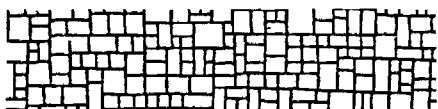




NATIONAL ASSOCIATION
FOR
RESEARCH IN SCIENCE
TEACHING



48th
ANNUAL
MEETING

***PROGRAM**



THE LOS ANGELES HILTON HOTEL
LOS ANGELES, CALIFORNIA

MARCH 17-20, 1975



OFFICERS FOR THE ASSOCIATION

1974 - 1975

PRESIDENT

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

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The University of Colorado
Boulder, Colorado

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The Pennsylvania State University
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Ohio State University
Columbus, Ohio

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The University of Georgia
Athens, Georgia

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LOCAL ARRANGEMENTS COMMITTEE

George C. Turner, Chairman	California State University, Fullerton
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Joseph Carter	Anaheim Unified High School District
William Mocnik	Carson High School

FUTURE MEETINGS OF NARST

1976	April 19-23	Las Vegas (AERA)
1977	March 28-31	Cincinnati (NSTA)
1978	April 11-15	Toronto (AERA)
1979	March 19-22	Atlanta (NSTA)

THE 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 annually meets concurrently with 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. Applications for membership, payment of dues, and correspondence related to the business operations of NARST should be mailed to the Secretary-Treasurer.

PRESIDENTS OF NARST

1928	W.L. Eikenberry	1952	Betty Lockwood
1929	W.L. Eikenberry	1953	J. Darrell Barnard
1930	W.L. Eikenberry	1954	George C. Mallinson
1931	Elliot R. Downing	1955	Kenneth E. Anderson
1932	Elliot R. Downing	1956	W.C. Van Deventer
1933	Francis D. Curtis	1957	Waldo W. Blanchet
1934	Ralph K. Watkins	1958	Nathan S. Washton
1935	Archer W. Hurd	1959	Thomas P. Fraser
1936	Gerald S. Craig	1960	Vaden W. Miles
1937	Walter G. Whitman	1961	Clarence H. Boeck
1938	Honor A. Webb	1962	Herbert A. Smith
1939	Ralph Powers	1963	Ellsworth S. Obourn
1940	Otis W. Caldwell	1964	Cyrus W. Barnes
1941	Harry A. Carpenter	1965	Frederic B. Dutton
1942	G.P. Cahoon	1966	Milton O. Pella
1943	Florence G. Billig	1967	H. Craig Sipe
1944	Florence G. Billig	1968	John M. Mason
1945	Florence G. Billig	1969	Joseph D. Novak
1946	C.L. Thiele	1970	Willard J. Jacobson
1947	Earl R. Glenn	1971	Paul D. Hurd
1948	Ira C. Davis	1972	Frank X. Sutman
1949	Joe Young West	1973	J. David Lockard
1950	N. Eldred Bingham	1974	Wayne W. Welch
1951	Betty Lockwood	1975	Robert E. Yager

REGISTRATION INFORMATION

Registration for the Meeting will be conducted at the Check Room on the Ballroom floor of the Los Angeles Hilton Hotel. Both persons who have preregistered, and those who have not will be able to obtain the following at the registration table:

- Book of Abstracts of Papers
- Registration Badge
- Ticket to the Luncheon
- Ticket to Training Sessions of Choice

The registration fee for members and non-members is \$10.00; Associate Members can register for \$6.00. The annual luncheon, which includes the presentation of the annual JRST award and the Patron's Award for proposed research will cost \$7.50. The training session fee is \$3.00 which covers the cost of the materials which will be distributed as part of the sessions. Please note that the training sessions were not included on the preregistration materials distributed prior to the convention. Thus, people who preregistered will still need to select the desired session and make their \$3.00 payment when they pick up their other registration materials.

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

ALL SESSIONS ARE ON THE BALLROOM FLOOR OF
THE HOTEL

FORTY-EIGHTH ANNUAL MEETING OF THE
**NATIONAL ASSOCIATION FOR RESEARCH
 IN SCIENCE TEACHING**

March 17-20, 1975

The Los Angeles Hilton Hotel
 Los Angeles, California

Sunday, March 16

7 - 10 pm	EXECUTIVE BOARD MEETING	<u>Boston Room</u>
Presiding:	Robert E. Yager The University of Iowa Iowa City, IA 52242	

Monday, March 17

9 am - 5 pm	REGISTRATION	<u>Check Room</u>
8:30 am - 12	EXECUTIVE BOARD MEETING	<u>Boston Room</u>
Presiding:	Robert E. Yager	
1:30 - 2:30 pm	GENERAL SESSION ONE	<u>Garden Room</u>
Presiding:	Robert E. Yager	
Speaker:	Dr. Michael Scriven The University of California Berkeley, CA 94720	

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"The Crucial Place of Values Education and Evaluation
 Education in Science Education"

