

# NARST Newsletter

Volume 24(1)

NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING

February 1982

## 1982 NARST Convention - The Abbey

Be sure to complete the NARST reservation and registration form for the 1982 convention contained in the "December 1981" mailing. NARST anticipates an even larger audience than the record number of people attending the 1981 meeting at Grossinger's last April. On January 21, The Abbey stated that the flow of NARST reservations to date was "very good." At that time, over 70 people from NARST had made reservations with The Abbey. In this respect, NARST needs to know whether to request The Abbey to hold more than our promised 200 rooms. The daily rate of \$57.19 (per person, double occupancy) at The Abbey on Lake Geneva is extremely low considering the high quality of resort and the complete package, including guest rooms, breakfast, banquet lunch and dinner, gratuities, state and local taxes and use of the facilities at The Abbey. The single occupancy rate is \$79.98. For new members who did not receive the December 1981 mailing, here is an abridged description of the convention.

The registration/information desk will be open during most of the convention - beginning at 4:00 p.m. Monday, April 5 and lasting until noon Thursday, April 8. The official program will begin Tuesday morning, April 6. *Reservation information* includes:

1. Mail one deposit cheque for \$49.85 (single occupancy) or \$54.06 (double occupancy).
2. Enclose in your envelope a note describing arrival and departure dates, name, address and phone numbers.
3. Mail to The Abbey (Fontana, Wisconsin 53125).

*Registration information* includes:

1. Mail pre-registration fees (received before March 16, 1981) of \$35.00 for regular members and \$46.00 for non-members
2. Enclose badge information (name, institution).
3. Mail to NARST (Dr. William G. Holliday, NARST-EDCI, The University of Calgary, Calgary, Alberta, Canada T2N 1N4).

On-site registration fees will be \$11.00 extra.

For other information, including transportation to and from the Chicago area, please telephone the executive secretary at (403) 284-7485 before March 25, 1982. Or his secretary at (403) 284-5639 on March 26, 1982 or after this date.

## Free Register-Directories of NARST Members to Respondents

At press time, about 75% of the returned invoices for the 1982 year contained register information about NARST members. This percentage frankly is much higher than anticipated, thus we are pleased. Be sure to complete the register information form on the reverse side of your 1982 dues invoice received in December, 1981. Information reaching the association headquarters by February 20, 1982 will be compiled and distributed at The Abbey (April 5-8) for the price of \$5.00, or will be mailed for the price of \$7.00. Members submitting this information will receive FREE copies of the entire register at the annual meeting or by mail. Support for this project will be obtained from funds *donated* to NARST.

## 1982 Elections: Be Sure to Vote

Be sure to complete the enclosed ballot describing the candidates for the 1982 NARST election. If you want the association to reflect your thoughts on issues related to research in science teaching, you should vote for your favorite candidates.

In the past few years, most NARST elections have been close, with votes for winning and losing candidates often differing by only 15-30 votes. The problem is that only a fraction of the membership takes the time to mail their ballots. For this reason, NARST has included a ballot in the form of an addressed postcard. Please mail your ballot today.

## New Membership Brochure

Enclosed with this mailing is a membership brochure designed by the graphics department at the University of Calgary to capture the attention of potential members.

Let's face the facts. Most brochures produced by educational organizations are dull, bland and seldom noticed by anybody. Thus, the enclosed brochure was designed to (first) catch the attention of potential members, (second) to convince them to read this unusual-looking notice and (third) to join NARST.

It was the opinion of many that a more conventional design *surely* would project a safe, predictable image of NARST but would *not* be noticed by potential members. The staff in the graphics department hopes you agree.

These brochures will be mailed to potential members of NARST. If you have any suggestions in this regard, please mail them to the executive secretary.

## Notes

Barry Fraser will head in April the School of Curriculum Studies at the Western Australian Institute of Technology, Perth, Australia.

Dave Lockhart of the University of Maryland recently represented NARST at the general assembly meeting of ICASE (International Council of Associations for Science Education) in Paris.

## Placement Information

In future issues of the newsletter, placement information will be announced on a quarterly basis rather than publishing one annual description. Members wanting more information about placement should write to the executive secretary. In some instances, closing dates or deadlines for positions described below were in late 1981. The new policy for publishing information on a quarterly basis will improve NARST's service to its members.

**Position and Rank:** Chemistry Laboratory Supervisor

**Qualifications:** M.S. in organic or analytical chemistry preferred, although all degree levels will be considered.

**Responsibilities:** Supervision of undergraduate laboratories in general and organic chemistry.

**Apply to:** Send curriculum vitae and names of three references to: Dr. W.M. Gulick, Jr., Administra-

tive Assistant, Department of Chemistry and Chemical Engineering, Michigan Technological University, Houghton, Michigan 49931.

**Position and Rank:** General Science Teacher

**Qualifications:** Bachelor's and Master's degrees plus four years of experience teaching science in grades 6, 7 and 8.

**Responsibilities:** Teach general science at independent, coeducational, West Coast day school.

**Apply to:** J. Van Winkle, P.O. Box 23, Corono Del Mar, California 92625.

**Position and Rank:** Physics faculty, tenure rank.

**Qualifications:** Master's in physics or science education required.

**Responsibilities:** Teaching courses in career-oriented college and university physics with responsibility for program development and expansion.

**Apply to:** Send letter of application, resume and credentials to: Robert D. Rose, Dean of Instruction, Richland Community College, 2425 Federal Drive, Decatur, Illinois 62526.

**Position and Rank:** NSF Policy Analyst, EC-13/14 level.

**Qualifications:** Ph.D. in physical sciences or another relevant field, although equivalent experience may be substituted. At least three years experience beyond Ph.D. or equivalent required. Candidates should have experience in fossil fuels technology and its environmental impact.

**Responsibilities:** The successful candidate will join a multidisciplinary policy research group assessing issues relating to environment, energy and resources, and their national science and technological implications.

**Apply to:** Send full biographical summary or SF-171 statement to: National Science Foundation, Personnel Administration Branch, 1800 G Street N.W., Room 212, Washington, D.C. 20550. Attn.: E. Paul Broglio, EX 81-36.

