS and TSLS Teaching Strategies on the Student's Information Acquisition"

"A One Year Study of Comparative Effects of SSLS and TSLS Teaching Strategies on the Student's Problem Solving Ability and Confidence"

"A One Year Preliminary Study of SSLS and TSLS Teaching Strategies on the Student's Behavior and on Affective and Cognitive Learning in Secondary School Chemistry"

"Teachers' Perceptions of Comparative Effects of SSLS and TSLS Teaching Strategies on Elementary and Secondary School Students"

"SSLS/TSLS Research: Implications for Teacher Education, Curriculum Development, and Future Research"

"A Study of Self-Perceptions Among Elementary School Students Exposed to Contrasting Teaching Strategies in Science"

"Studying the Effects of Quantitatively Defined Teaching Strategies on Students in Elementary School Science Using Macro-Interaction Analysis Techniques"

Charles C. Matthews
Ronald Good
Patricia Kolebas
Jane Leonard
Florida State University
Tallahassee, Florida

James A. Shymansky
The University of Iowa
Iowa City, Iowa

John Penick
Loyola University
Chicago, Illinois

Everett Stallings
Winthrop College
Rock Hill, South Carolina

Abu Hassanbin Ali
Education Ministry
Malaysia

C. The Measurement of Program Implementation and Students Cognitive, Affective, and Social Performance in a Field Test of the Inquiry Role Approach (1972-73) — Ivy

Chairperson: Daniel S. Sheldon
The University of Iowa
Iowa City, Iowa

"Implementation: Its Documentation and Relationship to Student Inquiry Development"
Lowell A. Seymour
Richard M. Bingman
Paul G. Koutnik
Lawrence F. Padberg
Kenneth A. Burton
Mid-Continent Regional Education Laboratory
Kansas City, Missouri

"Description of Student Preferences for and Perceptions of Selected Classroom Conditions, Teacher Behaviors, and Class Procedures"
Lowell A. Seymour
Richard M. Bingman
Paul G. Koutnik
Lawrence F. Padberg
Kenneth A. Burton
Mid-Continent Regional Educational Laboratory
Kansas City, Missouri

"Student Cognitive, Affective and Social Skills Performance"
Lowell A. Seymour
Richard M. Bingman
Paul G. Koutnik
Lawrence F. Padberg
Kenneth A. Burton
Mid-Continent Regional Educational Laboratory
Kansas City, Missouri

D. Evaluation of a "Parity" Model CBTE Program — Regency

Chairperson: Paul Joslin
Drake University
Des Moines, Iowa

"Experimental Design"
Douglas J. Harke
State University College at Geneseo
Geneseo, New York

"The Concerns Model and the Geneseo/STP CBTE Program"
R. Wayne Mahood
State University College at Geneseo
Geneseo, New York

"Measurement of Variables"
Patrick DeMarte
State University College at Geneseo
Geneseo, New York

E. Information Theoretic Memory Model — Embassy

Chairperson: Gene W. Moser
University of Pittsburgh
Pittsburgh, Pennsylvania

"Cultural Differences of Libyan and American Children in a Sorting and Piagetian Task"
Abdulrazik Attashani and Roberto A. Pesenti
University of Pittsburgh
Pittsburgh, Pennsylvania

"Relationships of Learning and Cognition in a Verbal and Visual Task"
Chick O. Empfield
Fox Chapel Area School District
Pittsburgh, Pennsylvania

"Relationships Between Memory Recall and Learning of Abstract Problem Solving and Piagetian Tasks"
Michael F. Fezar
Allegheny County Community College
Pittsburgh, Pennsylvania

"Characteristics of Primacy and Recency Processing of a Learning and Cognition Task"
David L. Dunlop
Fox Chapel Area School District
Pittsburgh, Pennsylvania

"Relationships of Concrete Learning and Concrete and Abstract Cognitions"
Bonnie L. Dean
University of Pittsburgh
Pittsburgh, Pennsylvania

