DEVELOPMENT COMMUNICATION REPORT

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Scaling Down: Local Radio in India

India is a vast country. All India Radio (AIR) is one of the biggest national radio networks in the world. India's regional stations themselves are huge--often retaining two full-time orchestras on staff, for example It was India that mounted the SITE project, providing educational television via satellite to rural communities. Now, in a remarkable turnaround, India is planning to establish up to 70 local radio stations. Why?

In our first article, Shri K. Anjanyulu describes the establishment of India's first local station at Nagercoil in the southern Indian state of Tamilnadu. Other articles in this issue look at local radio's benefits and limitations as a development communication strategy However, local radio's greatest asset as a development tool and the characteristic that sets it apart from other communication strategies may be that it is created, sustained, controlled and managed by the people it serves

In this issue . . .

by Shri K. Anjaneyulu

Five years ago, for the first time in its history, All India Radio (AIR) ventured into a new phase of broadcasting, experimenting with the concept of local radio stations AIR's first local station was established at Nagercoil in the Kanyakumari District in Tamilnadu in October, 1984 The challenge facing the new staff was to adapt expertise gained in national broadcasting to the needs of local radio This is the story of how we met that challenge

The area served by the local station at Nagercoil-Kanyakumari District is in the extreme south of Tamilnadu The area is essentially agricultural and rural, although the population has some urban influences. The District has a population of 17 lakhs--one lakh equals 50,000--and its 65% literacy rate stands second only to the city of Madras The area's contribution to the enrichment of Tamil literature and culture--ancient, medieval or modern--is significant and substantial The region's customs and habits, rituals and worships, festivals and ceremonies, legends and myths, songs, stories, and folk arts are those of a distinctive, tradition-bearing culture.

The Official View of Local Radio

Official guidelines on local radio state that since a local station serves a small area, its aim should be "to reach right into the heart of the community of people" it is expected to serve. A local radio station must be "flexible and spontaneous to enable itself to function as the mouthpiece of the local community." It should endeavor to use its microphone to reflect and enrich the life of the society Its programs should satisfy the local aspirations of the people whom the station serves. In short, local radio should identify itself so completely with the interests of its local population that the heart of the people beats in every pulse of the programs it broadcasts.

Local Radio in Practice

Our broadcasting experiences gained at regional stations had to be supplemented by new procedures and, in some respects, new skills in programming and production techniques for local radio Many local radio programs are field-based. Besides extra resources such as transportation, extensive field work requires program producers to have physical endurance and the intellectual qualities and attitudes necessary to establish rapport with listeners. Producers need to know how to conduct field work and need to be able to play the role of participant-observer to study the attitudes and culture of local groups.

Though small in number, the Nagercoil Local Radio producers geared up to face the challenges posed by the first ever local radio station in a very short period of time. Staff were allowed to waive the audition rules, to deviate from the Fixed Point Chart--a set of regulations and operating procedures--and to engage part-time comperes and free-lancers for outside broadcasts, reporting, editing and presentation Nagercoil Radio's success was possible in part because of the latitudes of freedom allowed the station.

Talking to the People

We produced access programs, service programs, specific programs on family welfare, nation integration, communal harmony, and r programs with similar themes of specific and immediate relevance to the people of the area We talked to a wandering mendicant, a laborer on a tea estate, a worker in a cashew-nut factory, a hand-cart puller, a domestic maid, an employee in a remote health service center, a milk vendor, a cobbler, a

(Continued on page 2)

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Clearinghouse on Development Communication
1815 North Fort Myer Drive, Suite 600
Arlington, VA 22209 USA
Tel. (703) 527-5546
Fax: (703) 527-4661
Telex: 710-833-0320 IIRINC VA

Michael Laflin, Director
Desiree deGraeve, Editor
Andre Roussel, Information Specialist
Stephen Mitchell, Librarian
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(ANJANEYULU from page 1)

hair dresser, a tailor and a bus conductor. We covered a myth surrounding a local temple, the histories of a church and a mosque, the stories of a poet and a scholar and a sculptor, and details of a controversy between two rival groups of fishermen. All of the programs had a direct bearing on the people's sense of belonging to their community.

Community Service Broadcasts

Community service broadcasts provided opportunities to all development agencies to broadcast matters of importance to the local people. Information on topics such as the distribution of loans under various schemes, the supply of commodities for daily needs, and various development activities was conveyed to the people through these broadcasts Extension agencies--such as the Social Welfare Department, the Education Department, the Health and Family Welfare, and Fisheries Departments--banks, and cooperatives became actively involved in the station's services. The following examples show how service agencies and the people were linked for the first time through a channel of two-way communication.

