NARST Newsletter

Vol. 25(1) NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING March 1983

The President's Column:

In recent columns I've been discussing the need to expand our membership. There are, of course, a couple of different ways of expanding membership. One is to increase our membership from colleagues we know that are not members, and the second way is to look for another group of people who might not have been considered in the past. As I thought about such groups of people I couldn't help but think of those educators who work with us all the time in what I call "action-oriented research." It's a sufficiently different group of people who do this sufficiently different kind of research, thus I thought that it would be a good idea to discuss with you ways of expanding both the areas - our membership and our involvement in action-oriented research.

Using Best's definition, action research is problem-oriented from the field. The assumptions are not well-documented and they are extremely limited in generalizeability. But action research does have the advantage of providing real problems to solve with immediate results. Access to research subjects on an invited basis rather than on a requested collaboration can be a real help to people in the field. The collaboration is probably the most important part in my mind because it involves us with people in the field - teachers, administrators, curriculum projects - that need to find real solutions to real problems on a very short-term basis. It provides us with long-term research teams that can develop from such things and it also provides us, sometimes, with the basis for a new direction in research. The research results are often disseminated rather quickly and we can help with that process as well as help provide a research design, a theoretical background, and analysis techniques. In other words, such action research can be a true collaborative process. Finally, it provides us with another group of people that we have, in the past, often overlooked. And that is the group we work with in the field - high school/elementary school teachers, curriculum designers, and designers who are employed in museums and industry. All these people could be well served by becoming members of NARST, and I invite you to think of your colleagues and how they, too, might benefit from membership in NARST.

I look forward to seeing as many of you as possible at our annual meeting this year in Dallas. In addition, I am pleased to report that from the results of the survey taken in the last newsletter, we have only two members of our organization who clearly feel that we definitely should meet with NSTA next year in Boston. The overwhelming majority, therefore, believe that we should meet with AERA next year in New Orleans. Furthermore, one very important idea emerged from the written responses to my request. A member suggested that we hold two meetings, one with AERA and one with NSTA. That way, members interested in both organizations could attend either one or both, resulting in a larger attendance at our national meetings. It's an interesting idea and, while it's easy to discount because of the cost of putting on an extra meeting, it is worth a look at how we might better serve our concerned members affiliated with NSTA and AERA. For a good meeting, I remain

Carl Berger President,
NARST

Crisis helps NSTA and NARST

The "crisis" in science education has helped NSTA (National Science Teachers Association) increase its visibility among science educators by providing information and arguments to the Congress and press for allocating funds to improve science teaching in the United States. Because of this recent "crisis-attention" and just plain good leadership and management at NSTA, this association has attained their highest level of membership - 42,000 in February - and of financial security, resulting from improved cost accounting, membership-promotion campaigns and relations with producers of science materials. Specifically, the leaders at NSTA have convinced influential people of the need to support a variety of emergency and long-term projects in science teaching. Thus, NSTA has met an important need of science educators by effectively focussing the public's attention on the "crisis" and by providing NSTA members with up-to-date developments about funding and political strategies.

Send Official Correspondence to Dr. William G. Holliday, Executive Secretary, NARST-EDCI, The University of Calgary, Calgary, Alberta, Canada T2N 1N4. (Telephone 403 - 284-7485)

NARST is now in the best position to serve as the forum for science educators to present and discuss investigations funded by government and aimed at clarifying and recommending techniques for improving science teaching. In particular, our journal, *Journal of Research in Science Teaching*, and our annual meetings have the best reputation for effectively sharing research findings that meet the high standards of our editorial board and program committees. So, concerned educators reading our journal and attending our meetings can rest assured that they are examining data, literature and conclusions of the highest quality.

The crisis in science education is finally being recognized by the public, thanks to organizations like NSTA. Now, members of NSTA and AERA (American Educational Research Association) need NARST's help in getting to the real roots of the research question - how can we improve science teaching.

Diverse Topics Covered at Dallas Meeting

The program committee for the 56th Annual Meeting at the Dallas Hilton - near the NSTA Convention Center, April 5-8, 1983 - has just completed its final arrangements for what promises to be another successful gathering of research people in science education. The program suggests a more diverse set of topics relative to past years.

Details regarding the convention were described in the December 1982 newsletter. If you have any questions regarding hotel reservations or program information, please feel free to contact the executive secretary of NARST.

Invited Speakers at the Dallas Hilton

Diane Schallert, a specialist in reading-language research, of the University of Texas will describe the latest research on langugage and science learning. Professor Schallert is very well-known as an excellent speaker and for her studies dealing with science textbooks and science learning. In addition, Frank Roberts of Control Data Corporation (CDC) is on the program and is known personally by some NARST members as an enthusiastic, inspirational speaker informed on the most recent developments in computer education. Indeed, CDC has devoted much of its profits to furthering science education during the past 20 years. William Norris, chairman of the CDC board, is known for providing assistance to science and mathematics educators with good ideas.

