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# LEARNTECH PROJECT, YEAR 4

## ANNUAL REPORT FOR 1993-1994

October 1993 - September 1994

The LearnTech Project  
Education Development Center  
1250 24th Street, N.W.: Suite 300  
Washington, D.C. 20037

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**EXECUTIVE SUMMARY**

The official statement of the LearnTech Project (Learning Technologies for Basic Education Project), as established by the A.I.D. Bureau for Research and Development, Office of Education, is "to promote the use of learning technologies to enhance basic education in the developing world." The project document gives special emphasis to extending the impact of interactive radio instruction (IRI), a highly cost-effective use of technology that A.I.D. has invested in since 1973. The project also supports the use of other learning technologies, from programmed text materials to video and computers. LearnTech will examine how technologies can best be used to increase access to schools, especially for girls. Finally, LearnTech seeks to internationalize financial support for learning technology projects. LearnTech is a four-year project that ends in September, 1994.

In practice, the activities have been organized around two strands of activity:

taking the methodology into new areas that countries demand, often entailing development and demonstration activities; and

institutionalizing the methodology so that others have the desire and wherewithal to use interactive instruction.

This annual report describes the measures that we have taken to institutionalize interactive instruction, the new models and adaptations that we have designed, the activities that have taken place in each pilot project site, and a complete list of consultant and staff travel and tasks during the year.

## CROSS-CUTTING INSTITUTIONALIZATION ACTIVITIES

In this section, we review the steps we took and materials we created during this year to develop the general awareness and acceptance of interactive instruction. We describe the training programs that we conducted, the publications we produced and disseminated, and the steps we took to develop institutional ties are seemed likely to sustain interactive instruction in the future.

### TRAINING PROGRAMS

#### The LearnTech Course at George Mason University:

LearnTech has made an agreement with George Mason University's Graduate School of Education to run a course called *Fundamentals of Interactive Media Instruction*. It is a graduate level, 4 week program that provides 3 Graduate Credits, and was attended by participants from South Africa, Indonesia, Bangladesh, Papua New Guinea, and the United States. The course was taught by Esta de Fossard, and built on the earlier successes of a similar program at Ohio University.

The course provided practitioners of instructional media from developing countries (as well as from the USA) with an overview of the theoretical and practical skills of the fundamentals of designing and writing for educational electronic media, with an emphasis on radio. It introduced the skills needed by practitioners who must carry out the tasks of designing, writing and evaluating programs. It gave an overview of fundamental instruction in the major components of interactive media instruction:

- audience research;
- medium selection;
- curriculum planning;
- format choice and design;
- using effective pedagogical principles (interactive learning, culturally appropriate activities, distributed learning, opportunities for critical and creative thinking);
- script writing (including story and character development);
- choosing and using interactive techniques;
- formative evaluation (observation and testing, incorporating formative evaluation results in program preparation, adjusting future programs to compensate for past weaknesses);
- selecting and preparing ancillary materials (teacher's notes, student work sheets and booklets).

**Participants learned:**

- to understand the advantages and constraints of media for education; to judge when and why the use of media is appropriate; to determine which media to use, based on audience suitability, resources available, and training required.
- to create a design document as part of a design team.
- to conduct audience research in order to specify:
- to determine the scope and sequence of the curriculum/content which will be delivered through the chosen medium or media, and to specify precisely the purpose and objectives of the series, and of each program within the series.
- to design a format which will be attractive to the chosen audience; to blend the format and the content in an appropriate written script that will promote effective learning.
- to write in several interactive instructional styles, such as drill, participatory game, story, individual drama, and serial drama.
- to design monitoring and formative evaluation strategies and instruments, and to apply the results of formative evaluation to script revisions.
- to determine and design training for teachers and aides who will be using the media programs.

**Regional workshop in Costa Rica**

The 2-week regional workshop was a Latin affair. It was attended by practitioners, and was set up so that Latin American IRI staff could examine the variety of approaches to IRI that had developed over the years. It was managed by Carleton Corrales, AED's Honduran Deputy Director of LearnTech, and German Vargas, EDC's Costa Rican Project Director. Radio Nederland in Costa Rica provided conference services.

The workshop was set up around three main case studies:

1. the Costa Rican Environmental education as a case study in designing a new format;
2. the Honduras adult basic education as a case study in issues in delivery and management of IRI;
3. the Bolivia health education as a case study in issues in research and evaluation.

Other models and adaptations, such as the early childhood development work and the RADECO out-of-school model, were looked at as studies of innovation in IRI.

The workshop was attended by participants from Dominican Republic (2), Honduras (6), Costa Rica (4), Bolivia (3), El Salvador (2), Venezuela (1), Cape Verde (1), Nicaragua (1).

Presenters included Lic. German Vargas, EDC/Costa Rica, Lic Marizela Turcios, AED/Honduras, Lic. Emilio Oroz Mendez, PER/Bolivia, Lic. Altigracia Diaz de De Jesus, RADECO/Dominican Republic, Dr. Jose Carleton Corrales, AED/USA, Dr. Jose Perez, RNTC/Costa Rica, Ann Fitzgerald, EDC/Bolivia and Mr. James Hoxeng, AID/W.

### **Regional conference in Philippines**

LearnTech participated in the Fourth SEAMEO INNOTECH Conference on "Technologies for Learning for All: Today and Tomorrow" held in Manila during February 1994. Steve Anzalone, Carleton Corrales, Andrea Bosch, and Chawalert Lertchalalorn (Thailand) made presentations on multi-channel learning at one of the principal plenary sessions at this meeting. The meeting was attended by an international group of over 500 participants. LearnTech also presented a concurrent session on interactive radio instruction. This was made by Carleton Corrales, Andrea Bosch, Gordon Naidoo (South Africa), and German Vargas (Costa Rica). During the course of the conference, Steve Anzalone was invited by INNOTECH to represent the United States in a discussion on education with Philippines President Fidel V. Ramos. Videos produced for these two presentations in Manila have since been translated into French and Spanish and have found wide use in LearnTech presentations and meetings in other settings.

LearnTech assisted the Clearinghouse on Development Communication in putting together an issue of the *Development Communication Report* drawn from the Conference proceedings.

Discussions taking place during the Manila Conference led to an invitation to IMAGE from the Undersecretary of the Philippines Department of Education, Culture, and Sports and the Representative of UNICEF in Manila to collaborate on setting an agenda for developing multi-channel learning activities in the Philippines. This will permit a continuation of LearnTech's relationship with INNOTECH. Discussions will take place in February 1995. It is likely that initial activity will focus on multi-channel learning approaches to multigrade teaching in the Philippines. It is expected that materials developed through the LearnTech activity in Costa Rica could be adapted for use in the Philippines.

### **Invitation for Presentation on Multi-Channel Learning at the Birmingham Conference**

In May 1994, an invitation was received from the Program Committee for the 1995 World Conference on Distance Education being organized by the British Open University in Birmingham, England, in June 1995. Steve Anzalone was asked to chair this session, which is to feature perspectives from developing countries. It is expected that the session will be attended by between 1,000 and 2,000 people. It is believed that this will be the largest audience for a live presentation on activities supported by LearnTech or its predecessor projects.

### **PARI in Argentina.**

PER was invited to Argentina to present their activities to the 1st International Congress on use of Media in the Classrooms, sponsored by the Senate of Argentina.

### **New Zealand course**

Klaus Galda presented a workshop at the ICDE conference held in New Zealand in April, 1994. Participants from 10 South Pacific nations received an overview of interactive radio instruction.

The participants reviewed what IRI is, what "interactive" means in this context, what has characterized its form and purpose over the years, and how it changes as it is applied to different purposes and audiences. Participants looked at videotape of the application of IRI in schools in Nicaragua, Kenya, South Africa, Papua New Guinea and the Dominican Republic.

The participants analyzed sample scripts in small groups, and were introduced to the issues involved in planning a new series of programs, including issues of pedagogy and structure, such as developing a master plan, taking account of other resources in and outside of the classroom, organizing objectives, designing distributed learning strategies, and outlining a program; managing the process, including matching resources to desired outcomes in a realistic manner, assessing the time needed; what to evaluate and when, how to use limited resources, what kind of expertise is required.

Participants reviewed how others have planned series, based on materials from other countries, and then worked in small groups to design a short series of programs around a topic of their own choosing. The next day, participants presented the outlines of the series that were developed the previous day. Participants selected one program from their series, and will develop segments for the program in small groups. Participants then critiqued the approach for its practicality to their settings, discussed the special needs of dispersed island nations, and conferred with Dr GalJa who has firsthand experience in designing IRI programs in Thailand, Costa Rica, Papua New Guinea, Nicaragua, Bangladesh, Cape Verde and elsewhere.

### **Bolivia training program**

German Vargas, EDC's director of the Costa Rica Environmental Education Project, conducted a workshop at the PARI project in Bolivia in July, 1994. He worked with the PARI team to: explore new and creative ways to improve the development of the lessons

through analyzing the radio aspect of the programs; the dramatic effect and affect of the lessons, and development thereof; focusing on the needs of the audience; stimulating behavior change through our lessons; and improving studio techniques and practices. Vargas also produced a manual of methods for producing radio dramas using interactive radio instruction.

### **Bangladesh study tour to southern Africa**

Two Bangladeshi non-formal educators participated in a 2 week study tour studying interactive radio projects in South Africa and in Lesotho. The two study tour participants were Ms. Saeeda Anis, Regional Manager; and Ms. Ammereen Khalid, Materials Developer, Non-formal Primary Education. The purpose of their trip was for them to be able to get a clear picture of the challenges involved in implementing a primary radio education project. To accomplish this they asked to hold a series of meetings with radio education professionals and visit classrooms in South Africa and Lesotho.

The net result of these meetings was a strong expression of an intention to go ahead with a radio education effort in Bangladesh, but with much greater awareness than before the tour of the particular challenges related to program production and demand for quality control related to going to scale.

### **English By Radio presentation in Bloemfontein**

The paper, entitled *New Dimensions in Multi-Channel Audio-Assisted English Language Instruction* was delivered by Lebo Ramafoko at the South Africa Linguistics Association conference. There was particular interest expressed in clarifying OLSET's use of the term "multi-channel" with respect to EIA as opposed to multi-media. LearnTech Advisor, Stuart Leigh, elaborated on his position that both audio cassette and radio are desirable delivery modes and hence justify our use of the term.

## **PUBLICATIONS**

### **Case studies**

LearnTech is producing a series of case studies that illustrate the two lines of development that have characterized interactive instruction: how it has been adopted and institutionalized, and how it has adapted to new circumstances. By the end of this period, three studies had been completed:

*Interactive Radio Instruction: Broadening the Definition*, by Jeanne Moulton

*Institutionalizing Radio Science in Papua New Guinea: A Response to teacher Demand for Interactive Radio Instruction*, by Micael Olsson

*Computer-Assisted Instruction in Grenada: High-Tech Success and Sustainability Against the Odds*, by Andrea Bosch

A further seven studies are under development, and will be completed during the next six months.

### **Red book and blue book**

Many people have felt the absence of an account in simple language of what interactive radio is, how it has helped education systems to improve their performance, and what resources a system needs to be able to institute IRI. So LearnTech produced the "big red book" ( a reference to the color of its cover, but also reminder not to take ourselves too seriously), which did all of these things, and added a planning section for anyone who wanted to adopt IRI, and samples of scripts that illustrate how the programs work in terms of radio writing and instruction.

The red book was well-received, and we did a Spanish-language version, this time with a blue cover.

