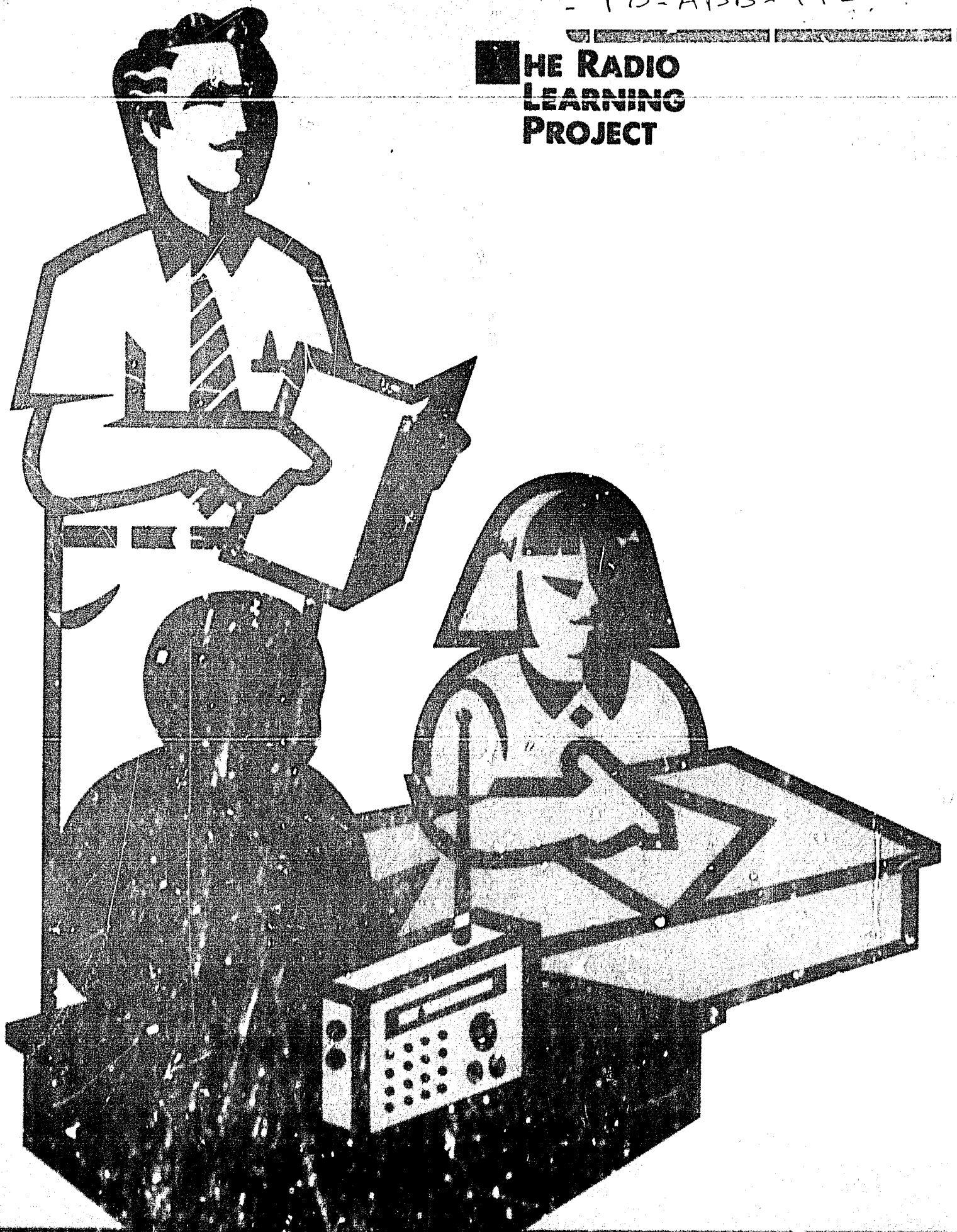
Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp

PD-ABB-992

THE RADIO LEARNING PROJECT



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

PD-ABB-992

ANNUAL REPORT

JANUARY 1989-

APRIL 1990

RADIO LEARNING PROJECT ANNUAL REPORT
JANUARY 1989 - APRIL 1990

TABLE OF CONTENTS

		Page
I.	SUMMARY OF IRI PROJECTS	1
II.	SITE ACTIVITIES	2
	Belize	2
	Bolivia	3
	Costa Rica	5
	Dominican Republic	8
	Ecuador	8
	Honduras	8
	Lesotho	12
	Papua New Guinea	12
	Swaziland	13
	Thailand	14
III.	PROMOTIONAL ACTIVITIES	14
	Generic Programming	14
	Seminars, Workshops and Conferences	15
	Publications	17
	Papers	17
	Media Coverage	18
IV.	IMPLEMENTATION STRATEGY	18
V.	PLANS FOR 1990	19
VI.	CONCLUSION	25

RADIO LEARNING ANNUAL REPORT
JANUARY 1989 - APRIL 1990

SUMMARY OF IRI PROJECTS

The past year has been a promising and productive year for the Radio Learning Project (RLP). We continued to implement interactive radio instruction (IRI) on a national basis in two countries, managed several successful IRI pilot programs, began work on a new Spanish reading course, and laid the groundwork for increased use of IRI in Africa and Asia. Throughout this time, we supported ongoing development and implementation activities in Latin America. In addition, the project explored new applications of IRI in health and in teacher training for math and science. The RLP also helped to support the adaptation of an ESL program for regional use in Latin America.

Radio English lessons were used for successful pilot projects in Belize and Swaziland. Belize has committed itself to a more conclusive pilot test in 1990-91, and Swaziland will soon decide whether to follow suit. Second-grade mental arithmetic radio programs, developed by AVANCE in Honduras, were adapted and successfully pilot-tested by CENADI in Costa Rica.

With funding from USAID/Bolivia, The RLP pilot-tested a new radio series on health, targeted to reach fourth and fifth grade children with information on the prevention and treatment of infant diarrhea. Since the successful conclusion of this series, discussions have been held about expanding the course to include topics such as nutrition, agriculture, population, ecology and drug abuse education beginning in late 1991.

The RLP also pioneered new broadcasts for teacher training in 1989 and 1990. Teachers working with IRI programs have always participated in a one or two day training session on using IRI in their classrooms. The RLP has now begun testing a radio-based teacher training series that instructs teachers on improved ways to teach important concepts in science and math. These pilot programs are taking place in Papua New Guinea and Costa Rica.

Planning for a new Spanish reading course is underway in Honduras. Although these lessons are designed for use in Honduras, AVANCE plans to re-tailor them into a regional or generic course that can be implemented with minimal changes throughout Spanish-speaking Latin America. Mindful of the high costs of adaptation, the RLP sponsored a 1989 meeting of Latin American educators to discuss the possibility of developing generic courses that would be less expensive to implement throughout the region.

