

Editor's Note:

This second Newsletter consists of the contributions received from people on the mailing list. It is organised into four sections which correspond to the headings under which information was requested.

An up to date mailing list, including addresses, has been appended so that you may contact other members directly.

Any comments or suggestions re form of this Newsletter would be appreciated.

Lindsay Mackay

1. Publications:

Publications in the science education research area between July 1st and December 31st, 1970 reported by members of the group (excluding publications still in press).

- Batten, H.D. "Some Aspects of the Application of Videotape Recordings in the Education of Teachers." A.S.T.J., 1970, 2, 16, 33-6.
- Best, E.D. "An Exploratory Study of the Correlates of Student Decision Making in the Secondary School Biology Laboratory." PhD. Dissertation, The Ohio State University, December, 1970.
- Dale, L.G. "The Growth of Systematic Thinking. Replication and Analysis of Piaget's first Chemical Experiment." Aust. Journal of Psych., 1970, 22, 3, 277-286.
- Fensham, P.J., "A New Course for the Professional Education of Science Teachers." School Science Review, 1970, & Batten, H.D. 179 52, 421-7.
- Field, T.W. & "Intellectual Style and Achievement in Arts and Science Undergraduates." British Journal of Educational Psychology, 40 (No. 3), 338-341, Nov. 1970.
- Poole, M.E.
- Gardner, P.L. "Relative Difficulty of Restricted-conjunctive and Conjunctive Concepts." Journal of Experimental Psychology, 1970, 86, 211-213.
- Gardner, P.L. "Specifying Objectives for Science Education." Teachers' Guide to Discovery in Science, Adelaide: Eberhard etc. 1970.
- Mackay, L.D. "Changes in Victorian Physics Students during Two Years of Physics Study", The Australian Physicist, July 1970, 103-109.
- Mackay, L.D. "Understanding of the Nature of Science of Some Teachers' College Students in the Territory of Papua and New Guinea", Papua and New Guinea Journal of Education, 1970, 6, 5, 72-85.

- Mackay, L.D. "Teacher Characteristics Affecting Student Changes in PSSC." A.S.T.J., 1970, 16, 3, 74-77.
- Mackay, L.D. "A Study of Optional Questions in Examinations." Education in the Commonwealth: Examinations at Secondary Level, Commonwealth Secretariat, London, 1970, 60-65.
- MacLay, R. "Energy - Unifying Theme or Phenomenon?." A.S.T.J., Nov. 1970, 16, 3, 11-15.
- Meyer, G.R. "Science by Radio and Television in a Developing Country - Mauritius, a Case Study." A.S.T.J., August, 1970, 16, 2.
- Meyer, G.R. "Reactions of Pupils to Nuffield Science Teaching Project Trial Materials in England at the Ordinary Level of the General Certificate of Education." Journal of Research in Science Teaching, 1970, 7, 4.
- Ramsey, G.A. A Review of the Research and Literature on the Chemical Education Materials Study Project. Research Review Series - Science Paper 4. ERIC Center for Science Education, Columbus, Ohio, 1970. ERIC Microfiche No. ED037 591.
- Tisher, R.P. A Study of Verbal Interaction in Science Classes and its Association with pupils understandings in Science, University of Q'ld. Papers, 1, 9, University of Q'ld. Press.
- Tisher, R.P. "The Nature of Verbal Discourse in Classrooms." ch. 21, In Campbell, W.J. (1970) Scholars in Context, John Wiley & Sons.
- Tisher, R.P. "Association between Verbal Discussion and Pupils' Understanding in Science", Ch. 22 in Campbell, W.J. (1970) Scholars in Context, John Wiley & Sons.
- Thomas, I.D. "Tests - What do they really tell us?" LAB TALK October, 1970, 6-8.

2. Science Education Research News Briefs:

David Cohen and Brother Tony Madely are in charge of arrangements for the proposed "Second Annual Conference" of the "Australian Association for Science Education Research" at Macquarie on Friday, 21 May and Saturday, 22 May, 1971. Arrangements for this conference are well in hand.

Data has been collected and is being analysed from about 60 South Australian biology teachers and classes.

- (a) from teachers: Views of Science Scale (giving the teacher's personal "philosophy of science").

Science Classroom Activities Checklist:
Teacher's Perceptions. (A teacher's "what should happen" form of an instrument in the Kockendorfer-BCAC family).

- (b) from students: Science Classroom Activities Checklist : Student Perceptions. (Student's "what does happen" form of the above).

Biology Exercise Report. (giving measures of student decision makings and problem orientation for a biology lab exercise done by the class.

This data will be used -

to test for relationships between measures
to compare with data from U.S. teachers and classes
to provide base line data for further studies.

E.D. Best

- (a) Have begun Ph.D. studies of relationships between teacher behaviour variables and pupil attitude changes during the Form V physics course in Victoria.
- (b) Final testing of Papua/New Guinean High School students' science vocabulary will be conducted shortly.
- (c) Dr. Theodore McDonald has taken up appointment as Senior Lecturer at Monash University. His field of specialization is Mathematics education.

P.L. Gardner

- (a) At present I am in East Africa working on evaluation of Biology Curricula for Uganda, Tanzania, Kenya, Malawi and Zambia. These countries are mounting extensive projects to obtain feedback from trial materials used in pilot schools. Making use of questionnaires; interviews; standardized tests and observational devices.
- (b) At Macquarie University Centre for Advancement of Teaching and School of Earth Sciences, Michael Wallace, a graduate student, is beginning an extensive study of the use of audio-tutorials in the teaching of earth science. His project is for an M.A. degree.