<u>2:45 - 4:15 pm</u>	CONCURRENT SESSION ONE	
Assembly East	A. Informal Discussion with Michael Scriven	
Presiding:	Richard L. Sagness The University of South Dakota Vermillion, SD 57069	

<u>Assembly Center</u>	B. Teacher Education	
Presiding:	Betsy Ann Balzano State University College Brockport, NY 14420	

"Rotating Peer Supervision: Implementation and Evaluation of Its Effect on the Inner-Direction and Internal Control Constructs of Teacher Trainees"

Elizabeth G. Armstrong
The University of Hartford
West Hartford, CT 06117

and George T. Ladd
Boston College
Boston, MA 02167

"A Comparative Study to Determine the Effects of Two Methods of Elementary Science Instruction on The Attitudes of Prospective Elementary Science Teachers"

H. Marvin Bratt
The Ohio State University
Marion, OH 43302

"The Effect of Teacher Training in Individualizing Science Instruction on Pupil Achievement and Attitudes"

Donald W. Humphreys
Temple University
Philadelphia, PA 19122

and Jerry Brown
Temple University
Philadelphia, PA 19122

"The Effect of Science Process Training on Preservice Elementary Teachers' Process Skill Abilities, Understanding of Science, and Attitudes Toward Science And Science Teaching"

Joseph P. Riley II
The University of Delaware
Newark, DE 19711

Mission

C. Paper Set: Urban Science Intern Teaching Project

Presiding: Paul Beisenherz
Louisiana State University
New Orleans, LA 70122

"USITP: An Overview"

George C. Turner
California State University
Fullerton, CA 92634

"USITP: The Education Program"

Frank Collea
California State University
Fullerton, CA 92634

"USITP: Field Experiences"

William Mocnik
Carson High School
Los Angeles, CA

"USITP: Reflections from a First-Year Participant"

Charles Noyes
Adams Junior High School
Los Angeles, CA

"USITP: Doctoral Research Study"

Elizabeth Nuckolls
El Camino High School
Los Angeles, CA

New York

D. Discussion Paper

Presiding: Robert L. Shrigley
Pennsylvania State University
University Park, PA 16802

"The Effects of Selected Entering Behaviors and
Different Cognitive Levels of Behavioral Objectives
on Learning and Retention Performance in a Unit
on Population Genetics"

Elaine J. Anderson
The University of Wisconsin
Madison, WI 53706

and

H. Seymour Fowler
Pennsylvania State University
University Park, PA 16802

Reactors: Jean Beard
San Jose State University
San Jose, CA 95192

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

4:15 - 5:45 pm

CONCURRENT SESSION TWO

Assembly East

A. Instruction: Self-Paced

Presiding:

Robert B. Collagan
Morgan State College
Baltimore, MD 21212

"An Evaluation of Student Characteristics as Related to Cognitive Achievement in an Individualized High School Biology Program"

David L. Littlefield
Deerfield High School
Deerfield, IL 60015

and Louis A. Gatta
Deerfield High School
Deerfield, IL 60015

"The Effects of Self-Pacing Science Methods Instruction on Attitudes and Achievement of Preservice Teachers"

Luis A. Martinez
Florida International University
Miami, FL 33144

and Richard L. Campbell
Florida International University
Miami, FL 33144

"An Evaluation of Student Attitudes, Achievement, and Learning Efficiency in Various Modes of an Individualized, Self-Paced Learning Program in Introductory College Physics"

Carl J. Naegele
Cornell University
Ithaca, NY 14850

and Joseph D. Novak
Cornell University
Ithaca, NY 14850

"An Analysis of Individualized Learning System Chemistry"

William Torop
WestChester State College
WestChester, PA 19380

Assembly Center

B. Environmental and Life Sciences

Presiding:

John E. Czirr
Austin Peay State University
Clarksville, TN 37040

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"Academic Year Resident Outdoor Education and Environmental Attitudes"

Paul S. Markovits
Syracuse University
Syracuse, NY 13210

"The Effect of the Teachers' Curricular Bias, The Kind of Curriculum Studied As Well As Their Interaction on Students' Achievement in High School Biology"

Pinchas Tamir
Hebrew University
Jerusalem, Israel

"Progress In Environmental Science"

John H. Trent
The University of Nevada
Reno, NV 89507

Mission

C. Curricular Approaches

Presiding: Diane R. Conradson
San Jose State University
San Jose, CA 95192

"Model for State-Wide Studies: A Profile of Earth Science Teachers and Programs in Public Secondary Schools of Pennsylvania"

Whitman Cross II
Temple University
Philadelphia, PA 19118

"A Strategy for Disseminating Elementary Science Curricula"

Jerry G. Horn
University of South Dakota
Vermillion, SD 57069

and Arlen R. Gullickson
University of South Dakota
Vermillion, SD 57069

"A Study of Relationships Among Selected Teacher Variables and Expressed Preferences for Student-Centered, Non-Direct Science Education"

