File

AUSTRALIAN SCIENCE EDUCATION RESEARCH NEWSLETTER. NUMBER 1, JULY 1970

Editor's Note:

This First 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 January 1st and June 30th, 1970 reported by members of the group (excluding publications still in press).

Batten, H.D. "An Investigation of the Performance of Different Student Groups on the V.U.S.E.B. School Leaving Biology Examination 1968." Australian Science Teachers' Journal, 16, 1, May 1970.

Mackay, L.D. "Creativity and Performance in Science Examinations." Australian Journal of Education, 14, 1, March 1970.

Mackay, L.D. "Development of Understanding of the Nature of Science in some Victorian Students." Australian Science Teachers' Journal, 16, 1, May 1970.

Mackay, L.D. "Students' Impressions after 3½ Years of the P.S.S.C. Course in Victorian Schools in 1966." Lab-Talk, June 1970.

Thomas, I.D. "Testing and Junior Science." Lab-Talk, February 1970.

White, D.C. "Science in the Secondary School." Lab-Talk, April 1970.

2. Science Education Research News Briefs

In Tasmania we are engaged in follow-up into tertiary education of students who sat for T.E.E.P. papers in 1968. Paper 2 of the T.E.E.P. battery involved science comprehension and interpretation.

L. Blazely

Multiple marking of an essay question on the 1969 Matriculation Biology examination at the S.A. P.E.B. was carried out by having each answer read by two markers, each of whom awarded a mark from 0 to 6 inclusive. The sum of these two independent assessments was the mark the candidate received for the question. The six markers all marked the same 44 papers to allow intercorrelation coefficients to be calculated. The range of the 15 possible correlations was from 0.222 to 0.714 with a mean of 0.488 ± 0.139. A similar analysis was made using the fifteen possible final marks for each of the 44 candidates. A random sample of 16 of the possible 105 correlations had a range of 0.485 to 0.885 with a mean of 0.731 ± 0.108. This is significantly greater than that between the marks given by individual markers ($t = 5.57$, $p < 0.001$).

(contd. over

Even under public examination conditions where there is no opportunity to train and select markers, this multiple marking procedure has greatly increased the reliability of the marking of a science examination essay.

A. Lucas

Analyses of the results obtained in the two year longitudinal study of physics students studying the P.S.S.C. physics course in Victoria and students studying the pilot P.S.S.C. course and the previous physics course in Queensland are currently underway and the first report has been submitted to A.S.T.J. The final testing for the 2 year longitudinal study of students of the two senior secondary school physics courses in South Australia will be conducted later this year. In the Victorian study, an attempt has been made to identify teacher characteristics which correlate with student changes.

L. Mackay

I am continuing a thesis on practical science examinations in relation to the developed psychomotor domain taxonomy published in Aust. Coll. Ed. "Educational Measurement and Assessment", A.H.Massina & Co., Carlton, 1969.

R. Maclay

A study is currently under way which is an attempt to improve the effectiveness in a microteaching situation of feedback from a class of student teachers in the pre-service education of science teachers. In this study, a scale (the Microteaching Evaluation Schedule) was developed which could be used by teacher, class or supervisor to rate 20 criteria assumed to be correlated with teacher effectiveness. The validity of each item on the scale is being assessed by noting the number of times raters mark it Not Applicable, and by computing the rank order correlation between scores given each item by the class and the sum of scores on the other 19 items. Rater reliability is also being checked. One important result that has emerged is that a high correlation exists between the supervisor's and class's rating of teacher effectiveness, but that there is no significant correlation between student teachers' self-rating and supervisor's rating or average class rating.

Copies of the Microteaching Evaluation Schedule are available.

A. Miller

(1) H.E. Thompson is currently working for a B.Ed.(Hons) thesis at the University of Queensland in which he is looking at changes in educational set and cognitive preferences in P.S.S.C. physics in Queensland compared with changes for non-P.S.S.C. physics students.

(2) Prof. Bassett, Brian Carss and I are continuing to investigate the predictive value of the T.E.E.P. tests, School Estimates and Matric. in Science based faculties (Medicine, Dentistry and Engineering).

C. Power

A.S.E.P. has begun the introductory phase of its teacher education program with conferences in Victoria and South Australia. Some evidence was gathered on the attitudes of the science co-ordinators attending these conferences, on their problems, and on what they believe A.S.E.P. materials ought to do. Reports of these conferences, including summaries of the data collected, will be published in each State's science teachers' journal. It is hoped to make some comparisons eventually for the A.S.T.A. Journal.