"Relationships of Personality Characteristics and an Abstract Problem Solving Task"
Mary E. Sweeney
University of Pittsburgh
Pittsburgh, Pennsylvania

"Relationships of the Intellect with the Processing of a Learning and Cognition Task"
Gene W. Moser
University of Pittsburgh
Pittsburgh, Pennsylvania

"A Visual Demonstration of Children in Learning and Cognition Tasks"
Gene W. Moser
University of Pittsburgh
Pittsburgh, Pennsylvania

Chick O. Empfield
Fox Chapel Area School District
Pittsburgh, Pennsylvania

3:00 P.M. AN HOUR WITH – (A Chance for Communication)

A.	The Editor and Editorial Board	Embassy
	O. Roger Anderson, Discussant	
B.	The President and President-Elect	Ivy
	Wayne W. Welch, Discussant	
C.	The Research Coordinator	Envoy
	Stanely Helgeson, Discussant	
D.	The Secretary-Treasurer, Newsletter Editor, Business Office	Gold
	Paul E. Bell, Discussant	
E.	The 1975 Program Committee	Regency
	New President-Elect for NARST, Discussant	

F. Placement Coordinator — Chicago

Marvin Druger, Discussant

G. National Institute of Educational Programs — French

George Gustafson, Discussant
Advisor to NIE on External Relations

4:15-6:00 P.M. Panel Discussions

A. Preparation of Research Summaries and Abstracts — Gold

Chairperson: Richard L. Sagness
University of South Dakota
Vermillion, South Dakota

Participants: Stanley Helgeson
Ohio State University
Columbus, Ohio

O. Roger Anderson
Teachers College Columbia University
New York, New York

N. Eldred Bingham
University of Florida
Gainesville, Florida

James Joseph Gallagher
Governors State College
Park Forest South, Illinois

B. Various Paradigms in Science Education Research — Embassy

Chairperson: John F. Schaff
University of Toledo
Toledo, Ohio

Participants: John W . Wick
Northwestern University
Evanston, Illinois

Jack A. Easley
University of Illinois
Urbana, Illinois

James Raths
University of Illinois
Urbana, Illinois

C. Perspectives on Advance Degree Programs in Science Education — French

Chairperson: David P. Butts
University of Texas at Austin
Austin, Texas

Participants: Joseph I. Lipson
University of Illinois
Chicago, Illinois

Joseph D. Novak
Cornell University
Ithaca, New York

Fred W. Fox
Oregon State University
Corvallis, Oregon

Clarence H. Boeck
University of Minnesota
Minneapolis, Minnesota

D. The Preparation of Graduate Students for Careers in Research — English

Chairperson: John T. Wilson
The University of Iowa
Iowa City, Iowa

Participants: Lynn W. Glass
Iowa State University
Ames, Iowa

Daniel J. Zaffarano
Iowa State University
Ames, Iowa

David H. Ost
California State College, Bakersfield
Bakersfield, California

Alan M. Voelker
Northern Illinois University
DeKalb, Illinois

6:00-8:00 P.M. Social Hour — Hubbard

Local Arrangements Committee

THURSDAY, APRIL 18

9:00 A.M. General Session II — Crystal Ballroom

Presiding: Robert E. Yager, President-Elect
The University of Iowa
Iowa City, Iowa

Speaker: Lee S. Shulman
Michigan State University
East Lansing, Michigan

Topic: "The Psychology of School Subjects: A Premature Obituary?"