Edwin L. Shay
Worthington High School
Worthington, OH 43085

"Assessing Conflicts of Educational Philosophies Between
Science Teachers and National Science Curricula"

John T. Wilson
The University of Iowa
Iowa City, IA 52242

New York

D. Discussion Paper

Presiding: Marvin Druger
Syracuse University
Syracuse, NY 13210

"A New Dimension in Selecting Science Teachers"

Miles A. Nelson
The University of Wisconsin
Madison, WI 53706

Reactors: Glenn D. Berkheimer
Michigan State University
East Lansing, MI 48824

Jacob Blankenship
The University of Houston
Houston, TX 77004

Tuesday, March 18

8:30 - 10 am

CONCURRENT SESSION THREE

Assembly East

A. Learning Theory: Piaget

Presiding: Irvin T. Edgar
Pennsylvania Department of Education
Harrisburg, PA 17126

"A Perspective on Formal Thought Development"

Eugene L. Chiappetta
The University of Houston
Houston, TX 77004

"A Study of Abstract Preferences in Problem Solving Tasks
and Their Relationship to Abstract Ability and Formal
Thought"

David L. Dunlop
The University of Pittsburgh
Johnstown, PA 15904

and Frank Fazio
Indiana University of PA
Indiana, PA 15701

"The Teaching and Transfer of Seriation Strategies Using
Non-Visual Variables with First Grade Children"

Michael J. Padilla
Michigan State University
East Lansing, MI 48823

"Strategies Used by First Grade Children in Seriating
Objects on Length and Weight"

Edward L. Smith
Michigan State University
East Lansing, MI 48823

Assembly Center B. Symposium: Evaluation of Implementation Projects
Supported by the National Science
Foundation

Presiding: Harold Anderson
The University of Colorado
Boulder, CO 80203

Chairperson: Wayne W. Welch
The University of Minnesota
Minneapolis, MN 55455

With: Harry Fehrenbacher
Northwest Regional Educational Laboratory
Portland, OR 97204

"Reactions by the Funding Agency"

Charles R. Wallace
National Science Foundation
Washington, DC

"Collaborative Elementary Projects"

Arlen Gullickson
The University of South Dakota
Vermillion, SD 57069

"Reactions by a Project Director"

Jerry Horn
The University of South Dakota
Vermillion, SD 57069

"Accessible Schools"

Robert A. Reineke
The University of Minnesota
Minneapolis, MN 55455

"Off-Campus Teacher Centers"

Jane E. Stoller
The University of Minnesota
Minneapolis, MN 55455

"Summer Workshops"

Victor L. Willson
The University of Minnesota
Minneapolis, MN 55455

Mission

C. Instrument Development

Presiding: Lynn W. Glass
Iowa State University
Ames, IA 50010

"Towards a Generalized Interaction Analysis System for Science Classrooms"

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

"The Development of the Science Processes Test"

Robert R. Ludeman
Andrews University
Berrien Springs, MI 49104

"Construction and Validation of a Biology Interest and Attitude Inventory"

J. Gregory Quinn
Beaver College
Glenside, PA 19038

New York

D. Discussion Paper

Presiding: Ronald G. Good
Florida State University
Tallahassee, FL 32306

"Some Effects of Training Preservice Teachers in Science Teaching Strategy Analysis"

Russell H. Yeany, Jr.
Southern Illinois University
Carbondale, IL 62901

Reactors: Robert W. Howe
Ohio State University
Columbus, OH 43210

James Okey
Indiana University
Bloomington, IN 47401

RESEARCH TRAINING SESSIONS

A \$3.00 fee is required for attendance at these sessions to cover the cost of materials. Registration for these sessions is at the Convention Registration Table in the Check Room.

A. EXPERIMENTAL DESIGN AND ANALYSIS

Assembly East

Presiding: Roger Olstad
The University of Washington
Seattle, WA 98105

Chairperson and Instructor: Arthur White
Ohio State University
Columbus, OH 43210

B. EVALUATION

Assembly Center

Presiding: William Snyder
Florida State University
Tallahassee, FL 32306

Chairperson and Instructor: Eva Baker
The University of California
Los Angeles, CA 90024

C. DEVELOPMENT AND USE OF ATTITUDINAL INSTRUMENTS

Mission

Presiding: Paul Westmeyer
The University of Texas
San Antonio, TX 78212

Chairperson and Instructor: Arlen Gullickson
The University of South Dakota
Vermillion, SD 57069

Instructors: Paul Geisert
The University of Wyoming
Laramie, WY 82071

Rita Peterson
California State University
Hayward, CA 94542

D. DEVELOPMENT AND USE OF CLASSROOM OBSERVATION INSTRUMENTS

New York

Presiding: Paul Eggen
University of North Florida
Jacksonville, FL 32216

Chairperson and Instructor: Patricia Blosser
Ohio State University
Columbus, OH 43210