**Position and Rank:** Assistant Professor of Elementary/Early Childhood Education  
**Qualifications:** Doctorate preferred

**Responsibilities:** Teach undergraduate and graduate courses in early childhood education and elementary science methods. Supervise student teachers.

**Apply to:** Dr. Edwin C. Nelson, President, Chadron State College, Chadron, Nebraska 69337

**Position and Rank:** Assistant Professor of Science Education

**Qualifications:** Doctorate in science education, at least three years secondary school science teaching experience, and a record of research productivity required. Background in computer science, supervision, middle school, or early childhood/elementary school science education preferred.

**Responsibilities:** Teach courses in science curriculum development, instructional methods, introductory science, and other areas of expertise. Advise undergraduate and graduate science/science education students. Direct research projects in science education/science specialty.

**Apply to:** Send application letter, vita, and credentials to: Dr. Emmett Wright, Chairperson, Committee for Joint Appointment in Science Education, Department of Curriculum and Instruction, University of Maryland, College Park, Maryland 20742.

**Position and Rank:** Temporary Replacement in General Chemistry

**Qualifications:** Minimum of Master's degree in chemistry and quality teaching experience or potential are required.

**Responsibilities:** Twelve contact hours per semester of instruction in general chemistry lecture and laboratory. Participation in additional areas of service such as research is encouraged.

**Apply to:** Send application letter and resume to: Dr. Roy D. Pointer, Chairman, Department of Chemistry, Bloomsburg State College, Bloomsburg, PA 17815.

**Position and Rank:** Instructor of Biology

**Qualifications:** Master's degree in biology required. Prior experience in allied health science preferred.

**Responsibilities:**

**Apply to:** Mildred Howard, Personnel Department, Broward Community College, 225 E. Las Olas Boulevard, Fort Lauderdale, Florida 33301

**Position and Rank:** Instructor of Biology Education  
**Location:** An Alabama college

**Qualifications:** Ability to teach college level biology, advise students, and conduct cellular research required.

**Responsibilities:** Teach college students general biology, zoology, anatomy, and general biochemistry. Advise pre-medical and other health-science students. Conduct research in field of cellular aging and environmental toxicology.

**Apply to:** Richard Rice, Alabama State Employment

Service, 125 Clayton Street, Montgomery, Alabama 36105. ph (205) 832-4150.

**Position and Rank:** Faculty of Humanities in Medicine

**Qualifications:** Ph.D. in humanities or social sciences, college teaching experience, publications record, administrative experience, and knowledge of biomedical ethics required. Medical school teaching experience desirable.

**Responsibilities:** Teaching in medical school curriculum, development of medical school program on humanities, administration, and research. The successful applicant will become Director of Division of Humanities and will be expected to provide campus leadership on matters of medical humanities.

**Apply to:** Send application letter and resume to: Chairperson, Medical Humanities Search Committee, College of Medicine, 4301 W. Markham Street, Little Rock, Arkansas 72205 c/o Office of the Dean.

**Position and Rank:** Assistant/Associate Research Specialist in Educational Technology

**Qualifications:** Ph.D. in science, math, or science/math education and a strong background in research and methodology, curriculum development, evaluation, and instructional computing required. In addition, some teaching experience and experience working with students/teachers at the junior high level desired.

**Responsibilities:** Take over duties as project director on three NSF research and development grants involving the use of computers in science and mathematics instruction.

**Apply to:** Alfred Bork, Department of Physics, University of California, Irvine, California 92717.

**Position and Rank:** Assistant Professor of Science Education (one year)

**Qualifications:** Doctorate with emphasis in all levels of biology education, biology teaching experience in secondary schools, and strong educational research experience required. Strength in CAI, continuing education, curriculum, or grantsmanship preferred.

**Responsibilities:** Join science education faculty with thrusts in curriculum development, research and evaluation.

**Apply to:** Send application and placement file to: James P. Barufaldi, Chair, Search Committee, Science Education Center, Education Building Room 340, University of Texas at Austin, Austin, Texas 78712.

**Position and Rank: Full-time Biology Faculty**

**Qualifications:** M.S. in biology required; Ph.D. preferred. Candidate must be committed to undergraduate education and possess sufficient background and flexibility to provide elective courses.

**Responsibilities:** Join biology faculty of Catholic liberal arts college dedicated to promoting Christian humanism. Teaching duties will include: microbiology, pathogenic bacteriology, immunology, and botany.

**Apply to:** Send resume, transcripts, and three letters of recommendation to: Dr. Franc E. Del Fosse, Acting Chair, Department of Biology, Allentown College of St. Francis de Sales, Center Valley, Pennsylvania 18034.

**Position and Rank: Assistant Professor of Education**

**Qualifications:** Doctorate with emphasis in elementary science and elementary mathematics education plus elementary teaching experience required. College teaching experience preferred.

**Responsibilities:** Teach undergraduate courses in elementary science and elementary mathematics; supervise student teachers; assume other duties as appropriate.

**Apply to:** Send application, transcripts, vita, and the names of three references to: Dr. Michael A. Grelia, Chairman, Department of Education, Lebanon Valley College, Annville, Pennsylvania 17003.

**Position and Rank: Part-time Faculty of Environmental Sciences**

**Qualifications:**

**Responsibilities:** Provide in-home supervision of graduate level independent study applied projects of older accomplished students.

**Apply to:** Do not call; send resume to: Dean of Faculty, Columbia Pacific University, 150 Shoreline Highway, Mill Valley, California 94941.

**Position and Rank: Geology Faculty**

**Qualifications:** Ph.D. or ABD expected. Ability and enthusiasm for working with bright undergraduates. All specialties welcome.

**Responsibilities:** Teach undergraduates. Shared appointment possible.

**Apply to:** Send resume, transcripts, and three letters of reference to: Duane Moore, Geology Department, Knox College, Galesburg, Illinois 61401.

**Position and Rank: Director of Academic Computing**

**Qualifications:** Master's and commitment to liberal education required; Doctorate in mathematics or science field preferred.

**Responsibilities:** Administer rapidly developing

computer centre; assist in faculty development; teach courses in computer science; and work closely with NSF-CAUSE funded science education and computing project.