- When there was a public grievance about a drainage facility, it was presented on the air along with the reply from the concerned Municipal Commissioner.
- When the public faced problems in obtaining essential commodities from Fair Price shops, their concerns were conveyed to the Civil Supplies Officer. His reply, together with the information on the remedial steps taken, was presented to the listeners
- When farmers faced problems posed by prolonged drought, the local station aired information from the Farm and Home Unit on forage crops in drought conditions, water management for paddy crops, how to save coconut trees in drought-affected areas and plant protection for vegetables.

Mediating Between Local Factions

Our success did not depend on merely winning the hearts of our listeners. It went much farther than that. The local station's role in resolving a feud between two rival fishing groups reveals the confidence that people began to place on the local radio station at Nagercoil

In spite of the various loans granted them at two important fishing coasts, a group of fishermen wanted to abandon their surroundings and move to the Mutton Coast to fish The scramble for fish and market facilities for the catches brought them into direct conflict with other local fishermen who had enjoyed fishing rights in that location for generations. The problem was brought to the notice of the Government, but the solutions suggested were not acceptable to either group. Nagercoil Local Radio interviewed the fishermen on both sides and conveyed their viewpoints to the local Fisheries Department. A meeting was arranged between the rival groups, the government authorities and representatives from AIR-Nagercoil. During the meeting, the misgivings of both groups of fishermen were removed and a happy settlement reached. The entire story of the feud and its resolution, *A Meeting at the Sea Coast,* was then put on the air.

Access Programs

Access programs have attracted broad participation from within the listening community. The relaxation of strict audition formalities has gone a long way to bring promising artists, performers, talkers and troupes to the station. There they exhibit their talent without fear or inhibition, even though for most of them this is their first attempt at broadcasting. More than 50 clubs or associations of children, youth and women have participated in plays, short stories, songs, folk art forms, discussions, dialogues, mimicry, choral music, percussion, instrumental, classical and light music.

The first local radio station at Nagercoil has come to stay. Its vitality and vigor have opened up a new future for broadcasting throughout India. The freedom that it offers to express the sentiments, emotions, ideas and views of its listening clientele have the potential to ultimately transform every local station into a People's Radio Station.

■

Shri K. Anjaneyulu is Assistant Station Director at All India Radio, Nagercoil in Tamilnadu.

Local Radio for Development: Haba Na Haba

There is a Kiswahili proverb that says "Haba na haba hujaba kibaba" or "Little by little we fill the pot." This could be the motto of community radio: tiny, daily increments of development rather than national surges of activity. Local radio stations dedicated to community development have unobtrusively served their audiences for many years: Radio San Gabriel--the voice of the Aymara--in Bolivia and Mahweli Community Radio in Sri Lanka are just two examples. Now, All India Radio plans to open 70 local stations. Is there any hard evidence about local radio's effectiveness to support this trend? We think so.

This article highlights findings from a recent impact evaluation of the Liberian Rural Communication Network. In January 1989, Dr. Dennis Foote and others of Applied Communication Technology, Inc. completed an independent impact evaluation of the Liberian Rural Communication Network (LRCN). DCR has carried articles about LRCN in previous issues, but a short description of the network will serve to refresh readers' memories.

LRCN is a network of three local radio stations--ELRG, ELRZ, and ELRV--located in the Bong, Voinjama, and Grand Gedeh counties of rural Liberia. Total population for the region is estimated to be over 400,000. Each station broadcasts approximately 50 miles in up to six local languages. Development of LRCN was funded by USAID and the Government of Liberia.

Since 1986, the stations have broadcast development information and education about health, nutrition, population, agriculture, and community development. They also carry news, entertainment, outside broadcasts of sports and local events, personal and official messages, music requests, and sponsored campaigns. Many development agencies--local, national, and international--buy airtime and production services. Indeed, one station has already sold all of its available airtime for development programming. A summary of Dr. Foote's evaluation methodology and findings is presented here.

by Dennis Foote

LRCN listenership is large. Fifty-five percent of those questioned by the independent evaluation team listen daily, and at least 80 percent listen several times a week. LRCN's popularity lies in three aspects of its localness: first, the perspectives of the producers--as expressed in program content and the use of local languages--is close to that of the listeners; second, LRCN's signal is stronger than its competitors so that programs sound better; third, the stations' location up-country among listeners invokes a sense of mutuality that brings identification, credibility and affection between listeners and broadcasters.

