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ABSTRACT

This issue of the newsletter of the American Association for the Advancement of Science has as its theme International Science Education. It contains reports from five science education projects located in Great Britain, the West Indies, Africa, Thailand, and Australia. Also included is an article by Dr. Albert V. Baez, Chairman of the AAAS Commission on Science Education. This article is entitled "Educational Goals for the Seventies." (PEB)

SCIENCE EDUCATION NEWS

American Association for the Advancement of Science

October 1973

International Science Education

This issue of *Science Education News* includes reports from five science education projects located in Great Britain, the West Indies, Africa, Thailand, and Australia. These five projects are only a fraction of the new science and mathematics curriculum programs that are being developed and implemented in many countries. The *Eighth Report of the International Clearinghouse on Science and Mathematics Curricular Developments* 1972, a joint project of the AAAS Commission on Science Education and the Science Teaching Center of the University of Maryland, contains data on some 150 projects in approximately 50 countries outside the United States. The reports in this issue supplement the data on these five projects that are contained in the *Clearinghouse Report*.

This issue also includes an article by Dr. Albert V. Baez, Chairman of the AAAS Commission on Science Education, entitled "Educational Goals for the Seventies." The educational goals identified by Baez should apply equally well to developed and developing countries. —V.H.L.

Some of the most pressing problems of our day can be put under the heading of the four P's: population, pollution, poverty and the pursuit of peace. Others, like the energy crisis, environmental deterioration, and malnutrition, are either subsumed under one of them or at least shown to be intimately related to them.

It is not difficult to show that the four P's are intimately interrelated and that science and technology have played a role in their development. Overpopulation, for example, exists because death rates have gone down faster than birth rates due to advances in agriculture and medicine. Pollution is a result of the technological advances that lead to industrialization.

Two-thirds of the people in the world live in poverty because the rate of increase in population has not been matched by a sufficiently rapid generation of food and the processing of natural resources. The pursuit of peace is precarious partly because so much of our wealth and our technology have gone into the development and production of armaments and weapons of mass destruction. Science and technology are at least in part responsible for the mess we are in.

In this same breath, however, I have to say that we will not pull ourselves out of the mess without further applications of science and technology. Part of the task of education, then, will be to train the scientists and technologists of tomorrow.

But science and technology have been called the most powerful forces for social change that have ever existed in the history of man. They have affected every aspect of our lives. For that reason, their importance must be appreciated by all people of the future, not just by the future scientists and technologists. That presents a special challenge to education, namely, the creation of a new generation of people who will understand the power, the responsibility, and the limitations of science.

In connection with this, I should like to propose four C's as educational guidelines for the seventies. They apply to science and technology education in particular, but they can also be considered guidelines for an education that can help us solve the problems posed by the four P's. They are *curiosity, creativity, competence,* and *compassion*. I shall use some of these words in a rather special sense so let me explain. I believe all of education, not just science and technology, should be imbued with the four C's. Let me consider them one at a time.

Curiosity. By this I mean the spirit of inquiry that characterizes the approach of a scientist. The spirit of science is exemplified by the following: longing to know and understand, questioning of all things, the search for data and for relations that give them meaning, demand for verification, and respect for logic. But these values need not be learned in the natural and social sciences alone. There is no reason in the world why, for example, questioning of all things should not be a valid guideline in the arts as well.

Creativity. The engineer, being product-oriented, often has to solve problems that have never been solved before. Unlike the scientist, he is not as much interested in understanding as in solving particular problems by any means whatsoever. Theodore von Karman once said, "The scientist explores what is, the engineer creates what has not been." He has to utilize the process of creative design to generate improvement in man-made things. Why should we not find ways to imbue all of education with the spirit of change through creative design? All man-made things, artistic and literary as well as material, could be improved if we could infuse students with the spirit of creativity.

Competence. There is a difference between understanding the theory of a jet engine and the ability to build one and make it work. The mechanic who can put the engine together has a special type of competence associated with knowledge and skill. He need not understand Newton's laws of motion to do so. But I should like to extend the concept of competence to include the ability exemplified by an artist, a musician, a teacher, a writer, an electronic technician, and a watchmaker. I suppose it can extend to all walks of life. What is required is the skill born of knowledge and experience to perform certain tasks well. Yet, on other occasions, I have linked competence with the idea of bringing into being something new and useful that had not existed previously and hence associated it with the concept of design. I am groping for a definition of competence that is more sophisticated than that exemplified by a plumber or an electrician but which implies the ability to make an imaginative jump from present fact to future possibilities. So, I guess it must be closely related to creativity. Regardless of the shade of meaning we give to competence it is clear that education, in the past, has not always generated competence. Perhaps it can in the future.