**Apply to:** Dr. Daniel Cobb, Dean of Faculty, Bethany College, Bethany, West Virginia 26032.

## 55TH ANNUAL MEETING OF THE NATIONAL ASSOCIATION FOR RESEARCH IN SCIENCE TEACHING

April 5-8, 1982

The Abbey, Lake Geneva, Wisconsin

### MONDAY, APRIL 5, 1982

4:00-10:00 Registration  
7:00-10:00 Executive Board Meeting  
Stan Helgeson, Presiding

### TUESDAY, APRIL 6, 1982

*The program committee determined that sessions marked with a \* indicate excellent papers thus there is a reactant and only limited papers are presented during these sessions.*

8:30-5:00 Registration  
8:40-9:40 CONCURRENT SESSION A  
Session A-1 Student Characteristics  
8:40-9:40 Chair:

"Effect of Background Experience and an Advance Organizer on the Attainment of Certain Science Concepts"

McAdaragh, Mary Kathleen, Farmington High School, Farmington, Mi.; Voss, Burton E., The University of Michigan, Ann Arbor, Mi.

"The Relationship Among Selected Demographic Variables Student Attitudes and Science Achievement"

Riley II, Joseph P., Science Education Department, University of Georgia, Athens, Ga.; Napier, John, Social Science Education, University of Georgia, Athens, Ga.

"The Relationship Among College Science Student Achievement, Engaged Time and Personal Characteristics"

Johnson, Franklin., Oconee CESA, Sandersville, Ga.; Butts, David., Science Education Department, University of Georgia, Athens, Ga.

"Sexual Differences in Attitudes that are Hypothesized to be Related to Cognitive Performance in Secondary Science with Grade Level and Type of Science Course Considerations"

Levin, James, Assistant Professor of Education, The Pennsylvania State University, Uni-

versity Park, Pa.; Fowler, H. Seymour, Professor of Education, The Pennsylvania State University, University Park, Pa.

Session A-2 Symposium  
8:40-9:40 Chair:

"Using the Computer in Science Classrooms"

Rivers, Robert, Education Department, Purdue University Calumet, Hammond., In.; Cox, Dorothy, The University of Michigan, Ann Arbor, Mi. White, Arthur L., Ohio State University, Columbus ,Oh. Crovello, Theodore, Notre Dame University, Notre Dame, In. Okey, James, University of Georgia, Athens, Ga. Vockell, Edward L., Purdue University ,Calumet, In. Bork, Alfred, University of California at Irvine

\* Session A-3 Teacher Preparation, Elementary  
8:40-9:40 Chair:

"The Elementary Level Science Methods Course: Breeding Ground of an Apprehension Toward Science? An Ethnographic Study"

Duschl, Richard A., Science Teaching Center, University of Maryland, College Park, Md.

"The Effects of Systematic Feedback on the Teaching Performance of Undergraduate Interns"

Capie, William, University of Georgia, Athens, Ga.; Newton, Roger, University of Georgia, Athens, Ga.; Bowell, Margaret, Clarke County Schools, Clarke County, Ga.

"Students' Rating of Instruction In Elementary Science Methods Courses"

Horak, Willis J., College of Education, The University of Arizona, Tucson, Az.; Blecha, Milo K., College of Education, The University of Arizona, Tucson, Az.

Session A-4 Spatial Reasoning  
8:40-9:40 Chair:

"The Relationships Among Logical and Spatial Skills and Understanding Genetics Concepts and Problems"

Costello, Sandra J., Rutgers Graduate School of Education, New Brunswick, N.J.

"The Importance of Visuo-spatial Aptitude in the Understanding of Biology Concepts"

Lord, Thomas R., Burling County College, Pemberton, NJ.

"Further Analysis of Gender Related Differences in Spatial Function"

Doody, William J., College of Basic Studies, Boston University, Boston, Ma.; Feldstein, JoAnn, Department of Psychology, College of Basic Studies, Boston University, Boston, Ma.

Session A-5 Techniques and Procedures of  
8:40-10:50 Research  
Chair

"The Concerns Based Adoption Model for Managing and Evaluating Implementation"

James, Robert K., Department of Curriculum and Instruction, Kansas State University, Manhattan, Ks.

9:50-10:50 CONCURRENT SESSION B

Session B-1 Undergraduate Teaching  
9:50-10:50 Chair:

"The Relationship of Cognitive Style to the Development of Positive Attitudes Toward Science and Science Teaching in Elementary School Teachers"

DeVore, Richard, Educational Testing Service, Princeton, NJ.

"Sex, Field Dependence and Science Achievement"

Piburn, Michael, Graduate School of Education, Rutgers University, New Brunswick, NJ.; Enyeart, Morris, Woodbridge, NJ.

"Evaluating Reasoning Abilities of Freshmen Biology Students for Their Understanding of Logical Connectives"

Duroy, Frank, Graduate School of Education, Rutgers University, New Brunswick, NJ.

"A Three-Year Study of Two Different Approaches to Teaching College Introductory General Biology"

Mondrinos, Veronica Reardon, Graduate School of Education, Rutgers University, New Brunswick, NJ.

Session B-2 Science Education and Research in  
9:50-10:50 Israel  
Chair:

"Arab Science Teachers' Attitudes Towards Teaching Science by Inquiry in Secondary Schools in Israel"

Khoury, Hatim e., Department of Education in Technology and Science, Technion, I.I.T., 32 000 Haifa, Israel; Lazarowitz, Reuven, Department of Education in Technology and Science, Technion, I.I.T., 32 000 Haifa, Israel

"Academic Achievements, Learning Environment, Self Esteem, and Inquiry Skills of High School Stu-

dents in Biology Taught in Cooperative-Investigative Small Groups"

Lazarowitz, Reuven, Department of Education in Technology and Science, Technion, Haifa Israel; Baird, Hugh, Department of Secondary Education, Brigham Young University, Provo, Utah; Bowlden, Val, Department of Secondary Education, Brigham Young University, Provo, Utah; Hertz-Lazarowitz, Rachel, School of Education, Haifa University, Haifa, Israel

"Israeli Students' Concrete and Formal Thinking Ability and Their Achievements in Mathematics and the Sciences"

Hofstein, Avi, Department of Science Teaching, The Weizmann Institute of Science, Rehovot 76100, Israel; Mandler, Vera, Department of Science Teaching, The Weizmann Institute of Science, 76100, Israel

"A Comparison of Biology Teaching in Junior and in Senior High Schools in Israel"

Tamir, Pinchas, School of Education and Israel Science Teaching Center, Hebrew University, Jerusalem; Amir, Ruth, Israel Science Teaching Center, Hebrew University, Jerusalem

Session B-3 \* Science Instruction \*  
9:50-10:50 Chair:  
Reactant:

"Science Materials: Open vs. Directed Instruction"

Cohen, Herbert G., Department of Elementary Education, Arizona State University, Tempe, Az.