The research confirmed that there was a high degree of access to radio among the population. Overall, more than half the households had radios, with the level rising to over three quarters among urban households. People were in the habit of listening regularly.

LRCN stations quickly became the most listened-to stations in all three counties. Listenership continued to increase during the 1986-1987 year of broadcasting until, by the end of the year, 87 percent of those who listened to the radio at all reported listening at least part of the time to LRCN stations.

Evaluation Design

The LRCN evaluation's basic design measured changes in the knowledge and behaviors of the rural population. Equivalent groups were sampled from each station's coverage area and measured before and after the first year of broadcasting. No separate control groups were used; the outcomes were compared within groups to see change over time and between groups to see the effect of the different program mixes used by the stations.

The target audience for most LRCN broadcasts was male and/or female adults within the station's broadcast radius. For both the baseline and the post-test, individual samples of approximately 200 households were selected from each of the three stations' broadcast areas. Respondents were selected from men between 20 and 50 and women 15 to 50 years old Data collection produced a pool of approximately 640 respondents in the baseline and 680 in the follow-up survey, equally divided between men and women.

Measurement of the outcomes was done by trained Liberian interviewers in local languages. The questionnaire consisted primarily of coded self-report items assessing knowledge, information sources, attitudes, and behaviors. Questions for the follow-up study were kept virtually identical to pretest questions in order to maintain strict comparability. Thus, evaluation content was determined at the time of the "before" measures. Choices about the content were based on stations' broadcast plans and included topics in agriculture, health and child survival issues, family planning, and village organizations.

A street in Gbarnga. Children are playing traditional dancing and clapping games. They are singing *Population Growth is Everybody's Problem*, an LRCN jingle.

It is Christmas morning The local power company in Gbarnga has not turned on the power. With constant technical and fuel supply problems, this is not unusual. Operating on its own generator, ELRG states on the air that, at least on Christmas Day, people should have power. The power is switched on.

Health Programming

Health and child survival issues constituted a major focus of LRCN broadcasting. The evaluation chose a range of health topics from the broadcast plans, including breastfeeding, immunization, oral rehydration therapy, and prenatal care. Some of the health programs were produced by the central production unit; others were local productions. Emphasis on a given topic varied from station to station.

Breastfeeding. Within this topic area, the evaluation looked at the prevalence and duration of breastfeeding, giving of colostrum (the antibody-rich first milk),

(Continued on page 4)

(**FOOTE** *from page 3)*

and general knowledge. Breastfeeding was virtually universal, with only one or two percent of children not being breastfed. The average reported age of weaning of the youngest child increased by more than two months. This is a very large change, particularly since it seemed to have happened within one year; the best interpretation of the change may be that women have learned they should breastfeed longer, rather than that women have changed their behavior suddenly. About four out of five mothers give the colostrum; this did not change over time.

Immunizations. The questions about immunizations were intended to measure knowledge about the reasons for immunizing and the necessity for multiple visits and for bringing the vaccination cards to the clinics.

Knowledge about immunizations showed statistically significant improvement. The number of respondents correctly reporting that immunizations are for the prevention of disease rose from 72 to 84 percent. Correct responses on the necessity for multiple visits increased even more, from 17 to 43 percent. The awareness of the need to bring the "Road to Health" vaccination card when taking children in for immunizations climbed from 34 to 69 percent. These improvements can almost certainly be attributed to radio. When asked where they got their information about vaccinations, the number responding "clinic" actually went down--from 58 to 52 percent--while those responding "radio" went up from five to 28 percent.

Oral Rehydration Therapy. In order to assess changes related to oral rehydration therapy (ORT), the questionnaire asked whether people had heard of ORT, where they learned of it, and the type of treatment they gave for the most recent episode of diarrhea among their children

Awareness that a home-mixed ORT existed rose from 30 to 50 percent during the year. Respondents who were aware of ORT were asked what their source of knowledge was, radio rose from 21 to 40 percent of the sample. The largest single response category was still health workers, but this fell from 57 to 46 percent as the radio responses rose Detailed knowledge about the solution was less well learned. The proportion of people able to name any of the ingredients rose only from 63 to 69 percent. Most of that improvement seems to have been among people who had graduated from knowing no ingredients to knowing one. When it came to naming the quantity of each ingredient needed, the situation was not encouraging Of the four questions that asked about quantity, two items showed no change over time, one went up and one went down.