Send your Banquet Reservations

The NARST Banquet will be held on April 6, 12:30-2:00. Roast sirloin of beef will be served in the Embassy Ballroom of the Dallas Hilton for the price of $15.00. Please return the enclosed card with your $15.00 cheque. Reservations must be received by April 1.

1984 NARST Meeting - New Orleans with AERA

The board of directors decided to meet next year with AERA (meeting April 23-27, 1984). Would you prefer to meet in the city or at a location near the city? Because of the success of the 1981 (Grossingers, New York) and 1982 (The Abbey at Lake Geneva) meetings, you might prefer to meet just outside of New Orleans.

Be sure to express your view on this and other issues to officers and board members. These people want to serve your interests. Historically, just two or three members voicing their opinions have had a powerful effect at NARST meetings.

NARST Register-Directory, 1983

NARST is now preparing the second edition of the Register-Directory for distribution to members who have completed their 1983 invoice forms. If you have not yet sent your form to NARST, please do so immediately. If you would like a copy of the Register-Directory, please add $2.00 to the 1983 dues ($44.00 + $2.00) to cover handling and mailing costs.

NARST is now Tax-Exempt

NARST finally received tax-exempt status from the Internal Revenue Service (IRS) after many previous attempts, apparently beginning with Joe Novak's conscientious effort in 1967. NARST is fortunate that the IRS decided to declare our association tax-exempt, albeit at some expense to NARST. A number of other associations in the United States have suffered during the last two years because of

their failure to obtain tax-exempt status or to file statements annually with the IRS.

June Seminar at Cornell

"International Seminar: Misconceptions in Science and Mathematics," is the title of a seminar to be held at Cornell University, Ithaca, New York, June 20-22, 1983. In view of the growing research interests and misconceptions (or "alternative conceptions" or "alternative frameworks") held by students of science and mathematics at school, college, or university, the organizers believe that the time is right for concerted discussion of problems in this field. To this end, they invite interested science educators to attend this Seminar, which will be held in the Department of Education (Stone Hall). The directors of the seminar include Professor Hugh Helm, Visiting Fellow, and Professor Joseph D. Novak, Professor of Science Education, Cornell University. A registration fee of $20.00 will be charged. Accommodations close to the campus will be available at reasonable cost. For further information and application forms, please write as soon as practical to:

Dr. Hugh Helm
Department of Education
Stone Hall
Cornell University
Ithaca, NY 14853

ASERA Meets in New Zealand

The Australian Science Education Research Association will meet in Hamilton, New Zealand, May 19-21, 1983. NARST members are invited to write NARST for details or write:

Dr. Roger Osborne
Science Education Research Unit
University of Waikato
Hamilton
NEW ZEALAND

56th ANNUAL MEETING OF THE NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING

April 5-8, 1983

The Dallas Hilton, Dallas, Texas

Tuesday, April 5, 1983

7:00-10:00 p.m. REGISTRATION

Social hours will be held in the evenings of April 5, 6, 7, 8 and 9.

WEDNESDAY, APRIL 6, 1983

8:00-5:00 REGISTRATION (Information Desk)

8:30-10:00 CONCURRENT SESSION A

SESSION A-1 Embassy West 8:30-10:00

PAPER SET: ATTITUDE, MOTIVATION AND ACHIEVEMENT OF ADOLESCENT STUDENTS

Trends in Achievement, Motivation and Science Related Attitudes Among Adolescent Students from Grades Six Through Ten

Ronald D. Simpson (University of Georgia)

An Investigation of the Attitudes and Perceptions of Junior High School Students Toward Science Courses

Burton E. Voss (University of Michigan), Christopher Akinmede (University of Jos, Nigeria)

Relationships Among Attitudes, Motivation and Achievement of Ability-Grouped Seventh Grade Life Science Students

Roger K. Cannon, Jr. (University of Georgia)

Peer and Classroom Influences on Attitudes Toward Science and Achievement in Science Among Tenth Grade Biology Students

Lynn E. Talton (University of Georgia)

SESSION A-2 Embassy East 8:30-10:00

RESEARCH WORKSHOP: ASSESSING IMPLEMENTATION USING INNOVATION CONFIGURATION

Presenters: Robert K. James (Kansas State University), & Shirley Hord (University of Texas at Austin)

SESSION A-3 Gold Room 8:30-10:00

PAPERS: PIAGETIAN STUDIES

The Construction of a Group Assessment of Logical Thinking (GALT)