To encourage more interest among African educators, the Radio Learning Project and the Zimbabwe Ministry of Education and Culture co-sponsored a meeting on radio education for fifteen sub-Saharan African nations, held in Harare in January, 1990. This conference inspired a great deal of enthusiasm; promotional efforts in Africa have increased as a result (see "Africa" on page 19).

In Asia, the RLP was represented at two conferences. The first was the World Conference on Education for All held in Thailand in March, 1990. IRI was featured at an A.I.D roundtable discussion that included a demonstration of Thai children learning English through IRI. Information about IRI was also presented at four exhibits. Later in March, representatives of the RLP presented a paper that summarized IRI work in the Asia/Pacific region at the Fifth Symposium on Educational Broadcasting in Asia and the Pacific. These activities helped to disseminate information about IRI to a broad spectrum of educators and educational donors both within and outside A.I.D. mission countries.

SITE ACTIVITIES

Belize

In 1989 the Ministry of Education tested first-grade English language instruction tapes, developed in Kenya and modified in Honduras. A pilot project for the "Let's Learn English" programs was conducted from September to December in six classes (170 students) with a control group of six classes (177 students). Because of the small number of classes, the following data cannot be considered conclusive, but the positive results are in line with the findings from other interactive radio projects.

Table 1 Results Radio English, Grade 1, Belize

Results of the Preliminary Pilot Study ESL in Belize(*)

	Percent(%)	Median
Experimental Group	55%	10.97
Control Group	38%	7.67

(*) Based on a posttest with twenty questions

Neither gender nor location appeared to influence the results significantly. Boys had a median score of 11.10 in comparison to girls' median of 10.82. Students in the northern part of the country scored a median of 10.93 while students in the south had a median of 11.2.

The Ministry of Education is planning to try out the full set of first-year lessons in a more extensive pilot project that will take place in about twenty-five schools during the 1990-91 school year.

As part of the Belize pilot project, the RLP experimented with the use of "Speak and Read" electronic learning aids. The objectives of this experiment were to see if the

children could benefit from using these devices, and to see if there might be a particular advantage from using them in combination with the radio English lessons. For this activity we collaborated with project administrators from the Institute for International Research, who have worked with similar learning devices. The results of this experiment should be available in mid-1990.

Bolivia

Mathematics

The RLP began work in Bolivia in 1987 when we helped Fé y Alegría, a non-governmental organization, conduct a successful second-grade pilot study of radio math lessons. In 1988 the Bolivian Radio Education Project began a large-scale project reaching about 9,000 children with second-grade math programs adapted from radio math in Nicaragua. The following year the Bolivian Radio Education Project broadcast 135 lessons each in the second- and third-grade mathematics series to about 18,000 students in more than 500 classrooms in five of Bolivia's nine departments. A preliminary estimate for 1990 indicates that about 2,000 classrooms with 60,000 students are currently using IRI.

The impact of the IRI lessons on student achievement has been significant. In 1989 a summative evaluation was carried out on the grade 2 lessons with impressive results. A control group mean score of 47% was surpassed by a radio group mean score of 66.3%. This evaluation also showed that bilingual Indian children were not held back by language difficulties when the radio lessons were broadcast in Spanish. Both bilingual Indian and native Spanish-speaking children improved significantly more in the radio group than in the control group. The very strong effect sizes are shown in Table 2.

The project also developed and piloted a 10-lesson module on teaching set theory to second- and third-graders during 1989.

Table II Grade 2 Radio Mathematics

	Effect Size
Overall	.915
Cochabamba	.784
Trinidad	1.473
Kami	1.071

Initially, the Bolivian Radio Education Project was to develop three grades of radio math and one grade of radio language arts. During 1989, the project decided to postpone the development of the language arts lessons in favor of increasing the scope of the health lessons and completing the series of elementary school math lessons from grade 2 through grade 5. This will require a major adaptation of the original Nicaragua radio math curriculum for grade 4 and development of a totally new curriculum for grade 5.

Although production of the language series has been postponed, the project recorded a series of twenty radio lessons of Bolivian children's stories that will be broadcast in lieu of mathematics lessons during school vacations. Each story has three goals: to increase listeners' vocabulary, to increase knowledge and appreciation of their cultural heritage, and

to sharpen the audience's aural comprehension by providing a series of reflective questions. A secondary objective will be to sustain children's and families' interest in the radio lessons.

Health

During 1989 the Bolivian Radio Education Project developed a successful health pilot project for fourth and fifth graders. The objective was to teach them about the causes and treatment of diarrhea, a major cause of death in Bolivian infants and also a serious ailment among older children. The lessons focus on teaching concepts and behaviors over which the children themselves have control. These topics include personal hygiene, water purification systems (by boiling, filtering or sunlight) and instruction in oral rehydration therapy. The project targeted older children because they are often the caretakers of younger siblings who are susceptible to this ailment. The project broadcasts the lessons twice weekly to 400 students in ten classrooms from January to June 1989.

The target group of older children was tested before and after the 10-lesson health intervention, using the same examination. Table 3 shows the test results.

Table III Results of Radio Health Lessons

	Pretest		Posttest	
Grade	**N**	**% Correct**	**N**	**% Correct**
4	224	51%	211	70%
5	214	57%	199	76%

In particular, students made significant and important gains in knowledge of four areas:

1. Knowing the amount of liquid that a child should drink if ill with diarrhea;
2. Understanding the relationship between bottle feeding and frequent diarrhea;
3. Recognizing one or more symptoms of dehydration,
4. Explaining how to mix homemade oral rehydration solution correctly.

The success of the radio health program may be partially due to the careful preparation of the lessons. Because of the sensitivity of teaching primary health care in Bolivia, a socially complex country, a thorough baseline study was completed before lesson development began. The project analyzed all available anthropological studies pertaining to health in Bolivia to assess intervention acceptance or rejection in specific ethnic groups.

To ensure the health curriculum would be both culturally appropriate and practical, the project also conducted field research on the target population's perception of specific health problems and interventions. Since health and dietary practices are culturally influenced, an anthropologist was hired to conduct individual and group interviews with fifty parents from the target locality. These interviews provided additional baseline data on issues relating to parents' understanding of basic health concepts, their beliefs in myths related to diarrhea and nutrition, community health and sanitation practices, and sex roles influencing family health and nutrition activities and decisions. Fifty children were also interviewed about their home life, household responsibilities, sibling care, and perceptions of health problems and practices.

Members of the health team also visited communities participating in the pilot to observe common sanitation practices, particularly the acquisition, care and storage of water, and to interview community health workers about outreach activities. They also observed classes in community schools to gather information about students' achievement levels, and participated in recreational activities, such as games and drawing, to learn more about students' interests, motivations, and understanding of specific words and images.