10:00 A.M. Paper Sets

A. Aptitude Treatment Interaction in Science Education — Envoy

Chairperson: J. David Lockard
University of Maryland
College Park, Maryland

"A Rationale for Investigating Differential Responses of Learners to Instructional Treatments in Science Classrooms"
John T. Wilson
The University of Iowa
Iowa City, Iowa

"Some Basic Statistical Procedures for ATI Studies in Science Education"
Kenneth Loose
University of Florida
Gainesville, Florida

"Aptitude X Treatment Interaction Studies in Science"
John J. Koran, Jr.
University of Florida
Gainesville, Florida

"Differential Effectiveness of Two Science Diagram Types"
William G. Holliday
University of Calgary
Calgary, Alberta, Canada

Discussant: Mary Lou Koran
University of Florida
Gainesville, Florida

Organizer: William G. Holliday
University of Calgary
Calgary, Alberta, Canada

B. University of Delaware Research in Science Education — Chicago

Chairperson: Carleton W. Knight
University of Delaware
Newark, Delaware

"Teacher Acceptance of Performance Based Objectives"
Robert L. Uffelman
University of Delaware
Newark, Delaware

"Designing a Model for Developing Learning Materials that Provide Elementary Teachers with Content Background in Science in an In-Service Workshop Format"
Winston Cleland
University of Delaware
Newark, Delaware

"Evaluating the Preparation of Classroom Observors through Audio-Tutorial Video Tape Units"
Sally G. Kehoe
University of Delaware
Newark, Delaware

Carleton W. Knight
University of Delaware
Newark, Delaware

"A Comparison of Retention Levels Resulting From the Traditional and Modular Laboratory Approaches"
Carleton W. Knight
University of Delaware
Newark, Delaware

Gary E. Dunkleburger
Alexis I DuPont High School
Greenville, Delaware

C. Implications of Piaget's Theory for Science Teaching — Ivy

Chairperson: Darrell G. Phillips
The University of Iowa
Iowa City, Iowa

"An Investigation of Portions of a Model Hierarchy for the Acquisition of the Concept of Speed in Children"
Daniel E. Kavanagh
Guilford Public Schools
Guilford, Connecticut

"Affective and Cognitive Development: Comparison of Need Achievement and Risk Level with Piagetian Levels of Cognitive Development"
Kenneth J. Osicki
Cleveland Board of Education
Cleveland, Ohio

"Five Formal Operational Piagetian-Type Tasks Using Two Modes of Presentation"
Donald J. Brown
Peoria Heights High School
Peoria Heights, Illinois

"Formal Operational Thought and Dogmatism"
Dale Phillips
Westinghouse Learning Corporation
Iowa City, Iowa

"An Investigation of Proportional Reasoning"
J. Harvey Hensley
University of Wisconsin
Platteville, Wisconsin

10:00 A.M. Contributed Papers IV

A. Instructional Procedures — Embassy

Chairperson: Vincent N. Lunetta
The University of Iowa
Iowa City, Iowa

"A Study of the Association Between the Use of Individualized, Self-Pacing Science Curriculum Materials (ISCS) as a Reading Course and Gains

in Reading Comprehension and Vocabulary Skills of Seventh Grade Students"

Robert H. Rivers
Highland Public Schools
Highland, Indiana

"An Analysis of the Effectiveness of the Use of Autoinstructional Materials in the Teaching of PSSC Physics by Qualified Physics Teachers"

Nasim M. Siddiqi
Science Branch
Directorate of Education
Delhi, India

"A Study of the Use of Computer Simulated Experiments in the Physics Classroom"

William R. Hughes
Model Secondary School for the Deaf
Washington, D.C.

"The Relationship of Independent Study, Object Visualization, and Anxiety to Hypothesis Formation by College Freshmen in the Biological Sciences"

Dorothy M. Brown
Cabrini College
Radnor, Pennsylvania

B. Educational Objectives — Gold

Chairperson: William L. Sharp
The University of Iowa
Iowa City, Iowa

"An Empirical Evaluation of the Effectiveness of Educational Objectives uses as Guidelines for the Development of Instructional Units"

Thomas C. Arnold and Francis M. Dwyer
State College Area High School
State College, Pennsylvania

"A Chronological History of Selected Objectives for the Teaching of Secondary School Chemistry in the United States During the 1918-1972 Period, as Reflected in Periodical Literature"

William R. Ogden
East Texas State University
Commerce, Texas

"The Use of Behavioral Objectives by Basis Vocational Science Students"

