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RADIO SCIENCE PILOT PROJECT IN PAPUA NEW GUINEA

DIRECTOR'S REPORT MAY 1986 TO AUGUST 1987

DIRECTOR'S CLOSING REPORT

PERIOD 1: MAY TO DECEMBER 1986

SUMMARY:

The project was successfully instituted within the National Education Department of Papua New Guinea. Final negotiations were conducted by the Project Director with a variety of interested Government Departments and officials. The unique nature of the Memorandum of Agreement, being an instrument of agreement between a private US contractor and a Department of State of PNG made the negotiations special, complex and time-consuming. The American Embassy in Port Moresby provided important support during the difficulties of these negotiations.

The project office was established within the Curriculum Unit of the NDOE, an unused staff room being made available, with a minimum of office furniture. The office was furnished and equipped. Vehicles were purchased, one station wagon and one twin-cab utility. Electronic typing and photocopying facilities were installed.

A project staff was recruited. The backbone of the staff was to be three professional assistants, responsible respectively for science education, school liaison and scriptwriting. A secretarial assistant was recruited.

Actors and musicians were auditioned over a period of several weeks.

A curriculum advisory group was established from within the Curriculum Unit.

A task-based programme of work was developed for the project, implemented by task memos to the professional staff.

A scheme of work was developed for the production of six lessons for grade four, transmission to begin in February 1987. The science curriculum for grade 4 was adapted to include elements from the PNG community school curricula for community life, health and agriculture. The intellectual focus of this science curriculum was the teaching of science concepts and facts through appropriate skills, working towards an appreciation of the world around from the initial starting point of "Ourselves". Specimen learning objectives were developed. This work was completed and approved by the Curriculum Unit Advisory Panel during September.

After the site visit of J Friend and T Tilson during October, this scheme of work was abandoned, and Friend Dialogues was made responsible for a new Instructional Design, to be ready by December. The negotiated broadcasting arrangements for February 1987 were shelved. The agreed half-hour formats were abandoned in favour of a more traditional, twenty-minute format plus the usual teacher-directed follow-up activities. The science educator, DEB Chayton left the project in November. There would be no science educator on the project for the next six months. Project Director Kerrison wrote a report via EDC to AID, critical of the disorientation of the project planning, and of the poor prospects of immediate project activity without a qualified, competent science educator on the project.

Two pilot scripts on measurement developed by Friend Dialogues were trialled at Sogeri Community School during October, and proved a useful model of an IRI cycle. The trial produced mixed results.

The Director was invited to give two instructional presentations to a UNDP Regional Broadcasting Training Course held at the Training School of NBC, and organised by AIRD Kuala Lumpur. The presentations were on Scriptwriting for Radio, and The Art of Interviewing.

A baseline test was assembled from test items supplied by Friend Dialogues, to be administered as soon as practicable. This test was cleaned up and pre-tested during November and December, using out-of-school children in Gaire village, thanks to arrangements made by the project professional assistant from Gaire, K Maleva. Dr Lance Hill from the University of PNG agreed to act as general project science advisor at this time.

During the Christmas vacation period, Project Director Kerrison made two trips from the UK to the USA, holding discussions and work-sessions at EDC, Friend Dialogues and USAID Washington. Communications systems and project plans for 1987 were agreed. D Kerrison requested as a matter of the utmost urgency that a temporary science educator be sent out immediately to PNG if a permanent appointment could not be made. This was agreed.

PERIOD 2: FEBRUARY TO AUGUST 1987

The baseline test was formatted, printed, and administered to around 700 children from grades 3 and 4 in Central Province classrooms. The test was scored, and the data plus sample scripts were sent to Friend Dialogues for analysis.

Dr Charles Currin visited the project as a consultant during February to advise on project networking, and S Kozlow from Friend Dialogues visited the project to deliver the Instructional Design for grade 4, and to discuss the summative evaluation plan with interested parties to the Agreement.

Currin's visit was useful, in that the Project Director was able to prepare and submit comprehensive project documentation for the newly-assembled project advisory committee under the chairmanship of FAS/GES Penias and receive committee approval for developments and plans.

Kozlow reported to several small advisory groups and explained the skeleton instructional design from Friend Dialogues and how it might operate, once science content was included. The coded format of the instructional design was explained.

As the project was sorely short of scriptwriting and production practice, Kerrison drew up a set of intermediate script outlines based on the skeleton design, and the first four lessons were planned, discussed by script conferencing, and written, using a variety of group and individual writing strategies. These first four programmes were recorded and trialled in several classrooms throughout PNG, the entire exercise taking around six weeks.