"Questions in the Narrative of Science Text: Do They Make A Difference?"

Leonard, William H., School of Life Sciences, University of Nebraska, Lincoln, Ne.

"Improving Reading Comprehension of Chemistry Textbooks Using Postquestions"

Chastko, Audrey M.; Holliday, William T., University of Calgary, Calgary, Alberta T2N 1N4

Session B-4 \* Science Instruction \*  
9:50-10:50 Chair:  
Reactant:

"A Study of Conceptual Change in the Classroom"

Nussbaum, Joseph, Israel Science Teaching Centre, The Hebrew University of Jerusalem, Jerusalem, Israel; Novick, Shimshon, Israel Science Teaching Centre, The Hebrew University of Jerusalem, Jerusalem, Israel

**"The Effects of Instruction on Integrated Science Process Skill Achievement"**

Padilla, Michael J., University of Georgia, Science Education Department, Athens, Ga.; Okey, James R., University of Georgia, Science Education Department, Athens, Ga.; Garrard, Kathryn, P.O. Box 148, Hawkinsville, Ga.

Session B-5 Techniques and Procedures of  
8:40-10:50 Research  
Chair:

**"The Concerns Based Adoption Model for Managing and Evaluating Implementation"**

James, Robert K., Department of Curriculum and Instruction, Kansas State University, Manhattan, Ks.



11:00-12:00 General Session I  
Chair: Stanley Helgeson,  
President, NARST  
Speaker:

**"What Science Teachers Say to Science Education Researchers"**

12:00-1:35 Lunch

1:40-2:40 CONCURRENT SESSION C

Session C-1 Symposium  
1:40-2:40 Chair:

**"Informal Science Study: First-Year Research Results of Science in Amusement Parks"**

Jones, Howard L., University of Houston, Houston, Tx.; Sumners, Carolyn, Houston Museum of Natural Science; McConnel, William, Webster College, St. Louis, Mo.; James, Robert, Kansas State University, Manhattan, Ks.; Rawe, James, University of Houston, Houston, Tx.; Rooney, Terry, University of Houston, Houston, Tx., Sethna, Godrej, University of Houston, Houston, Tx.

Session C-2 Science Teaching  
1:40-2:40 Chair:

**"The Effects of Directed Observation on Learning of Science Concepts"**

Eggen, Paul D. University of North Florida, Jacksonville, Fl.; Kirk, Sandra K., University of North Florida, Jacksonville, Fl.; Kauchak, Donald P., University of Utah, Salt Lake City, Ut.; Wolfe, Mary Alice, St. Johns County Public Schools

**"Implications of Integrated Science Teaching Upon**

**Students' Perception of the Different Disciplines of Science"**

Arzi, H. J., Department of Science Teaching, The Weizmann Institute of Science, Rehovot, Israel; Ben Zvi, R., Department of Science Teaching, The Weizmann Institute of Science Teaching, Rehovot, Israel; Ganeil, U., Department of Science Teaching, The Weizmann Institute of Science, Rehovot, Israel

**"The Effects of Strategy Analysis on Science Teacher Behaviors: A Meta-Analysis"**

Yeany, Russell H., Department of Science Education, University of Georgia, Athens, Ga.; Porter, Charles F., Department of Science Education, University of Georgia, Athens, Ga.

Session C-3 Research Symposium  
1:40-2:40 "Symposia on Reduction of Anxiety in Preservice Teachers"  
Chair:

**"Basic Studies on Anxiety in Preservice Teachers"**  
Westerback, Mary, C.W. Post College, Greenvale, NY.

**"An Exploratory Study: State Anxiety and Concerns About Teaching Elementary School Science"**  
Barufaldi, James P., Science Education Center, The University of Texas, Austin, Tx.

**"Factor Analytic Studies of the State-Trait Anxiety Inventory"**  
Sherwood, Robert, New York University

**"Factors Related to Anxiety in Teaching Geology"**  
Gonzalez, Clemencia, C.W. Post College, Greenvale, NY



Session C-4 Problem Solving  
1:40-2:40 Chair:

**"Effects of Student Reasoning Level on Posttest Format"**  
Staver, John R., University of Illinois at Chicago Circle, College of Education, Chicago, Il.; Halsted, Douglas A., Evanston Township High School, Evanston, Il.

**"The Role of Cognitive Styles in Problem Solving"**  
McCurdy, Donald W., University of Nebraska, Lincoln, Ne.; Ronning, Royce R., University of Nebraska, Lincoln, Ne.

**"Creativity and the Group Problem Solving Process"**  
Foster, Gerald Wm., DePaul University, Schmidt Academic Center, Chicago. Il.

Session C-5 Techniques and Procedures of  
1:40 2:40 Research  
Chair:

**"Workshop in Intensive Time-Series Design"**

Mayer, Victor J., Ohio State University, Columbus, Oh.; Willson, Victor, Texas A&M University, College Station, Tx.; Pezaro, Peter, Ohio State University, Columbus, Oh.; Rojas, Carlos, Ser Institute, Bogota, Colombia; Monk, John, Ohio State University, Columbus, Oh.