### **Textbook on writing for radio**

Ultimately the success of any interactive instruction lies in the soundness of the instructional design decisions, the quality of the writing, and the production quality. Of the three, excellence in writing is hardest to teach and hardest to achieve.

Esta de Fossard has taught many of the scriptwriters who now work in IRI projects, and has produced course materials for the GMU course and its predecessors at Ohio University. Before the project ended, we felt that it would be useful to capture what is virtually a unique capacity to train radio scriptwriters -- certainly no-one else has had quite the same breadth of involvement in so many activities, nor been quite so vocal about the quality of the actual scripts that have been written.

The result has been a remarkable textbook on writing for radio. It will serve both as a reference guide for practitioners and as a basic text for training new generations of writers.

### **MultiGrade Teaching Manual**

Learntech has developed classroom instructional methodologies and organizational strategies, linking these small one- or two-room schools to the community in the Costa Rica activity described later. But one of the reasons why multigrade classes have been such a widespread but ignored phenomenon for so many years is that most countries do not know of the special needs that they have, nor how many there are. So we have developed a rapid appraisal methodology to describe each of these.

The manual describes how to draw up national regional and local samples for survey purposes, and then describes a methodology that does not require a Ph.D. to implement. This methodology is mainly quantitative at the national and regional levels, allowing planners to gauge the national incidence of schools with multigrade classes, and then at the regional level to measure how these classes are provided with resources and the learning outcomes that are achieved as compared with single-grade classes in the same regions. Finally, the manual describes how to select a small sample of schools with multigrade classes and to conduct qualitative research into the processes and outcomes that operate inside the schools and classrooms.

In this way, the manual allows planners to gauge the incidence of multigrade classes in a nation or a region, and to understand much more clearly what needs to be done about them.

### **PIDI Manual**

A spiral bound Jugando en el Pidi caregiver's manual accompanies the 20 cassette programs. The manual offers caregivers explanations and instructions on the activities in the programs. Each chapter begins with a program outline of the developmental skills the children are practicing in each activity, and the professional skills the caregivers are learning. The manual offers caregivers guidance on questions they might ask the children concerning stories in the program, and reminds them to give the children positive reinforcement.

Caregivers are encouraged to replicate program activities, and they are provided with the words to the songs and how-to directions for games. The manual also includes ideas for other games, activities and craft projects not in the cassette programs. A blank section at the end of the manual allow caregivers to write down their own ideas.

Although the manual is very complete and includes information on many aspects of the program, it isn't intimidating. The wording is straight-forward and conversational, and pages aren't crowded with type. The artist who created posters for use in the pad also created the drawings for the caregiver's manual. The line drawings that dot the manual allow caregivers to understand the content visually, cue them for information presented in standard formats, and give the printed words a human dimension. Much like the cassette programs themselves, the caregiver's manual contains valuable learning tools presented in an entertaining, appealing way.

### **IMAGE/LearnTech/COL Publication**

An agreement was reached among LearnTech, Commonwealth of Learning, and IMAGE to collaborate and share costs for a publication on multi-channel learning. The publication, which is expected for Spring 1995, will be entitled *Multi-Channel Learning: Connecting All to Education*. The publication is expected to be an elaboration of the concept of multi-channel learning and a presentation of examples from developing countries. It will be distributed through LearnTech and COL dissemination channels.

### **DCR Issue on Multi-Channel Learning**

LearnTech assisted in production of an issue of the *Development Communication Report* that was published in December 1993 that contained articles about multi-channel learning and examples of applications. This included an update of latest interactive radio instruction applications

### **Videos**

Five videos were produced during the reporting period. The first was a video on multi-channel learning. Steve Anzalone wrote the script for the video, and it was produced from existing footage by Drew Tiene at Kent State University. There are versions in English, Spanish, and French.

Two teacher training videos, "The Art of Questioning" and "Reacting Techniques," were produced by SEAMEO INNOTECH. They are described later in this report.

A video was produced on the PIDs to accompany the manual, and a new 10-minute compilation of IRI experiences was assembled that included some of the new work in South Africa, Costa Rica and Bolivia.

A video on multigrade learning strategies is under development, in both English and Spanish.

## **STRENGTHENING INSTITUTIONAL TIES**

### **IMAGE**

AID has supported IRI for twenty years, and, quite reasonably, said that it would like this contract to demonstrate that other agencies also had sufficient faith in IRI to fund similar projects or activities. Consequently, the LearnTech contract calls for us to establish ties with other donor agencies to continue and to expand the IRI capacity developed through LearnTech and its predecessors. In some instances this would be achieved through joint activities with other agencies, such as the Cape Verde collaboration with UNESCO, the Dutch government and the UNDP. In others, it would be countries such as Venezuela or agencies such as BRAC in Bangladesh creating their own, unassisted IRI projects.

But there were also instances when LearnTech's skills would be needed, but where another bilateral agency could not put funds into an AID project to buy that assistance. So, in 1992, LearnTech established IMAGE, the International Multichannel Action Group for Education, led by LearnTech's Steve Anzalone and Reidar Roll of the International Council on Distance Education (ICDE). ICDE was an appropriate collaborator because it was an internationally recognized membership association operating in a relevant technical and professional area, had its headquarters in Oslo but with offices in UNESCO in Paris, and whose administrative functions were funded by the Norwegian Government and were thus immune from charges of having been unduly influenced by USAID.

During this year, IMAGE's activities became increasingly coherent and broad-based as we both defined what is meant by "multichannel learning" and gained international support for the ideas that it embodies. Two main activity areas, focused on what is called RAPID-Ed and on multichannel learning for women and girls, were chosen and developed.

### **Multi-Channel Learning**

LearnTech, as mentioned above, worked with other IMAGE partners to articulate the notion of multi-channel learning. The following definition has proved to be useful:

Multi-channel learning is a design and implementation strategy. It is not an explanation of how learning takes place or a prescription of what should be learned. Multi-channel learning aims at identifying the means to integrate and reinforce learning that takes place in educational programs in and out of school. It seeks to strengthen educational interventions, within the constraints of feasibility and cost-effectiveness, by combining a wider range of delivery options than is typically found in existing programs. Multi-channel learning seeks to more thoroughly engage students in the learning process. It seeks to take advantage of what is presently known about designing effective instruction, teaching students at a distance, developing media materials, and using community resources as part of instruction.

Multi-channel learning is founded on the conviction that people learn in various ways and through various means. These *paths to learning* can be described as learning channels. Unless there is substantial reinforcement of skills acquired and diversity in the learning channels used, the chances for skills to endure are not strong. This is especially significant in environments where opportunities for reinforcement through daily living may be quite limited.

Multi-channel learning approaches are built upon an examination of the various paths that connect or could connect the learner to sources of knowledge, skills, and information. Multi-channel learning proceeds from the premise that the chances for successful learning and transfer of what is learned to situations encountered in daily life are improved when education makes use of more than one learning channel and that learning channels are used in ways that reinforce one another. Learning channels include teachers or facilitator, other learners, family members, others in the community, social experiences, and educational materials of all kinds. Learning channels also include the various means of informal learning used to convey development-related messages, including posters, flyers, buttons, and media spots. Learning channels connect learners to knowledge, skills, and information found in the immediate learning environment or the community or delivered from a distance through various communication media.

Multi-channel learning seeks to build on and build out from educational programs and practices already in place. It promotes more effective or more accessible alternatives within established educational systems rather than as rivals to them.

The term learning channel should not be confused with the narrower concept of communication channel, even though the use of communications is often part of multi-channel learning. Similarly, the discussion of above should make it clear that multi-channel learning means something different than *multi-media*. Finally, multi-channel learning does not divide education into three "channels" (formal, nonformal, and informal). Rather multi-channel learning sees formal, nonformal, and informal education as modalities and seeks to make use of learning channels that often cut across the boundaries between these modalities.

## Rapid-Ed

The IMAGE Rapid Response Basic Education Program (Rapid-Ed) Working Group moved forward to the reporting period. An "S.O.S." was received from Haiti in April 1994. LearnTech, on behalf of IMAGE, convened a meeting in Washington during May to meet with the Director of the Haitian Foundation for Private Education. Agreement was reached to look for ways to support development of multi-channel learning/distance education approaches for civic education and teacher training. Following the resumption of commercial airline service to Haiti, a LearnTech team of Steve Anzalone and Betsy

Goldstein visited Haiti to move these discussions forward. These discussions helped to shape a USAID/Haiti buy-in to the ABEL 2 project to design and implement a pilot project using multi-channel learning /distance education to support civic education and teacher training.

Rapid-Ed was invited by UNESCO to send a consultant to assist in the emergency educational relief effort in Rwanda. Consultant Marc Sommers represented Rapid-Ed in this effort. He was supported by funds from LearnTech and the Norwegian Refugee Council. This on-the-ground experience was seen as being an important input in developing a long-term action plan for Rapid-Ed.

### **Formation of IMAGE Working Group on Multi-Channel learning for Women's and Girls**

Stephen Anzalone and Andrea Bosch prepared a concept paper to assist formation of an IMAGE Working Group on Multi-Channel Learning for Women Girls. The paper was reviewed by members of the Steering Committee and others interested in the topic.

In April 1994, the Working Group was formed. The activities of the Group will be guided by a panel of Principal Technical Advisers that include :

- Mr. Paud Murphy (World Bank)
- Ms. Eddah Gachukia (Forum for African Women Educationalists)
- Ms. Minda Sutaria (SEAMEO/INNOTECH, Philippines)
- Ms. Clotilde Fonseca (Omar Dengo Foundation, Costa Rica)
- Ms. Vibeke Jensen (UNESCO)

Andrea Bosch was invited to serve as Coordinator of the Working Group. During the reporting period discussions were held with the Forum for African Women Educationalists with respect to collaboration on activities. This led to a visit to Washington (in early October 1994) by FAWE consultant Dr. Sheila Wamahiu. During this time, she and Andrea participated in the World Bank's Economic Development Workshop on Training of Trainers Workshop on Girls' Education in Anglophone Africa. Discussions were also held with USAID WID Officer Rosalie Norem on areas of potential collaboration. Dr. Wamahiu's report for LearnTech will serve as the basis for future FAWE/IMAGE collaboration in Africa.

### **IMAGE Steering Committee Meeting**

The second meeting of the IMAGE Steering Committee was hosted by the International Council for Distance Education in Oslo during September 1994. Invitations were sent to donor agencies and international organizations to participate in a day of dialogue around multi-channel learning and IMAGE activities. Representatives from the following

development assistance agencies attended the meeting: USAID (Washington and South Africa), UNESCO (3), UNICEF (2), United Kingdom, Germany, Norway, Sweden, Finland, Denmark, and the Netherlands. Participants came from the following developing countries: South Africa, Tunisia, Philippines, Thailand, Brazil, Haiti, Zimbabwe, and India.

**Egypt distance education:**

Prior to the Philippines conference, Steve Anzalone was invited by UNESCO to serve as a resource person in a planning meeting for the Distance Education Initiative for the Nine High Population Countries (DE-9). Materials produced by LearnTech, the Radio Learning Project, and BRIDGES were part of the materials distributed by UNESCO at this meeting. Steve Anzalone was subsequently invited by UNESCO to assist in launching DE-9 activities in Egypt. This involvement has resulted in a request from USAID/Egypt for his participation on an ABEL team to examine possibilities for a distance education component for a project on education for women and girls to be supported by the Mission.