A document outlining the areas of research and evaluation activity with A.S.E.P. is being prepared and will eventually be circulated to persons receiving the Newsletter.

G. Ramsey

Science units are currently being prepared for inclusion in a Scholastic Aptitude Test being prepared by A.C.E.R. for research into selection for tertiary studies.

B. Rechter

In the I.E.A. Science Project, science achievement in Australia at lower and upper secondary levels is being measured as part of an international project. The upper secondary testing takes place at the end of July, and the lower secondary at the end of September. A set of tests will be sent on request after the September testing is finished.

M. Rosier

I have been interested in the possible relation between sex differences in achievement in science and the expectations of teachers. A pilot study has been carried out on this topic and the results written up and forwarded to the Australian Journal of Education.

J. Rowell

At present I am undertaking research on a science performance test, which can be used as a measure of:

(a) Science performance.
(b) Scientific competence.
(c) Scientific attitude.

I. Thomas

A pilot scheme to determine the logistics problems of operating I.S.C.S. (Burkman's Project ex. U.S.A.) at first year high school has been commenced at two Western Australian schools.

R. Vickery

3. Kites

You should have received by now a request for information on EVALUATION INSTRUMENTS relevant to the objectives of science education. This information is to be collected and published in booklet form. If you intend to contribute to this publication, but have not yet mailed the completed pro-forma, please do so NOW.

Completed pro-formas or requests for additional pro-formas should be forwarded to:- Science Evaluation Instruments Survey, School of Education, Macquarie University, North Ryde, 2113.

N. Baumgart and D. Cohen

Is anyone working on readiness testing in science at lower secondary levels? (in relation to specific units, topics, etc.)

Has anyone used the "Nedelsky Grid" for physics testing in any projects?

L. Blazely

(1) Would welcome any information on tests used to place children at Piaget's stages of concrete and formal development. I know of Tisher's test but of no others that are readily applicable in classroom situations used in Australian research.

(contd. over

(2) I have developed a trial form of a group test to test ability to make systematic combinations and am willing to send copies to anyone interested in trying it out at primary school level.

L. Dale

Anyone interested in testing practical science skills might like to discuss experience and progress.

R. Maclay

Would appreciate hearing from others who have experimented with micro-teaching and videotaping students' lessons. When analyses of results of my current study are completed in the next few weeks, I would be happy to supply these to interested parties.

A. Miller

Anyone who did not get a copy of the "Guidelines Conference" booklet from the Australian Science Education Project (A.S.E.P.) should write in requesting to be placed on the mailing list and indicating any specific areas of research interest (P.O. Box 210, Hawthorn, Vic. 3122).

Ideas on a pre-testing program gathering information on students, teachers, and schools for the second trial of A.S.E.P. materials is invited.

A.S.E.P. has a particular need for persons wishing to develop (or having already developed) instruments to describe classroom processes so that teachers can see more clearly what they are doing. Check lists, observation instruments, etc. are needed.

G. Ramsey

Suggestions welcomed - the Board of Secondary Education (W.A.) will be developing, adapting or utilizing test instruments to establish broad comparability between schools at Grade 9 science level. Tests of a global nature, not highly specific in science content, are sought which will provide a valid measure of level of achievement without at the same time assuming a common state wide syllabus.

R. Vickery

Does anyone have any information on research on classes where students are allowed a greater degree of autonomy in choice and way of carrying out projects? All I have seen is a report from the Earth Science Curriculum Project (U.S.A.) on this.

D. White

4. Information on Visitors

Professor H. F. Halliwell: Chemical Education, University of East Anglia, associated with Nuffield Chemistry.

Newcastle July 3rd, 4th; A.C.E. New South Wales Convention July 11th; in Melbourne in August (see Lab-Talk); Conasta XIX; Address to N.S.W. Science Teachers, Sept. 26th; Armidale October 2nd, 3rd.

(Contacts - N.S.W.: R. Maclay. Victoria: K. Mappin, Scotch College)

Professor F. Cornall, Science Education, University of British Columbia.

In Melbourne for one week from July 18th en route to U.S.A. from Africa.

(Contact - Victoria: E.D. Gardiner, Melbourne Grammar School)

Dr. Garrett, President N.S.T.A. of America.

Conasta XIX.

Professor M. Druger, Syracuse.

Leaves Macquarie at end of July to return to U.S.A.

Mr. M. Auld, Griffin and George, Nuffield Physics.

Conasta XIX; Melbourne September 6th and 7th.

(Contact - Mr. I. Berckelman, Wynyard Scientific Pty Ltd,
43 Grosvenor Street, Cremorne, N.S.W. 2090)