Vantipa Roadrangka (University of Georgia), Russell Yeany (University of Georgia), & Michael Padilla (University of Georgia)

The Effects of Method and Format in the Responses of Subjects to a Piagetian Reasoning Problem

John R. Staver (University of Illinois, Chicago), & Ernest T. Pascarella (University of Illinois, Chicago)

Logical Ability in Reasoning with Material of Familiar Content

Dorothy A. Petrushka (Somerset County College)

Proportional Reasoning and the General Linguistic Abilities of Hypothetico-Deductive Reasoning

Anton E. Lawson (Arizona State University), David I. Lawson (Seiscom Delta United), & Chester A. Lawson (University of California at Berkeley)

SESSION A-4 Silver Room 8:30-10:00

PAPERS: VISUAL EFFECTS AND LEARNING

The Use of Pictures as Stimulators for High School Biology Students' Questions Fluency, Cognitive Levels and Content Interests

Reuven Lazarowitz (Technion IIT, Israel), & Orna Meir (Technion IIT, Israel)

The Effects of Content, Color, Visuals, and Page Layout in Elementary Students' Abilities to Read Science Materials

Richard L. Williams (University of Victoria, Canada), & Larry D. Yore (University of Victoria, Canada)

The Effects of Imagery on the Understanding of Torque Problems for College Introductory Physics Students

Paul S. Markovits (Montana State University), & Lawrence Ellerbruck (Montana State University)

The Effectiveness of Color Versus Black and White Visuals Used with a Computer Program Safety Simulation

Floyd Ploeger (Tandy Corporation)

SESSION A-5 Mustang Room 8:30-10:00

PAPERS: RESEARCH METHODS: TIME SERIES DESIGN AND META-ANALYSIS

A Study of the Validity of Attitude Measures Used in an Intensive Time-Series Study

Victor Mayer (Ohio State University), & Carolyn Farnsworth (Upper Arlington Public Schools)

Segmented Straight Line Regression Analysis to Identify Momentum Effect for the Intensive Time-Series Design

Jae-Sool Kwon (Ohio State University), & Victor J. Mayer (Ohio State University)

Adding Results to a Meta-Analysis: Theory and Example

Victor Willson (Texas A&M University)

10:15-11:15 SESSION B

GENERAL SESSION: CHILDREN AND OTHER LANGUAGE USERS AS EXPLORERS IN KNOWLEDGE SPACE

Dr. Diane Schallert, University of Texas at Austin

11:30-12:30 CONCURRENT SESSION C

SESSION C-1 Embassy West 11:30-12:30

PAPERS: USING LANGUAGE TO ENHANCE LEARNING

A Critical Review of Research Related to Learning from Science Textbooks

Sarah Ulerick (University of Minnesota-Morris)

Using Adjunct Questions to Change Physics Students' Perception of a Reading Assignment Involving Computer-Animated Graphics

Barry McGuire (University of Calgary), & William G. Holliday (University of Calgary)

Questions in Textual Narrative: Do They Make a Difference?

William H. Leonard (University of Nebraska)

SESSION C-2 Embassy East 11:30-12:30

PAPERS: INSTRUCTIONAL USES OF COMPUTERS

Development and Evaluation of Lesson Plans for Computer Simulations

James Okey (University of Georgia), Edwin L. Shaw Jr. (University of Georgia), & Michael L. Waugh (University of Georgia)

The Impact of Microcomputer Based Instruction on Student Achievement

Kevin C. Wise (University of Georgia), & James R. Okey (University of Georgia)

The Effects of Computer Managed Diagnostic Testing on Science Achievement for Students of Varying Levels of Motivation and Ability

Michael L. Waugh (University of Georgia), & Russell Yeany (University of Georgia)

SESSION C-3 Gold Room 11:30-12:30

PANEL: NATIONAL MONITORING OF SCHOOL SCIENCE IN BRITAIN: A REVIEW OF THE ISSUES

Participants: Paul Black (Chelsea College, University of London, England), & Rosalind Driver (University of Leeds, England)

SESSION C-4 Silver Room 11:30-12:30

PAPERS: COGNITIVE STYLE AND LEARNING

Teacher-Student Cognitive Style and Achievement in Biology

Barbara Strawitz (Louisiana State University), & Pauline Jolly (Senegal, West Africa)

A Meta Analysis of Studies on Cognitive Preference in Science Learning

Pinchas Tamir (Hebrew University, Israel)

The Relationship of Attitude, Cognitive Ability, and Personality to Science Achievement in the Junior High School

Dale Baker (University of Utah)