Compassion. Weisskopf suggests that there is a second complementarity between curiosity and compassion. He says, "Science cannot develop unless it is pursued for the sake of pure knowledge and insight. But it will not survive unless it is used intensely and wisely for the betterment of humanity and not as an instrument of domination by one group over another. There are two powerful elements in human existence: compassion and curiosity. Curiosity without compassion is inhuman; compassion without curiosity is ineffectual."[1]

The way I am using the word compassion implies a concern for the well-being of other people.

In the world of the future, burdened by the four P's, surely scientists and engineers should be imbued with the spirit of brotherhood that engenders concern and social responsibility. But so should everyone else. It should be a universal guideline for education.

How to imbue education with the four C's? That is the key question to which I do not have an easy answer. I feel that the four C's will be needed to pull us out of the mess we are in. But we will need pioneers who are already endowed with the four C's to invent ways of injecting them into the education of the future. I believe we must find ways to experiment with new forms of education that exemplify the four C's. If we succeed, we will all be the gainers and science education will benefit as well.—ALBERT V. BAEZ, *Chairman, AAAS Commission on Science Education.*

[1] Victor F. Weisskopf, The Significance of Science. *Science* 176:138, April 14, 1972.

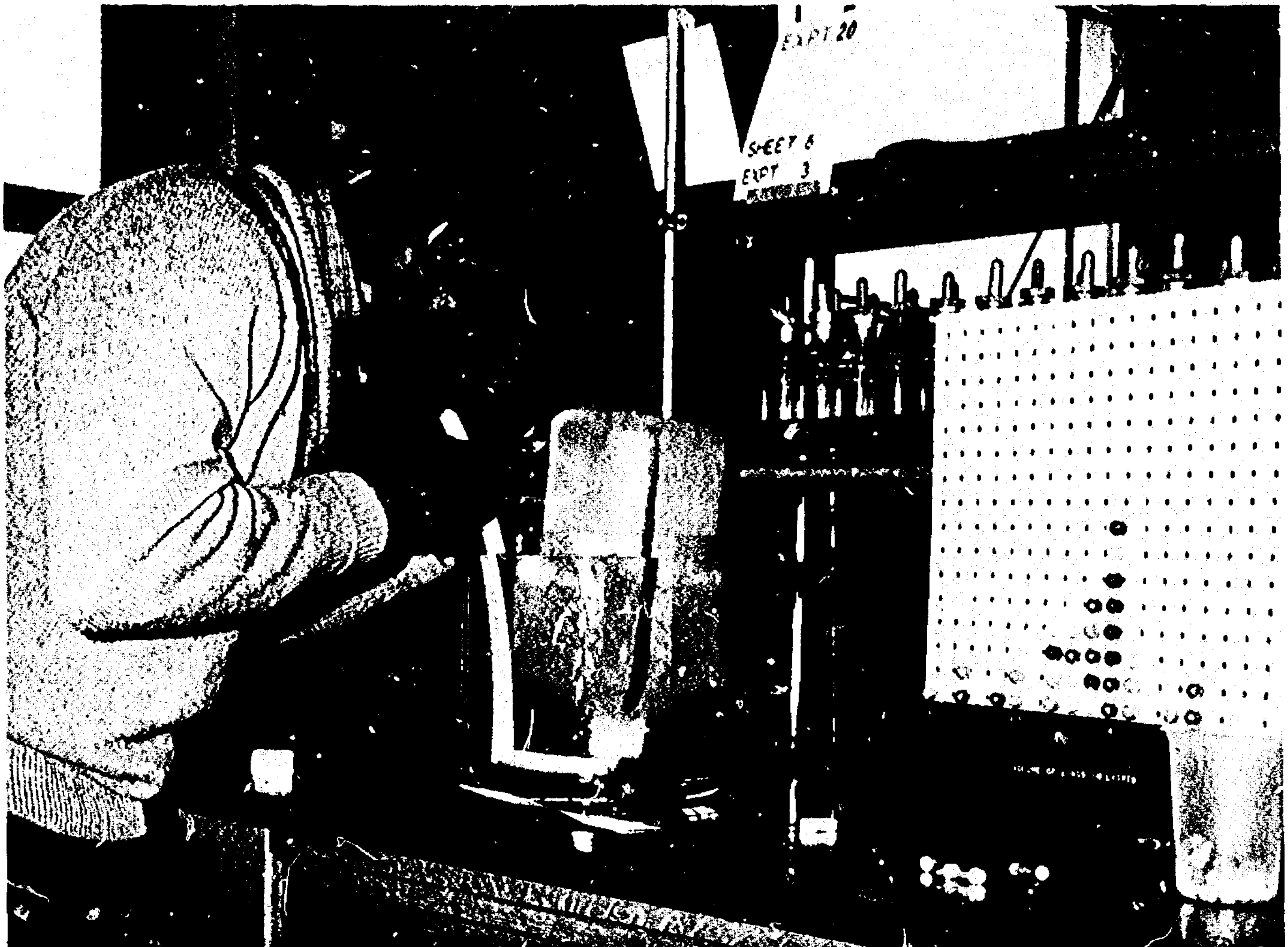
Centre for Educational Development Overseas (CEDO)