This cultural baseline information was used to identify health behavior that could be influenced by health education. The health team's ability to integrate cultural beliefs and attitudes into acceptable health messages was critical for the effective design of the final curriculum.

At the conclusion of this successful project, parents, teachers, and students all expressed interest in expanding the pilot activity to include two additional modules for fourth and fifth grades. However, Fé y Alegría, voted to postpone development of additional materials so that it could first devote its energies to internal reorganization.

Recently, USAID/Bolivia has expressed interest in expanding the Radio Education Project to include a health sciences course for children in grades 3-6. This program would focus on health, nutrition, population, agriculture, environment, and substance abuse issues. Discussions about this proposed course were held at EDC/Boston on March 28 and at EDC/Washington on March 30, 1990.

The project created a 18-minute, low-budget videocassette of all its activities; this has been used as a marketing tool in Bolivia, offering a general introduction to the project for all phases of program development.

Costa Rica

In mid 1988 Costa Rica's National Center for Teaching (CENADI) adapted and introduced IRI mental arithmetic lessons to twenty Costa Rican first-grade classrooms. These pilot lessons, first developed and used in Honduras, were introduced as part of a plan to raise the quality of education; in particular it was hoped that they would improve math instruction in remote multigrade classrooms. After the successful conclusion of the first-grade pilot, math lessons were broadcast to first-grade classes in about 600 schools during 1989, and are being used in 1,000 in 1990. The grade 2 lessons were used in twenty schools

in 1989, and are in 500 schools in 1990. CENADI also plans to pilot the grade 3 lessons in a small number of schools in 1990.

To evaluate the impact of grade one lessons on different types of school situations, participants in the summative evaluation of this grade have been broken into three groups: one-teacher schools, three-teacher schools, and large schools. The result for the whole group is 68.7% for the radio group and 63.1% for the control group. At first this looked a bit disappointing to those accustomed to exceptionally large gains achieved by other interactive radio programs, even though the effect size of .22 represents a respectable gain in achievement.

Table IV Achievement Results from the Evaluation of the Grade 1 Costa Rican Radio Mental Mathematics Programs

Type of School	Radio Mean % Correct	Control Mean % Correct	Percentage Difference
One-Teacher	58.2	41.5	16.7% (a)
Three-Teacher	63.8	53.1	10.7% (b)
Large Urban	73.0	73.1	None (c)
Overall	68.7	63.1	5.6% (d)

Notes: (a) T-test showed that the difference between radio and control mean test score is significant at $p < .003$. Effect size = .63

(b) Difference between radio and control significant at $p < .001$. Effect size = .44

(c) Difference not significant at $p < .05$.
Effect size = .01

(d) Difference significant at $p < .002$.
Effect size = .22

However, the data in Table 4 reveal very interesting dissimilarities between the three groups. In the small, one-teacher schools, the difference in favor of the radio group (58.9%) as opposed to the control group (41.5%) is remarkable. In the medium-sized schools, the

difference is still quite large (63.8% versus 53.1%); but in the large, urban schools, there is no difference between the radio and control groups. The overall test difference is less than expected because the large schools have by far the largest number of students (almost 60% of the sample), which then unduly influences the total result. If we use the school as the unit of analysis -- in other words if our overall mean is the average of school scores, so that each school contributes equally to the overall result -- instead of the individual student, then the result is a group mean of 64.5% for the radio group and 54.4% for the control group. With this type of analysis the result in the small schools has a relatively larger influence on the overall result.

It is interesting to note that the radio programs apparently help reduce the normally large rural-urban educational gap in Costa Rica. In the radio group, the mean difference between the large urban schools and the one-teacher schools is 14.1 points while in the control group the difference is 31.6 point. We conclude that IRI programs appear to promote urban-rural equity in Costa Rica, a result that is consistent with those from IRI programs in other countries.

Under a grant from the RLP, CENADI is also developing a radio-based teacher training series to help teachers with math education. A teacher training conference was held in April 1989 in Costa Rica to plan a series of lessons to train teachers in math instruction as well as in the use of interactive radio lessons. CENADI is producing twenty half-hour radio lessons for teachers. The first nine lessons are designed to motivate and train teachers in the use of interactive radio math lessons in the classroom. The remaining lessons, accompanied by a booklet, will help first-grade teachers with several mathematics topics, including areas not fully covered by the children's radio programs and topics that teachers find difficult to teach. The design of these lessons is based on several studies carried out by CENADI. They tested the teachers' knowledge of mathematics and asked them how to diagnose errors made by students and what they found most difficult to teach.

CENADI is interested in using radio to teach two other subject areas - English and environmental studies. In 1990 the Ministry of Education plans to test the first twenty radio English lessons from a series being adapted by AVANCE (the organization that has worked on mental math lessons) from the IRI English series developed for Africa. The Ministry also plans to write a proposal to apply IRI methodology to the teaching of environmental studies.

Sponsored by the Radio Learning Project, two CENADI delegates visited the Dominican Republic to observe and learn more about the RADECO project. This program, particularly its language component, continues to be of great interest to the Costa Rican Ministry of Education for its rural, multigrade schools.

The RLP sponsored a one day meeting on the Costa Rican experience with IRI in September, hosted by AVANCE in Honduras. The purpose of this meeting was to review the Costa Rican activities and the assistance provided by AVANCE and the RLP.

Dominican Republic

See below under "Promotional Activities."

Ecuador

After a very successful interactive radio math pilot project in 1988, the USAID mission is moving ahead with plans for a large-scale project to begin in mid-1990. The organization to host the new project will be CIESPAL, a Quito-based regional institution with whom we have worked previously. The Radio Learning Project is providing technical assistance in the preparation of the project paper.

Honduras

Spanish Reading Course

In early 1990 AVANCE, a USAID/Honduras supported agency that works with the RLP, completed an implementation plan for a reading course in Spanish for grades 1-3. The new programs will be based on the Honduran national primary education textbook series. The radio programs will concentrate on methods and varieties of reading presentations, drill, and practice.

AVANCE has sought to expand its services throughout the Latin American region. With an expectation that other Latin American nations would also value a reading course, a separate regional version will be developed for international use.

Mathematics

The AVANCE mental math series La Familia de los Números differs from the radio math course used in Nicaragua, Thailand, and Bolivia because it focuses on mental computation skills. It helps students master mental processes which are the basis for all work in mathematics. The course stresses cognitive skills including algorithms, proofs, problem solving, estimation, and memorization. Radio lessons are designed to complement new textbooks introduced in Honduras in 1987. Because the program requires no expensive support material and only minimal teacher training, it can be adapted easily and inexpensively for use anywhere.