The Director made a country visit to sites of primary science expertise in PNG, notably in the Teachers' Colleges in East New Britain, Madang and Lae, visited several community schools, and discussed the project's broadcasting plans with the managers of three provincial broadcasting stations, in Rabaul, Wewak and Goroka.

In April, Dr Melvin Webb came to join the project team as temporary science educator, and with the Director attended the NDDE community schools science workshop in Madang to obtain a definitive statement on the science curriculum to be followed by the Project in Papua New Guinea. A decision was taken by all interested parties that the RSP would follow the official PNG science syllabus for grade 4 and future grades as outlined in the official curriculum guides, and that the specified science activities would also be followed as closely as possible.

The Director visited and addressed the Committee of Principals of Teacher Training institutions held at Lae. He briefed them on the teacher training aspects of the RSP, and undertook personally to conduct in-service and pre-service training workshops for those teachers who would be affected by a possible national implementation of the Project.

Responsibility for a new science instructional design was switched from Friend Dialogues to the project office in PNG, to Dr Webb in particular, and to Mr Frank Watson, who was appointed by EDC as science educator to the project. The topic syllabus would be used as the backbone of project activity. Kerrison and Webb took a decision to start the production cycle for grade 4, producing one lesson a week, and beginning with lesson number 9 for the school year, which implied beginning the production activity with the Fourth Grade Ecology Unit. One lesson a week would be planned, scripted, recorded, distributed, observed and tested.

This activity was assisted by the arrival in PNG of messrs. Tilson and Watson in May/June.

The Director took R and R leave at the end of June, and paid working visits to centres of primary science advice and activities in the UK during July, including the Department of Educational Technology, at the Open University, and the Centre for Research in Primary School Science and Technology, at Liverpool University. He held discussions in particular with Professor Wynne Harlen. At the time of his departure, programmes 9-13 had been completed and recorded. Programmes 14-17 had been planned.

On his return to PNG in July, programmes 14 and 15 had been recorded, 16 and 17 were in script. The Director completed a draft, approval/veto and tagging system of lesson production, to increase the production rate from less than one programme every one and a half weeks, to around two and a half programmes a week, and also to prevent an increasing number of science and factual errors, and examples of inappropriate English, getting into the lessons.

This plan was described to EDC senior staff by letter on July 20th and EDC corporate support for the Director's new system was requested. The Director intended to put this quality-control plan into operation on August 3rd, accompanying a switch in emphasis from rote learning of definitions and names to a concentration on problem-solving and active science, based on the practice of appropriate observational and communication skills.

These suggestions, however, were not approved, and agreement was reached that Kerrison should leave the Project at the end of August.

Programmes 16 and 17 were completed and distributed in the regular way, under the supervision of the Radio Producer, and Dr Webb.

Dr Webb left the project on August 13th, and the Director took over supervision of the production cycle, starting with lessons 18 and 19.

Project Director Kerrison left the project on August 31.

WHAT KIND OF SCIENCE EDUCATION?

The project has never had a clear idea of the science it should teach. Dr Chayton's initial design was based on a requirement from the NOOE for syllabus integration, and was structured on a child's exploration of himself and his perception of his environment.

The next, skeleton design from Friend Dialogues contained no science at all.

The current, topic curriculum of the NOOE depends to some extent on science materials or kits. It imitates secondary science.

At the time of writing, the new instructional design for Grade 4 is in preparation by Dr Webb, and plans are being made for a workshop in PNG to advise on the instructional design for Grade 5.

The project plans call for the broadcasting of two lessons per week for Grade 4 beginning in February 1988.

RECOMMENDATIONS:

The RSP should continue to follow the topic outline of the PNG syllabus for the community schools, and the official learning objectives and suggested activities. The children should, however, do science in every lesson, not merely listen to presenters talking about science.

There is now sufficient evidence that teachers do not naturally respond well to our suggested post-broadcast activities. They are used to merely summarising the main points from a school broadcast in this period, and they naturally tend to continue this practice after the RSP lessons. The project should revert to the original, negotiated scheme, which called for half-hour lessons mixing direct instruction with activities led by radio explainers.

If we are to continue with the present format, with ten-minute post-broadcast activities, they will have to be far more practical than the kinds of recitation and definition we have too often required in the past. The RSP will largely be judged on how successfully we are able to promote active science.

Every RSP lesson should contain a science activity.