SESSION C-5 Mustang Room 11:30-12:30

PAPERS: STUDENT ATTITUDES AND ACHIEVEMENT

Differences in Attitudes Between Academic Continuing and Academic Terminal Secondary Science Students

James Levin (Pennsylvania State University), & David Klindeist (State College, Pennsylvania School District)

A Comparison Between Hypothesis Testing Strategy and Academic Achievement of Freshman Biology Students

Frank Duroy (Rutgers University)

Predicting Achievement in Community College Science Students

Janet M. Detloff (Wayne County Community College)

12:30-2:00 BANQUET

Embassy Ballroom

2:00-3:00 CONCURRENT SESSION D

SESSION D-1 Embassy West 2:00-3:00

PAPER SET: ATTITUDE-RELATED STUDIES IN SECONDARY SCHOOL SCIENCE

Compatibility of Student Characteristics and Instructional Strategy: An Investigation of the Matching Hypothesis

Frank E. Crawley (University of Texas at Austin), & John S. Trout (St. Edwards University)

The Effects of Pupils' Achievement and Attitude of Training Secondary Science Student Teachers to Match Teaching Strategies to Pupils' Learning Styles

Merry C.M. Seagert (Incarnate Word College), & Frank E. Crawley (University of Texas at Austin)

A Meta-Analysis of Instructional Characteristics Influencing Attitudes Toward Secondary School Science

Conrad V. Schmitt, & Frank E. Crawley (University of Texas at Austin)

SESSION D-2 Embassy East 2:00-3:00

RESEARCH WORKSHOP: USING RECENT RESEARCH METHODS BASED IN COGNITIVE PSYCHOLOGY TO EVALUATE SCIENCE TEXTBOOKS

Presenter: William G. Holliday (University of Calgary, Canada)

SESSION D-3 Gold Room 2:00-3:00

OUTSTANDING PAPER OF 1982 NARST ANNUAL MEETING

Presentation and Discussion (to be announced)

SESSION D-4 Silver Room 2:00-3:00

PAPERS: PRESERVICE TEACHER EDUCATION: SECONDARY

Influence of a Secondary Science Methods Course with a Microteaching Experience on Preservice Teacher Development

Lucille Slinger (Michigan State University), & Charles W. Anderson (Michigan State University)

Identification and Validation of Objectives and Areas of Concern for a Science Methods Course for Prospective Science Teachers in Brazil - A Delphi Study

Maria dos Santos Silva (Universidade Federal de Santa Maria, Brazil)

An Assessment of Need Among Secondary Level Jordanian Science Teachers

Peter A. Rubba (Southern Illinois University), & Abdel Rahman Zurub (Southern Illinois University)

SESSION D-5 Mustang Room 2:00-3:00

PAPERS: GENDER RELATED DIFFERENCES IN ACHIEVEMENT

Two Year Study Relating Adolescents' Self Concept and Gender Role Perceptions to Achievement and Attitudes Toward Science

Herbert M. Handley (Mississippi State University), & Linda W. Morse (Mississippi State University)

Characteristics of Male and Female Students Who Experienced High Versus Low Success in Their First College Science Course

George E. DeBoer (Colgate University)

Differential Effects of Teaching Method and Time Available for Study on Male and Female Students in a High School Science Course (ISIS)

Ernest Burkman (Florida State University), Eunice Loewe (Florida State University), & Yuwadee Wongbundhit (Florida State University)

3:15-4:15 CONCURRENT SESSION E

SESSION E-1 Embassy West 3:15-4:15

PAPERS: THEORETICAL ISSUES IN SCIENCE EDUCATION

Understanding the Nature of Scientific Knowledge: Interviews with College Students

Margaret A. Waterman (Kenyon College)

Reconsidering the Science Curriculum: Clues from the Structure of Scientific Theories

Richard A. Duschl (University of Maryland)

Distinguishing Features of Genetic Epistemology: The Object of Study and the Methodology

Richard K. Meinhard-Pellens (University of Iowa)

SESSION E-2 Embassy East 3:15-4:15

RESEARCH WORKSHOP: CONTINUATION OF SESSION D-2

SESSION E-3 Gold Room 3:15-4:15

PAPERS: ENERGY EDUCATION

Energy Knowledge and Attitudes and Locus of Control of Secondary Teachers: Study II

Lloyd Barrow (University of Maine), & Constance Holden (Bangor Community College)

Effects of a Summer Institute on Middle School Science Teachers' Energy Knowledge and Attitudes and Energy Education Implementation

James D. Ellis (BSCS, The Colorado College)

An Evaluation of Two DOE Sponsored Workshops and a Comparison Between Participants' Energy Literacy and That of the General Public