Instructors: Thomas P. Evans
Oregon State University
Corvallis, OR 97331

Delivee Wright
The University of Nebraska
Lincoln, NE 68508

1 - 2 pm

GENERAL SESSION TWO

Garden Room

Presiding: Robert E. Yager

Speaker: Dr. David Berliner
Far West Laboratory for Educational Research
San Francisco, CA

"Studying and Defining Effective Science Teaching"

2:15 - 3:45 pm

CONCURRENT SESSION FIVE

Assembly East

A. Informal Discussion with David Berliner

Presiding: John F. Schaff
The University of Toledo
Toledo, OH 43606

Assembly Center

B. Instruction

Presiding: Stanley L. Helgeson
Ohio State University
Columbus, OH 43210

"A Comparison of Individualized Group Instruction in a Sixth Grade Electricity Unit"

Charles Anderson
Westlake High School
Austin, TX 78751

and David P. Butts
The University of Georgia
Athens, GA 30602

"Concept Formation as a Function of Instructional Procedure"

J. Dudley Herron
Purdue University
Lafayette, IN 47907

RECSAM?

"Science Concept Learning: Needed Lines of Research"

Alan M. Voelker
Northern Illinois University
DeKalb, IL 60115

"The Effect of Intensive Instruction in Cue Attendance and Hypothesis Generation Upon Open Exploration Behavior of Low and High Ability Ninth Grade Students"

Emmett L. Wright
The University of Maryland
College Park, MD 20740

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and H. Seymour Fowler
 Pennsylvania State University
 University Park, PA 16802

Mission

C. Teacher Behavior

Presiding: Richard D. Kellough
 California State University
 Sacramento, CA 95819

"A Comparison of Ratings of Elementary Science Teaching
 Competencies by Teachers and Teacher Educators"

Carl F. Berger
 The University of Michigan
 Ann Arbor, MI 48104

"The Relative Effectiveness of the Science Programs of
 Inservice and Preservice Teacher Training Institutions"

Victor Y. Billeh *Willbrand*
 American University of Beirut
 Beirut, Lebanon

and George Zakhariades
 Famagusta Gymnasium for Boys
 Cyprus

"The Effect of Performance Based Teacher Education
 Training on Some Humanistic Behaviors of Science
 Teachers"

Leopold B. Smigelski
 The University of Iowa
 Iowa City, IA 52242

"Lessons Taught by Students in Training to Become
 Biology Teachers Simultaneously Evaluated by Their
 Peers and by Their Students"

David R. Stronck
 Washington State University
 Pullman, WA 91163

New York

D. Discussion Paper

Presiding: Thomas G. Teates
 Virginia Polytechnic Institute
 Blacksburg, VA 24061

"An Investigation to Empirically Determine Which Instruc-
 tional Procedures Produce Optimum Student Growth"

Clark S. Markell
Minot State College
Minot, ND 58701

and Victor J. Mayer
The Ohio State University
Columbus, OH 43210

Reactors: Rita Peterson
California State University
Hayward, CA 94542

J.A. Easley, Jr.
The University of Illinois
Urbana, IL 61801

3:45 - 5:15 pm

CONCURRENT SESSION SIX

Assembly East

A. Instruction ISCS

Presiding: Donald W. McCurdy
The University of Nebraska
Lincoln, NE 68508

"A Study of Parents' Attitudes Toward Supplemental
Report Cards Which Identify Objectives Accomplished
By ISCS Students"

H. Vincent Bardsley
Pennsylvania State University
University Park, PA 16802

"The Effects of Pairing and Pacing on Learning Rate
in ISCS Classrooms"

Dorothy L. Gabel
Indiana University
Bloomington, IN 47401

"A Comparison of Intermediate Science Curriculum Study
and Traditionally-Taught Seventh-Grade Science
Students on Performing Tannenbaum's Science Processes"

William S. Murrie
Perryville Junior High School
Perryville, MO 63775

"An Empirical Study of ISCS and Individualization"

Michael Szabo
Pennsylvania State University
University Park, PA 16802

and Charles Beehler
Rosetree Media Schools
Media, PA

Charles Greene
Fitchburg Schools
Fitchburg, MA

Prasit Kongsasana
Chulalongkom University
Bangkok, Thailand

Assembly Center B. Panel

Presiding: David Ost
California State University
Bakersfield, CA 93309

"Do Science-Related Social Issues Belong in Science Courses?"