\* 2:50-3: 50 General Session II  
Chair: John Renner, Past  
President, NARST  
Speaker:

Title: What Industry Says to the Science Education  
Researcher

4:00-5:00 CONCURRENT SESSION D

Session D-1 Elementary School Science  
4:00-5:00 Chair:

**"Student Preconceptions Interfere with Learning:  
Case Studies of Fifth-Grade Students"**

Eaton, Janet, Erickson Hall, Michigan State  
University; Anderson, Charles, Erickson Hall,  
Michigan State University; Smith, Edward L.,  
Erickson Hall, Michigan State University

**"One View of Fifth-Grade Text Based Science In-  
struction"**

Slinger, Lucy, Erickson Hall, Michigan Stae  
University; Smith, Edward L., Erickson Hall,  
Michigan State University; Anderson, Charles

**"Plants as Producers: A Case of Elementary School  
Science Teaching"**

Smith, Edward L., Erickson Hall, Michigan  
State University

**"Student Conceptions of Two Topics Taught in  
Fifth-Grade Science: Test Development and Re-  
sults"**

Anderson, Charles, Erickson Hall, Michigan  
State University; Smith, Edward L., Erickson  
Hall, Michigan State Universty, Lansing, Mi.

Session D-2 \* Museums and Alternative  
4:00-5:00 Settings \*  
Chair:

**"Investigating Learning Mediators in the Planetar-  
ium Classroom"**

Giles, Thomas W., Hemfield Area Schools,  
Greensburg, Pa.; Bell, Paul E., Chambers Build-

ing Pennsylvania State University University  
Park, Pa.

**"Attention and Curiosity in Informal Science Set-  
tings"**

Koran, John J., Jr., University of Florida,  
Gainesville, Fl.; Lehman, Jeffrey R., University  
of Florida, Gainesville, Fl.; Gandara, Luisa, Uni-  
versity of Florida, Gainesville, Fl.; Morrison,  
Laura, University of Florida, Gainesville, Fl.;  
Koran, Mary Lou, University of Florida, Gaines-  
ville, Fl.,

Session D-3 NARST Committee Meetings  
4:00-5:00

\* Session D-4 Concept Learning  
4:00-5:00 Chair:

**"The Identification and Representation of Student  
Knowledge Concerning Density"**

Hewson, Mariana G., Science Education Pro-  
ject, Physics Department, University of the Wit-  
watersrand, Johannesburg 2001, South Africa

**"Childrens' Alternative Frameworks about Motion"**

Leith, Sylvia, Faculty of Education, University  
of Manitoba, Winnipeg, Manitoba R3T 2N2,  
Canada.

**"Student Understanding of Chemical Equation  
Balancing"**

Yarroch, W.L., Teacher Education Building,  
Madison, Wi.

**"Can Students Be Taught by Analogy?"**

Polland, Ronald J., 4405 Tree Harbour Way,  
Tallahassee, Fl. 32308

Poster Sessions and Cooperative Research  
5:00-6:30

Social Hour  
6:30-7:30

## WEDNESDAY, APRIL 7, 1982

8:30-5:00 Registration

8:40-9:40 CONCURRENT SESSION E

\* Session E-1 Meta-Analysis  
8:40-9:40 Chair:

**"A Meta-Analysis of Major Science Education Ques-  
tions"**

Anderson, Ronald D., Laboratory for Research  
in Science and Mathematics Education, Uni-  
versity of Colorado, Boulder, Colo., 80309

**"A Meta-Analysis of Research on Pre-Service and In-Service Science Teacher Education Practices Designed to Produce Outcomes Associated with Inquiry Strategy"**

Sweitzker, Gary L., ERIC/SMEAC, Upper Arlington City Schools, 1950 N. Mallway, Columbus, Oh. 43221

**"The Effects of New Science Curricula on Student Performance"**

Kyle, William C., Science Education Center, The University of Iowa, Iowa City, Iowa 52242; Shymansky, James A., Science Education Center, The University of Iowa, Iowa City, Iowa 52242; Alport, Jennifer, Department of Biological Sciences, University of Natal, Natal, Republic of South Africa 4001

**"A Meta-Analysis of Teaching Systems in Science"**

Willett, John B., College of Education, Stanford University, Stanford, Ca., 94305; Yamashita, June J.M., College of Education, Stanford University, Stanford, Ca. 94305; Anderson, Ronald D., Laboratory for Research in Science and Mathematics Education, Box 249, University of Colorado, Boulder, Colo. 80309

**"A Meta-Analysis of the Impact of Different Science Teaching Techniques on Student Achievement"**

Wise, Kevin C., Department of Science Education, University of Georgia, Athens, Ga. 30602; Okey, James R., Department of Science Education, University of Georgia, Athens, Ga. 30602

**"Research Associate, Conceptual Change Project"**

Lott, Gerald W., Michigan State University, East Lansing, Mi.

**"A Meta-Analysis of the Teacher Characteristics, Teacher Behaviors and Student Outcomes in Science"**

Druva, Cindy, College of Education, Burton Hall, University of Minnesota, Minneapolis, Minn., 55455

**"What are the Relationships Between Student Characteristics and Outcomes in Science?"**

Malone, Mark R., Box 119, 3924 Highway 119, Longmont, Colo. 80501; Fleming, Lynette, 1905 Chalcis Dr., Unit E., Lafayette, Colo. 80026

Session E-2 \* Science Education Research \*  
8:40-9:40 Chair:

Reactant:

**"The Effect of Wait Time Feedback on Teacher-Student Interaction in Classroom Discussion"**

Swift, Dr. J. Nathan, Department of Secondary Education, State University of New York at Oswego, Oswego, N.Y. 13126; Gooding, Dr. C. Thomas, Department of Psychology, State University of New York at Oswego, Oswego 13126

**"Must a College Teacher Do Research?' and Other Axioms"**

Dyer, Dr. Gloria J., Fairleigh Dicksonson University, Rutherford, N.J. 07070.

Session E-3 An Hour With.....  
8:40-9:40 Chair:

Session E-4 \* Science Teaching \*  
8:40-9:40 Chair:  
Reactant:

**"The Relationship Among Teacher Classroom Management Behaviors, Student Engagement of Middle and High School Science Students of Varying Aptitudes"**

McGarity, John, Elbert County Comprehensive High School, Elbert, Ga.; Butts, David, University of Georgia, Athens, Ga.