Joseph P. Riley II (University of Georgia), & Richard Faller (University of Georgia)

SESSION E-4 Silver Room 3:15-4:15

PAPERS: PROGRAM DEVELOPMENT AND IMPLEMENTATION: ETHNOGRAPHIC STUDIES

A Study of Policy and Program Formulation and Implementation in a Secondary School Science Department

James J. Gallagher (Michigan State University)

The Planning and Teaching Intermediate Science Study: An Application of Cognitive Science to Classroom Research and Curriculum Development

Charles W. Anderson (Michigan State University)

Curricular Innovation and Teacher Role Change: An Exploratory Study

Barbara S. Spector (Florida International University)

SESSION E-5 Mustang Room 3:15-4:15

PAPERS: LEARNING SCIENCE IN THE ELEMENTARY SCHOOL

The Effects of Cognitive Development, Age and Inquiry Strategy on Elementary Students' Science Achievement

Larry D. Yore (University of Victoria, Canada)

The Effect of Science Teaching on the Fourth Grade Korean Child's Concept of Piagetian Physical Causality

Ann Chin Hann (Inchon Teachers College, Korea), H. Seymour Fowler (Pennsylvania State University), & Roy W. Allison, Sr. (Pennsylvania State University)

An Experimental Study into the Effect of Science Teaching on the Trinidadian Fifth Grade Child's Concept of Piagetian Physical Causality

Pamela Fraser-Abder (University of the West Indies, Trinidad), & H. Seymour Fowler (Pennsylvania State University)

4:30-5:30 SESSION F

POSTER SESSION

(All members of NARST are encouraged to present their research findings and developing ideas at this poster session. It was considered last year to be a good mechanism for members with common interests to exchange data and viewpoints.)

THURSDAY, APRIL 7, 1983

8:00-4:30 REGISTRATION (Information Desk)

8:30-10:00 CONCURRENT SESSION G

SESSION G-1 Embassy West 8:30-10:00

PAPER SET: PARENTS AND CHILDREN LEARNING SCIENCE TOGETHER: NATURALISTIC AND EXPERIMENTAL STUDIES

A Description of Science Courses for Children and Their Parents

Eugene D. Gennaro (University of Minnesota), & Richard Haney (University of Wisconsin-Milwaukee)

A Comparison of Achievement and Attitudes of Children Taking a Science Class with Their Parents and Children Taking the Class with Peers

Barbara Hertel (Mahtomedi Middle School), & Patricia Heller (University of Minnesota)

A Naturalistic Study of Children and Their Parents in Family Learning Courses in Sciences

Karen Pyzik (Island Lake Elementary School), & Eugene D. Gennaro (University of Minnesota)

A Comparison of Achievement and Attitudes of Children Who Volunteer to Take a Microcomputer Course with Their Parents and with Their Peers

Roger Olstad (University of Washington), Michael Padilla (University of Georgia), & Patricia Heller (University of Minnesota)

SESSION G-2 Embassy East 8:30-10:00

RESEARCH WORKSHOP: VEE MAPPING AS A RESEARCH TOOL

Presenter: Joseph D. Novak, Cornell University

SESSION G-3 Gold Room 8:30-10:00

SYMPOSIUM: COGNITIVE SCIENCE AND SCIENCE EDUCATION

Presider: Ron Good (Florida State University)

Participants: Carl Berger (University of Michigan), Anton Lawson (Arizona State University), John Renner (University of Oklahoma), & James Stewart (University of Wisconsin-Madison)

SESSION G-4 Silver Room 8:30-10:00

PAPERS: MASTERY LEARNING

The Effects of Mastery Instruction on the Learning and Retention of Science Process Skills

Edwin T. Brooks (Three Village Central School District and Indiana University)

The Effects of a Mastery Learning Strategy on Different Cognitive Levels of Achievement of High School Chemistry Students

F. Gerald Dillashaw (Bradley University), & James R. Okey (University of Georgia)

Mastery Learning in College Chemistry

Marian Chu Hallada (University of Michigan), & Burton Voss (University of Michigan)

Individualized Audio-Tutorial Instruction in High School Biology

Yehuda Huppert (Comprehensive High School "Hof HaCarmel," Israel), & Reuven Lazarowtiz (Technion ITT, Israel)

SESSION G-5 Mustang Room 8:30-10:00

PAPERS: ENERGY AND ENVIRONMENTAL EDUCATION FOR TEACHERS

Using the CBAM to Prepare Elementary Teachers to Teach Environmental Science

Lowell T. Bethel (University of Texas at Austin), & Shirley M. Hord (University of Texas at Austin)

Evaluation of an Inservice Teacher Training Program for Energy Education

Frances Lawrenz (Arizona State University)