Laura C. Trout
Indiana University
Bloomington, IN 47401

Panel Members: Hans O. Anderson
Indiana University
Bloomington, IN 47401

Fletcher G. Watson
Harvard University
Cambridge, MA 02138

James Robinson
Biological Sciences
Curriculum Study
Boulder, CO 80302

Allen Vegotsky
Biomedical Interdisciplinary
Curriculum Project
Berkeley, CA 94704

Mission

C. Attitude Surveys

Presiding: Wayne Schade
Educational Service Center Region XIII
Austin, TX 78721

"Cognitive Style as a Factor in the Science Achievement of Preservice Elementary Teachers"

James L. Shanks
California State University
Northridge, CA 91324

"The Correlation of Selected Affective Behaviors with Cognitive Performance in a Biology Course for Elementary Teachers"

Ronald D. Simpson
The University of Georgia
Athens, GA 30602

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"Dogmatism and The Beliefs of Preservice and Inservice Elementary Science Teachers"

Barbara M. Strawitz
Louisiana State University
Baton Rouge, LA 70803

"Role Specific Pupil/Science Teacher Interpersonal Compatibility and Science Attitudes"

Robert A. Vargo
Syracuse University
Syracuse, NY 13210

and Larry E. Schafer
Syracuse University
Syracuse, NY 13210

New York

D. Discussion Paper

Presiding: Lowell A. Seymour
Union District
Pollock, SD 57648

"An Investigation of the Teacher Behavior of Wait-Time During An Inquiry Science Lesson"

Thaddeus W. Fowler
The University of Cincinnati
Cincinnati, OH 45221

Reactors: Mary Budd Rowe
The University of Florida
Gainesville, FL 32601

John P. Smith
The University of Washington
Seattle, WA 98105

Wednesday, March 19

CONCURRENT SESSION SEVEN

8:30 - 10 am

Assembly East

A. Instruction

Presiding: Gene F. Craven
Oregon State University
Corvallis, OR 97331

"The Effects of Two Differing Questioning Strategies on The Achievement and Attitudes of Elementary Pupils"

Lance E. Bedwell
Department of Public Instruction
Springfield, IL 62706

5:00 PM
Social Hour
Borden Rm

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"The Effect of the Position and Cognitive Level of Questions on Learning From An Activity-Centered Module"

Glenn C. Markle
The University of Cincinnati
Cincinnati, OH 45221

"Levels of Questions Asked by Elementary School Teachers Involved in Teaching SCIS Material"

George Moriber
Brooklyn College
Brooklyn, NY 11210

"The Effects of Sequencing Selected Instructional Strategies on the Attitudes and Open-Mindedness of Preservice Elementary Science Teachers"

Thomas L. Bogut
The Ohio State University
Mansfield, OH 44906

Assembly Center B. Symposium

Presiding: Ronald K. Atwood
The University of Kentucky
Lexington, KY 40506

"Symposium on Scientific Literacy I. Scientific Literacy Within the Framework of Science"

Participants: Michael L. Agin Milton O. Pella
Michigan Technological University The University of Wisconsin
Houghton, MI 49931 Madison, WI 53706

Calvin W. Gale Delmar L. Janke
Michigan Technological University Texas A & M University
University College Station, TX 77843

William R. Ogden Alan M. Voelker
East Texas State University Northern Illinois University
Commerce, TX 75428 DeKalb, IL 60115

Mission

C. Attitude Surveys

Presiding: Duane Smith
Pennsylvania State University
Middletown, PA 17057

"An Assessment of Value Preferences of College Students with Reference to Environmental Chemistry"

Frank Fazio
Indiana University of PA
Indiana, PA 15701

and David Dunlop
The University of Pittsburgh
Johnstown, PA 15904

"A Flexible Scheduled Cluster Program: Its Effect on
Cognitive Learning and Attitude Development"

Harold Friend
Queens College
Flushing, NY 11354

and John Merone
Oceanside Junior High School
Oceanside, NY

"The Effects of Activity-Oriented Science Instruction on
Children's Attitudes Toward Science and School"

Harold H. Jaus
Purdue University
West Lafayette, IN 47906

"Possible Influences on Student Attitudes Toward Involvement with Science: Curricular, Demographic, and Personal Factors"

Byron E. Moore
Southwestern College
Winfield, KS 67156

and Arnold Moore
Youngstown State University
Youngstown, OH 44503

New York

D. Discussion Paper

Presiding: Robert L. Steiner
Ohio State University
Columbus, OH 43210

"The Effect of Mode of Instruction and Exposure Time to
Examples on the Acquisition of a Biological Concept"

John J. Koran, Jr.
The University of Florida
Gainesville, FL 32611

and Patricia Freeman
The University of Florida
Gainesville, FL 32611

Reactors: O. Roger Anderson
Columbia University Teachers College
New York, NY 10027
Jack E. Sherman
The University of Colorado
Colorado Springs, CO 80907

9:30 - 11:30 am JRST Editorial Advisory Board Work Session Buffalo Room

10 - 11:30 am CONCURRENT SESSION EIGHT

Assembly East A. Student Assessment

Presiding: Victor J. Mayer
Ohio State University
Columbus, OH 43210

"The Reception of Elementary Students to Inquiry Science"