CEDO was created in 1970 to assist developing countries with modernization and innovation in education by providing a source of information, advice, and help. CEDO is concerned with curricula in the widest sense, with the techniques of teaching, with all aspects of educational technology and with related problems of educational organization. CEDO is active in the fields of formal and informal education and with all levels of education. There are three divisions in CEDO—Audio-Visual, Broadcasting, and Curriculum—together with an Information and Research Department. CEDO is supported by funds from the British government through the Overseas Development Administration of the Foreign and Commonwealth Office, but also has funds from private organizations. It is assisted in its activities overseas by the representatives of the British Council.

In science education the Curriculum Division is involved at primary and secondary levels in many developing countries throughout the world. Recent interest has given rise to projects in integrated science at the junior secondary level, particularly in the Caribbean, in Sierra Leone and in Botswana, Lesotho, and Swaziland in southern Africa. In the case of the Caribbean and the southern African territories the interest has centered around adaptations of the Scottish integrated science project for the junior secondary level, that is, for grades 6 through 9. British consultants are working in these regions under bilateral aid schemes and together with teams of local teachers and advisors the projects are proceeding by means of trials of locally produced materials in a limited number of schools.

In the Caribbean, for instance, there are now some 80 schools in 15 territories involved in the trials with about 7,000 children in each of the three years of the project.

In the separate sciences CEDO is concerned with adaptations of Nuffield biology, chemistry, and physics in the East African countries of Kenya, Tanzania, and Uganda and in Malaysia. In East Africa courses at the secondary school level of four years' duration have been



devised following trials in schools in each of the territories. These courses have given rise to new examinations at the end of the secondary course, which are administered by a recently established East African Examinations Council. In Malaysia the adaptations are concentrated at the upper secondary level (grades 10 and 11) following the introduction of an integrated science course for grades 6 through 9 which itself is based on the Scottish Integrated Science Scheme.

CEDO is also involved in undertaking consultancies for international organizations such as UNESCO and UNICEF. For example, two members of the staff from the Curriculum Division of CEDO were invited by UNICEF and the government of India in 1970 and 1971 to advise on the implementation of a large-scale UNICEF-aided project to improve the teaching of science at primary and middle school levels throughout India. Although much of CEDO's efforts are directed toward Commonwealth countries, CEDO is also operating in Latin America, notably Colombia and Mexico at the present time, in the Middle East (Egypt and Lebanon) and in the Far East (Thailand and Indonesia).

The Curriculum Division of CEDO is collaborating with the Science Teaching Center of the University of Maryland and with the Division of Pre-University Science and Technology Education of UNESCO in maintaining a comprehensive collection of science curriculum materials from all over the world and in keeping in touch with the latest projects. Liaison has also been established with the Science and Mathematics Center of ERIC in Columbus, Ohio.