The first implementation phase for the grade 1 math lessons began in April 1988 reaching 3,000 classrooms and 70,000 children in six of the country's eighteen districts. More than 2,900 teachers purchased specially packaged materials to accompany the lessons. At end of the school year, students were evaluated and mean test scores were compiled for three groups of first graders:

- **Traditional** group - children who received **traditional instruction** and used either old textbooks or no textbooks at all. This group was tested at the end of the 1987 school year before either new textbooks or radio lessons were available.

- **Textbook** group - children who used the **new textbooks and** whose teachers received **the teacher training** provided by the Primary Education Efficiency Project. This group was tested at the end of the 1988 school year.

- **Radio** group - children who received the **radio lessons in addition to the new textbooks and the teacher training** from the Primary Education Efficiency Project. This group was also tested at the end of the 1988 school year. The results were extremely positive.

Table V The Impact of Radio Math, New Textbooks and Teacher Training on Grade I Students in Honduras

	Traditional Instruction	Textbooks & Teacher Training	Radio, Textbooks, & Teacher Training
Mean score	34.3%	43.7%	51.9%
Effect size		0.43	0.80*

*This refers to the difference between traditional instruction on the one hand and the combination of radio, new textbooks and teacher training on the other.

During 1989 the RLP completed further analyses of first-grade math test data to determine IRI's potential impact on school efficiency. Our objective was to see if IRI lessons reduced the number of students repeating grade one. The same three groups were compared.

The data analysts looked at the posttests (with a maximum score of 22) to determine which children would pass math. Since the tests given are not ordinarily used for grading school children, the analysts assessed the data by using various arbitrary passing criteria. (See Table VI)

If the passing criterion were set at 7 points, 59% of the **textbooks** (actually new textbooks **and** teacher training) group and 76% of the **radio** (radio in addition to new texts

and teacher training) group passed. The combination of textbooks and teacher training improved performance considerably because 59% in this group of students passed versus 38% in the traditional group. The addition of radio to these interventions provided even more significant gains: twice as many children met the passing criterion when they benefited from textbooks, teacher training and radio lessons. As the data show, no matter what criterion was used, the same pattern emerged; the addition of textbooks and teacher training produced a great improvement and the addition of IRI to these two interventions contributed even more. In fact, the higher the passing criterion was set, the greater the relative impact of the radio programs. If the criterion were set at 15 points, for example, nearly three times as many students in the radio group would pass in comparison with the traditional group.

Table VI Theoretical Pass Rates in Mathematics - Grade 1

	Percentage of Students Passing Math Under Different Passing Criteria				
	Criterion (points out of 22)				
	7	**9**	**11**	**13**	**15**
Traditional group	38%	32%	26%	17%	10%
Textbook group	59%	44%	34%	23%	13%
Radio group	76%	64%	53%	44%	29%

However, despite the measurable impact of the three interventions on children's math posttest scores, the hypothetical passing scores cannot be used to predict improvements in promotion rates, which are the real test of improved efficiency. The increase in numbers of children "passing" math did not represent a corresponding increase in the number of children who were promoted; the actual promotion rates for grade 1 in Honduras were:

Traditional group	70%
Textbook group	76%
Radio group	78%

While improved math performance apparently motivated Honduran teachers to promote more children, the increases in promotion rates were not nearly proportional to the performance gains in math verified by test data. Perhaps teachers put more weight on

performance in subjects other than math, or in factors such as age, attendance, class participation, and previous repetition. It is also possible that some teachers have an implicit "quota" system that they are reluctant to alter. Nonetheless, the analysis of the Honduran data for first-grade math indicates that IRI does have a positive effect on promotion.

If radio programs have a beneficial effect on promotion, then IRI lessons could have a potential impact on the internal efficiency of education systems. Internal efficiency refers to the extent to which children pass successfully through the school system on time. Dropout and repetition rates are major indices of efficiency; another important index is the number of years of schooling that is required for each graduate. For example, in many countries where there is high repetition and dropout, it may take twelve years of schooling for each sixth grade graduate.[1]

How might the cost for an interactive radio series be justified on the basis of improved efficiency? Providing IRI lessons for children in schools will increase the cost of education, yet the lessons result in significant learning gains. Theoretically, if the children learn more math and language, there should be an increase in the promotion rate and a proportionate decrease in repetition. Even a modest increase in promotion could result in a significant savings for the Ministry of Education in terms of the cost per primary school graduate. This savings could pay for the costs of the radio programs. The following example with data estimates from Honduras demonstrates how a very modest increase in efficiency results in an extraordinary cost savings. The following assumptions were made:

- There are 45 students per class.
- The add-on cost for the radio programs is $0.65 per child per year, or $29.25 per class.
- The Ministry of Education spends a total of $70 per student per year.
- The radio programs result in one additional child being promoted.

The calculations are straightforward. It costs the Ministry of Education $29.25 per classroom per year for the radio programs, but these programs result in at least one additional child being promoted to the next grade. Therefore, the Ministry does not need to pay $70 for the education of that child for the year he or she would have repeated. Thus, for the added expense of $29.25 the Ministry does not have to pay $70 for a child to repeat, for a net savings of $40.75. That is an exceptionally high return on an investment.

---

[1] Note that a reduction in the number of children who drop out of school will result in an <u>increase</u> in the total number of children in school; a reduction in the repetition rate will result in a <u>decrease</u> in the school population. Thus, in terms of total school enrollment, a proportionate improvement of both indices of efficiency (dropout and repetition) will not have a significant impact on total enrollment. However, the efficiency of the school system will improve because more children will receive more years of schooling, and it will take fewer years of education to produce a school graduate.

$29.25 Spent for radio lessons	One child more is promoted	$70 Saved by not educating 1 student an extra year	$40.75 Net Savings

Lesotho

The radio project in Lesotho is administered by the Academy for Educational Development under the BANFES project. Grade 1 and 2 English lessons, adapted from the Radio Language Arts Project lessons from Kenya, are now being used nationwide in 95% of the schools (200,800 children). A summative evaluation was completed for grade 2 and results are expected by mid-1990. The adaptation of grade 3 lessons is complete and the re-recording of these lessons should be finished by mid-1990 also.

Papua New Guinea

The Radio Science Project (RSP), funded by the Agency for International Development, is a collaborative effort between the Education Development Center and the Papua New Guinea (PNG) National Department of Education. Friend Dialogues of North Carolina is a subcontractor.

The purpose of the project is to develop and test a radio-based science curriculum for PNG children in grades 4-6. The project is producing sixty lessons for grades 4 and 5, and fifty lessons for grade 6. Each lesson is divided into two parts, a twenty-minute radio broadcast followed by ten minutes of teacher-directed activities.