John B. Bath
Syracuse University
Syracuse, NY 13159

"The Mathematics Skill Test (MAST) and College Freshmen"

Rita T. Denny
Lamberton Alternative High
School
Philadelphia, PA 19151

"Evaluation of a Practical Procedure for Sequencing Pictorial Classification Tasks in Science"

William G. Holliday
The University of Calgary
Calgary, Alberta

and Louise A. Partridge
The University of Calgary
Calgary, Alberta

"What Behavioral Objectives Do Physics Tests Actually Measure: Part II"

R.G.E. Mitias
Ohio University
Athens, OH 45701

Assembly Center B. Symposium

Presiding: Ronald K. Atwood
The University of Kentucky
Lexington, KY 40506

"Symposium on Scientific Literacy: II. Scientific Literacy and Planning for Alternative Futures"

Participants:

Michael L. Agin
Michigan Technological
University
Houghton, MI 49931

George T. O'Hearn
The University of Wisconsin
Green Bay, WI 54305

John F. Disinger
Ohio State University
Columbus, OH 43210

Rodney L. Doran
S.U.N.Y.
Buffalo, NY 14214

Calvin W. Gale
Michigan Technological
University
Houghton, MI 49931

Victor M. Showalter
Ohio State University
Columbus, OH 43210

Mission

C. Symposium

Presiding:

David Lockard
The University of Maryland
College Park, MD 20742

"Natural Laboratories: Opportunities for Research in Classrooms Using New Curricula"

Participants:

~~Earle L. Lomon~~ ~~Guile Fano~~
Educational Development
Center
Newton, MA 02160

James T. Robinson
Biological Sciences
Curriculum Study
Boulder, CO 80302

John W. Renner
University of Oklahoma
Norman, OK 73069

New York

D. Paper Set

Presiding:

Ilene Joyce Swartney
Buffalo State University College
Buffalo, NY 14222

"Cooperative (University/School) Secondary Science Teacher Preparation"

Hans O. Andersen
Indiana University
Bloomington, IN 47401

"Evaluation of an Early Experience in Science Teaching"

Linda Knight
Monroe County High Schools
Bloomington, IN 47401

"Systematic Observation as a Technique for the
Assessment and Improvement of Student Competencies"

Paul Repicky
Baylor College of Medicine
Houston, TX 77025

"Instrumentation Focusing on Formative Evaluation
Aspects of an Inservice Teacher Preparation Model"

Harold Harty
Indiana University
Bloomington, IN 47401

11:45 - 12:30 pm BUSINESS MEETING
Presiding: Robert E. Yager

Garden Room East

ANNUAL LUNCHEON

12:30 - 2:15

Garden Room West

Presiding: Robert E. Yager, President

Patron's for 1974-75, George O'Hearn

The JRST Award, J. Dudley Herron, Chairman

The NARST Patron's Award, James Joseph Gallagher, Chairman

Vaden W. Miles Memorial, Clarence H. Boeck, Chairman

Past President's Recognition

Recognition of New Officers

Installation of New President

2:30 - 4 pm

CONCURRENT SESSION NINE

Assembly East

A. Discussion of Research Design Award Paper

Presiding:

Burton Voss
The University of Michigan
Ann Arbor, MI 48104

*Validating T Prep
Through It Perform
John J Koran*

Assembly Center

B. Paper Set

Presiding:

K.M. Kalra
Maple Ridge, British Columbia

"Studies of Learning Environments and Outcomes
(Project LEO): Comparative Studies of Affective and
Cognitive Learning Under Two Quantitatively Defined
Teaching Strategies: Part III"

"Relationships Between Cognitive Characteristics and
Self Perceptions in Elementary School Children"

James A. Shymansky
The University of Iowa
Iowa City, IA 52242

"Relationships Between Cognitive Characteristics and
Problem Solving Strategies in Elementary School
Children"

Charles C. Matthews
Florida State University
Tallahassee, FL 32304

"Relationships Between Classroom Behavior and Cognitive
Development Levels in Elementary School Children"

Ronald G. Good
Florida State University
Tallahassee, FL 32304

"Relationships Between Classroom Behavior and Self
Perceptions in Elementary School Children"

John E. Penick
Loyola University
Chicago, IL 60611

Mission

C. Panel

Presiding:

Charles A. Wall
Salisbury State College
Salisbury, MD 21801

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"Openness and Accountability: A Look at the Issues
And Related Research Questions"

Joseph A. Abruscato
The University of Vermont
Burlington, VT 05401

and Jack Hassard
Georgia State University
Atlanta, GA 30303

New York

D. Learning Theory: Ausubel

Presiding: Paul W. Welliver
The Pennsylvania State University
University Park, PA 16802