This article is concerned only with the science education work of the Curriculum Division of CEDO but readers may like to know that at the headquarters of CEDO training facilities exist for students from overseas who wish to join courses in educational television, educational radio and audio-visual aids. There is also an Educational Resources Centre where there is a library, and curriculum materials from various countries and audio-visual aids made overseas are on display. Visitors to the United Kingdom wishing to see something of CEDO's training facilities or to inspect the curriculum materials, or to learn about the work of the Centre as a whole are invited to write to the Director of the Information and Research Department from whom copies of general brochures about CEDO and the training courses can be obtained on request.—D. G. CHISMAN, *Deputy Director, Curriculum Division, CEDO, Tavistock House South, Tavistock Square, London, W.C.1, England.*

The CEDO/UWI Caribbean Regional Science Project (CRSP)

CRSP started in September 1970 and has now completed the first phase of its operations. The broad aim of the project was to improve the standard of science education at the junior secondary level (roughly 11-14 year olds) in the English-speaking Caribbean territories, through the introduction of a pupil-activity/discovery-based, integrated science curriculum. Finance for the project comes mainly from the British Overseas Development Administration and the Centre for Educational Development Overseas in London. A professional base is provided by the University of the West Indies, at its Cave Hill campus in Barbados. The new curriculum was to supersede formal "chalk-and-talk" general science in some schools, and in others to introduce science into the school curriculum. In selecting the curriculum to be used, the following points were considered:

1. The science taught should form a part of the general education of all pupils, and the curriculum must be useful to the early school leaver, as well as to the pupil who goes on to specialize.
2. The project was to include 15 territories lying on a 4000-kilometer crescent across the Caribbean: Belize, Cayman Islands, Jamaica, Turks and Caicos, British Virgin Islands, St. Kitts-Nevis, Anguilla, Antigua, Montserrat, Dominica, St. Lucia, Barbados, St. Vincent, Grenada, and Guyana. While displaying marked geographical, social, and economic differences, these territories do share a common educational tradition, so that the task of providing one basic curriculum that suited them all was not unrealistic.
3. The background of the teachers was also very varied—from professionally trained graduates, to teachers with only a minimal education in science themselves, and no teacher training. The few well-qualified teachers were generally specialists in one or at most two of the traditional disciplines of science. In almost all cases the teachers' experience of science education had been very formal, and the new curriculum would involve a distinctly new approach.
4. There would be no opportunity within the project for a full preservice training program. (This task has subsequently been taken up by a UNESCO project, RLA 142.) Teacher preparation would be limited to a two-week induction course, plus a maximum (seldom realized) of six one-day briefings each year.
5. The project was to start with only one full-time regional consultant (P. S. Adey), based in Barbados, and a part-time visiting senior consultant (A. J. Mee), based in the United Kingdom. We were able to enlist the help of two other consultants in Jamaica (Miss J. F. Reay and Dr. A. D. Turner) who fitted in CRSP work with their many other commitments. During the last nine months of the project, another full-time consultant, L. Jones was appointed to work in Jamaica.

This shortage of staff, plus the difficulties and high cost of travel in the region, meant that pilot schools were not visited as often as one would have liked.

6. Pilot schools in the project were provided where necessary with a set of modern equipment; most had adequate science rooms with gas and water provided by their local ministries of education.

Consideration of all these factors—especially items 2 through 5—suggested that the material to be provided must offer the teacher a great deal of support and advice both in science content and teaching method.

A curriculum which offered such material had already been initiated in Trinidad where conditions were similar to (but not the same as) those outlined above. This curriculum was known as WISCIP—the West Indian Science Curriculum Innovation Project.

The foundation of WISCIP is a highly detailed teachers guide, which not only defines the curriculum, but provides lesson-by-lesson notes for the whole three-year course. This highly structured course has some obvious disadvantages, but in the context of this project has proved successful, and most teachers have welcomed the confidence and relief from long-term planning that the guide provides.

For the CRSP the Trinidad WISCIP was first revised by a curriculum committee in Barbados and some pupils' worksheets were prepared. The result, known as WISCIP/B, was introduced to pilot schools throughout the region. An elaborate system of feedback allows teachers—even in remote areas—to submit detailed information of the progress of the course in their schools. This feedback system not only supplements the consultants' own observations on the teaching activities, but gives every teacher the opportunity to become directly involved in the curriculum development process. We believe that this is particularly important for a highly structured course like WISCIP, where the more innovative teacher may otherwise feel that he is having a curriculum imposed on him without his firsthand classroom experience being considered.

Each year a writing session is held at which the consultants and a small group of teachers rewrite the year's work on the basis of feedback received. WISCIP/C, the result of this rewrite, is then put into the schools and once again feedback is received on its progress.