Constructing One-Sided and Two-Sided Communications for Use in Persuading Preservice Teachers of the Importance for Including Energy Conservation Topics in the Elementary School Curriculum

Thomas R. Koballa, Jr. (University of Texas-Austin)

The Development and Validation of a Bargaining, Cohension and Cooperation Environmental Decision-Making Attitude Instrument

Emmett L. Wright (University of Maryland)

The Impact of Multidisciplinary Marine Education Curriculum Infusion Materials on Schools and Teachers in Maine and New Hampshire

John Butzow (University of Maine), & Charles Gregory (University of Maine)

10:15-11:15 CONCURRENT SESSION H

SESSION H-1 Embassy West 10:15-11:15

PAPERS: SOCIAL CLIMATE OF THE CLASSROOM

Acceptance of Differences and Achievement in Science Classrooms as Related to Different Student/Student Interaction Patterns

Roger T. Johnson (University of Minnesota), & David W. Johnson (University of Minnesota)

The Effects of Mixed-Sex and Single-Sex Cooperative Grouping and Individualization on the Science Achievement, Attitudes and Verbal Leadership of Early Adolescent Females

Linda E. Scott (University of Shoreview, Minnesota), Roger T. Johnson (University of Minnesota), & David W. Johnson (University of Minnesota)

Use of Classroom Environment Scale in Investigating Effects of Psycho-Social Milieu or on Science Students' Outcomes

Darrell L. Fisher (Tasmanian College of Advanced Education, Australia), Barry J. Fraser (Western Australian Institute of Technology, Australia)

SESSION H-2 Embassy East 10:15-11:15

PAPERS: ATTITUDES TOWARD TEACHING

Developing an Attitude Scale Toward the Teaching of Chemistry

Robert L. Shrigley (Pennsylvania State University), & Abdel Moneim Ahmed Hassan (Al-Alzhar University, Egypt)

The Relationship of Field Independence, Dogmatism, Tolerance for Ambiguity, and Knowledge of Science Processes to the Development of Positive Attitudes Toward Science and Science Teaching

Richard N. DeVore (Skillman, New Jersey)

Anxiety About Teaching Science and Attitude Toward Teaching Science Among Inservice Elementary School Teachers

Barry P. Brockley (University of Texas at Austin), & James Barufaldi (University of Texas at Austin)

SESSION H-3 Gold Room 10:15-11:15

INFORMAL: HOUR WITH EXECUTIVE COMMITTEE OF NARST

NARST members are invited to meet with members of the Executive Committee for informal discussion of any matters pertaining to the association.

SESSION H-4 Silver Room 10:15-11:15

PAPERS: SECONDARY STUDENTS' PERCEPTIONS§ ATTITUDES§ AND INTERESTS

High School Chemistry Student Perceptions of the Laboratory and Classroom

Thomas E. Leonard (Concordia College), & Avi Hofstein (Weizmann Institute of Science, Israel)

Effect of Increased Laboratory Time on Selected Students' Attitudes Toward Science

Harold Friend (Queens College) & John Caifa (Dominican Commercial High School)

A New Science and engineering Career Interest Survey for Junior High School Students

Edward P. Donovan (Moorestown High School), Robert H. Fronk (Florida Institute of Technology), & Phillip B. Horton (Florida Institute of Technology)

SESSION H-5 Mustang Room 10:15-11:15

PAPER SET: HORIZONTAL ENRICHMENT IN SCIENCE AND MATHEMATICS AT THE SENIOR HIGH LEVEL

Presider: Seymour Fowler (Pennsylvania State University

An Analytic Profile of Precociously Gifted Students Enrolled in Horizontal Enrichment Programs

Charlene Connolly (St. John's University), & Louis Primavera (St. John's University)

Horizontal Enrichment for Precocious High School Science Students

James R. Campbell (St. John's University)

Horizontal Enrichment for Precocious High School Math Students

Ralph A. Napolitano (College of Mt. St. Vincent), & James R. Campbell (St. John's University)

11:30-12:30 CONCURRENT SESSION I

SESSION I-1 Embassy West 11:30-12:30

PAPERS: STUDENT CHARACTERISTICS AND LEARNING

Development of an Integrated Science Process Skills Test

Joseph C. Burns (University of Georgia), Kevin C. Wise (University of Georgia), & James R. Okey (University of Georgia)

What Affects Student Achievement in Science? A Correlational Study

Avi Hofstein (Weizmann Institute of Science, Israel)

Flexibility and Achievement in Science

Michael Piburn (Rutgers University), & Robert Jamet (South Brunswick School District)