"The Effectiveness of a Comparative Advance Organizer
in the Learning and Retention of Metric System Concepts"

Keith A. Kennedy
St. Cloud State College
St. Cloud, MN 56301

"The Effects of Utilizing Three Types of Advance Organizers
for Learning a Biological Concept in Seventh Grade
Science"

Stephen B. Lucas
Edinboro State College
Edinboro, PA 16412

and H. Seymour Fowler
Pennsylvania State University
University Park, PA 16802

"Analysis of Creative Ability to Terms of Ausubel's
Cognitive Psychology"

Joseph D. Novak
Cornell University
Ithaca, NY 14850

"An Investigation of Children's Concepts of Natural
Phenomena"

Richard M. Rowell
Cornell University
Ithaca, NY 14850

4 - 5:30

CONCURRENT SESSION TEN

Assembly East

A. Empirical Studies

Presiding: William LeShier
University of Kansas
Lawrence, KS 66044

"A Study of the Relationship Between Collective Bargaining Impasse and the Attitudes of Biology Students in Two Urban Community Colleges in Michigan"

Edwin A. Arnfield
Macomb County Community
College
Warren, MI 48065

"Retention Studies Since 1960"

Darrell D. Young
S.U.N.Y.
Buffalo, NY 14222

"An Instrument Designed for Observation of Inquiry in Elementary Science Education"

Harold A. Swigart
College of Charleston
Charleston, SC 29401

"The Construction of a Pictorial Classroom Test in Biology and an Evaluation of Administering the Test by Four Different Procedures"

Charles D. Reese
Paul D. Camp Community
College
Franklin, VA 23851

Assembly Center B. Symposium

Presiding: Edward C. Lucy
Georgia State University
Atlanta, GA 30303

"How Can a Predetermined Set of Process Content and Learning Outcomes Be Developed for Elementary Science Teaching: The Florida Elementary Science Assessment Project"

Participants: Jack Hassard
Georgia State University
Atlanta, GA 30303

Ted Colton
Georgia State University
Atlanta, GA 30303

Mildred Graham-Greaney
Georgia State University
Atlanta, GA 30303

David S. Butts
The University of Georgia
Athens, GA 30601

Lou Gardner
Georgia State University
Atlanta, GA 30303

Ashley Morgan
Georgia State University
Atlanta, GA 30303

Mission

C. Symposium

Presiding: Victor A. Perkes
The University of California
Davis, CA 95616

"The Role of Redundancy and Code Information in Memory
and Intelligence: An Analysis of the New Piagetian
Model"

Participants:	Gene W. Moser University of Pittsburgh Pittsburgh, PA 15260	Abdulrazik S. Attashani University of Pittsburgh Pittsburgh, PA 15260
	Barbara Biglan University of Pittsburgh Pittsburgh, PA 15260	Bonnie Dean University of Pittsburgh Pittsburgh, PA 15260
	Chick O. Empfield LockHaven State College LockHaven, PA 17745	David Kopp University of Pittsburgh Pittsburgh, PA 15260
	Janice Skraly St. Angela Merici School White Oak, PA 15131	David Speer Shaler Area School District Glenshaw, PA 15116
	Mary E. Sweeney University of Pittsburgh Pittsburgh, PA 15260	

New York

D. Paper Set

Presiding: Robert E. Ziegler
Elizabethtown College
Elizabethtown, PA 17022

"Research Related to Piaget's Paradigm"

Darrell G. Phillips
The University of Iowa
Iowa City, IA 52242

"An Investigation of Specific Concepts of Space and Time
in Children from Grades One Through Six"

Gaylen Carlson
California State University
Fullerton, CA 92634

"Bilingualism and the Development of Logical Structures"

Mohammed A. Kishta
The University of Jordan
Amman, Jordan

11/17

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"A Study of the Structure of Piagetian Logical and
Infralogical Groupings Within the Concrete Operational
Period of Cognitive Development"

Graham W. Detrick
Gippsland Institute of
Advanced Education
Churchill, Victoria,
Australia

JWT

"The Relationship of Moral and Cognitive Modes of
Thought in Second and Fifth Grade Children"

Eileen M. Mays
Indiana University Northwest
Gary, IN 46408

Buffalo

E. Presentation of the Two Honorable Mention
Research Design Award Papers

*Ease by: Integr. Soc
+ math in beh.*

Presiding: Ann Howe
Syracuse University
Syracuse, NY 13210

7 - 10 pm

EXECUTIVE BOARD MEETING

Boston Room

Presiding: Ronald D. Anderson
The University of Colorado
Boulder, CO 80302

Thursday, March 20

8:45 am

GENERAL SESSION, AETS PROGRAM

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Presiding: S.L. Giuliani
San Diego, California

Moderating: David Butts
The University of Georgia
Athens, GA 30601

"As Teachers, What We Want From You--Science
Teacher Educators"

Reaction Panel: Robert Holman Virginia Way
Baytown, Texas Colorado
Robert Howe Addison Lee
Ohio Austin, Texas

Jointly sponsored by AETS, NSSA, CESI, and NARST

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. Letters to the officers, in particular the president-elect, are always a welcomed means of communicating suggestions.