The radio lessons are built on interactive radio methods used successfully for teaching mathematics and language in other countries. But the RSP's specific challenge is to apply the interactive radio methodology to a discipline that requires more hands-on learning and a more open-ended, inquiry approach.

Grade 4 lessons were developed in 1988 and formally evaluated in 1989. The grade 4 summative evaluation took place in twenty-seven classrooms in the East Sepik Province. This province is typical in PNG because it is rural and has a diverse population of many distinct ethnic groups, each speaking a different language.

The results of the evaluation confirm that interactive radio is an effective tool for teaching primary school children in PNG. The mean score for the experimental group was 46.5 percent as compared to 41.5 percent for the control group. The effect size is .36, which is quite impressive for an intervention with only two 20-minute radio programs per week. Using analysis of variance, the F value is 24.45, which makes the difference of the means significant at the $p < .001$ level. The following are some conclusions from the evaluation:

Teaching science by interactive radio is effective.

The difference in posttest scores between boys and girls was less in the radio group than in the control group.

Programs were effective at all ages. The experimental group's scores were higher than those of the control group at every age between 10 and 14.

The radio programs were effective in both the biological and physical sciences, but slightly more effective in the physical sciences.

The experimental group scored higher than the control group in all types of schools: government, Catholic, and Evangelical.

The radio programs were effective across a wide range of school locations - rural, remote rural and urban.

The results of the Radio Science Project grade 4 summative evaluation are encouraging for educators looking for a cost-effective way of helping teachers teach science. In addition to the radio lessons for the children and the teacher's guides to help teachers with postbroadcast activities, the project is developing special programs to enhance the competence and confidence of primary school science teachers.

The government of PNG has decided to broadcast the radio series on a national basis for teachers who would like to use the lessons. The grade 6 lessons will be introduced in 1991, grade 5 in 1992 and grade 4 in 1993. RSP has also completed a videocassette of the project, "Science on Air."

Swaziland

The Radio Learning Project and the Swaziland Ministry of Education carried out a pilot radio English activity from November, 1989 to May, 1990. Forty grade 1 English lessons from Lesotho were adapted and tried out in twenty-five schools. About three-quarters of the funding was through a mission buy-in to the RLP; the remaining funds were from AID/S&T through the RLP. The RLP provided the required technical assistance for the six-month project.

The project produced two videos. One focuses on the role of the teacher and is useful for teacher training. The context for the tape is Swaziland, but the classroom scenes were shot in Lesotho. The other video provides an excellent overview of the project; it demonstrates the various processes involved in the implementation of an English language pilot program.

The Ministry of Education and USAID will make a decision by mid-1990 whether to continue with the next phase of introducing IRI to Swaziland. Phase II calls for a full year trial of the grade 1 lessons. A third phase would entail national implementation.

As part of an effort to develop support for IRI in Swaziland, the RLP supported a summer work program of a Swazi educator completing her master's degree at the University of Texas.

Thailand

The IRI math activity in Thailand is the oldest continuing IRI program, having started in 1980. A consultant was hired to review IRI activities in Thailand in 1989. It was reported that in 1988 about 1,200 schools in grades 1-3 in 64 provinces were listening daily to IRI "Teaching Math through Radio." In 1989 the lessons were used voluntarily for math enrichments and broadcast once a week to 72 provinces. The improved skills of teachers were cited as the reasoning for reducing the broadcast times to once weekly for each grade.

PROMOTIONAL ACTIVITIES

Generic Programming

In September 1989 the RLP sponsored a seminar, hosted by AVANCE, to discuss possibilities for developing regional IRI programs. Representatives participated from Honduras, Costa Rica, Bolivia, Ecuador, Guatemala and El Salvador. Honduras, Costa Rica, Bolivia and Ecuador have had experience with IRI.[2] As a variety of subjects have become available for an increasing number of grades, countries adopting IRI have generally chosen to adapt pre-existing radio courses to their needs rather than to develop totally new radio lessons for their students. The cost savings resulting from adaptation usually make it preferable to new development even though some degree of cultural specificity may be lost.

But adaptation can still be expensive, especially if there are vast cultural differences between the country developing IRI lessons and the one adapting them. Aware that funding is a major obstacle for many countries that have expressed interest in IRI, the RLP has become interested in the possibility of regional or generic lessons that would be developed from the outset for use in more than one country in a region. Regional programs would facilitate the spread of interactive radio instruction by making it easier and less expensive to share programs among several countries. The September meetings in Honduras focused specifically on this possibility.

Discussants at the seminar agreed that there were three possible levels of adaptation:

- **Retaining only the instructional design.** This type of adaptation would preserve the structure of the original curriculum, but modify language, vocabulary, and dramatic context. The programs would need to be re-recorded. This is the most common and

---

[2] The USAID mission in Guatemala will begin a new IRI activity in 1990. USAID/El Salvador is planning to include an interactive radio activity in the basic education plan for 1990 or 1991.

a relatively expensive type of adaptation. Examples include the adaptation of the original radio mathematics series to Bolivia and the Kenyan radio English series to Lesotho.

- **Preserving the instructional design while developing a regional context in vocabulary and culture.** In this adaptation, dramatic contexts and music from a variety of countries in the region would be used to give a regional flavor. The programs would deliberately mingle music, vocabulary, and actors from several countries to avoid identification with a single nation. To carry out this design, program developers would need to conceive of the radio series as a regional product from the very beginning. This special effort would increase the cost of series development initially, but would yield considerable savings over the long term if it could be used by other countries without further adaptation. This type of programming has not yet been tested with interactive radio programs.

- **Retaining instructional design, vocabulary, and dramatic context.** This is the most economical adaptation, requiring only superficial changes. It is particularly appropriate for situations where there is close cultural and linguistic affinity between countries that plan to share a lesson series. The most striking example of this type of simple adaptation has been the use of "The Numbers Family" in Costa Rica. This series was developed by AVANCE for Honduras but is being broadcast to Costa Rican classrooms with few changes and at low cost.

All countries except Bolivia expressed interest in promoting the development of interactive radio programs that could be easily adapted for use in other countries.

Seminars, Workshops and Conferences

RADECO Seminar - Dominican Republic

RADECO (Radio Assisted Basic Community Education Project) began in 1981 to develop lessons in math, reading, writing, and social and natural science for communities where there are no primary schools. These "radio schools" are for children in grades one through four. In RADECO communities, parents provide simple buildings where children meet each day in the late afternoon to listen to hour-long educational broadcasts. Lessons are monitored by a local radioauxiliary who is responsible for the radio and the distribution of printed materials to the listeners. Since 1986 RADECO has been institutionalized as a department of radio education within the Secretariat of Education (SEEBAC).