SESSION I-2 Embassy East 11:30-12:30

PAPER SET: RESEARCH WITH THE LEARNING CYCLE IN CHEMISTRY AND PHYSICS

Presenters: John W. Renner (University of Oklahoma), Michael R. Abraham (University of Oklahoma), & Howard Birnie (University of Saskatchewan, Canada)

SESSION I-3 Gold Room 11:30-12:30

PAPERS: SCIENCE CONCEPT AND PROCESS LEARNING

The Effects of Relating Personal Experiences Through Narrative and Prompting on the Recall of Physical Science Concepts

Eugene Chiappetta (University of Houston), & James Rawe (Collier County School District)

A Single Subject Design to Test Selected Science Process Learning with Mentally Handicapped Children

Donald C. Orlich (Washington State University), & Maria Macarena Figueroa Morales (University of Oregon)

Development of Seriation and Its Relation to the Achievement of Inferential Transitivity

Julia V. Clark (Howard University)

SESSION I-4 Silver Room 11:30-12:30

PAPERS: LEARNING FROM OUT-OF-SCHOOL EXPERIENCES

Classroom Versus Field Trip Science Experiences: Is One Better for Learning?

John D. Balling (Chesapeake Bay Center for Environmental Studies), & John H. Falk (Chesapeake Bay Center for Environmental Studies)

The Comparative Effects of Different Museum Tours on Children's Attitudes and Learning

David R. Stronck (University of Victoria, Canada)

Family Involvement in Elementary Science: A Survey of Parents

Richard J. Rezba (Virginia Commonwealth University)

SESSION I-5 Mustang Room 11:30-12:30

PAPERS: DISCOURSE PATTERNS OF TEACHERS AND STUDENTS

Effects of Continuity Versus Discontinuity of Physical Science Teaching upon Long Term Retention of Antecedent Learning

Hanna J. Arzi (Weizmann Institute of Science, Israel), Ruth Ben-Zvi (Weizmann Institute of Science, Israel), & Uri Ganiel (Weizmann Institute of Science, Israel)

Discourse Patterns Associated With the Use of Extended Wait Time in Whole Class Settings

Kenneth Tobin (Western Australian College, Australia)

2:00-3:00 CONCURRENT SESSION J

SESSION J-1 Embassy West 2:00-3:00

PAPER SET: COGNITIVE DEVELOPMENT IN MIDDLE SCHOOL, HIGH SCHOOL, AND COLLEGE

Protocols, Scoring Criteria, and Motivation for Presenting Six Logical, Spatial and Formal Tasks to Middle School, High School and College Students

Bruce Perry (West Virginia University)

The Performance of Students in Grades Six, Nine and Twelve on Five Logical, Spatial and Formal Tasks

Michael J. Wavering (Eastern Kentucky University)

An Investigation of the Order of Attainment of the Mental Structures for Six of Piaget's Logical, Infralogical and Formal Tasks

Linda J. Kelsey (West Virginia University)

SESSION J-2 Embassy East 2:00-3:00

RESEARCH WORKSHOP: ASSESSMENT OF CLASSROOM PSYCHOSOCIAL ENVIRONMENT

Presenters: Barry J. Fraser (Western Australian Institute of Technology, Australia), & Darrell L. Fisher (Tasmanian College of Advanced Education, Australia)

SESSION J-3 Gold Room 2:00-3:00

PAPERS: STUDENTS' KNOWLEDGE OF SCIENCE

Application of the Learning Hierarchy Model to the Identification of Specific Misconceptions for Two Science Concepts

Alan K. Griffiths (Memorial University of Newfoundland, Canada), John Pottle (Memorial University of Newfoundland, Canada), & Pat Whelan (Memorial University of Newfoundland, Canada)

Variations in Student Science Knowledge

Fred N. Finley (University of Maryland)

SESSION J-4 Silver Room 2:00-3:00

REVIEW OF RESEARCH 1982

Presenter: Burton Voss (University of Michigan)

SESSION J-5 Mustang Room 2:00-3:00

PAPERS: GRAPHING AND SPATIAL ABILITIES

The Construction and Validation of the Test of Graphing in Science (TOGS)

Danny L. McKenzie (University of Georgia), & Michael Padilla (University of Georgia)

An Examination of the Graphing Abilities of Students in Grades Seven Through Twelve

Edward Shaw (University of Georgia), Danny McKenzie (University of Georgia), & Michael Padilla (University of Georgia)

Enhancing the Visual-Spatial Aptitudes of Students

Thomas R. Lord (Burlington County College)

3:15-4:15 CONCURRENT SESSION K

SESSION K-1 Embassy West 3:15-4:15

PAPERS: PROBLEM SOLVING

Using Analogs to Determine Chemistry Students' Skills for Solving Mole Concept Problems