## **NEW APPLICATIONS**

### **Early Childhood Development in Bolivia**

*Jugando en el PIDI* is an interactive radio program designed for use with young children in child care centers serving children under the age of six. In Bolivia these are known as PIDI's (Programa Integrado por Desarrollo Infantil). The PIDI centers operate under ONAMFA (Organismo Nacional del Menor Mujer y Familia), a governmental organization which is sponsoring the development of the PIDI family day care homes in El Alto, Santa Cruz and Tarija, Bolivia. The interactive radio project was conceived of as a way to provide appropriate learning for both the children and the teachers and to foster the interaction between them.

A pilot program was begun in November 1993 and ended in April 1994, after which the program was adopted for funding by the Bolivian Government. During this time 20 radio programs were introduced, 1 per week, in 10 PIDI's in El Alto and 10 in Tarija. A formative and summative evaluation of the program was undertaken to provide on-going feedback to the development team which has led to the revision of the program itself and the support materials.

The radio program has been developed in full cooperation with the PIDI team. Thus it reflects the child development perspective of the PIDI project and the curriculum and activities developed within PIDI serve as the basis for the radio programs. Specifically this means that there is a focus on active learning, the use of the environment in the development of appropriate activities, the importance of parental and community involvement, and providing teacher training that recognizes and supports the interaction of the teacher with the children.

Those who work in the PIDI's, and child care programs like them worldwide, are, for the most part, uneducated women, untrained in how to work effectively with children. The time devoted to pre-service training programs is generally very limited. *Jugando en el PIDI* provides teachers with both the theory (what young children are like and what they need) as well as clear examples of appropriate practice. Within *Jugando en el PIDI*, the teacher is introduced to both the principles and the practice of adult-child interaction within the same context.

### **Multigrade classrooms in Costa Rica**

Multi-grade schools present an educational challenge for all of Latin America, and in particular Central America. Although seen as a problem in many countries, Costa Rica is beginning to think of multi-grade schools as the solution to the demographic explosion of the

1970s. If the quality of education offered by multi-grade schools improves, they can also be a solution to the problem of inferior education frequently encountered in rural areas.

With this in mind, LearnTech talked with the Costa Rican Ministry of Public Education about conducting a small six-month pilot program to work with teachers to develop strategies and materials in a small number of multigrade schools. Together, the Ministry of Education, teachers from seven schools, EDC and the Radio Nederland Training Center conceived of, planned and executed a pilot project between January and August, 1994 titled "New Methodological Options for Multi-grade Schools, Focused on the Environment, with Multimedia Support."

At the end of the pilot, the teachers were asked to fill out forms evaluating their training. All wished that it had been longer, so that they would have had more time to learn new multi-grade techniques. They thought that the new methodology was modern, practical and creative, and the most useful for teachers in rural areas. They felt that the trainers respected them, and they in turn realized that children are capable of acting independently and they began to respect their students more.

This small investment of \$40,000 by LearnTech is going to have major consequences for multigrade schools in Costa Rica. The Ministry of Education has elected to develop the program methodologies further under its World Bank-funded education project, and has asked for further assistance in designing the program.

### **Bolivia Bilingual Health Pilot**

IRL designed, implemented and evaluated a 10 lesson health pilot in rural Cochabamba . The hypothesis posed by the pilot was that "...third graders learning health in their maternal language (Quechua) would have significantly greater learning gains than those receiving health lessons in Spanish" ". The results were highly significant, affirming the fact that the children had greater learning gains in Quechua than in Spanish. The PARI team provided teacher training to the participating schools and conducted 23 observations during the 10 lesson pilot. In addition, in-depth interviews were conducted with the students and teachers, and mini case studies were developed. The evaluation report is in first draft phase and will be available in late October.

PARI plans to disseminate the findings of this study within Bolivia, as well as internationally. While the findings confirm that children learn much more thoroughly when taught in their native language, education authorities and school directors participating in the program seem to prefer that the students received the Spanish language version of the lessons so that they can improve their Spanish.

This experience in the rural areas has confirmed for PARI that the program has to find ways to make the PARI math and health program available to the rural school systems, where the needs are great and the program can be of great benefit to the students.

### **A new model of mathematics by radio in South Africa**

South Africa has developed new approaches to teaching English language and mathematics. IRI language programs have developed a more communicative approach that involves the teachers to a much greater extent, and has built in teacher development in the classroom radio programs. It has proved highly popular with both teachers and principals.

LearnTech is also working on a new, constructivist version of radio mathematics. 30 programs have been developed and are being tested in conjunction with three other innovative but relatively mainstream primary mathematics projects. Design considerations included the following issues:

**Mathematics content in programs:** Can the methods and maths ideas and content (the same math that is generally regarded as effective and is now in the MCPT booklets and which seems to be receiving general approval nationally now) be well supported by audio/radio? At what grade level(s) is this audio method appropriate?

**Students:** To what extent are generic skills developed or addressed? These might include active listening, and other skills to be specified as well under this issue, such as motivational issues. To what degree do the programs contribute to the children being able to do better mathematics (more numerate, able to devise strategies)? To what degree do the children accept and enjoy the approach? Can completely (or predominantly) English language programs as we propose here be effective at St. 1? St 2?

**Teachers:** To what extent are teachers "empowered" by the programs? To what extent is the audio-based approach accepted by teachers? How much support is required to help teachers make the necessary changes in their methods? What additional skills are needed for teachers to succeed with audio-based methods? What happens in schools with low or no prior INSET? To what degree does the project support teachers in assessment of their students?

**Delivery medium:** Is the non-stop radio-like playback mode OK - for teachers? for students? Can radio introduce and sustain the methodology? What INSET is necessary for this intro and sustaining to happen?

**Content/Style of Programs and Print:** Is the 1/2 period 15 minute duration good? Is there adequate multi-lingual accommodation? Are the various interactivity processes well designed? (Are the timings of the interactive segments OK, is there adequate variety)? Is the music considered valuable? Are the print elements well integrated and easy to use?

### **Reproductive Health Lessons in Fifth Grade classes in Bolivia**

PARI has introduced 5 reproductive health lessons in the 5th grade health curriculum. We have had great success with these 5 lessons. In El ALTO, the PARI team held an orientation meeting for teachers and parents, in one school. More than 400 parents from many schools arrived because they wanted to learn how to talk with their children about reproductive health. It is clear from this experience that the school principals and teachers are ready to address reproductive health, at least in a very basic way, with their students. The lessons emphasize what the reproductive system is; how the students bodies are changing; the importance of hygiene; the importance of respecting your own body and requiring that others respect your body too. The children accepted the information with curiosity and an openness that either flowered or not, depending the teacher's comfort with the subject matter. The lessons have stimulated roundtables and further consultation with "experts" in many schools.

### **Environmental Education by Radio**

In 1992, the LearnTech project and the Government of Costa Rica agreed to pilot new approaches to using radio to boost awareness, increase community participation in conservation activities and teach information about the environment. LearnTech developed two models for environmental interactive radio instruction (IRI). The first series uses a more traditional IRI storyline where the setting of the radio show and the interaction over the air simulate a classroom environment. A teacher and student experiment with environmental information through imagination and practice. In the second model, LearnTech departed from traditional IRI formats and developed a soap opera drama which combines a carefully crafted and entertaining storyline with environmental information and proposed action in the community.

*Let's Listen to the Earth* worked well with fourth graders and was a step in the right direction for environmental education in Costa Rica. The series supported the students and teachers, who had very few materials on environmental issues. However, when it came time to continue the experience with fifth grade children, the production team decided to look carefully at the format, asking the question: how different are fourth and fifth grade radio audiences? Are they similar enough that the same radio format can be used? How should the new radio series cater to the new audience? It was clear that the focus and format of the fourth grade series-- a teacher in a classroom and a small, fairly rural town-- was not ideal

for this new audience. LearnTech and the Costa Rican production team decided to create an innovative drama for environmental radio education.

Using content taken from the official curriculum, three stories with conflict and suspense, a group of appealing and provocative characters, and a series of interesting settings, we created *Econauts: Mission Nature*.

The series *Econauts: Mission Nature* consists of 28 radio programs, or chapters, broadcast to fifth grade classrooms once a week. The project also broadcasts a second series of 28 chapters called *Puerto Ventura: The Ecological Battle*. Although the content of the two series is similar, *Puerto Ventura* is designed for parents and community members as well as children.

The main features of the new format were:

It used a serial style, where each program covered one episode of a larger story that was developing. The fact that the students-- and the teacher-- got to know the story little by little was seen to be a motivating factor. The main characters and songs reinforced the image of the boys and girls in the classroom as protagonists discovering things about the environment and protecting it. The entertainment factor made the programs "special." The dramatic format broke with traditional teaching methods and the children considered the program a special activity. The entertainment value was seen as the key to their acceptance.

Learning was a continuous process. As students listened to more programs they got better at understanding the story, recognizing the characters, and managing the content. The evaluation showed that children who listen to the program regularly and continuously learn and make better use of the content. Teachers who cancelled, changed, postponed the program, were sick or interrupted the sequence of the sessions had students who sometimes did not remember or identify certain characters.

## **REGIONAL ACTIVITIES**

### **1. LATIN AMERICAN AND THE CARIBBEAN**

#### **Bolivia**

##### **The PARI Project**

LearnTech received a buy-in for just over four million dollars from USAID/Bolivia to create the PARI activity, a new health education IRI series and to expand the implementation of the math programs. PARI, which stands for Programa de Aprendizaje por Radio Interactiva, is a collaborative effort of EDC, the Bolivian National Secretary of Education, USAID, and Bolivian subcontractors, Programa de Educacion por Radio (PER), and Fe y Alegría. The project purpose is to improve the quality of basic education through national dissemination of the interactive-radio mathematics curriculum previously developed under the Radio Learning Project, and through development and validation of a radio-based health-education curriculum. The project will also improve the capabilities of the teachers to teach these critical subjects to children and to other community members. The project will contribute to ongoing policy dialogue/reform through rigorous data collection efforts on specified indicators of education and health.

The PARI project has made substantial progress during the period from October, 1993 through September, 1994. PARI has focused on institutionalization strategies as it enters into the last phase of the project. The PARI team held five successful national conferences, completed the comprehensive evaluation of the pilot health series for the 1993 school year, with validation of the health programs targeted for completion during the last phase of the project, heeded feedback from its international health panel, and as a result, is bringing a fresh new approach to the fifth grade lessons in the health series. The math program has reached over 335,000 students in the nine departments of Bolivia and over 102,000 students in the health programs during the 1993-94 school year and continues to grow. We are also working ardently to get the Secretariat of Education ready for the implementation and administration of the PARI program. In addition, we are focusing our energies on keeping our program in the forefront of the education reform.

Beginning in 1988, the Radio Learning Project (PARI) field-tested the use of interactive-radio to improve the quality of mathematics education in Bolivian primary schools. In addition, a small pilot activity undertaken in 1989 applied this same methodology to the teaching of basic health concepts at the elementary-school level. Based upon the success of this endeavor, PARI is now working to institutionalize the model mathematics and health-education curricula in the Bolivian school system. Major components of the Project include:

- (1) continued evaluation and dissemination of the interactive-radio math curriculum, developed under previous project cycle, in all nine of Bolivia's nine Departments;
- (2) development and field testing of a health-education curriculum emphasizing responsible behaviors in personal hygiene, nutrition, sanitation, and the prevention of diarrhea and other transmissible diseases for upper-primary school grades three and four, 1993, and for grade five, 1994;
- (3) development of a teacher-training support model for improved teacher effectiveness in the project;
- (4) enhancement of the MEC 's ability to manage a permanent basic education program using interactive radio;
- (5) a monitoring, evaluation, and operations research component to track Project implementation and effectiveness;
- (6) extension of the interactive-radio curriculum to out-of-school children and adults, 1994;
- (7) training a broad-based professional core in communication strategies for environmental education;
- (8) achievement of policy objectives for integrating the radio curricula into the national educational reform package.