With funding support from the RLP, the RADECO project held a two-day seminar to inform 75 educational leaders from the Dominican Republic about its activities and enlist their help with the planning of future RADECO programs. The Radio Learning Project also sent three representatives.

Seminar participants included educators from SEEBAC (including top level officials), RADECO staff, and representatives of national and international donor agencies. Representatives at the conference gained a full understanding of the RADECO program

and viewed it positively. SEEBAC officials supported RADECO and advocated an immediate expansion of it. Seminar participants recommended that two pilot projects begin in October, 1989:

1) A test of the use of RADECO in disadvantaged neighborhoods of Santo Domingo; and

2) An experiment with the use of RADECO math lessons in formal classrooms.

Several important research projects were also suggested including a study of dropouts, monitoring of RADECO graduates, measurement of student achievement, and a study of the community recruitment program. Conference participants proposed a development program in which SEEBAC/RADECO would seek assistance from potential donor agencies. It was also suggested that RADECO programs be used to replace some of the smaller, "inefficient" rural schools.

African Conference on Educational Radio - Zimbabwe

African educators from 15 countries attended the African Conference on Radio Education in Harare, Zimbabwe, from January 22-26, 1990. Sponsored by the Radio Learning Project and Zimbabwe's Ministry of Education and Culture, the conference focused on problems facing educators in Africa and possible ways in which radio could help meet those needs. It also provided a forum for educators to share their experiences with the use of radio in formal and non-formal basic education. Participants agreed that radio is an efficient and cost-effective medium for achieving educational goals, and urged renewed emphasis on the technology's role in both formal and non-formal education in Africa. They resolved to promote closer collaboration between countries and regions to investigate educational radio on the continent.

Twelve of the countries that participated remain very interested in IRI. For planned follow-up activities, see the country reports under "Plans for 1990: Africa."

A.I.D. Basic Education Workshop

The project director gave a presentation on IRI at the A.I.D. Basic Education Workshop, held in Washington, D.C. in February, 1990. This workshop provided an opportunity to share with other donors A.I.D.'s experience supporting basic education programs.

World Conference on Education for All - Thailand

The World Conference on Education for All was held in Thailand from March 5-9, 1990. This was a major conference co-sponsored by the World Bank, UNESCO, UNICEF and UNDP, with contributions from A.I.D. and many other donors. The purpose of the conference was to develop support and a strategy for a major increase in emphasis on basic education.

IRI was well represented at the conference. A.I.D and several other organizations displayed videos on IRI. Interactive radio was also featured at A.I.D's round table on distance education. A live demonstration of Thai children learning English by radio offered particularly convincing testimony to IRI's effectiveness.

CIES - California

A staff member represented the Radio Learning Project at the CIES conference (March 22-25, 1990) in Anaheim, California.

Symposium on Educational Broadcasting - Philippines

Two staff members presented an overview of IRI at the 1990 Symposium on Educational Broadcasting in Asia and the Pacific Region, held in Manila, Philippines March 28-30, 1990. They showed "Science on Air," the new Radio Science video, to the plenary session. There was considerable interest in IRI, especially among Philippines participants.

World Bank Workshop on Educational Technology

The RLP project director was a member of a team conducting a workshop on educational technology for World Bank staff, held in Washington, D.C. in May, 1990. His presentation focused on IRI.

Publications

The RLP published Interactive Radio Instruction: Confronting Crisis in Basic Education, an A.I.D monograph, in February 1990. Written by Joan Zirker, the book includes a history and overview of IRI and an appendix on costs.

A third newsletter was also published in 1990 and featured special discussions of the development of generic or regional programs, and the second language factor in IRI, as well as summaries and reports of current projects.

In addition, the RLP re-wrote and printed the Radio Learning Project brochure. A professional designer was hired to work on the lay-out and cover.

Wambui Githiora's article on "Radio Education in Africa" has been published in the Development Communication Report issue focusing on literacy.

Papers

Michelle Fryer's paper, "Health Education by Radio in Bolivia," has been accepted for publication by the Health Education Quarterly.

Phil Sedlak has written a paper on "Interactive Radio: A New Literacy Medium" that will be presented at the International Reading Association meetings (Atlanta, Georgia,

May, 1990) and at an international symposium on "Popular Literacy by Radio" (Dominican Republic, July, 1990)

Molly Teas wrote a paper on teacher training through distance education, which is now available for general circulation. She will also present a paper on "Improving Educational Equity for Girls through Distance Education" at a World Bank EDI Conference (Zimbabwe, May, 1990).

Tom Tilson's paper on "The Economics of Radio Education" is completed and will be submitted for publication in mid-1990.

Media Coverage

Radio Learning Project staff were interviewed about IRI by WBUR, a Boston public radio station. The short segment aired on September 11, 1989.

IMPLEMENTATION STRATEGY

In 1989 A.I.D., with funding from the RLP, commissioned a project review by an independent consultant. The final report, "The Radio Learning Project: The Current Status -- Options for the Future," was completed in July. Its recommendations have influenced the RLP during its final months of activity. Shortly after the completion of Terry's review, the RLP held a three-day workshop to plan for the remaining period of the contract and to lay the groundwork for future IRI activities for the next few years. Some of our discussion revolved around major recommendations for securing widespread acceptance of IRI and sustained IRI projects. In response to the evaluation report's suggestions, participants isolated four principal plans for the future.

1. Promoting Adoption of IRI Programs. The principal mandate of the RLP has been to promote IRI. During 1989, the RLP continued to gather support from users of our programs (teachers, students, parents) and made greater efforts to contact and win approval from gatekeepers, those who decide whether the RLP programs will be implemented in a given country. Attention was also given to the development of critical political support among ministries of education, donor agencies, IQC (Indefinite Quantities Contract) holders, and educational consultants.

Personal contact with decision-makers is the most effective means for inspiring decision-maker interest in IRI programs. Although promotional materials offer important support, site visits by project staff, local workshops and international conferences have generally been the catalysts for new IRI programs.

2. Internationalizing the RLP. As donors leave more decision-making power under the control of host country officials, the RLP has given more attention to host country institutions and decision-makers. During 1989 the project sought to increase the involvement of non-American specialists with IRI activities. In the Latin American region, we already had the assistance of AVANCE consultants, who were able to help both Costa

Rica and Belize with the implementation and evaluation of IRI pilot projects. During 1989 the RLP hired an African educational consultant to visit countries in sub-Saharan AFrica and meet with education decision makers, radio officials and donor agencies to plan for IRI activities. An experienced Kenyan IRI practitioner was recruited to help coordinate the Ugandan workshop in November 1989. Future RLP activities would require that an Asian consultant be identified and trained to represent the RLP in the Asia/Pacific region.

3. Preliminary Site Development Activities. As preparation for project implementation, the RLP is preparing a database on each prospective country. Research has already been done on thirteen African nations.