Dorothy Gabel (Indiana University), & Robert Sherwood (New York University)

Problem Solving and Physics Instruction

George J. Pallrand (Rutgers University), & Walter Lockwood (Rutgers University)

The Effects of Using Two- and Three-Dimensional Models on Science Achievement of Students with Varying Levels of Spatial Ability, Cognitive Development, and Gender

Russell H. Yeany (University of Georgia), & Charles F. Porter (University of Georgia)

SESSION K-2 Embassy East 3:15-4:15

RESEARCH WORKSHOP: CONTINUATION OF SESSION J-2

SESSION K-3 Gold Room 3:15-4:15

PAPERS: CHILDREN'S THOUGHT PROCESSES

Young Students Ask Operational Questions in Science

Robert L. Shrigley (Pennsylvania State University), & Wayne A. Allison (Lock Haven State College)

The Relationship Among Students' Questioning Level, Their Cognitive Level, and Teacher's Questioning Level

Gerald Abegg (Boston University), & Nancy Corindia (Lincoln-North Woodstock Elementary School)

A Study of the Effect of the Number of Properties in a Decision Making Situation on the Number of Alternatives Generated by Young Children

Phillip A. Heath (Ohio State University-Lima), & Arthur L. White (Ohio State University-Columbus)

SESSION K-4 Silver Room 3:15-4:15

PAPERS: STUDENT CHARACTERISTICS AND LEARNING

Factors that Influence the Science Learning of Eighth Grade Students in Santa Catarina State (Brazil) Public Schools

Jose Erno Taglieber (University of Iowa), Vincent Lunetta (University of Iowa), & Ubiratan D'Ambrosio (Universidade Estadual De Campinas, Brazil)

Cognitive Growth and Achievement in Biology

O.J. Ehindero (University of Ife, Nigeria)

Relationships Between Motivation and Achievement of 17 Year Olds in Science

John T. Wilson (University of Iowa)

SESSION K-5 Mustang Room 3:15-4:15

INFORMAL: AN HOUR WITH THE EDITOR OF THE JOURNAL OF RESEARCH IN SCIENCE TEACHING

4:30-5:30 GENERAL SESSION L

GENERAL SESSION: COMPUTER AIDED LEARNING

Mr. Frank Roberts (Control Data Corporation)

FRIDAY, APRIL 8, 1983

8:00-10:15 REGISTRATION (Information Desk)

8:30-10:00 CONCURRENT SESSION M

SESSION M-1 Embassy West 8:30-10:00

PAPER SET: RESEARCH ON SCIENCE IN AMUSEMENT PARKS

Presenters: Howard L. Jones (University of Houston), Carolyn Summers (Houston Museum of Natural Science), Robert James (Kansas State University), Gudrej Sethna (University of Houston), Bill McIlwaine (Millersville State College), Bill McConnell (Webster College), & Terry Contant (University of Houston)

SESSION M-3 Gold Room 8:30-10:00

PAPERS: NEUROSCIENCE AND SCIENCE EDUCATION

A Neuromathematical Model of Human Information Processing and Its Application to Science Content Acquisition

O. Roger Anderson (Columbia University)

Correlates of Cerebral Hemisphericity

Steve Fields (Heritage High School)

Neuroscience and Science Education - Is There a Link?

Marianne B. Betkouski (Stanford University), & Rita W. Peterson (University of California at Irvine)

SESSION M-4 Silver Room 8:30-10:00

PAPERS: PRESERVICE TEACHER EDUCATION

Correlations of Science Process Understandings with Cognitive Development and Other Academic Variables Among Prospective Elementary Teachers and University Science Majors

Ernest W. Lee (University of North Carolina at Greensboro), & Mohammed Ali Gosbi (University of Tripoli)

The Effects of Conducting a Preservice Elementary Science Methods Course Based on the Concerns Based Adoption Model (CBAM)

Mark R. Malone (Louisiana State University)

Research in Science Teacher Education: A Critical Review

Marvin F. Wideen (Simon Fraser University, Canada)

SESSION M-5 Mustang Room 8:30-10:00

PAPERS: STUDENT DEVELOPMENT IN COLLEGE AND MEDICAL SCHOOL

Disjunctive Reasoning of Students at an Urban Community College

Carol Biermann (Kingsborough Community College)

A Study of the Cognitive and Social Development of Freshmen and Senior Medical Students

Sandra K. Pellens-Meinhard (University of Iowa), & J. Patrick Shier (University of Iowa)

Changes in Medical Students' Perceptions of Their Abilities as Determined with a Defined Ranking System

John A. Caldwell (University of North Dakota)