Progress to-date is as follows:

	Planned in LOP	Last 6 months	Number to date	% of LOP
Total students: math -boys -girls	200,920	66,513 67,628	335,061	167%
Teacher guides: math developed: revised:	4 4	Completed Completed	4 4	100% 100%
Math Lessons Revised (135 each for grades 2-5)	540	Completed	540	100%
Total students: health - girls - boys	50,000	26,300 26,142	102,442**	205%
Teacher guides: health developed: revised:	3 3	1 1	3 3	100% 100%
Health Lessons Developed: cholera pilot grade 3 grade 4 grade 5  Revised: grade 3 grade 4 grade 5	10 30 30 30  30 30 30	0 0 0 25  25 25 ***	10 30 30 25  25 25 ****	100% 100% 100% 84%  84% 84%

Footnotes:

\*\*\* we are still testing the 5th grade lessons; we will finish by December 1994

## **Teacher Training in the *Escuelas Normales***

Under the leadership of Lic. Emilio Oros, PARI's Executive Director, and Jorge Ayala, National Coordinator of PARI for the Secretariat of Education, PARI delivered 4 training workshops to students at the "Escuelas Superiores Normales" in La Paz, Sucre, Potosi and Oruro. The total number of new teachers trained was 670. The objective of the training was to provide the students in the Normales with an in-depth understanding of interactive radio methodology and the content areas emphasized in health and mathematics. The evaluations of the training workshops emphasize that the future teachers were convinced of the importance of applying the methodology when they are in classrooms next year. For the PARI team, the experience confirmed the importance of incorporating this type of teacher training as a regular part of teacher training activities.

### **Teacher Training for 1994 school year.**

By April, 1994, an estimated total of 2000 teachers were trained in mathematics and an estimated 1000 teachers were trained in health. The mathematics training was designed and largely implemented by the Secretariat of Education supervisors with the support of the PARI/PARIB team. The PARIB staff are representatives of the Secretariat of Education, supported by DIFEM funds. The health training were run by the PARI team, with the design and logistical aspects being handled by regional offices of the Ministry of Education.

PARI, working closely with the Director General for Rural Education, trained rural teachers in Tarijia in mathematics. Problems with supervisors in this area have been overcome due to the support of the Director General.

### **Changes in Health Curriculum Format and Content.**

The conclusions reached during the discussions held in the October meetings in Santa Cruz were added to the PARI evaluation activities for the pilot health project. The evaluation strategy combines quantitative information gathered in the summative evaluation, and qualitative information gathered in the impact evaluation in the form of extensive interviews with students in each of the pilot health areas of study. In addition, a summary of the formative evaluation results gathered throughout the year was presented to the curriculum department as they began their revisions. These revisions have been ongoing since November, 1993 and reached a peak in January, 1994 when international panel member, David Werner, joined the PARI staff in an extensive analysis of the contents and presentation of the pilot health scripts.

David Werner worked with the PARI curriculum team from January 24 to February 5 to review the health lessons for accurate health content and integration of drama and problem solving approaches. As a result of David's visit, intensive revisions began on the third and

fourth grade lessons, and development of the fifth grade lessons, incorporating drama, problem-solving approaches and other suggestions for health content.

Joao Pinto, LearnTech consultant, visited the PARI project from January 5-15 to work with PER on institutionalization activities. Joao also helped with evaluation data and programmatic strategies for evaluation activities.

A PARI representative, Jose Luis Aguire, traveled to Costa Rica from January 22-27 to help plan the upcoming LAC training seminar to be held in April-May, 1994 in San Jose. A more detailed plan of this activity can be found in the Costa Rica section of this annual report.

### **San Jose de Chiquitos.**

PCI/CCH representatives of the San Jose de Chiquitos health district requested that PARI implement its health program in San Jose. This experience is providing PARI with valuable information about how the health program works in a rural school system. The program is operating in 7 schools, reaching 596 students. 40 teachers and directors have been trained.

In addition to training teachers, the PARI team trained 14 health promoters interested in using the program as part of their health talks in their communities. PARI is planning on producing a guide for using the health program in the communities as a result of this effort. This is the first opportunity that PARI has had to work directly with the health district instead of the education district and we are in the process of exploring the possibility of expanding this experience to more rural health districts.

During the week of October 5, PARI's team delivered the first Child to Child workshop to the San Jose Community, inviting both teachers and health promoters to participate. It was a very successful first effort and we are planning to develop a training guide based on the experience.

### **NRECA Pilot: Solar Panels.**

NRECA and PARI have installed 50 solar panel systems in schools in Sucre, Tarija, Rurenebaque and La Paz. To date the panels have worked well. NRECA is in the process of evaluating the systems and making recommendations for design modifications.

Not everything has progressed smoothly. Due to delays in receipt of USAID funding, PARI delayed the contracting of consultants, the implementation of the bilingual pilot and the implementation of the public relations strategy. Fortunately, the situation was resolved in June and PARI is moving forward with its activities. The 1994 school year has also been plagued with strikes. At this date, the students have only attended 132 school days of the

required 200 for the year. The Secretariat of Education is restaffing all levels, therefore the authorities are demoralized and are providing minimal support to their duties. The supervisors trained in February are generally not completing their PARI related activities in the major cities. In the BENI region they continue to function well. In addition, the current government continues to replace principals and classroom teachers, which disrupts the continuity in the delivery of the PARI program classes, in particular, the health classes because they are not a required part of the curriculum. PARI has delivered one day "booster" training to these new teachers and directors in various cities.

The PARI team is working hard to finish all contractual obligations by March 31, 1995, however, the delay of the external evaluation until March, makes it necessary to request a no time cost extension in order to review the recommendations and provide time to assure that a structure is in place to implement the recommended changes.

## **PIDIs: Early Childhood Development in Bolivia**

*Jugando en el PIDI* is an interactive radio program designed for use with young children in child care centers serving children under the age of six. In Bolivia these are known as PIDIs (Programa Integrado por Desarrollo Infantil). The PIDI centers operate under ONAMFA (Organismo Nacional del Menor Mujer y Familia), a governmental organization which is sponsoring the development of the PIDI family day care homes in El Alto, Santa Cruz and Tarija, Bolivia. The interactive radio project was conceived of as a way to provide appropriate learning for both the children and the teachers and to foster the interaction between them.

A pilot program was begun in November 1993 and ended in April 1994. During this time 20 radio programs were introduced, 1 per week, in 10 PIDIs in El Alto and 10 in Tarija. A formative and summative evaluation of the program was undertaken to provide on-going feedback to the development team which has led to the revision of the program itself and the support materials.

In March 1994 the World Bank commissioned an evaluation of the PIDI program. As a part of that the evaluator was introduced to *Jugando en el PIDI*. Since she had a very limited exposure to the program, she recommended that a more extensive evaluation of the program be conducted. Thus in June 1994, LearnTech contracted an evaluation of the *Jugando en el PIDI* program to provide an analysis of the revised materials in terms of their appropriateness in teaching teachers how to teach and providing children with appropriate learning activities. LearnTech also asked the evaluator to make recommendations about the future development of the project. The evaluator, Dr. Judith Evans wrote in her report:

"After having spent time in 4 PIDIS (2 that had previous exposure to the radio program and 2 for whom the experience was new), talking with the PIDI Technical teams at the regional and national levels, and having talked with the educators (the teachers in the PIDIs), the power of this particular interactive radio program became evident.

The value of *Jugando en el PIDI* is that the cassette/radio programs have been designed in such a way that they provide training for the teacher at the same time that children are learning. And the situations created in the program provide a framework for and support the interaction of the teacher with the children.

The radio program has been developed in full cooperation with the PIDI team. Thus it reflects the child development perspective of the PIDI project and the curriculum and activities developed within PIDI serve as the basis for the radio programs. Specifically this means that there is a focus on active learning, the use of the environment in the development of appropriate activities, the importance of parental and community involvement, and

providing teacher training that recognizes and supports the interaction of the teacher with the children.

*Jugando en el PIDI* has the potential to be a powerful teacher training device. Those who work in the PIDIs, and child care programs like them worldwide, are, for the most part, uneducated women. What *Jugando en el PIDI* provides is consistent support in the development of appropriate teaching practice. *Jugando en el PIDI* provides teachers with both the theory (what young children are like and what they need) as well as clear examples of appropriate practice.

More specifically, one of the keys to effective early childhood programs is the way in which teachers interact with the children. The teacher's role is to support children's development through the creation of an environment within which children feel secure, to provide materials that the child can explore, to facilitate children's learning of new concepts and provide opportunities for children to apply their learning, to provide experiences which stimulate children's language and communication skills, and to help foster the development of children's self-esteem.

Within *Jugando en el PIDI*, the teacher is introduced to both the principles and the practice of adult-child interaction within the same context. Adult-child interaction is fostered through the program. Within the program itself the teacher is given instruction on how to work with the children and the guías (teaching guides) provide an understanding of WHY what the teacher is doing is important and how that fosters the child's development. Thus interactive radio as realized in *Jugando en el PIDI* is an important tool in providing teachers with both the theory and the practice of effective adult-child interaction.

*Jugando en el PIDI* also provides for the teacher's professional development and is a useful tool in the teacher's work with parents. In essence, the program provides a way for the teacher to organize what she does within the PIDI.

A primary goal of *Jugando en el PIDI* is to make children more active learners. While this is what is desired from the point of view of children's development, it makes the teacher's job more difficult. What we observed in the PIDIs involved in the pilot project was that the children were more active. As a result, teachers in these PIDIs had a 'classroom management' problem.

When children arrive at the PIDI they are generally reticent, shy, passive and non-verbal. Children with these characteristics are easy to manage. As the children experience the radio programs, where they are encouraged to explore their environment, play, talk and interact more, they become more active. This requires a different kind of leadership from the teachers. They have to learn how to set limits and create expectations in terms of appropriate behavior. They need to develop new strategies in terms of managing the

classroom. These can be presented through the programs and the Guide and be reinforced by the supervisors and group meetings as well as through the programs.

The teachers and the children look forward to and obviously have a lot of fun during the program--listening to the stories of Don Pancho, finding out what Tia Clara has in her Surprise Bag, laughing at the antics of the Parrot Ito, and identifying with the experiences of Katy. These characters have become a part of the children's PIDI experience. The songs are catchy and quickly learned by the children, and the activities, while teaching children many new concepts, often stimulate giggles. Once the children and teacher become less self-conscious, they enter into the activities with enthusiasm.

## **Costa Rica**

### **MultiGrade Teaching Strategies**

Multi-grade schools present an educational challenge for all of Latin America, and in particular Central America. Although seen as a problem in many countries, Costa Rica is beginning to think of multi-grade schools as the solution to the demographic explosion of the 1970s. If the quality of education offered by multi-grade schools improves, they can also be a solution to the problem of inferior education frequently encountered in rural areas.

With this in mind, LearnTech talked with the Costa Rican Ministry of Public Education about conducting a small six-month pilot program to work with teachers to develop strategies and materials in a small number of multigrade schools. Together, the Ministry of Education, teachers from seven schools, EDC and the Radio Nederland Training Center conceived of, planned and executed a pilot project between January and August, 1994 titled "New Methodological Options for Multi-grade Schools, Focused on the Environment, with Multimedia Support."

Seven schools from diverse geographic regions were chosen to take part in the pilot project, with a total of 217 students, 107 boys and 110 girls. The schools were all in poor areas, with environmental problems such as water pollution due to solid and agrochemical waste, deforestation, air pollution and animal extinction. But the communities subsist on the land: coffee, fruit orchards, sugar cane and bananas are all the major industries.