Another important preparatory activity is identification of institutions responsible for distance education and local advocates with decision-making ability. Individuals have been already been identified in A.I.D., the World Bank, ministries and schools broadcasting programs to whom promotional information might be sent. The RLP also plans to seek alternative sources for funding, equipment, and broadcast time for each potential IRI country.

4. Insuring Long-Term Sustainability. To ensure that pilot projects are implemented on a long-term basis, the RLP will continue to be attentive to professional and political support from the beginning of each country's IRI activity. the RLP has been paying particular attention to the placement of each project within the bureaucracy, the involvement and support of key decision makers, and the incorporation of recurrent project costs in government budgets.

PLANS FOR 1990

COUNTRY DEVELOPMENT

AFRICA

African countries face the challenge of improving the quality of their continually expanding basic educational systems. Economic problems, however, plague most of them, making it impossible for them to make much-needed improvements in teacher education, provision of textbooks, increased access to basic education for all, and other changes to raise the quality and efficacy of basic education programs throughout the continent. It is therefore necessary to seek affordable interventions capable of improving educational quality, and African educators have begun to investigate the possibilities of interactive radio instruction to meet this pressing challenge.

There is growing experience in Africa in the use of IRI. From 1980-85 the Radio Language Arts Project (RLAP) was field-tested in Kenya under the collaboration of the Kenya Institute of Education (K.I.E.) and the Academy for Educational Development. That project was later replicated in Lesotho, where 95% of the primary school children in standards 1-3 are currently learning English through the IRI methodology. From November

1989 - May 1990, Swaziland conducted a successful radio English pilot project adapted from the Lesotho model.

The RLP and the Zimbabwe Ministry of Education and Culture co-sponsored the African Conference on Radio Education in Harare on January 22-26 (See more detailed discussion of this conference on page 16. Fifteen countries participated and twelve of these remain seriously interested in IRI. The RLP is currently holding talks with the ministries of education in Uganda and Zimbabwe, where there is a lively interest in IRI, and has initiated talks with ministries of education in Botswana, Cameroon, Ghana, Guinea, Nigeria, Liberia, Zambia, and Tanzania, all of whom were represented at the Harare conference. For planned follow-up activities, see the country reports below.

Botswana

USAID/Botswana is preparing for a new education effort. Although interested in radio education, the USAID mission is inclined to leave support for this effort to the Swedish foreign assistance program. Nevertheless, the mission is somewhat interested in providing very modest support for radio activities.

Cameroon

The Ministry of Education representative at the Harare conference was very enthusiastic about IRI, and has submitted to the Ministry the first draft of a proposal to establish IRI in Cameroon. The Ministry has expressed a serious interest in IRI and will be visited by RLP representatives.

Ghana

Ministry representatives at the Harare conference were interested in IRI. The RLP will contact the Ministry to learn more about the level of the country's interest.

Guinea

The Vice-Minister for Pre-University Education became interested in IRI through discussions with an RLP representative. The Vice-Minister also attended the radio education conference in Zimbabwe. The Ministry of Education has asked that a radio-based literacy component be included in its proposal for a basic education project to be co-funded by the World Bank, A.I.D. and French development assistance.

Lesotho

The RLP is carrying out a cost study of the English in Action series, currently being broadcast to students in grades 1-3. Analysis of recurrent costs should be completed by mid-1990. The government is moving toward administrative and financial responsibility for long-range implementation. (For additional information, see "Site Activities.")

Liberia

Through a contract with the Academy for Educational Development, the Ministry of Education and USAID have been developing teacher training activities that include the use of radio programs. USAID is now interested in expanding the possible uses of IRI to help with the teaching of reading. Further action depends on a successful resolution of Liberia's political problems.

Namibia

In June, 1990, an RLP consultant visited Namibia to meet with education and broadcasting officials on the potential use of IRI, especially for teaching English. The government officials expressed considerable interest.

Swaziland

The RLP conducted a very successful radio English pilot project from November 1989 to May, 1990. The Ministry of Education is now considering whether to proceed to the next implementation phase -- a full year trial of the grade 1 lessons. (For further details, see also "Site Activities.")

Uganda

An RLP project development associate met with the World Bank and Ministry of Education representatives in Uganda in August, 1989. As a result of her visit, a workshop took place on November 14-17 in Kampala. Assisted by a former RLAP staff member, the director of the BANFES project in Lesotho conducted a workshop with thirty-one participants representing all of the key areas required to implement an IRI project. The participants explored the potential uses of radio in general, and IRI in particular, to meet Uganda's educational challenges. The consensus was that IRI should be implemented in Uganda as soon as possible, beginning with an adaptation of the Kenya Radio Language Arts Project (RLAP) lessons and/or the development of an in-service IRI teacher training series.

Three Ugandan officials also attended the RLP Conference in Zimbabwe in January 1990. In April, 1990, sponsored by the RLP, they visited Lesotho, Kenya and Swaziland to talk with IRI project administrators and to observe IRI classes in English. In Kenya they also examined the distance education teacher training program.

The Ministry remains very interested in a radio-based English program for primary schools. The RLP will wait for the Ugandans to plan a pilot activity.

Zambia

A representative of the Ministry of Education attended the RLP's Zimbabwe conference. The head of Educational Media Services has submitted a proposal for IRI activities to the Permanent Secretary. The MOE remains very interested in IRI, but funding remains a problem until the country's debt situation improves.

Zimbabwe

The Ministry of Education and Culture is interested in a follow-up IRI workshop after co-sponsoring and hosting the very successful African Conference on Radio Education, held in Harare in January, 1990. The RLP and the Ministry have agreed to hold one for Zimbabwe educators in September 1990 to assess the suitability of IRI for Zimbabwe's basic education programs. The workshop would be along the lines of the Uganda workshop, held in Kampala in November 1989.

LATIN AMERICA

Bolivia

The RLP will continue to help the project expand use of math and health lessons on a national basis. The RLP will also assist the USAID mission in preparing for a much expanded IRI health project to begin in late 1991.

Costa Rica

The RLP will continue to provide support for Costa Rica's new teacher training activities, using IRI. The project will also help with the development of a proposal for an IRI environmental education program.

Ecuador

Following a successful pilot project in 1988, the USAID mission is completing plans for a full IRI project to begin in late 1990. On request, the RLP will provide on-going assistance.

El Salvador

The RLP will provide assistance as recommended to the USAID mission as they develop plans for an IRI component in their new basic education project.

Guatemala

The Radio Learning Project will seek to collaborate with the new IRI activities that will be a component of the BEST project. In addition to adapting the mental arithmetic lessons from Honduras, these activities will include the development of a new IRI series for teaching Spanish as a second language.