WISCIP/C is now being used in their three junior secondary years by 73 schools in the Caribbean. A further 8 schools have already made a start with it in their first two years, involving a total of 211 teachers and over 20,000 pupils. The numbers of inquiries received during this summer vacation indicate that in September 1973 many more schools will start to use WISCIP, so that in the eastern Caribbean project territories at least, virtually every secondary and junior secondary school with suitable facilities will be teaching WISCIP.

The obvious popularity of WISCIP with teachers and ministries of education is supported by the results of an evaluation exercise carried out in 1972 and 1973. Pupils following WISCIP were shown to perform significantly better than similar pupils following other courses on a test of scientific comprehension, application, and higher abilities.

Future plans include the production of a "final" version of the curriculum, probably to be known as WISC, and its publication together with pupils' workbooks.—PHILIP ADEY, *CEDO/UWI Caribbean Regional Science Project, School of Education, University of the West Indies, Cave Hill, P. O. Box 64, Bridgetown, Barbados.*

Science Education Programme for Africa (SEPA)

Science education in Africa is characterized by intense interest and commitment by African governments, professional educators, and small, scattered, and undermanned programs proceeding mostly in isolation from one another. Expertise, manpower, and funds are almost nowhere sufficient. One solution to the problem is to combine, relate, exchange, and coordinate available personnel, materials, and efforts to improve efficiency and effectiveness while making thrustful innovations. This is the purpose of the Science Education Programme for Africa (SEPA).

SEPA is an independent international education development and nonprofit organization of African states established in 1970 to:

1. facilitate science education development in Africa through workshops, conferences, publications and innovative programming;
2. encourage and support production of excellent relevant instructional materials and scientific equipment for schools from locally available materials; and
3. support national and regional education institutions.

Before 1970 the African Primary Science Programme (APSP) under the administration and direction of the Education Development Center had developed science education materials for primary schools, established science curriculum development centers, and built some manpower resources.

SEPA members are: Ethiopia, Gambia, Ghana, Kenya, Liberia, Nigeria, Sierra Leone, Uganda, and Zambia. Associate members include Botswana, Lesotho, Swaziland, and Tanzania. As a catalyst and as a tool to extend the frontiers of science education in Africa, SEPA makes individual countries its starting points and focuses on the efficient utilization of existing centers and on creating additional human resources. Primary education is a priority. Science is viewed broadly as a medium for young people to develop appreciation and understanding of local environments and the total context of man in the biosphere. The primary focus is the learner; the approach is inquiry; the strategy is problem-solving and decision-making while exploring the total environment.

Over 50 teachers' guides and children's books were developed at international workshops. They cover activities for lower primary classes; biological, physical, chemical, and earth sciences; and cultural and rural education. SEPA helps each member to adapt them to its particular needs and to extend their range. Five films produced to date reinforce the written materials.

With the introduction of new learning strategies and approaches SEPA has created programs for the preparation and continuing education of teachers. SEPA furnishes science education specialists for four to six weeks as resource staff during workshops for teachers and teacher educators in each country. Staff members

are drawn from other African countries, Europe, and the United States. Many teachers and teacher candidates have thus received excellent education. SEPA also supplies educational materials to its members and assists them to utilize their local resources. Science teachers associations receive publicity in SEPA's publications devoted to their work. Utilizing the leadership of local centers, SEPA has enabled scholars and students to confer and exchange views on the development needs of their country and to share them with counterparts in other African countries.

In 1971 an international workshop for the development of materials for teacher training colleges involving 55 science educators, teachers, teacher educators, school children, and laymen produced guidelines for environmental education, fundamental issues in teacher education, educational evaluation, structure of science, and children's ways of learning. They form a base for work in individual countries and have led to two international professional meetings focusing on problems of teacher educators, strategies for attacking the problems, and on exemplary case studies.

Special weaknesses exist in the staffing of curriculum centers, educational evaluation and supervision, and in the education of teacher educators. SEPA responded by running a six-month course for curriculum developers in 1972.[1] It will be established on a permanent basis in 1974. A pilot project, also in 1972, conducted feasibility activities on the training of educational evaluators, research into appropriate evaluation instruments and techniques, and on consultant services for SEPA members. The International Center for Educational Evaluation has since been established.[2]