William J. Martin
Williamsport Area School District
Williamsport, Pennsylvania

"Behavioral Objectives, Science Processes, and Learning From Inquiry-Oriented Instructional Materials"

Elaine Anderson
Pennsylvania State University
University Park, Pennsylvania

C. Student Characteristics — Regency

Chairperson: James A. Shymansky
The University of Iowa
Iowa City, Iowa

"Sex, Race, Junior High Curricula, and the Acquisition of Process Skills"

Donald T. Fritz and Michael Szabo
Gwynn Park Junior High School
Brandywine, Maryland

"An Investigation of Some Cognitive Style Variables and Their Relationship to Science Achievement"

Geno Zambotti and Frank Fazio
Indiana University of Pennsylvania
Indiana, Pennsylvania

"High School Chemistry Student Attitudes: Assessment and Analysis"

Henry W. Heikkinen
University of Maryland
College Park, Maryland

"An Investigation of Aptitude-Treatment Interaction Using Two Distinct Modes of College Chemistry Instruction and a Selected Set of Student Aptitudes"

Bruce D. Parker
Syracuse University
Syracuse, New York

D. Teacher Education — French

Chairperson: Verne A. Troxel
Miami University
Oxford, Ohio

"Credibility of the Communicator: A Paradigm for Attitude Change for Preservice Elementary Teachers Toward Science"
Robert L. Shrigley
Pennsylvania State University
University Park, Pennsylvania

"The Effects of Integrated Science Process Skill Instruction on the Achievement and Planning Practices of Prospective Elementary Teachers"
Harold H. Jaus
Purdue University
West Lafayette, Indiana

"Pupil Growth in Classification Skills as a Consequence Measure of Learning Site on Preservice Elementary Teachers"
Richard J. Rezba
Boston University
Boston, Massachusetts

"An Analysis of the Effects of an Undergraduate Pre-Service Teacher Education Program on Selected Personal Characteristics"
Edward L. Pizzini
The University of Iowa
Iowa City, Iowa

E. Learning Behaviors — English

Chairperson: Patricia E. Blosser
Ohio State University
Columbus, Ohio

"A Study of Student Verbal Behaviors in Inquiry and Noninquiry Settings in Biology"
Delivee L. Wright
University of Nebraska-Lincoln
Lincoln, Nebraska

"Studies on Audiotutorial Teaching of General Biology at Syracuse University"
Marvin Druger
Syracuse University
Syracuse, New York

"Home-Culture Influence on Learning About Natural Phenomena in School: A Case Study in Sierra Leone, West Africa"
Tommy D. Conkright
University of Illinois
Champaign, Illinois

"Tests of Perceptions About Scientists and Self"
Richard T. White
Monash University
Clayton, Australia

"Audio-Tutorial Modules for the Preparation of College Biology Teachers"
Martha T. Hatcher
Gainesville Junior College
Gainesville, Georgia

11:15 A.M. A Clinic for Manuscript Preparation — Crystal Ballroom

Chairperson: Ronald J. Raven
State University of New York
Buffalo, New York

Participants: Judy Egelston
Geneseo State College
Geneseo, New York

Douglas Roberts
Ontario Institute for Studies in Education
Toronto, Ontario, Canada

Verne A. Troxel
Miami University
Oxford, Ohio

Edward L. Smith
Michigan State University
East Lansing, Michigan

William R. Capie
University of Georgia
Athens, Georgia

Rodney Doran
State University of New York at Buffalo
Buffalo, New York

Fred W. Fox
Oregon State University
Corvallis, Oregon

Paul G. Koutnik
Mid-Continent Regional Education Laboratory
Kansas City, Missouri

Hans O. Andersen
Indiana University
Bloomington, Indiana

Louis A. Gatta
Deerfield Highland Park Schools
Deerfield, Illinois

James R. Okey
Indiana University
Bloomington, Indiana

John T. Wilson
The University of Iowa
Iowa City, Iowa

Ronald D. Anderson
University of Colorado
Boulder, Colorado

Darrell G. Phillips
The University of Iowa
Iowa City, Iowa

Robert Guerin
State Univesity of New York at Buffalo
Buffalo, New York

Members are invited to bring manuscripts that have been rejected, manuscripts being revised, manuscripts in preparation, and manuscripts where referees have disagreed. After some preliminary remarks, the session will develop into a series of roundtable discussions where specific problems, questions, and issues can be approached.