**"The Development and Evaluation of an Interactive Computer Program Simulation Designed to Teach Science Classroom Laboratory to Preservice and In-service Teachers"**

Ploger, Floyd, Science Education Center, The University of Texas, Austin, Tx.

Session E-5 Cooperative Research  
8:40-9:40 Chair: Willard Jacobson

9:50-10:50 CONCURRENT SESSION F

Session F-1 Meta Analysis  
9:50-10:50 Continued From Session E-1  
Chair:

Session F-2 \* Research on Instruments \*  
9:50-10:50 Chair:  
Reactant:

**"Computer-Aided Formative Testing"**

Okey, James R., Department of Science Education, University of Georgia, Athens, Ga. 30602; McGarity, John, Elbert County Comprehensive High School, Elberton, Ga. 30635; Wright, Emmett, Science Teaching Center, University of Maryland, College Park, Md. 20742

**"A Three-Part Test for Judging the Evaluative Quality of Likert Attitude Items"**

Shrigley, Robert L., The Pennsylvania State

University, University Park, Pa. 16802; Koballa, Thomas R., Jr., Pikeville College, Pikeville, Ky. 41501

Session F-3 Research in Informal Settings  
9:50-10:50 Chair:

"Research in Informal Settings"

Falk, John H., Smithsonian Inst., P.O. Box 28, Edgewater, Md. 21037; Gennaro, Eugene, University of Minnesota, Minneapolis, Mn. 55812; Koran, John J., Lawrence Hall of Science, Berkeley, Ca. 94720; Wright, Emmett, University of Md., College Park, Md. 20742

Session F-4 Research in Energy Education  
9:50-10:50 Chair:

"Energy Knowledge and Attitudes and Locus of Control of Secondary Teachers"

Barrow, Lloyd H., 212 Shibles Hall, University of Maine, Orono, Me. 04469

"The Effect of a Persuasive Communication on the Energy Attitudes of College Students"

Koballa, Thomas R., Jr., Pikeville College, Pikeville, Ky. 41501; Shrigley, Robert L., The Pennsylvania State University, University Park, Pa. 16802

"The Development and Use of Energy Knowledge and Attitude Tests from Released National Assessment Items"

Riley, Joseph P., II, Science Education Department, University of Georgia, Athens, Ga. 30602; Waugh, Michael, Science Education Department, University of Georgia, Athens, Ga. 30602

"Validation of the Test of Energy Concepts and Values for High School Students"

Holden, Constance C., Orono High School, Orono, Maine 04473; Barrow, Lloyd H., College of Education, University of Maine, Orono, Maine 04469

Session F-Techniques and Procedures of Research  
59:50-10:50 Chair:

"Conducting Contextualist Research in Science Education"

Roberts, Douglas A., Faculty of Education, University of Calgary, Calgary, Alberta; Russell, Thomas L., Faculty of Education, Queen's University, Kingston, Ontario; Munby, Hugh, Faculty of Education, Queen's University, Kingston, Ontario

11:00-12:00 CONCURRENT SESSION G

Session G-1 Urban Achievement  
11:00-12:00 Chair:

"Classroom Behavior, Causal Attributions, and Achievement of Urban Junior High School Science Students"

Howe, Dr. Ann C., Syracuse University, Syracuse, NY 13210; Lederman, Mr. Norman, Syracuse University, Syracuse, NY 13210; Bankston, Ms. Mabel, Syracuse University, Syracuse, NY 13210; Brown, Ms. Karen, Syracuse University, Syracuse, NY 13210; Hall, Dr. Vernon, Syracuse University, Syracuse, NY 13210

Session G-2 \* Reasoning \*  
11:00-12:00 Chair:  
Reactant:

"A Neo-Piagetian Approach to Teaching Formal Reasoning Skills to College Preparatory Students"

Betskouski, Dr. Marianne, University of North Florida, Jacksonville, Fl. 32216; Cortez, James, The Bolles School; Mann, Anne, The Bolles School

"Are Proportional and Probabilistic Reasoning Necessary Prerequisites to Correlational Reasoning?"

McKenzie, Danny L, Department of Science Education, University of Georgia, Athens, Ga.; Padilla, Michael, Department of Education, University of Georgia, Athens, Ga.

Session G-3 AETS Research Presentation  
11:00-12:00 Chair:

Session G-4 Energy Education Research  
11:00-12:00 Chair:

"Sex as a Factor in Relating the Words Used in Describing the Energy Crises to the Cognition of Figural Perception Transformations"

Kielbowick, David P., 1525 Woodside Drive, Ambridge, Pa. 15003

"A Needs Assessment Survey of Home Energy Analysis Training"

Ellis, James D., Science Education Center, Education Building 340, The University of Texas at Austin, Austin, Tx. 78712

"Teacher Concerns and Their Implementation of Energy Education"

James, Robert K., College of Education, Kansas State University, Manhattan, Ks. 66506

Session G-5 Techniques and Procedures of  
12:00-1:00 Research

(Continued from F-5)  
Chair:

1:40-2:40 CONCURRENT SESSION H

\* Session H-1 The Outstanding Paper Presented at  
1:40-2:40 the 1981 National Meeting

Chair:

Session H-2 \* Reasoning \*

1:40-2:40 Chair:

Reactant:

"An Assessment of the Validity and Precision of the Intensive Time-Series Design Through Monitoring Learning Differences in Groups of Students with Formal and with Concrete Cognitive Tendencies"

Mayer, Victor J., Ohio State University, Columbus, Oh., 43210

"Problem Solving Analysis: A Piagetian Study"

Hale, James P., Office of Educational Evaluation, Research and Services, The University of South Dakota School of Medicine, Vermillion, SD., 57069

\* Session H-3 Symposium

1:40-2:40 Chair:

"Research into Practice"

Presenters: Linn, Marcia C., University of California, Berkeley, Ca. 94720 Bybee, Rodger, Carleton College, Northfield, Mn. 55057 Boyer, Jane, Mills College, Oakland, Ca. 94613 Discus-  
sant: Berger, Carl F., University of Michigan, Ann Arbor, Mi. 48109