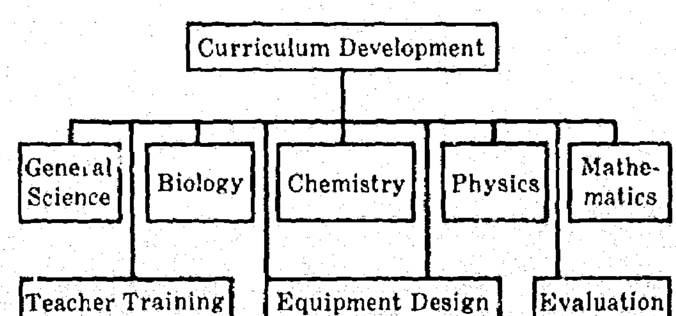
Financial support comes from African governments, Carnegie Corporation of New York, Centre for Educational Development Overseas (UK), and UNESCO. New projects include a university-based project for the education of teacher educators; a coordinated research program on key cultural contexts whose psychological concomitance can be effectively utilized in educational development and on how they can be so utilized; establishment of comprehensive fellowship and staff exchange programs to enable each country to build a sufficient infrastructure to bear the strain of rapid and massive educational growth; and acceleration and diversification of secondary school curriculum development— HUBERT M. DYASI, *Executive Director, SEPA, P. O. Box M. 188, Accra, Ghana.*

Institute for the Promotion of Teaching of Science and Technology (IPST)

During the two-year preparatory phase (1971-72) the Institute for the Promotion of Teaching of Science and Technology (IPST) was established through cooperative action of the Royal Thai Government, the United Nations Development Program (UNDP) and its executing agency, and the United Nations Educational, Scientific, and Cultural Organization (UNESCO). At the beginning of 1972 the Institute was granted the official status of a semi-autonomous body within the Ministry of Education. It is administered by a Governing Board which is chaired by the Under Secretary of State for Education and its membership is made up of the Directors General of those departments of the Ministry with colleges and schools under their responsibility, the Secretary General of the National Education Committee, the Rector of Chulalongkorn University, the President of the College of Education, the Secretary General of the National Research Council and a professor from the Department of Liberal Arts, Thammasat University. The Director of the Institute, Sanan Sumitra also acts as Secretary to the Board.

The objectives of the Institute are to promote the development of modern science and mathematics curricula, and the teaching practices congruent with modern approaches to teaching and learning science and mathematics, for the schools of Thailand.

Curriculum development in the Institute is carried out by various "design teams" working in close cooperation with one another. There are eight design teams and their interrelationship is shown in the diagram below.



The membership of each design team consists of a representative cross section of teachers, supervisors, College of Education instructors, and university lecturers; and, in addition to a full complement of competent nationals, most teams are assisted by a UNESCO advisor.

[1] Funds from Education Development Center.
[2] Funds from Carnegie Corporation of New York.

The initial decisions concerning the overall organization and philosophies of the new curricula were made after intensive studies of materials that have already been produced in other countries. The curricula, however, have not followed any particular curriculum from another country but writers have drawn from most in attempting to develop Thai-oriented modern science and mathematics programs for the lower and upper secondary schools. The students' books, teachers' guides, and supplementary materials are written in the national language. Some of the major decisions made by the "subject teams" are listed below.

General Science. Use a unit approach similar to the existing syllabus but different in its effort to draw from all sciences and integrate science process skills with the major concepts of science. Design science equipment and experiences that can literally be performed on the small writing tablet attached to the school chairs.

Biology. Adopt an activities-centered approach. Emphasize the biology of Thailand. Use data collected in Thailand and focus attention on developing instruction that will get the student to examine the biology of his immediate environment.

Chemistry. Integrate text and laboratory manual in an effort to encourage teachers to teach chemistry as a learner-centered inquiry involving both theory and practice. Develop experiments and an inexpensive kit that can contain most of the equipment needed to perform the experiments. Introduce a study of Thai chemical industries and chemical problems that are relevant to the Thai society.

Physics. Present physics as a single unified course containing mechanics, heat, light and sound, electricity and magnetism, and laboratory experiments. Develop inexpensive equipment that can be manufactured locally.

Mathematics. Design a "modern maths" approach to mathematics suitable for Thailand. Introduce "modern maths" simultaneously at four different levels: grade 1, grade 5, grade 8, and grade 11.

The curricula for chemistry, physics and biology for the upper secondary schools (grades 11-12) were introduced simultaneously into ten trial schools in May 1973. Teachers from the trial schools have worked very closely with the design teams during all of the production phases. Many of these teachers have spent every school vacation of the last two years at the Institute studying the new materials. The trial program for general science (grades 8-10) will begin in 1974.