Inside the multi-grade classrooms chosen, group activity should be very important, but was usually limited to older children helping younger ones copy text. Rarely did the students use the blackboard. The classroom furniture was arranged in rows, and there was little flexibility in terms of rearranging desks to facilitate group activities. The natural surroundings were not used as a resource, and topics of importance to the community such as the environment or ecology were not usually incorporated into the lessons. One key reason

for this was that the teachers did not plan lessons in an integrated manner, but usually planned each grade separately. The design of the pilot modules let them change their pedagogic practice to suit a multi-grade environment. The teachers themselves were involved in this design process, and met with the other pilot school teachers regularly to compare and share their ideas and experiences.

Distance training using audio materials was an important component of the teacher training, and the teachers were given assignments to be completed for the face-to-face study group sessions and the four workshops. Trainers also visited the teachers in their schools to get to know the classroom, the community, the types of materials available, and so forth, to help them plan and adapt the national curriculum to their unique situations. The teachers said that the new types of lessons and interaction with the communities made the students more eager to learn, and stimulated creativity, independence and more critical thinking. The teachers also noted that the children were able to guide the lessons, and act on their own with the help of various media such as the cassettes, books, clay and local resources.

The children, for their part, said that their favorite parts of the project were that they liked to study environmental themes, enjoyed the programs on cassette, and liked to work in groups. They also liked to be able to ask more questions in class, share their ideas, participate in "conversation circles" and work outside of the classroom in the surrounding areas. They thought the classes were more organized, although the teachers worked with them less but gave them more work to do on their own with books and other materials. More horizontal work took place (between children) and less vertical (each child relating individually to the teacher).

One difference the observers noted was that even though the teachers had planned some group work previously, the students usually sat in groups but did individual work. Now they actually did group work, all participating in a joint activity. This is crucial for effective multi-grade classroom teaching. Besides focusing the classes more on areas outside the classroom, the teachers also learned how to enhance group work by dividing the room into small areas. For example, they moved bookcases and blackboards around the classroom to create different atmospheres. The blackboard could be used as a blackboard for one group of children and a poster holder or easel for the group of children on the opposite side.

Various classroom layouts are commonly used as the base for multi-grade classrooms, but these layouts are adapted to each classroom depending on the resources available. For example, in a classroom with six grades, grades 3 and 4 can work directly with the teacher on social studies at the side of the room, grade two can work in small groups on Spanish worksheets in the front of the room, grade one can work individually using reading texts at the back of the room, grade five can work in the hallway on an environmental situation using a guide written on the blackboard, and grade six can be out in the community doing research. Later in the day, grade two can do writing activities using words that the teacher

has written on the blackboard at the side of the room, while those grade two children with reading problems can work individually with the teacher at a desk in the middle of the classroom. Grade four can do worksheets individually based on a model written on another blackboard at the front of the classroom, grade three can do worksheets in the hallway, grade one can have play a sports game in the school yard, and grade six can work in the orchard and cafeteria. Later, the children present to the teacher and other students what they did and learned, in the form of games, quizzes, dramas, oral examinations, and so forth.

The two main types of activities used in multi-grade schools are those directed by the teacher, in which the teacher moves around the room to spend time with each age group individually; and those in which the children act independently, receiving guidance from worksheets, the radio or textbooks. The independent work can in turn be categorized into individual work and group work. Individual work is important in the multi-grade class so that students develop skills and confidence. but group work is the most important type in a multi-grade class, and is the basis of the multi-grade organizational plan.

Each school and community proposed its own modules based on the critical environmental needs of the area. From these suggestions, two modules were created: environmental pollution caused by garbage (solid waste) and deforestation. The teachers learned how to develop the themes so that they related to the national curriculum and the communities, choose the media needed, orient the theme to the different age groups, plan activities appropriate for individual and group work for the different age groups and within the communities, and make supporting materials out of local resources. It is important to note that the teachers were encouraged not to "adopt" the environmental problem with the aim of solving it, but rather to raise consciousness and learn how to create a multi-grade lesson plan. The goal was to make one lesson plan encompassing all the grades.

The environmental themes proposed were decided upon by meetings with the communities, parents and students. Everyone was involved in determining what are the most important problems. Activities were chosen based on what the children were physically and mentally able to do, and based upon what resources the communities had. Sometimes children were asked to bring in objects from home, and other times they took field trips to see the activities taking place in the communities.

For example, during the deforestation module, the subthemes differed by age: the grade four students analyzed deforestation as a problem caused by humans, grade five students analyzed how human actions change their surroundings and then they proposed ideas of how they could participate in solutions to the problem of deforestation, and grade six students discussed concrete steps that can be taken to protect and preserve the forest so that it can be part of a sustainable development plan for the community. These different subthemes also required a variety of activities, such as grade four and five students listening to a story while grade six students went around the school area looking for little forest areas. Then grade

four students discussed with the teacher positive and negative events which have historically affected forests, grade five students divided into two groups to make posters showing the consequences of cutting down the forest, and grade six students in a group shared their opinions as to why there are not more forests in their community.

At the end of the pilot, the teachers were asked to fill out forms evaluating their training. All wished that it had been longer, so that they would have had more time to learn new multi-grade techniques. They thought that the new methodology was modern, practical and creative, and the most useful for teachers in rural areas. They felt that the trainers respected them, and they in turn realized that children are capable of acting independently and they began to respect their students more.

This small investment of \$40,000 by LearnTech is going to have major consequences for multigrade schools in Costa Rica. The Ministry of Education has elected to develop the program methodologies further under its World Bank-funded education project, and has asked for further assistance in designing the program.

### **Costa Rica Environmental Education by Radio**

In 1992, the LearnTech project and the Government of Costa Rica agreed to pilot new approaches to using radio to boost awareness, increase community participation in conservation activities and teach information about the environment. LearnTech developed two models for environmental interactive radio instruction (IRI). The first series uses a more traditional IRI storyline where the setting of the radio show and the interaction over the air simulate a classroom environment. A teacher and student experiment with environmental information through imagination and practice. In the second model, LearnTech departed from traditional IRI formats and developed a soap opera drama which combines a carefully crafted and entertaining storyline with environmental information and proposed action in the community.

LearnTech began its first experiment with environmental interactive radio instruction in Costa Rica with the *Let's Listen to the Earth* series for fourth graders. *Let's Listen to the Earth* was well received by students and teachers. For the students, using radio in the classroom broke up the daily routine. The teachers felt that because the series followed the official curriculum, it helped them address environmental issues required by the Ministry of Education. The programs integrated content in the areas of social studies, sciences, mathematics, art and language, as well as agriculture and home economics. A teachers' manual included activities and projects the teacher could do with students in the classroom or school. The programs suggested ways for the community to get involved in the protection of national parks, coastlines, biodiversity and endangered species, as well as waste management and contamination.

However, when it came time to continue the experience with fifth grade children, the production team decided to look carefully at the format, asking the question: how different are fourth and fifth grade radio audiences? Are they similar enough that the same radio format can be used? How should the new radio series cater to the new audience? Instead of guessing about the interests and desires of young people, a survey was designed for fifth graders from diverse geographic and social sectors that identified certain trends that dramatically affected the design of the radio series:

**Children in fifth grade tend not to accept adult explanations as the absolute truth.** There is a marked difference in the critical attitudes of fourth and fifth graders toward adult explanations of events in nature, society, economics or other spheres. In general, fourth grade children accept adult explanations more easily while fifth graders have a strong tendency to create "their own explanations." For the production team this meant that the fifth grade series could not present information as a "finished product" but should encourage children to come to their own conclusions. This finding greatly influenced the decision to reject traditional educational radio formats.

**Children in the fifth grade don't believe in magic solutions.** Although the fifth grade audience enjoyed fantasy, legends, epics, and adventure plots, they rejected "magic solutions." For these students, problems or phenomena should have a logical, rational, and scientific explanation. They showed a marked increase in interest in natural sciences and the laws that govern natural phenomena.

**Love towards humans, animals and nature is a recurring, omnipresent theme.** Generally, the audience surveyed enjoyed plots of love and humanity. However, the relationship between humans and the natural environment was viewed differently by children from rural and urban areas. Urban children showed a strong tendency to describe the natural environment as places where one went to rest-- recreation spaces. Rural children, on the other hand, saw the environment more as a home, a place that provides work and food. They saw nature as a "provider of natural resources."

**Children know about environmental problems, but not about solutions.** We could not accurately determine the sources of information, but it was clear that these children, unlike the fourth graders, knew a lot about environmental problems and were genuinely concerned. However, evaluators noticed that the children had serious difficulties trying to offer solutions to the problems. There was an overall tendency to propose a solution simply as the opposite of the problem; the answer to contamination in the rivers was to "not contaminate the rivers", and the answer to deforestation was to "not cut down trees." The programs would have to create situations in which there were many options for solutions to discuss and analyze.

**The "bad guy" is a crucial character.** Fifth grade children did not fear the "bad guys." Instead, they were interested, almost fascinated, by the bad guys. Fifth graders were not interested in the bad things these characters did, as much as the reason they acted badly. This surprising finding influenced how characters and conflicts within the series were created.

**The children have an apocalyptic vision of their future.** The evaluation revealed that children had a very pessimistic, almost desperate, vision of their future. Both urban and rural children felt powerless to change the current national and global environmental situation.

**Fifth grade children need new learning environments.** The students were tired of the daily dynamics within the classroom. They were searching for new voices, interesting challenges, and new sources of information and ideas. This called for expanding their learning environment, not reducing their education to school and the classroom.

Based on these and other conclusions, it was clear that the focus and format of the fourth grade series-- a teacher in a classroom and a small, fairly rural town-- was not ideal for this new audience. LearnTech and the Costa Rican production team decided to create an innovative drama for environmental radio education.

The series *Econauts: Mission Nature* consists of 28 radio programs, or chapters, broadcast to fifth grade classrooms once a week. The project also broadcasts a second series of 28 chapters called *Puerta Ventura: The Ecological Battle*. Although the content of the two series is similar, *Puerta Ventura* is designed for parents and community members as well as children.

The series has three general objectives:

**To support teachers in the classroom, but not to try and replace them.** The Ministry of Education introduced environmental education concepts without having trained teachers or prepared classroom materials suitable for the subject. The radio programs are a resource for teachers who little expertise and few other materials to draw upon.

**To promote environmental ethics in children, parents and community members.** They should be aware of issues, and change attitudes and practices that are harmful to the environment. We believe that the only way to reverse the process of environmental destruction is to encourage individuals to take responsibility for their own actions.

**To encourage students, teachers, parents and community members to protect the environment.** Environmental education must promote action and not just the accumulation of knowledge. The programs offer time for discussion and suggest ways to apply environmental knowledge within the community.

In environmental education, unlike other subjects like mathematics, language or even natural sciences, there is no single answer to the causes, effects, and solutions to most problems. A combination of factors contribute to environmental problems and in many cases, the answers are not yet known. The more complex nature of problem solving needed to be reflected in the radio programs. The *Econaut* series, therefore, explored new kinds of interactivity, going beyond the automatic responses to a question where a child might not answer what he or she thinks, but what the teacher expects. We introduced open questions with many "correct" answers. We also defined interactivity and learning not just as verbal responses or physical actions, but also as concentration, attention and thinking during the stories. These important forms of interaction led to high levels of "learning."

The main features were:

**The serial style** covered one episode of a larger story that was developing. The fact that the students-- and the teacher-- got to know the story little by little was seen to be a motivating factor.