The key practice should be that of observation: the children should be encouraged to observe, to compare, to discriminate, to categorise, to guess why, what would happen if..? to wonder aloud, to discuss, to explore, and so far as possible the lessons should be based on problem-solving techniques. Looking, listening, and wondering why, should be the keys, and solving problems should be a major component.

Lessons should include devices like: a problem of the week; a question of the week; the RSP book should have a problem corner on each page; classrooms should be encouraged to develop problem tables/displays as well as materials tables/displays.

Recent studies of the science cognition of young children should be used as a starting point for lesson planning, and it should be remembered that children are extraordinarily resistant to direct teaching of science concepts which are in conflict with their daily experiences and their preconceptions.

The important distinction between what Sheila Jelly calls productive and non-productive questions in the classroom should be kept in mind. The notion of productive questions, which is similar to the emphasis on open questions on standard training courses for radio interviewers and producers, is highly pertinent to any audio medium which requires simulated inter-activity, and aims to teach science to young children.

The importance of peer-group discussion in the primary science classroom should also be one of the pedagogical starting points for RSP lesson plans: recordings of children discussing, puzzling out, wondering aloud, should be edited into the recorded lessons, with full transcripts being available of the appropriate inserts. It is a pity that after all this time, no attempt has yet been made to include segments of interview or vox pop in our lessons, despite assurances that this might be done, and inordinate discussions of why this ought to be done.

In order to ensure that the science fact in our lessons is accurate, science lessons plans must be approved by a project officer or monitor with good experience of PNG classroom science teaching, together with a regular, sign-off procedure.

There have been an embarrassing number of errors and omissions in some recent lessons, and these errors have been reinforced by inexperienced scriptwriters, and unchecked recordings. The consensus, "committee" system, of producing recorded lessons has not produced accurate lessons.

The science has sometimes been poor, the scripts stereotyped and dull, the recordings frequently of marginal quality, and of wrong duration. Some of our recent lessons have actually reinforced untruths.

In order to improve on this, the following checking and approval system was to have been implemented from August 3rd, and something like it should be put in place as soon as possible::

Approval/veto system: (This approval/veto system, accompanied by suitable tagging and progress-chasing, is proposed in order to get more accountability into the Project, to eliminate errors in lesson plans and scripts, and increase productivity):

a. instructional design- must be approved by science sub-committee.

b. lesson plans- must be approved by an appointed science monitor (in lieu of Director) with good experience of primary science teaching in PNG, to check science accuracy and appropriateness, and to check the clarity of the task for national scriptwriters who are not themselves qualified in primary science pedagogy.

c. scripts- must be approved for correct PNG English language by an experienced PNG ESL specialist. The language must be the standard PNG English approved by the NDOEN, and it must be suitable for the grade level of the children: recent RSP infelicities have included "Good on you", and "reafforestation serves to.." Both are inappropriate in terms of idiom, register and cultural origin. There has also been some attempt to get the children to recite Latin species names. That kind of teaching is simply unacceptable in modern primary education. Phrases like "chalk board" are still creeping into our notes to teachers, as are highly prescriptive instructions such as "after the broadcast teachers will do such and such"; this kind of thing sounds like plain bad manners.

d recordings- must be checked for accuracy, signal quality, duration, attractiveness, PNG idiom, by Supervisor School Broadcasting or qualified PNG radio producer.

PRACTICAL ACTIVITIES

At the time of writing there is no item of science equipment or material in the production office of the RSP. The Director has negotiated the availability of workshop/lab facilities and these should be used, or a suitable resource area set aside in the main production office, to try out science activities, using substitute materials, based on the best advice of PNG science educators such as Sorenson and Bussie. Activities must be trialled and demonstrated to scriptwriters to ensure the feasibility and accuracy of the instruction to children, and the relevance of the advice given to teachers.

Our recent activity with two kinds of grasses was not properly researched or trialled; consequently the children were giving correct responses in the classroom but were being "corrected" to an incorrect answer by our radio lesson. Confusion was the result. There is plenty of tropical, ecological expertise around the Project, and RSP science staff must learn to make use of it.

WHAT KINDS OF RADIO PROGRAMMES ?

The RSP programmes have to be at least as well-written, produced and edited as those of the NDQE School Broadcasting Unit, and to be as attractive as the best of those currently being transmitted by NBC. Some of the latter are of very high quality.

It is important to remind all concerned with the RSP that faking, or staging interviews, vox pops, quiz shows, news bulletins with actors is not only poor pedagogy, but is hardly ethical. Most broadcasting organisations have very strict rules about it, and some countries make it illegal. Interviews, quizzes, sound montages, newscasts must be authentic. They are all simple to arrange, record and edit. Children talking about science is an important resource for modern primary teachers.