The type of treatment given for the latest episode of diarrhea among the household's children was recorded to determine behavioral change. The dominant response was "Western medication", meaning the type of drugs one might receive in a clinic or buy in a pharmacy. About two thirds of cases were treated this way both before and after the broadcasts. Home-mixed ORT was mentioned third after traditional remedies, and only accounted for five to eight percent of the cases. These and other measures show that while basic awareness has gone up substantially, there is little improvement in ability to recall details of actual practice.

Family Planning. Family planning information was an important topic with broad general relevance. Questions asked in the evaluation surveys covered assessment of population as a problem, knowledge about the prevention of pregnancy, availability of services, family planning benefits and responsibilities, contact with centers, and sources of information.

A small but growing number of people felt that population growth might present problems for Liberia. Before the broadcasts, 24 percent of the sample named at least one problem population growth might cause. Afterward, 39 percent named one or more problems, a significant increase. People's basic awareness of the existence of family planning was high to begin with--61 percent--and rose significantly to 76 percent after the broadcasts, with growth concentrated in those counties that put emphasis on the program topic. Respondents who had heard of family planning were then asked if they had ever been to a family planning center. About a quarter of them said yes, a level which did not change during the year.

A majority of people--58 percent--said that they got their information about family planning from the radio, with clinics being the next most frequently cited source. When asked where they would turn for additional information, most said they would go to a family planning center or health clinic, radio as a source for more information rated a stable six percent of responses. This is not surprising, given the sensitivity and the complexity of the topic. It demonstrates both the value of radio for introducing and supporting a topic, and the necessity for a parallel infrastructure to pro-

(Continued on page 5)

When ELRV celebrated its first anniversary, the paramount and clan chiefs organized their districts to come into Voinjama A demonstration started on the outskirts of town and began marching toward the center. Schoolchildren with banners, policemen with banners, the local transport union, soldiers and individuals joined the march. The taxidrivers and moneybus drivers declared a day of celebration. No one could leave Voinjama. ELRV sold 300 audiocassettes of highlights from the year's radio broadcasts. $1500 was collected for the station. Celebrants declared the coming of their local station as the biggest single event in their lives.

A clan chief is on trial in Zwedru for extorting payments from local farmers before allowing them to slash and burn a new plot to farm. The aggrieved farmers complain to the County Superintendent. ELRZ broadcasts the hearing in English, with translation into the local language. The clan chief is found guilty Justice has not only been done, it has been heard to be done.

Two soldiers bang on the door of the ELRZ Station Manager's house. An announcement that the local military commander wants to broadcast has been turned down by the producer on duty because the soldiers have not paid the required $5. The Station Manager confirms that everyone must pay for announcements and offers to go with the soldiers to the commander so he can pay. They go. The commander pays his $5 with good grace. The Station Manager writes a receipt.

(**FOOTE** *from page 4)*

A Grebo woman disappears with a Krahn army officer It is widely believed that she has been abducted. Other rumors abound, including that she has been killed. A machete-wielding mob descends on the County Superintendent's house demanding that the girl be produced. Just before violence erupts, the girl is found. ELRZ flashes the news immediately, and follows up with an interview with the girl, defusing what might have been a violent encounter.

vide more complex instruction and interpersonal support.

Agriculture

Two topics were chosen from the broadcast plans to represent the agriculturally-oriented programming from the stations. In Bong County, the station carried programs about the County Agricultural Research Institute (CARI), promoting name recognition and knowledge about what CARI does. In Lofa County, the stations carried programs about fish farming, telling listeners about its benefits, giving them information about where to locate a fish pond, and telling them where to go for help if they wanted to build a fish pond of their own.

County Agricultural Research Institute. Overall awareness of CARI rose significantly as a result of the broadcasts, from 39 to 50 percent. All of the increase was concentrated in the rural areas, which had much lower initial levels of awareness--21 percent before to 38 percent of respondents after. There was no change in the already high awareness levels in the towns adjacent to the Institute itself--74 percent to 71 percent, not a significant difference Radio was the information source most frequently cited by rural residents. This pattern of results suggests that the broadcasts helped overcome a problem of information availability to rural people and reduced the gap between the urban and rural sectors.