**The characters were likeable.** The main characters and songs reinforced the image of the boys and girls in the classroom as protagonists discovering things about the environment and protecting it.

**The use of imagination was important.** As in the *Let's Listen to the Earth* series, each adventure was a way to leave the walls of the classroom behind through imagination.

**The entertainment factor made the programs "special."** The dramatic format broke with traditional teaching methods and the children considered the program a special activity. The entertainment value was seen as the key to their acceptance.

**Learning was a continuous process.** The students must learn how to listen to the radio, as they are not used to having a radio in the classroom. As students listened to more programs they got better at understanding the story, recognizing the characters, and managing the content. The evaluation showed that children who listen to the program regularly and continuously learn and make better use of the content. Teachers who cancelled, changed, postponed the program, were sick or interrupted the sequence of the sessions had students who sometimes did not remember or identify certain characters.

**The number of times information is presented affects comprehension.** Almost all of the students correctly answered the questions relating to the sequence of the story, as well as questions and drawings about the main environmental content of the story. However, comprehension levels dropped for more specific or complementary content, especially if it was derived from the main message and appeared only once in the episode.

**Local beliefs affected comprehension.** Comprehension levels also dropped when a program dealt with content which directly contradicted established beliefs in Costa Rican culture. For example, the children would correctly answer the questions related to how useful snakes are (in the banana growing region), but then explain how, in their daily lives, they fear snakes and kill them.

**Baseline studies can ensure that you know how to capture the children's interest.** We found that knowing your audience well through direct contact is the key to ensuring that the drama captures and interests the children.

**Adults will resist action, even when children are committed.** Although children were motivated to act, they met with obstacles when they tried to take concrete action in the school or community. For example, the children in the coastal community of Riojalandia looked for sources of contamination. They planned to dig a big hole in the school to bury garbage as a solution to the problem of waste management. The children in another marginal urban area campaigned to recycle aluminum beer cans and use the proceeds to paint the classrooms. They also proposed planting a garden, a compost pile for leftover food, and a science fair. In a urban middle class area, the children suggested planting trees and a garden. In each case, the suggestions met with resistance from adults, especially school principals, who felt they did not authorize the actions. Uninspired teachers simply see the children's ideas as more work. According to some administrators "the solutions should come from the government."

**Interactivity that incorporates higher level learning was preferable.** *Econauts* showed that the best interactivity for environmental education involved ways to encourage the students to follow the story. In the drawings, letters, dramatizations and observations, the children showed a great capacity for imagination and thinking. We experimented with different forms of interaction because each child reacts differently. Sometimes, the characters asked the children to answer questions, offer opinions, or intervene in the story with ideas or actions. The children especially enjoyed this form interactivity because they had a role in the development of the action. Putting the reins in the children's hands by letting them stop and start the cassette tape also diversified interaction. We found that the children could anticipate

events in the story, comment on them, refer to things that happened in their own lives, etc.,

## **Dominican Republic**

*Let's Learn Mathematics* in the Dominican Republic completed an evaluation of the first grade programs in August 1994, and showed an average performance of 73% for the experimental group, compared with 59% for the control group. In 1995, it is expected that 500 classrooms and 20,000 pupils in Grade 1, and 200 classrooms with 10,000 pupils in Grade 2 will receive the programs. Each student will receive a workbook. Teacher training for the 700 participating teachers will be accomplished by a mixture of face-to-face training workshops, twenty radio lessons for teacher training, and a teachers' guide.

## **Honduras**

### **Adult Basic Education by Radio**

The Ministry of Education asked LearnTech to provide assistance in designing and implementing an IRI basic skills series for useful employment for adults who attend literacy centers. The main focus was to adapt for adults the interactive radio programs that have worked so well with young people in order to provide instruction equivalent to the education of primary schools.

Each lesson lasts 35 minutes and has two basic curricular lines: reading and writing in Spanish and mathematics. The lessons are divided into five sections. The first two sections are language, reading/writing, and mathematics and use the traditional IRI method of instruction. The other three sections use a dramatic approach, and focus on civic, legal, and democratic issues; family life which emphasize the role of women and children; and the population growth factor and its results on health, economics, education, and the environment. The legal, civic, and democratic education segments are supported by the USAID Democratic Initiative Project. Adults may listen to the radio lessons at the new literacy centers organized by the Adult Education Division of the Ministry of Education. Printed material to be used during the lesson and for post-broadcast exercises is available to the students.

LearnTech core funds provided \$396,000 for this activity, and USAID/Honduras provided a further \$522,000.

Working with the Academy for Educational Development, and with some assistance from EDC, COEDUCA, a Honduran private sector agency, has completed the following programs:

- 100 recorded lessons for Level 1
- 100 scripts for Level
- 100 recorded lessons for Level 3
- 100 radio segments for civic education
- Master Plans for levels 1 through 6

## **2. AFRICA**

### **Cape Verde**

The Cape Verde project was conceived as a regional project for the five Portuguese speaking countries in Africa, to be funded, planned and implemented in conjunction with UNESCO and Dutch funds provided through the UNDP. 130 lessons from the grade 3 Nicaraguan series were translated from Spanish to Portuguese, and a mathematics expert from Bolivia advised the Cape verde staff on how to resolve issues in teaching fractions. Some cultural adaptations are being made at the same time.

By September 1992, the first twenty radio lessons for grade 3 mathematics had been translated, adapted, and produced. The first IRI lessons on cassette were tested in the schools and were well received. Radio broadcast of the first math lessons were scheduled for early 1993. However, despite this good start, the project stalled for lack of support that had been promised by the Dutch government. UNESCO continued to pay the salary of an advisor, and LearnTech picked up the other costs in the hope that Dutch money would come through.

A further 45 programs were produced and a pilot was implemented and completed by February 1994. Just when Learntech had become thoroughly cynical about multi-donor collaboration, \$4 million in Dutch funds came through. The regional project will go ahead with UNESCO management, and Portuguese language IRI programs, at least in mathematics, will go ahead in Mozambique and Cape Verde, a little late but as promised.

### **Ghana**

Learntech staff visited Ghana in September, 1991, to talk with USAID, Ministry of Education, and Ghana Broadcasting officials about possible support of educational radio activities by LearnTech in Ghana. But, for various reasons, IRI was not supported in the USAID mission or by the Ministry of Education. However, in August, 1994, Learntech staff were asked by USAID/Ghana to conduct a feasibility study into the use of radio for basic education.

The feasibility study of interactive radio instruction (IRI) in Ghana was of limited scope, and was conducted over an intensive seven-day period. It examined the fit between the need to improve the quality of English language and mathematics instruction in Ghanaian primary schools and the performance of interactive radio instruction in other countries facing similar needs; the context in which IRI would have to operate in Ghana and the likelihood that it would work here; the level of interest expressed by policymakers and educational

practitioners in using IRI; and the resources and readiness of Ghana's institutions to absorb IRI. Specifically, LearnTech was asked to focus on four key questions:

1. Are policy makers and practitioners interested in IRI?;
2. Can IRI improve teaching and learning for primary education in Ghana;
3. How can IRI add value to Ghana's experience with radio education programming?;
4. Does Ghana have the institutional and human resources needed to develop an IRI program?

The study began by summarizing the events that led to this study being commissioned, describing its purpose and rationale. It described interactive radio instruction and what it has done to improve the quality of learning in other countries. The discussion of radio education showed how it has been traditionally practiced in many countries, including Ghana, and how it is practiced very differently through IRI. The study related IRI's performance to Ghana's specific educational needs, discussing potential areas of service for IRI in Ghana, including substantial discussions of evidence from particular experiences with IRI English and Maths, examining the match between the purposes of IRI and Ghana's needs.

The main body of the study looked in detail at the feasibility of IRI in Ghana. It provided detailed discussions of current educational broadcasting issues for Ghana both through analysis of some of the constraints on the current system and in terms of the issues surrounding possible adoption of an IRI approach. It dealt with each of the logical areas that must be involved in IRI system development - curriculum development, production, teacher training, broadcast transmission, evaluation, etc

The study's main findings, not ranked in order of importance, but clustered by topic, were as follows.

### **Support for IRI**

There seems to be strong backing for IRI from the MOE, MOI, and other education institutions and professional groups whom we consulted.

### **Institutional home, capacity and links**

There is not a ready capacity to produce IRI. Such a project would require a few months of intensive training followed by on-the-job apprenticeship with experienced IRI professionals.

The individual components of IRI (scriptwriting, teacher training, distribution, evaluation), are relatively straightforward, but as they must function together in a particular time period, the task of developing a reliable interlocking system should not be underestimated both from the standpoints of the technical challenges it poses and from the timely mobilization of resources.

In order to establish ownership of IRI within the MOE it is important to get the curriculum, writing and production teams working closely together.

While an IRI project should be conceived and undertaken with the SBD, the project should not be housed there.

Strong cooperative links with distance teacher training universities at Winneba and UCC are possible, welcome and desirable.

Others in distance education institutions in Ghana (Legon) could benefit from IRI training.

### **Fiscal Management**

The arrangements for the disbursing of money require a simple mechanism to enable and guarantee efficient and timely provisioning and operations.

### **Fit with existing curriculum and instructional methodology**

The curriculum of current IRI English programs seems to be consonant with what is being promoted for primary English in Ghana.

The consonance of Ghana's future primary maths curriculum with various IRI maths programs is not known.

### **Infrastructure**

Present FM transmitters would permit a regional pilot in the North and on a limited basis in the South without use of SW. Time could be purchased on the national SW service as well if it is useful to test multiple band broadcasting to guarantee national service where FM coverage may not be complete even under the current development plan.

The preferred transmission system is the developing regional FM network, for reasons of sound quality superior to SW.

Additional study of the issue of radio reception would assist decision making about the appropriate bands to use and the pace of expansion.

Studios as they are currently configured do not provide adequately for IRI production. A dedicated studio should be available to IRI producers on a nearly full time basis.

### **Project implementation issues**

The nature of the activity is such that a more extended period than consultants generally provide would be required for apprenticeship in writing and management in order to get the system up and running.

We would recommend a pilot project before going to scale. Piloting of a new series is not properly compatible with immediate expansion to scale.

Essentially, the study concluded that IRI seemed to enjoy the support of key planners and policymakers, but that IRI also raised considerable interest among practitioners after initial skepticism based on their current experience with broadcasts to schools. IRI is feasible in Ghana -- programs can be made and transmitted, schools can receive broadcasts on shortwave in most parts of the country if they have radios -- but Ghana would have to make investments in training programming staff and teacher training, and further upgrading its transmission equipment to do IRI well enough to justify investing in it. With respect to the programs themselves, the development costs are not insignificant, but the potential benefits to the quality of learning in primary schools are likely to be greater than any other feasible investment at this time.

### **Community radio in Guinea**

At present, five of USAID/Guinea's programs and projects use Radio Rurale to reach beneficiaries: Social Marketing of Contraceptives, Natural Resources Management, Agricultural Marketing Investment, Education Sector Reform, and Rural Enterprise Development. Each of these uses the system for somewhat different purposes, ranging from announcements of meetings to social marketing of products and services.

Several projects are considering uses of radio that Radio Rurale could not effectively implement at present because of its limited available airtime. In addition, the system is not flexible enough now to function as local radio, which would greatly enhance the process of democracy building, in which USAID/Guinea now has a strong interest.

LearnTech was asked to follow up its feasibility study of last year with another study, this time funded by the Mission. The study was to propose specific actions that the Mission might take to use radio to support development in Guinea.