1:00 P.M. Executive Board Meeting — Patrick

Robert E. Yager, Presiding
The University of Iowa
Iowa City, Iowa

1:30 P.M. Tour of Science Education Facilities and Visit with Staff

Members desiring to travel to one of the following innovative centers are invited to sign at the registration table on Tuesday and Wednesday. Information will be available Thursday A.M. at the registration table concerning mode of transportation and 1:30 meeting points.

A. University of Chicago Laboratory School

Hosts: Karl Kertz
Ernest Poll

B. Governors State University

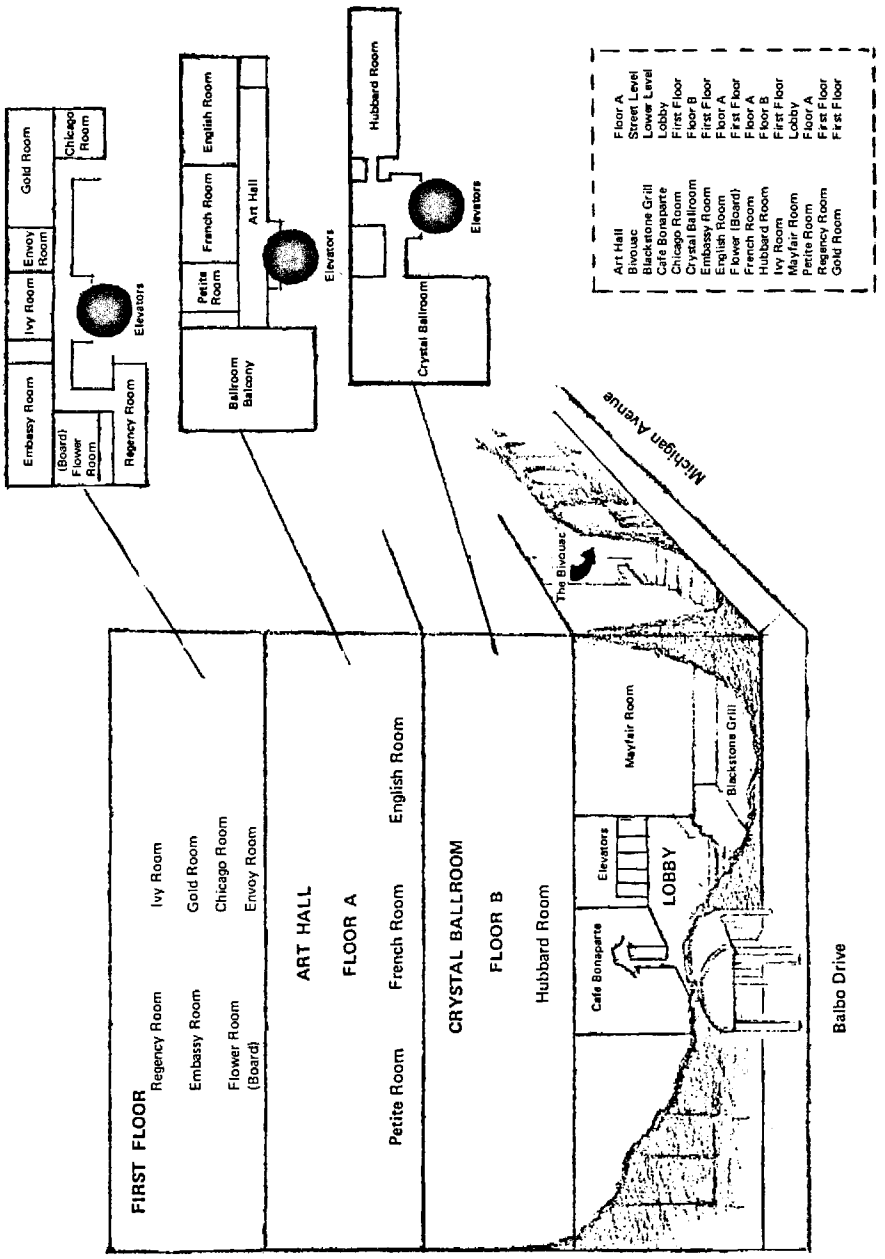
Host: James Joseph Gallagher

C. University of Illinois, Chicago Circle Campus

Host: Joseph I. Lipson

SEE YOU MARCH 17 IN LOS ANGELES – 1975!

For your convenience — a guide to the various Party and Meeting Rooms in the BLACKSTONE HOTEL.



PLACEMENT SERVICE

A placement desk and bulletin boards will be set up in the registration area. This will provide for the posting of information about jobs available and personnel seeking employment. Interested parties may post information and addresses on the bulletin board, and arrange interviews on their own. In addition a limited number of copies of an updated NARST PLACEMENT INFORMATION BULLETIN will be available.

Coordinator of Placement:

DR. MARVIN DRUGER
Center for Science Education
101 Heroy Building
Syracuse University
Syracuse, New York 13210

Mechanism for Planning NARST Programs

According to the NARST By-Laws, the Program Committee is a Standing Committee consisting of the Research Coordinator, the President-Elect (as chairman of the Committee), and four members (each with rotating two-year terms). This Program Committee is charged with planning the program format for the Annual Meeting. This planning includes preparing the Call for Papers, evaluating the contributions suggested by the members for all program elements, and preparing the program copy for distribution to members.

The Call for Papers is included in a Newsletter (and, at the option of the Secretary-Treasurer, a special mailing) to all members. The Call for Papers includes a questionnaire which serves as a cover sheet for multiple copies of a summary of the contributed paper or other program feature. Such copies are not to include names of the investigator(s) or other means of identification. These copies of the summaries are number coded with the cover sheets being filed until after all program planning and summary evaluation has occurred.