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. 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.

3. 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.

4. DISCUSSION PAPERS - Some research reports may 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. An entire session is scheduled for each paper, where participants can carefully analyze and discuss the paper. Before audience participation begins, two reactors will present their viewpoints with respect to the paper under discussion. Copies of the paper will be available at the Registration Table. Members can secure a copy of the paper that interests them, read it, and attend the particular session ready to "discuss" the issues, the analyses, the results, and the interpretations.

5. SYMPOSIA - Areas of current research or research needs are identified and papers prepared addressing 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 desired features for Symposia.

6. 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.

7. **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.

8. **TRAINING SESSIONS - NEW THIS YEAR** - Members may choose one of four two-hour training sessions which have been scheduled concurrently. They are devoted to topics of basic importance for conducting disciplined inquiry of particular types.

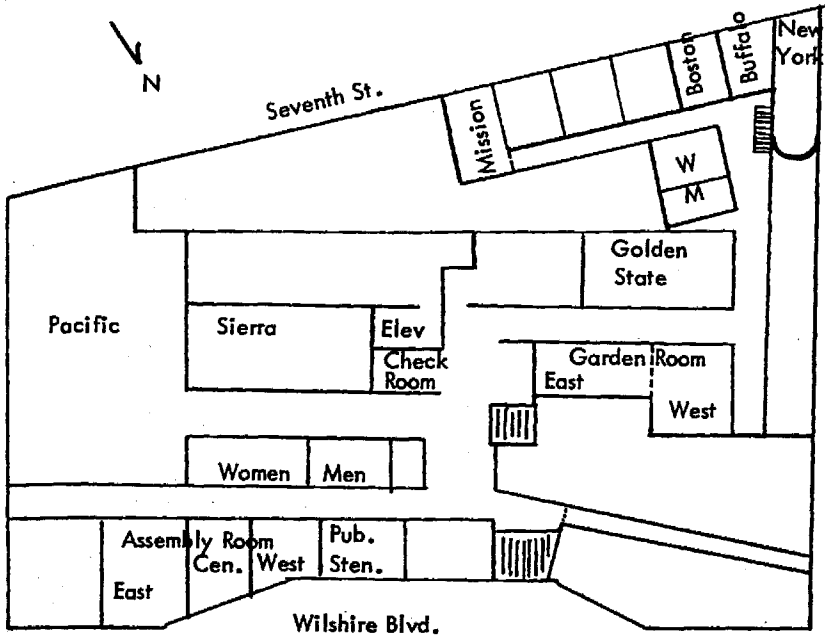
MECHANISM FOR PLANNING NARST PROGRAMS

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 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.

Members of the Program Committee read and rate each paper submitted for possible use on the program. Following this independent rating, the Committee meets as a group. The separate ratings are summarized and any disagreement among the Committee members making the ratings are then discussed thoroughly. All papers are eventually recommended for inclusion in the program structure or rejected. Sometimes 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 to all persons making ratings until all decisions are made. This "blind" evaluation of papers, panels, and symposia is an important feature in structuring the NARST Annual Meeting.

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TEACHING SCIENCE IN ELEMENTARY AND MIDDLE SCHOOLS

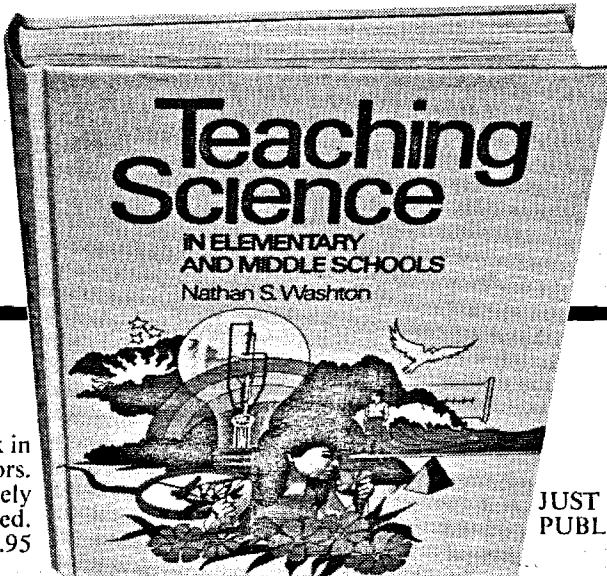
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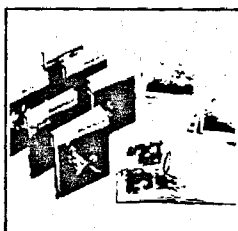
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