Established only in 1990, Guinea's Radio Rurale has become an important rural institution. It is the only way of reaching large numbers of people directly with information to improve their lives. It has also become a significant means of helping people communicate with each other. The staff at each station produces programs of high quality which are credible to the rural people. Though there is no statistical evidence that radio messages have effected behavioral change at a significant level, many development agents have witnessed changes that convince them that people do indeed take heed of what they hear on radio. Thus, Radio Rurale has become an active tool of development. As a means of communication among local people, it is also a potential instrument of democracy.

There are five principal constraints to Radio Rurale's functioning as a robust channel of communication in rural Guinea: Inadequate transmission of the radio signal; unreliable studio electrical power supply; high costs of operation; insufficient sources of revenue; and insufficient competence in station management, marketing, and production equipment repair.

The team proposed two ways for Radio Rurale to resolve these constraints. One was to invest in a transmission system that uses more appropriate technology, which would dramatically reduce fuel costs and provide more flexible use of airtime. The other was to decentralize the fiscal management of Radio Rurale for the purpose of improving the use of resources and providing incentives to market services more vigorously.

**Appropriate transmission technology.** The cost of fuel for the operation of a transmitter increases exponentially as the geographic area covered increases. To barely triple the radius of a broadcasting area, one must increase the power output by a factor of 100. Thus, while the cost of fuel for operating a 500 watt transmitter is less than fifty cents per hour, the cost of fuel for operating a 50 KW (50,000 watts) transmitter is \$35 per hour. Yet the more powerful transmitter covers only about three times the radius as that of the lower powered one--at 100 times the cost.

An alternative technology, newer, but also more appropriate for Guinea's needs, is that of a system that links many small transmitters by new, very affordable, all digital compressed audio satellite service. Using small transmitters greatly lowers the cost of fuel for their operation, probably making it affordable for each community in which a transmitter is placed. Satellite service should be available in West Africa within a year or two. And satellite technology is developing so rapidly that within three years, something even more advanced will be available, and at a lower cost.

This technology also provides far more airtime, as the satellite signal is available 24 hours a day, and a more flexible system, as each transmitter can be used to provide a local, community signal as well as to carry the regional station's signal and even Radio Nationale's signal. Because of their low power requirements, these transmitters and satellite receiving equipment can be easily powered by a photovoltaic (PV or solar) power system. PV power systems can also be used to solve the problem of unreliable electrical power supply for generators used at the studios.

Finally, the new technology requires less mechanical operation and is much easier to maintain and repair. Each community should be able to maintain its own transmitter.

**Decentralization of management and finance.** The second way to resolve constraints is to decentralize the fiscal management of each station. This should help to raise revenues from services. Once the regional stations do not need to depend on the central government to operate transmission systems and pay their fuel costs, they will be in a better position to manage their own resources. Greater control of management will also give them more incentive to raise revenues and thus improve operations.

Decentralization, however, will require that regional staff receive extensive training in running their stations as a business, including training in marketing their services and repairing equipment.

The team recommended that USAID support Rural Radio's adoption of transmission technology that links small transmitters in almost every community by satellite. This is a long-term solution, but one which should bring operational costs down to a manageable level, increase the independence of not only regional but also local radio stations, and make Guinea' radio network more flexible, serving national, regional, and local needs.

In the short term (roughly two years), the team recommended that USAID/Guinea:

Assist Radio Rurale in making the best use of resources it already has by providing extensive training in management, marketing, and technical maintenance and repairs.

Help to finance the purchase of photovoltaic (PV) power units at each station to power its studio, thus overcoming the lack of reliable, stable electrical power during airtime. Excellent production facilities without the ability to go on the air have little value.

Supply the stations with some minor production equipment and additional motorcycles that will enhance their ability to produce program segments throughout the regions they serve.

Condition short-term support on the commissariat's following through with its announced intention to make stations more autonomous.

In the long-term, it recommended that USAID/Guinea:

Work closely with the commissariat of information to plan for and invest in the transmission technology we have described.

Encourage Radio National to share the costs of a new transmission system with Radio Rurale and any donor support Radio Rurale might receive.

Collaborate with other donors to share in the financing of Radio Rurale's contribution toward the new transmission system.

Condition long-term assistance on the creation of a parastatal or other form of network of independent rural radio stations that receive some government subsidies.

Persuade Radio Rurale to build its new transmission system one region at a time, learning from the early experiences lessons that improve the later ones.

## **South Africa**

As South Africa moves towards a post-Apartheid democracy, there has been much activity in support of a new educational system. There is general agreement that radio has much to offer to improve equity, access and the quality of education. The South Africa radio project has been funded by USAID/Pretoria since 1992 to assist the Open Learning Systems Educational Trust to develop English language programs for the first two grades of primary school, and to develop a South African approach to teaching mathematics by radio. The project also is assisting OLSET in its development as an institution, and in the design, development and marketing of interactive radio as a viable primary education delivery system in South Africa.

The Real World Productions team of Stuart Leigh and Rebecca Kalin assisted OLSET during this year. Stuart Leigh provided the following assistance:

- trained OLSET radio producers and talent to produce IRI radio programs, and assist them to complete English language and mathematics programs;
- assisted in the development of the instructional systems in participating schools and communities;

- assisted OLSET and appropriate local individuals and institutions to conduct research and evaluation of language and mathematics materials and of the IRI system as it evolves in South Africa;
- assisted OLSET to complete a summative evaluation of "English in Action" and a pilot test of third grade mathematics;
- developed plans for the use of IRI and other interactive instructional strategies in other areas, such as health or environmental education.

Rebecca Kalin worked fulltime as scriptwriter and trainer of scriptwriters. She assisted in the following tasks:

- provided continuing on-the-job training to the two scriptwriters currently working on the English In Action series.
- provided initial and ongoing training for 4 new scriptwriters expected to join the project (for English teacher training, and mathematics).
- provided script continuity management and quality control for level one of the English In Action series through the end of 1993 and provide assistance in revision work in 1994;
- provided script continuity management and quality control for level two of the English In Action series;

Research and evaluation was largely carried out by well qualified South African consultants, Sbongile Nene and Charles Potter.

By the end of the reporting period, the following achievements had been realized:

### **Production / Project Implementation**

- OLSET's scriptwriters had completed 100 scripts for the second level of English;
- OLSET's radio production team had completed recording and post-production through lesson 95.
- LearnTech Scriptwriting consultant Rebecca Kalin, working with Nick James of CPE, had completed drafts of maths scripts through lesson 30;
- OLSET's radio production team completed recording through lesson 30 of the "Many Times" radio maths series and worked with Stuart Leigh to complete post-production and cassette dubbing for distribution to pilot schools through lesson 30;

- print (teachers notes and daily worksheets) for maths programs 11-30 had been produced;
- OLSET's John Molefe had trained teachers for the radio maths series in four locales;
- the OLSET/MCPT/CPE radio maths series began operations in about 40 classrooms in 20 schools in four locales -Soweto (MCPT), Randfontein (OLSET), Bakenberg (CPE), and Natal (CPE);
- the most advanced school had completed approximately lesson 45 of EIA 2 by the end of the month;
- Rebecca Kalin wrote two sample revision scripts for English programs for level 1, (produced and tested in schools the previous year), incorporating aspects of EIA 2 such as a format with three teacher led activities per program;

### **Evaluation**

- Stuart Leigh and Charles Potter had created an evaluation design table for the maths project;
- maths evaluation instruments had been prepared for all coordinators, including school and class context forms, pre-interview and post interview forms, and daily observation schedules;
- a pre-test was administered to about 750 standard 2 children participating in the maths project;

### **Staffing / Staff Development**

- OLSET confirmed its decision to send Meshack Chaza to the LearnTech scriptwriting course at George Mason University in September;
- Joe Ndlovu and Nomfundo Mpondo returned from their 6 week training in ESL methods (in association with USIS) in South Carolina in the US;

The project has a further six months to run.

### **3. ASIA**

#### **Bangladesh**

During an initial visit in late 1993 from LearnTech consultant, Klaus Galda, BRAC developed a proposal to explore using interactive radio to teach English and maths in BRAC non-formal schools. After a visit in March 1994 by BRAC staff to the radio English projects in South Africa and Lesotho a decision was taken to move forward with development of a 90-program pilot English language series for grades 2 and 3. The starting point will be the normal introduction point for BRAC students - the 18th month of their 3 year program of instruction.

A LearnTech team visited Bangladesh in May 1994 to advise BRAC staff on the development of English language programs and to plan mathematics programs. The team provided detailed suggestions on the many issues involved in designing English language teaching by radio.

BRAC decided that it would assess the radio English project, and analyze existing IRI radio materials and assess the effectiveness of the materials they are now developing. The radio mathematics project will not begin until BRAC mathematics staff have had a chance to complete their own materials, assess the BRAC radio English project, do further analysis of existing radio maths materials (Honduran scripts in English) as well as analysis of the effectiveness of the text based materials that they are now developing.

They will try out these new materials in classrooms for some time to assess how well teachers are able to deal with the materials and to discover which areas present special problems to children. They see that the radio series might then be used to address some of the problem areas, fill gaps, and enrich the print based approach.

The subject of a possible radio math pilot will be revisited in 1995 when something is known about the viability of BRAC's radio English project and when some evaluation information about their new materials is available.

In September, 1994, BRAC sent a scriptwriter at its own expense to Learntech's EDC/George Mason University course to improve her scriptwriting skills.

#### **Philippines**

##### **Using video for teacher training**

In August, 1992, Steve Anzalone initiated collaboration between Learntech and INNOTECH in developing and testing a new interactive model for using videotapes for teacher training. By September, 1994, two videotaped lessons had been prepared, one on "The Art of Questioning" and one on "Reacting Techniques". These were accompanied by a trainer's manual, transparencies on selected topics related to interactive instruction, and follow-up worksheets for take-home assignments.

The package was tested with teacher trainers in two settings: an in-service training session for 33 experienced teachers and a pre-service group of 140 teacher training college applicants. It was also evaluated by 50 supervisors, principals and teachers; the Dean, faculty and students at the Philippines Normal University, and a group of 22 Nepali educators. The package also received widespread review on courses at INNOTECH by participants from Cambodia, Laos and Vietnam.

The favorable reviews that the package received have persuaded INNOTECH to conduct an adaptation of the tape in Thailand in 1995.

## **STAFF AND CONSULTANT TRAVEL**

### **Australia**

● **Micael Olsson**, September 10-11, 1994. Met with Barry Evans of Wildlife Fund - Australia and Michael Bourke at the Australian Centre for International Agricultural Research regarding the development of environmental education and information packages around nonwood forest products for rural populations of the Asia-Pacific Region as part of the multichannel learning activity development.

### **Bangladesh**

● **Klaus Galda**, November 14-28, 1993. Participated as an advisor to the World Bank pre-appraisal mission in the uses of mass media to support an upcoming World Bank-financed basic literacy project and consulted with BRAC and helped them plan a pilot IRI English project and possible follow-up activities.

● **Stuart Leigh**, June 2-9, 1994. Surveyed the current project plans and assisted BRAC in established or refining production, implementation, training, evaluation plans and radio studio development plans.

● **Rebecca Kalin**, June 2-9, 1994. Surveyed the project's goals and scripting processes and assisted BRAC by conducting a one day workshop for scriptwriters, refining scriptwriting processes and consulting on design of workbooks and teacher notes for Level 1 English programs.

### **Bolivia (PARI)**

● **Joao Pinto**, January 5-15, 1994. Worked with PER on institutionalization strategies, and with PARI staff on evaluation activities.

● **David Werner**, January 24 - February 5, 1994. Reviewed the health lessons for accurate health content and integration of drama and problem solving approaches.