G.R. Meyer

- (a) IPS course is being introduced at the lower secondary level in two Western Australian schools to study logistic problems.
- (b) Teachers from the two schools using First Year ISCS materials in 1970 were enthusiastic about the course and have elected to continue the course and to extend it into the second year level. Some problems have been experienced in obtaining ISCS materials.

H.A. Pearson

The Consumer Education Project at Banyule High School, Victoria, is attempting to apply the methods of Science Education to the field of consumer education. If students can be got to behave like scientists when confronted with consumer products and their images, should not their attitudes to these products become more objective, and their ability to discriminate these products more reliable? A 12 week instructional program of product testing is being offered in the 3rd year of secondary

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schooling. Students' attitudes to consumer products will be rated on a Likert-type scale. A separate groups pre-test post-test design has been selected.

A.H. Phillips

ASEP has produced materials for trial of the first four units, messengers, mice and men, working in the laboratory and soils.

Eight working parties from all states, except W.A., developed eight units for ASEP. Two working parties in W.A. investigated the adoption of ISCS materials to the ASEP PROGRAM.

Forty trials teachers were present at the four-day workshop in February, which introduced trials teachers to the units they were to try. Some information was gathered on the teachers, and this will be compared with that of the teachers in the IEA sample.

G.A. Ramsey

I have conducted an analysis of the Matriculation (Grade 12) Examination performance of students from Rural Government, Urban Government, Roman Catholic and other Independent Schools over the years 1966-1969 inclusive.

I am currently writing a report of this project, with Dr. Broadhurst of Bedford Park Teachers College for publication.

We have analysed various subjects, including Mathematics I, Physics, Chemistry and Biology. Results thus far indicate a lack of consistent trends as to the superior performance of one group over another.

R.J. Sumner

In Queensland, we are continuing on studies of teaching strategies and their effect. An adoptive version of M.A.C.I. is to be used to study verbal and non-verbal behaviours in classes, including lessons involving inquiry and discovery.

Suggested reading for science education researchers is the following:-

Wright, C. & Nuthall, G. (1970) "Relationships between Teacher behaviour and Pupil Achievement in Three Experimental Elementary Science Lessons", American Educational Research Journal, 7, No. 4, Nov. 1970, 477-491.

R.P. Tisher

Following the validation of a Gagne - type learning hierarchy, the effects of several factors on learning, retention and transfer of the elements of the hierarchy were investigated. The factors were -

1. amount of guidance given to the learners.
2. sequence in which elements of the hierarchy were presented
3. individual differences of learners.

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Despite the use of quite powerful statistical analyses, the only significant result was that greater guidance causes quicker learning. Retention and transfer are unaffected by amount of guidance. Sequence is of little moment. No individual difference interacts with sequence or amount of guidance.

R.T. White

3. Kites:

Do we have, and if not, could we compile, a list of instruments useful for science education research? Each person on the mailing list could provide information on instruments which he has used or seen used, with notes on the availability of the instrument, normative or comparative data etc.

E.D. Best

Has anyone tried to test for the development of the following in junior secondary students -

1. the concept of geological time
2. the idea that slow geological processes activity over a long time have a marked effect
3. the understanding of the limitations of laboratory simulation of geological processes.

L.D. Blazeley

I would like information on any known pencil-and-paper tests designed to test the Piagetian stage at which a child is thinking - particularly with regard to the transition from concrete to formal thinking.

L. Dale

When a set of detailed behavioural objectives has been prepared for a particular course, what is the most effective way of using these objectives to -

1. select the content of the course,
2. plan learning experiences,
3. plan evaluation procedures.

(The difficulty is to keep all of the numerous objectives in mind so that each secures its appropriate emphasis.)

J.P. Doherty

I have an interest in developing science education courses in integrated science and would like to compare notes with course developers in teacher education institutions.

R. Maclay

ASEP has prepared two Newsletters. Any SER person who did not receive one and would like a copy should request same from the Director, ASEP, 11 Glenbervie Rd., Toorak, 3149. Members who would like to review specific units as detailed in the list in Newsletter No. 2 should let me know. I hope each member of SER would like to read two or three of the fifty nominated. There could be some remuneration for detailed evaluation of units.

G.A. Ransey

I am currently beginning a project on the supply, training and utilization of science teachers in South Australia.

I would be interested to contact any researcher or organisation that is presently undertaking, or has recently undertaken, a similar or related study, either for an individual state or for Australia as a whole.

R.J. Sumner

I would like to have the opinions of readers on the feasibility of a Research Journal (Science Education). At present there are a few articles appearing (in condensed form) in A.S.T.J. Will it be possible to produce a journal soon??

R.P. Tisher

We have all the responses of candidates for the 1970 H.S.C. Victorian Physics examination available to us on magnetic tape. We have one or two research uses in mind for this data, but would be pleased to receive suggestions for hypotheses to be tested.

The tape shows whether the responses were correct or not, and the school attended by the candidate.

R.T. White & L.D. Mackay.

4. Information on Visitors:

Three introductory sessions were conducted by ASEP staff for teachers in both Government and Independent schools during November. Mrs. G. Wilkinson and Mr. L. Dale also attended the W.A. State Advisory Committee meeting.

Professor George C. Turner, Chairman of Dept. of Science and Mathematics Education, Fullerton State College, California, will be in Queensland during middle of March, 1971.