In science programmes especially, it is vital that natural history sound effects are not faked. If we say "this is the sound of a python", it must be that, and nothing else. If we say "this is a tern", it must be just that. Standard professional broadcasting practices for documentary programmes must be adhered to. Clear distinctions must be made between the factual and the fictional. This is elementary school broadcasting procedure, but seems to need emphasis .

- The old-fashioned radio teacher format is unlikely to be successful for primary science. Most developing countries have used the format at various times in their early educational broadcasting history, but most attention will in future be on open broadcasting formats of the kinds successfully used in non-formal educational broadcasting. People's feedback systems, and the use of the audience as formative commentators and programme contributors seems the most promising way forward for the formal education sector as well. The radio teacher can have a limited function in pedagogical situations where rote learning is still thought to be appropriate, but PNG primary specialists are trying to escape the confines of this kind of learning.

All of the resources of development radio broadcasting as typically practised by educators in the Asia-Pacific region should be exploited for the RSP. Science from PNG, and in PNG should be a regular feature. A library of recorded items and factual stories from around PNG must be started now. The power of radio as an imaginative tool should be fully realised, by an exploitation of the variety of possible formats and modern production techniques available to an imaginative producer.

STAFF CAPABILITIES:

From September 1 the project will be without instructional experience in ESL or non-American English language norms.

It will be without serious scriptwriting or radio production expertise.

There is little expert primary science teaching ability on the project, such as might be provided by a young, enthusiastic primary science practitioner.

There is no experience of Third World (especially tropical environmental) science education issues. Hence some of our recent mistakes.

STAFF RECOMMENDATIONS:

A monitoring/approval system as above should be established. The project technician should be sent to one of the regional broadcasting training organisations (NBC/PACBROAD/AIBD/SPC) to be trained in educational radio scriptwriting and production.

A day-release system should be instituted on a weekly basis so staff may learn: radio scriptwriting, testing and evaluation, writing for media, and Primary Teaching Methods. It does not seem likely that these can be taught from within the RSP expatriate staff after 1 September.

Existing contacts with local and regional training institutions should be maintained and built upon.

Existing plans for teacher training through video should be carried through. A new scriptwriter and video producer should be identified as soon as possible to take over this work.

EQUIPMENT:

The project has a fine audio studio at its disposal, and there are plenty of alternative resources available for situations when spare capacity is required. We have established excellent relations with the managers of different studios in PNG, and these should be used for reasons of dialectical, cultural and political diversity, as well as for convenience. There are trained technicians and experienced actors working regularly all over PNG, and they could prove invaluable to the RSP.

The project has a separate tape machine for office editing, and a high quality, portable machine for home use. The computers, typing and copying equipment are giving excellent service.

The two RSP vehicles are giving reliable service, although the accident record is not good. There have been six minor accidents to one of the vehicles during the year, which have required the vehicle to be off the road. It is likely that named driver restrictions will be imposed by the insurers in the future, and that there will be a hefty rise in premiums.

STRENGTHS:

The National staff show an increasing ability to work well under pressure. Given clear guidance on the classroom principles and practices to be followed in a particular lesson, they are able to write appropriate dialogue and provide good audio instruction. If the lesson plans are clearly explained, together with the basic science skills and concepts involved, the scriptwriters write with increasing confidence.

This is helped by their complete lack of nervousness when working with high-tech. Almost the entire staff makes use of the word processor as a matter of course, and the two secretaries are highly skilled and extremely hard-working.

The staff have indicated a recent desire to be more firmly established within the NDOE establishment, and a consultative working party should be established to deal with the issue.

The network of professional colleagues built up during our first year in PNG is proving invaluable. There is a wealth of primary science expertise in the colleges, and a large number of expert advisers on particular branches of science living and working in the country. It remains vital, however, that the opinions offered by these advisers should not be ignored once solicited: the faux pas we made in our "rainforest" scripts have made us seem unreceptive to advice and correction. The experts here really are expert. The specialists recommended to us by Dr Hill should be approached and consulted, and the full resources of UPNG and its library should be exploited.

The personal contacts established and maintained with NEC producers and managers have proved a major asset to the RSP, and these should at all costs be maintained. RSP staff should contribute to the network output and help their colleagues within NEC.

The teachers and the children in the schools seem to like the lessons, and the co-operation and relatively good level of training of PNG teachers augur well for the future.

DAVID KERRISON
DIRECTOR

Port Moresby
22nd August 1987