● **Ann Fitzgerald, Emilio Oros, and other PARI staff** travelled to Costa Rica in April, 1994 to attend the LAC seminar hosted by LearnTech. PARI staff shared with participants their experience using IRI in teaching health in Bolivia and their careful analysis of evaluation data.

● **German Vargas**, July 18-27, 1994. Reviewed with the PARI curriculum team content areas which overlap between environmental programs and the fifth grade master plan, to work with the production of the fifth grade curriculum, and to improve the dramatic quality of the scripts and taping of the lessons.

● **David Netherton**, August 22-September 2. As part of a team, worked with local education expert, Brenda Langdon, on a country assessment of Bolivia as it relates to the current state of health and nutrition in Bolivia's school aged children, and the

assessment of institutional capabilities of agencies working with basic education in Bolivia.

- **Dolores Alvino**, September 10-23. Met with PER, EDC's Bolivian subcontractor, and EDC's Chief of Party, to deal with the subcontract negotiations between EDC and PER, to observe the health and math classes in Cochabamba and Lapa, and to meet with the AID Project Officer in Lapa.
- **Magda Raupp**, September 10-October 4. Worked with the PARI team in designing tests and evaluation tools, and in implementing and evaluating the 10 lesson bilingual pilot project in rural Cochabamba.
- **Jose Villar**, a local consultant in Bolivia, started working with PARI in September to help initiate a PR effort to reach out to central authorities, regional authorities and international entities to inform them about the project's results and to solicit support for future strategies, to develop a marketing study looking for new markets for the program and products, and to solicit new areas for applying the IRI methodology with neighboring countries or within Bolivia.
- **Rita Fairbanks**, a local community health specialist in Bolivia, worked with the PARI staff in September and will work through December, to support the activities of the Cuidemos Nuestra Salud program to coordinate program activities with health agencies at the district levels, and to develop strategies for integration and outreach.

### **Bolivia (Early Childhood)**

- **Andrea Bosch**, November 28 - December 7, 1993. Visited several pidis in El Alto and Tarija to observe the interactive radio pilot programs for early childhood development in action. She also met with the project team, USAID personnel, Onamfa officials and others.
- **Enrique Tasiguano**, December 2-21, 1993. Advised Onamfa on how to incorporate parent involvement in the overall PIDI process.
- **Andrea Bosch**, April 4-15, 1994. Worked with Onamfa/PER team on the revision of the first 20 programs of the PIDI project and ensured that original individual IRI program and overall project objectives have been met. Also met with regional teams and visited pidis in El Alto and Tarija to see the final programs in use.
- **Judith Evans**, June 13 - 20, 1994. Dr. Evans evaluated the Jugando en el Pidi program to provide an analysis of the revised materials in terms of their appropriateness in teaching teachers how to teach and providing children with appropriate learning activities. She also made recommendation about the future developments of the project.

## **Cape Verde**

- **Joao Batiste Furriery-Pinto**, October 17-29, 1993. Developed the formative evaluation plan, helped with planning the pilot program, and designed a qualitative evaluation for the first 30 lessons to test for the teachers and students reactions to the radio program. Presented a one day Qualitative Evaluation seminar.

## **Costa Rica**

- **Klaus Galda**, January 13-February 2, 1994. Advised the Interactive Radio Environmental Education during the period of transition from production to evaluation, training and institutionalization. Also assisted in writing the final project report and participated in the planning of the Latin American Seminar on IRI.
- **Carleton Corrales**, January 23 - 26, 1994. Participated in the planning of the Latin American Seminar on IRI.
- **Ada Passigna**, February 13-18, 1994. Worked with the various Costa Rican partners working on the development and testing of two pilot modules for multi-grade teaching in six rural schools, initiated instructional design activities related to development of these modules and elaborated the next steps to be taken toward completion of the modules. Also worked with the Costa Rican collaborators in further specifying the evaluation/action research component and conducted negotiations on a draft version of a sub-contract with Radio Nederlands to support this work.
- **Andrea Bosch**, June 27 - July 1, 1994. Travelled with Jim Hoxeng, USAID, to observe the Radio for Environmental Education project in use in Santo Domingo and module 1 of the multi-grade project in use in La Perla. Explored the possible adaptation of the English in Action programs for Costa Rica.
- **Andrea Bosch**, August 15-19, 1994. Concentrated on ways to make the pilots appropriate on a regional level through discussions with Flora Ruiz and the Environment Office at USAID, and Jose Perez and Luis Tejada at Radio Nederland.

## **Dominican Republic**

- **Gloria Gamero**, November 7-20, 1993. Continued training RADECO's evaluation team and worked on the design for the Summative Evaluation of the Let's Learn Mathematics series.
- **Carleton Corrales**, November 20-28, 1993. Discussed current status of the project with team members and participated in two training seminars - one for school principals and the second for participating primary school teachers.
- **Marvin Murillo**, December 5-18, 1993. Participated in the RADECO Training Workshop on Radio Production and Management.

- **Jose Romero**, January 9-27, 1994. Designed a marketing plan for the Let's Learn Mathematics series and trained RADECO staff in marketing techniques.
- **Mario Ramirez**, February 6-26, 1994. Worked with RADECO on development of the second grade curriculum of the Let's Learn Mathematics series.
- **Jose Maria Ramirez**, February 20 - March 4, 1994. Assessed, designed and re-designed teacher-training seminars for interactive radio instruction.
- **Gloria Gamero**, April 17-30, 1994. Worked with Altagracia Diaz de de Jesus on evaluation plans and test development for radio lesson in math.
- **Edith Vasquez**, June 5-18, 1994. Collaborated with Riselda Perdomo and Altagracia Diaz de Jesus on the design of a scriptwriter training course for RADECO.
- **Carleton Corrales**, July 30 - August 7, 1994. Helped with the development of a short term action plan for the Let's Learn Mathematics series and attended the closing seminar on the results of the first year of the mathematics series.

## **France**

- **Andrea Bosch**, March 10-15, 1994. Met with UNESCO and the International Institute for Educational Planning/Donors for African Education to discuss the IMAGE paper on multi-channel learning approached to education for girls and women and working group.

## **Ghana**

- **Mike Laflin, Stuart Leigh and Mitch Kirby**, September 5-13, 1994. Conducted a feasibility study of interactive radio instruction in Ghana that focussed on: Are policy makers and practitioners interested in IRI?; Can IRI improve teaching and learning for primary education in Ghana?; How can IRI add value to Ghana's experience with radio education programming?; Does Ghana have the institutional and human resources needed to develop an IRI program?

## **Honduras**

- **Rieselda Perdomo**, October 18-31, 1993. Worked with COEDUCA to define the needs of the scriptwriting unit and then design and implement a training for the scriptwriters that addresses those needs.
- **Carleton Corrales**, October 23 - November 8, 1993. Worked with COEDUCA on the ABEH and Civics projects.
- **Carleton Corrales**, December 19, 1993 - January 10, 1994. Collaborated with Donald Swanson on the evaluation of ABEH. Also met with USAID regarding the requested change in the scope of work for the ABEH project.

- **Donald Swanson**, January 2-8, 1994. Collaborated with Carleton Corrales on the evaluation of ABEH.
- **Carleton Corrales**, April 4-13, 1994. Reviewed the current progress of the activities under the ABEH and Civics projects.
- **Alejandro Gallard**, April 24 - May 5, 1994. Reviewed curriculum development activities for interactive radio and worked on the development of levels four to six of the Adult Basic Education Project.
- **Carleton Corrales**, June 9 - July 5, 1994. Reviewed the activities of the ABEH Project, including the design of the Master Plans for levels four, five and six of ABEH and the progress of the Civics project.
- **Alejandro Gallard**, July 24 - August 6, 1994. Reviewed the Master Plan for the six levels of the Adult Basic Education Project and worked on the development of levels four to six.
- **Altagracia Diaz de Jesus**, August 28 - September 10, 1994. Reviewed segments written for Civic, Legal and Democratic Education and reviewed complementary printed materials.
- **Carleton Corrales**, August 29 - September 18, 1994. Worked with COEDUCA in order to complete deliverables under ABEH, including those developed under the Civics project.

## **Japan**

- **Steve Anzalone**, March 8-10, 1994. Met with Prof. Yoichi Nishimoto, a member of the IMAGE Steering Committee, and discussed areas of potential collaboration. Also met with Prof. Yasutaka Shimizu, of the Center for Research and Development of Educational Technology at the Tokyo Institute of Technology, and discussed educational technology.

## **New Zealand**

- **Klaus Galda**, May 2-12, 1994. Presented a two-day workshop on interactive radio instruction to 18 participants from 11 Pacific Island nations and participated in ICDE's Regional Distance Education Conference.

## **Niger**

- **Gilles Lavigne**, April 27 - May 8, 1994. Worked with a team of educators from AID Washington in undertaking a needs assessment and an appraisal of feasible education alternatives related to the development of distance education strategies in Niger.

## **Papua New Guinea**

- **Micael Olsson**, September 5-10, 1994. Led a planning workshop at the invitation of the National Department of Education with the goal of revising all radio school broadcasts to follow the interactive radio instruction methodology introduced by EDC under the Radio Science program there. Senior education officials reached consensus around a strategy for integrating the development of the new programs into the larger education reform program about to be implemented.

## **Philippines**

- **Steve Anzalone**, November 30 - December 3, 1993. Reviewed INNOTECH's progress in completing Phase 1 of the VIDEO TECH project and began laying plans for Phase 2.

- **Steve Anzalone and Andrea Bosch**, February 26 - March 1, 1994. Participated in an adaptation workshop of the LearnTech/INNOTECH pilot teacher training modules at which progress under Phase 1 of the VIDEO TECH project was reviewed and Phase 2 begun.

- **Micael Olsson**, August 30 - September 5, 1994. Met with officials of the Asian Development Bank regarding support for further work in Papua New Guinea to develop interactive radio programs in all subjects following expressions of interest on the part of educational planners.

## **South Africa**

- **Maurice Imhoof**, October 24 - November 24, 1993. Worked with OLSET to assess the various English in Action (EIA) materials, helped develop the curriculum guide for Level 2 and the revised curriculum for Level 1.

- **Mike Laflin**, October 25 - November 5, 1993. Met with LearnTech's Resident Technical Advisor and OLSET management and staff to assess the progress of the project and to plan for developments through the rest of the year and beyond.

- **Alexander Romiszowski**, April 18-29, 1994. Assisted OLSET in the design and development of a system of radio-based mathematics instruction which is aligned with major theoretical positions and methodological trends currently espoused by mathematics education specialists and educational administrators in South Africa.

● **Mike Laflin**, July 14-22, 1994. Worked with USAID/Pretoria, the LearnTech field team and South African collaborators to plan the last nine months of project work in South Africa, specifically focussing on the completion of the OLSET work, discussions of Andrea Bosch's assistance to the educare initiative and the presentation of a small research study that might be conducted in improving instruction in multigrade schools.

● **James Cobbe**, June 20 - July 15, 1994. Produced a report analyzing the costs of the Radio Learning Project as it currently is and providing estimates of the probable costs to take the project to scale.

● **Andrea Bosch**, August 27 - September 5, 1994. Met with NGOs involved in early child development, research, and/or media to initiate contacts and begin uncovering the methods in which media can be used to support the education of caregivers and the overall growth of young children and also to identify possible counterparts.

## **Thailand**

● **Steve Anzalone and Andrea Bosch**, March 1-10, 1994. Worked with Prof. Chawalert Lertchalolarn of Chulalongkorn University on collecting data on the effect IRI has on education and materials in Bangkok and northern Thailand.