Each member of the Program Committee reads and rates each paper submitted for possible use on the program. Following this independent rating, the Committee meets as a group. The separate ratings are summarized on a single rating sheet. All papers rated highly by five or more Committee members are automatically included for use in the program outline. Similarly, all papers judged as poor by five or more Committee members are automatically rejected. The group of papers with middle scores as well as those where there is disagreement among the Committee members making the ratings are then discussed thoroughly. At times Committee members change their assessments. All papers are eventually recommended for inclusion in the program structure or rejected. Many times the final decision regarding borderline situations is made based upon the program structure (i.e., number of papers within a particular classification, total number of concurrent sessions planned, needed balance in terms of topics).

The names of contributors remain unknown until a draft copy of the program is prepared and distributed to program committee members for final editing. This "blind" evaluation of program suggestions from the membership is an important feature in structuring the NARST Annual Meeting.

The timetable for planning the NARST Program is as follows:

September 1	Call for Papers
October 15	All Papers Mailed to Chairman of Program Committee
October 25	All Papers Number Coded and Mailed to Members of Program Committee for Individual Rating

November 15	Meeting of Program Committee
November 25	Notification of Paper Evaluation Mailed to Members Who Submitted Papers
December 1	First Draft of Program Copy Circulated to Program Committee
December 15	Submission of Abstracts for All Program Parts to ERIC/SMEAC
January 1	Draft of Complete Program, including Presiding Officers, Ready for Circulation to All Participants for Final Edit
January 15	Program Copy Ready for Printer
March 1	Mail Copy of Printed Program to All Members

NEWS NOTES

In the space below please give information that will be of interest to NARST members. Tear this page off the Program and leave it at the Registration Desk. It will be given to J. Seymour Fowler, NARST Newsletter Editor.

MEETING NOTES