\* Session H-4 General Research

1:40-2:40 Chair:

"Bridge Between Neuro-Cognitive Research and Science Education"

Peterson, Rita W., Director, Office of Teacher Education, University of California, Irvine, Ca.92717

"Identifying Mediating Factors of Moral Reasoning in Science Education"

Zeidler, Dana Lewis, Department of Science Education, Syracuse University, Syracuse, NY 13210

"An Adult Marine Inventory II: Subsample Differences"

Butzow, John W., Science Education, University of Maine, Orono, Me.04469; Hedlund,

Wesley, Biology Instructor, Bangor High School, Bangor, Me.04402

Session H-5 Techniques and Procedures of  
1:40-2:40 Research

Chair:

"Nonparametric Research"

Voekler, Allan, Northern Illinois University, DeKalb, Il. 60115

2:50-3:50 CONCURRENT SESSION I

Session I-1 Logical Reasoning

2:50-3:50

Chair:

"Logical Ability and Achievement in College Level Physics"

Pallrand, George J., Graduate School of Education, Department of Science and Humanities Education, Rutgers University, New Brunswick, NJ 08903

"Logical Ability and Achievement in High School Level Physics"

Lockwood, Walter E., Graduate School of Education, Department of Science and Humanities Education, Rutgers University, New Brunswick, NJ 08903; Pallrand, George J., Graduate School of Education, Department of Science and Humanities Education, Rutgers University, New Brunswick, NJ 08903; VanHarlingen, David, Graduate School of Education, Department of Science and Humanities, New Brunswick, NJ 08903

"Two Year Community College Students and Syllogistic Reasoning Skills"

VanHarlingen, Dr. David, Department of Natural Sciences, Somerset County College, Somerville, NJ 08876

Session I-2 Reasoning

2:50-3:50

Chair:

"Logical Reasoning Ability of Pre-Nursing and Nursing Students at an Urban Community College"

Biermann, Carol, Kingsborough Community College, City University of New York; Lockwood, Walter, Graduate School of Education, Science Education Center, Rutgers University, New Brunswick, New Jersey; VanHarlingen, David, Graduate School of Education, Science Education Center, New Brunswick, New Jersey

"Reasoning Skills and Science Course Achievement"

Rothaug, Walter H., Science Education Center, Graduate School of Education, Rutgers, University, New Brunswick, NJ; Pallrand, George, Science Education Center, Graduate School of Education, Rutgers University, New Brunswick, New Jersey

**"A Study of Reasoning Skills in Introductory College Science Courses"**

O'Hearn, George T., University Wisconsin Green Bay, Green Bay, Wi. 54302; Rusch, John, University of Wisconsin, Superior, Wi.; Haney, Richard, University of Wisconsin, Milwaukee, Wi.; Feiker, James, Marquette University, Milwaukee, Wi.

Session I-3 An Hour With.....  
2:50-3:50 Chair:

Session I-4 Teacher Education  
2:50-3:50 Chair:

**"The Effectiveness of Pertinent Biological Science-Content Articles and the Relating of Biological Science Content to the Non-Science Student's Major on Attitude Modification and Academic Achievement"**

Crosby, Dr. Tom, Morgan State University, Cold Spring Lane and Hillen Road, Baltimore, Md. 21234; Fowler, Dr. H. S., Pennsylvania State University, University Park, Pa., 16802

**"N.S.F. Curriculum Projects as Science Courses for Elementary Education Majors"**

Stallings, Everett S., Winthrop College, Rock Hill, SC 29733; Astwood, Phillip M., Winthrop College, Rock Hill, SC 29733

Session I-5 Techniques and Procedures of  
2:50-3:50 Research  
Chair:

**"Non-Parametric Research"**  
(Continued From Session H-5)

4:00-5:00 General Session III  
Chair: Carl F. Berger,  
President-elect, NARST  
Speaker:

**"What Education Research Says to the Science Education Researcher"**

5:30-6:30 Social Hour  
8:30- University of Wisconsin Open House

**THURSDAY, APRIL 8, 1982**

8:40-11:00 Executive Board Meeting  
Carl F. Berger: Presiding

8:30-10:00 Registration

8:40-9:40 CONCURRENT SESSION J

Session J-1 Manitoba Assessment  
8:40-9:40 Chair:

**"The Development, Implementation and General Results of the Manitoba Science Assessment Program"**

Slentz, Dr. K.R., Faculty of Education, University of Manitoba, Winnipeg, Canada; Grunau, Dr. H., Faculty of Education, University of Manitoba, Winnipeg, Canada; Leith, Dr. S., Faculty of Education, University of Manitoba, Winnipeg, Canada; Meadows, Dr. T., Faculty of Education, University of Manitoba, Winnipeg, Canada; Williams, Dr. H., Faculty of Education, University of Manitoba, Winnipeg, Canada

**"Alternative Methods for Interpreting Science Assessment Data"**

Grunau, Dr. Harold, Faculty of Education, University of Manitoba, Winnipeg, Canada; Leith, Dr. Sylvia, Faculty of Education, University of Manitoba, Winnipeg, Canada; Meadows, Dr. Tom, Faculty of Education, University of Manitoba, Winnipeg, Canada; Slentz, Dr. Kenneth, Faculty of Education, University of Manitoba, Winnipeg, Canada; Williams, Dr. Harvey, Faculty of Education, University of Manitoba, Winnipeg, Canada

**"Disparities Between Science Curriculum Theory and Teacher Priority and Practice as Revealed by a Teacher-Designed Science Assessment"**

Williams, Dr. H.D., Faculty of Education, University Manitoba, Winnipeg, Canada; Leith, Dr. S.L., Faculty of Education, University of Manitoba, Winnipeg, Canada; Grunau, Dr. H.H., Faculty of Education, University of Manitoba, Winnipeg, Canada; Meadows, Dr. T.C., Faculty of Education, University of Manitoba, Winnipeg, Canada; Slentz, Dr. K., Faculty of Education, University of Manitoba, Winnipeg, Canada