Nicaragua

The RLP will provide technical assistance for planning IRI activities. This planning activity will be particularly interesting because IRI originated in Nicaragua in the mid-1970's.

ASIA AND THE PACIFIC

Indonesia

The RLP held meetings with USAID/Jakarta in April, 1990. In addition, a RLP representative met with decision-makers in the Ministry of Education for the up-coming World Bank primary education project. They were enthusiastic, but noted that it was essential that we contact World Bank representatives in Washington before any decisions can be made. There may be some room in the project for direct instruction to primary school children but the emphasis will be on primary school teacher training.

Nepal

The USAID Mission decided that they would proceed with an IRI math activity for primary schools. They plan to buy into the new learning technologies project to be funded in 1990.

The Pacific Islands

RLP staff will continue to follow up on interest in radio education projects in the Solomons, Vanuatu, and Kiribati. Although the RLP is exploring the possibility of working with Peace Corps Volunteers in this region, project funding remains an insurmountable problem in all three countries.

Pakistan

An RLP representative met with Ministry of Education and World Bank officials in October 1989 to explore possibilities for use of IRI in Pakistan. In response to their enthusiasm, a proposal for a feasibility study and pilot project to test IRI in Pakistani classrooms was submitted to the World Bank. However, Bank interest in this project has recently declined due to a shift in funding priorities from primary to secondary education.

EASTERN EUROPE

Poland

The RLP is responding to the demand for ESL in Eastern Europe. Teaching ESL through IRI has been included as a component of an EDC proposal to the Ministry of Education in Poland. This has been enthusiastically received by the Polish Ministry and will go to USIA for a decision about funding.

Latvia

Latvian delegates visited EDC in May and listened to a presentation on IRI. There was interest in English lessons, in particular. The staff plans to follow up on this.

REFUGEE GROUPS

Afganistan (Provisional Government)

An RLP associate presented information about the RLP and IRI to a USIA-sponsored delegation of media specialists from the Provisional Government of Afghanistan at a Boston University seminar. The Afghan Director of Radio Broadcasting and two other delegates later visited EDC for discussions with the project director about IRI implementation.

Cambodia

The program director of the Indochinese Psychiatry Center, visited the RLP to learn more about IRI and its potential use in Cambodian refugee camps along the Thai border, where he has been working with the United Nations Border Relief Organization (UNBRO). His center is actively seeking funding to implement a number of population-based interventions to improve the quality of life in the camps. The introduction of IRI to educate camp children remains high on his list of desirable innovations. He is hopeful that use of IRI in the Cambodian camps will provide a model for implementation among other refugee groups.

United Nations High Commission on Refugees

A staff member held discussions with UNHCR staff in Geneva to discuss potential ways that IRI might be useful in their activities, including the education of Mozambique refugees in Malawi. Although there was interest in IRI, UNHCR funding will not permit use of IRI at this time.

OTHER ACTIVITIES

Publications

During its final months, the RLP will publish a fourth newsletter. We are also preparing quarterly reports, including copies of major project documents. The RLP has agreed to contribute to a new World Bank publication, "Technology and Teaching: Elements of Sustainability in Developing Countries," to be edited by Marlaine E. Lockheed, John Middleton and Greta S. Nettleton.

Studies

The project will conduct two cost studies of IRI projects, one for Lesotho and the other for Honduras.

CONCLUSION

The Radio Learning Project is pleased by the increasing interest in IRI throughout the world. The response in Latin America has been particularly gratifying; current projects in several nations are moving towards national implementation, and other nations are planning to extend pilot activities or to begin new IRI programs during the coming year. The experience in Latin America demonstrates the adaptability and viability of IRI. Costa Rica and Belize, for example, are using programs developed in other countries with only minor changes -- very low cost adaptations in each case. Other nations, such as Bolivia, are making more substantial changes to existing programs in order to fit them to the national culture. Some nations have adopted only the IRI methodology for use in developing new programs, e.g. mental arithmetic in Honduras, health lessons in Bolivia and the planned Spanish as a second language course in Guatemala. In addition to these different levels of IRI adaptation, the RLP has begun a promising radio-based teacher training program series in Costa Rica where teachers are instructed not only in IRI use in the classroom, but also in improved techniques for teaching math.

The RLP is also very encouraged by the growing interest in IRI among African educators. We have believed for some time that IRI could be a particularly important option for addressing critical problems in African primary education. As a result of our general dissemination efforts, the recent African Conference on Radio Education, and IRI activities in two African countries, information on IRI is now widespread in Africa where educators are sincerely interested in the incorporation of IRI programs, especially in language teaching, as part of their reform efforts.

We have begun to develop support for IRI in Asia, but further development in this region remains a goal for the years ahead.

As part of our effort to broaden support for IRI, we have sought to collaborate with international donors, to strengthen institutions in countries that are using IRI, and to expand our use of international consultants.

The RLP has developed increasing support among other donor agencies. Because of a series of meetings and workshops with the World Bank, understanding of IRI is now much more widespread in the Bank. The RLP has also held discussions with the Asia Development Bank, and the African Development Bank. The World Bank division for southern Africa has shown particular support by seeking development opportunities in which to include IRI for new projects. The RLP has continued efforts to keep UNESCO, UNICEF and UNHCR informed about IRI.

In Latin America, the RLP has continued to strengthen key institutions involved with IRI. AVANCE, under a subcontract to the RLP, has been providing excellent technical assistance in IRI to Costa Rica and Belize. The RLP has also provided limited ongoing support to Costa Rica's CENADI, an organization that is swiftly developing expertise in IRI. CENADI has written a proposal to develop their own IRI course in environmental education.

Finally, the RLP has increased its use of IRI experts from developing countries. A key part of the RLP strategy has been the identification of at least one senior education official from each major geographic region who could be an effective spokesperson for IRI. Dr. Carleton Corrales, former General Manager of AVANCE in Honduras, has been a singularly effective advocate of IRI, not only in Latin America, but at meetings in Africa, Asia, North America, and Europe. In Africa, Professor George Eshiwani, Principal, Kenyatta University College of Agriculture and Technology, has also been an effective advocate of IRI. In addition to the hiring of these consultants, the RLP has sought to use the technical expertise in IRI that can now be found in a number of developing countries including Bolivia, Costa Rica, the Dominican Republic, Ecuador, Honduras, Lesotho, Kenya, and Papua New Guinea. We hope that IRI implementation in the years ahead will draw increasingly on these international resources.

The RLP staff believe that IRI has reached a crucial threshold where it is now being considered by a wide range of educators throughout the world as a important option for meeting the critical needs of education. With approximately a dozen nations and 600,000 children using IRI, this method is reaching a level of visibility and experience that may generate a rapid increase in the acceptance of this successful technology.