A massive inservice education program that will provide several weeks of intensive training will precede full-scale implementation. Full-scale national implementation is scheduled to begin in 1976 at which time grade 8 general science and grade 11 biology, chemistry, and physics will be introduced. Implementation of mathematics curricula will follow sequentially in 1977.

This study has been made possible by the UNESCO/UNDP local fellowship program.—Sanan Sumitra, *Director, IPST, Sukhumvit Road, Bangkok, Thailand.*

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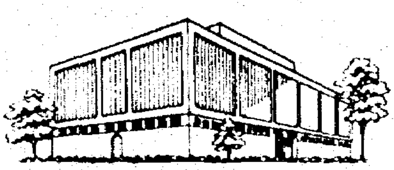
October 1973



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Australian Science Education Project (ASEP)

ASEP is already well known to many science educators throughout the world as information about the project and its products has been widely disseminated. Australian science eduators have talked about ASEP in many countries and the project has had a steady stream of visitors from overseas and from within Australia. Within Australia it has proved to be a focal point for education in general and for science education in particular. Following many requests, arising from interest shown in the project, inspection sets of project trial materials have been sent to over 100 centers in Australia and about 50 centers in the world.

ASEP's task has been the development of materials for use in science teaching in grades 7 to 10 in Australian schools. A modular approach has been used and 40 classroom units are being developed, each designed to take about 15-20 hours of class time. An inquiry approach is used and students work at their own rates, choosing among options offered. A special feature of the materials is their presentation at three Piagetian developmental levels—concrete, transitional, and formal.

The materials are in the form of printed books supplemented by charts, transparencies, 8 mm and 16 mm films. The main printed book for each unit is the student book, which has a corresponding teacher edition.

Many units have student record books for notes, diagrams and answers to questions. Diagnostic tests are included in most units.

The ASEP materials will be published and distributed within Australia by The Stores Branch, Education Department of Victoria, Melbourne, from where all information on costs and availability can be obtained. Keen interest in the publication of overseas editions has been shown by publishers in the United Kingdom, Canada, and the United States. It is expected that the first Australian published materials will become available early in 1974 and the first printing should be complete by the end of 1974.

All ASEP materials were given rigorous classroom trial and evaluation prior to preparation for publication. First trials were conducted in schools close to project headquarters, with competent teacher volunteers, who visited the project for discussions with unit developers and who, in turn, were visited in their classrooms. Second trials were on a national basis, each unit being tried in 26 classrooms throughout Australia and New Zealand. The national trials, which involved over 500 teachers, served a two-fold purpose in that, as well as providing evaluation feedback to the project, they were used as the beginning of teacher education in the use of the materials. By recycling the trial version materials and by using teachers who conducted earlier trials as team leaders for later trials, an effective teacher education program was initiated.

ASEP has been an experiment in Australian education as it is the first large curriculum project of its kind. Fortunately, the experiment has been successful and it is expected that funds will become available for further similar projects in other subject areas. ASEP's work is scheduled to finish in March 1974, but its impact on Australian education will be felt for many years to come.—L. G. DALE, *Deputy Director, ASEP, 11 Glenbervie Road, Toorak, Victoria, Australia 3142.*

United Nations Environmental Program

An intriguing environmental education project has been developed that provides for nonformal community enlightenment, as well as classroom instruction in an atmosphere warmed by greater regard for the educator.

Seventeen teachers—especially of science and social studies—selected for special qualifications, including camera skill, will be conducted on a private diplomatic mission to East Africa, following a send-off at the UN Plaza, December 22. They will report to the United Nations Environmental Secretariat in Nairobi, confer with world leaders, engage in cultural exchanges and intensively field-study ecological problems of concern to Africans and Americans. To help make these vivid to students and community groups, the educators will be given special instruction in candid and wildlife photography and recording, and taught how to produce sound-slide documentaries to quality standards.

While in Africa, the group will select a natural resource conservation project through which Americans may express their environmental concern, in cooperation with Africans. Thus, the "Cameraides" will be able to offer students and adult audiences concrete opportunities for involvement in protecting the ecosphere.

As educators voluntarily engaged on behalf of the UN and world understanding, Cameraides will receive unusual attention from the mass media. To make the most of this in furthering their professional aspirations, they will be given public relations counsel for a year following return.

The project is sponsored by Friends of Africa in America, 330 South Broadway, Tarrytown, New York 10591.

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