**"The Relationships Between Student Achievement in the Manitoba Science Assessment Program and Two Variables Teacher Ratings of Importance of Objectives, and Teacher Judgments of Student Success"**

Leith, Dr. Sylvia, Faculty of Education, University of Manitoba, Winnipeg, Canada R3T2N2; Grunau, Dr. Harold, Faculty of Education, University of Manitoba, Winnipeg, Canada; Meadows, Dr. Tom, Faculty of Education, University of Manitoba, Winnipeg, Canada; Slentz, Dr. Ken, Faculty of Education, University of Manitoba, Winnipeg, Canada; Williams, Dr. Harvey, Faculty of Education, University of Manitoba, Winnipeg, Manitoba

"Processes of Science and Nature of Science Comparisons and Analyses for the Manitoba Science Assessment Program for Grades, Five, Eight, and Eleven"

Meadows, Dr. T.C. Faculty of Education, University of Manitoba, Winnipeg, Canada; Leith, Dr. S., Faculty of Education, University of Manitoba, Winnipeg, Canada; Grunau, Dr. H., Faculty of Education, University of Manitoba, Winnipeg, Canada; Slentz, Dr. K., Faculty of Education, University of Manitoba, Winnipeg, Canada; Williams, Dr. H., Faculty of Education, University of Manitoba, Winnipeg, Canada

Session J-2 Reasoning  
8:40-9:40 Chair:

"Effect of Format and Interviewer on Performance in Piagetian Tasks"

Pearson, Robert E., Science Teaching Center, University of Maryland, College Park, Md. 20742

"An Investigation of the Use of the Shipley Test and the Piagetian Type Battery for Differentiating Students of Same Grade Level From Two Different Junior High Schools"

Roja, Pastor R., University of Pittsburgh, Pittsburgh, Pa. 15260; Rojas, Ninoska R., University of Pittsburgh, Pittsburgh, Pa. 15260

"Instrument Development Towards the Assessment of Generic Problem Solving Ability in Medical Students"

Hale, James P., Office of Educational Services, School of Medicine, The University of South Dakota, Vermillion, SD 57069; Witzke, Donald B., Office of Educational Services, School of Medicine, The University of South Dakota, Vermillion, SD 57069

Session J-3 An Hour With.....  
8:40-9:40 Chair:

Session J-4 Process Skills

8:40-9:40 Chair:

"Effects of Engagement Quality on Integrated Process Skill Achievement in Grade 7-8 Science Students of Varying Ability Levels"

Newton, Roger, Department of Science Education, University of Georgia, Athens, Ga. 30602

"Student Conception of Structure and Process in Chemistry (Part I)"

Eylon, B., Department of Science Teaching, The Weizmann Institute, Rehovot, Israel 76100; Ben-Zvi, Department of Science Teaching, The Weizmann Institute, Rehovot, Israel 76100; Silberstein, J., Department of Science Teaching, The Weizmann Institute, Rehovot, Israel 76100

"Student Conception of Gas and Solid-Difficulties to Function in a Multi-Atomic Context (Part II)"

Eylon, B., Department of Science Teaching, The Weizmann Institute, Rehovot, Israel 76100; Ben-Zvi, Department of Science Teaching, The Weizmann Institute, Rehovot, Israel 76100; Silberstein, J., Department of Science Teaching, The Weizmann Institute, Rehovot, Israel 76100

Session J-5 Techniques and Procedures of  
8:40-9:40 Research  
Chair:

"Concept Mapping as a Research Tool"

Novak, Joseph D., Cornell University, Ithaca, NY.; Roy, Protima, Drury College, Springfield, Mo.; Gurley, Laine, Cornell University, Ithaca, NY.

9:50-10:50 CONCURRENT SESSION K

X Session K-1 Creation and Evolution  
9:50-10:40 Chair:

"Creation, Evolution and Curriculum"

Kilbourn, Dr. Brent, The Ontario Institute for Studies in Education, Department of Curriculum, Toronto, M5S 1V6; Anderson, Mr. Edward, East York Collegiate Institute, East York, Ontario

"The Cloud of Creationism: Is There a Silver Lining?"

Stewart, Dr. Jim, Teacher Education Building, Madison, Wi. 53706

"Evolution and Creationism: A Question of Demarcation"

Dale, Michael W., Teacher Education Building,

University of Wisconsin, Madison, Wi. 53706

"Evolution as an Heuristic: A Darwinian Defense"  
 Siegfried, Robert, History of Science Department,  
 University of Wisconsin, Madison, Wi. 53706

Session K-2 Reasoning  
 9:50-10:00 Chair:

"Cognitive Development and Academic Achievement in Hearing Impaired Early Adolescents"  
 Sunal, Dennis, College of Human Resources and Education,  
 West Virginia University, Morgantown, WV 26506

"Formal Operational Thinking of Gifted Students"  
 Tipps, Steve, University of Virginia, School of Education,  
 Charlottesville, VA 22903

"Diagnosis of Learning and Reasoning Difficulties of 9th Grade Physics Students as a Basis for Developing Remedial Teaching Methods"  
 Idar, J., Department of Science Teaching, The Weizmann Institute of Science, Rehovot 76100, Israel

Session K-3 An Hour With.....  
 9:50-10:50 Chair:

Session K-4 Curriculum  
 9:50-10:50 Chair:

"A Study of the Relationship Between Quality of

Implementation and Type of Science Teaching Strategy and Student Engagement"

Roadrangka, Vantipa, Department of Science Education, Athens, Ga. 30602; Yeany, Russell H., Department of Science Education, Athens, Ga. 30602

"Factors Influencing the Receptivity of Educators to Curriculum Change"

Stubbs, Harriett S., 1037 Bidwell St., W. St. Paul, MN 55118

Session K-5 Techniques and Procedures of Research  
 9:50-10:50 Chair:

"Concept Mapping as a Research Tool"

11:00-12:00 CONCURRENT SESSION L

Session L-1 Follow up  
 11:00-12:00

Session L-2 Follow up  
 11:00-12:00

Session L-3 An Hour With.....  
 11:00-12:00

Session L-4 Follow up  
 11:00-12:00

Session L-5 Follow up  
 11:00-12:00