Fish Ponds. Awareness of fish ponds increased significantly, rising from about a quarter of Lofa County respondents before the broadcasts to about a half after the broadcasts. Radio emerged as a major information source for people in Lofa County, with those who knew about fish ponds citing radio as their information source 16 percent of the time before the broadcasts and 59 percent afterward. Although interpersonal sources decline in importance for initial awareness, they continue to dominate as the place to turn for further information. Radio is cited by only eight percent of Lofa County residents as the place to get more information about fish farming

Village Organizations

Part of Liberia's development strategy has been the establishment and support of local organizations to promote community-based involvement in the development process. The evaluation emphasized two types of village organizations· Village Development Councils and Parent-Teacher Associations. While these organizations might occur in any of the communities in the study, only Grand Gedeh County planned to make community organizations a priority broadcast topic.

Village Development Councils Overall awareness of Village Development Councils (VDCs) showed a substantial gain during the year, from 42 to 62 percent. This occurred in spite of a significant and difficult-to-explain drop in the rural respondents who reported a VDC in their community Among those who were aware of VDCs and lived in rural areas, a surprisingly high number reported having been involved in VDC activities--60 percent before and 64 percent after the year of broadcasting (not a significant difference)

The depth of knowledge increased considerably, before the broadcasts 74 percent could name one or more benefits of having a VDC, while after the broadcasts, 91 percent could name one or more Radio played the central role in disseminating this information When asked in the follow-up survey about the sources of their information about VDCs, radio was the most frequently cited source, named by 61 percent of the respondents. In general, most of the improvements were seen in all the counties, but the strongest effects were seen in Grand Gedeh, where the topics were a priority For example, within Grand Gedeh, the proportion citing radio as a source of information was 81 percent, significantly higher than the other counties. This supports the conclusion that the broadcasts have had a strong effect in that county

Parent Teacher Associations (PTAs) The reported sources of information again show radio playing an important role Radio was mentioned as a source of information about PTAs by 46 percent of the respondents--nearly as high as for teachers and school administrators. However, within Grand Gedeh where radio programming gave priority to information on community organizations, 75 percent mentioned it as a source of information on PTAs.

An old man comes into ELRV to complain about the explicit nature of programs on family planning. It is offensive to him to hear private functions and anatomical parts such as *uterus* discussed on the radio. The producer convenes a focus group to review the approach taken by the programs, and the field assistant plays the program at Village Listening Groups to get their guidance and suggestions for better ways to present the topic.

What is Local?

Our definition of *local* is behavioral and descriptive and includes the following elements:

- stations are physically close enough to the people they serve for listeners to be able to visit. Actual distances vary depending on season, terrain, the availability of local transportation, etc.,
- stations have an open door policy that encourages local people to visit; producers rountinely leave the station to talk directly with listeners;
- formal structures, such as program advisory groups and listening groups allow local people to regularly express their views on program content;
- stations do not limit their activities to broadcasting only; they organize events and community activities that make the stations an integral and exciting part of local life;

Local means listeners identify with their station. Listenership figures and preferences, listeners' willingness to help raise money for the station, and listener turnout at station-organized events are just some of the way to measure listener support.

(Continued on page 6)

MARKETING DEVELOPMENT RADIO

Three factors were crucial to the successful marketing and promotion of LRCN to development agencies:

1. Statistical data from the Ministry of Health showing the effectiveness of local radio were gathered whenever possible· for example, there was a 300% increase in the number of immunizations through LRCN involvement and a fall in the unit cost of immunization from $4.50 to $0.90. This information was used as persuasive evidence to convince potential clients of LRCN's impact.

2. Promotion and marketing were organized to be effective. A full-time Community Relations Coordinator was appointed. Special promotional pamphlets, fliers and a video were prepared. A list of possible clients was developed, contracts drawn up, and a follow-up visit schedule maintained.

3. The Community Relations Coordinator was trained in negotiation techniques and observed how sales and marketing is handled by commercial and nonprofit radio stations in the U.S. He then passed these principles on to field assistants at the local stations.

(FOOTE *from page 5)*

Generalizations

The evidence that has emerged about the impact of the LRCN stations is consistent and supports several generalizations

Changes have been strongest in the areas of awareness, knowledge, and attitude. Far less evidence exists to measure changes in behavior. There are three possible explanations for this result, all three of which may be simultaneously valid First, a year may be too short a time to expect major behavioral changes as a result of this type of intervention, but that behavioral changes will accumulate over time. Second, programming may not yet be focussing in explicit, prescriptive terms on manageable units of action and may need to be redirected to support small, concrete steps listeners can take by themselves. Third, some types of behavioral change may require greater concurrent infrastructure support from available services or need complementary interpersonal communication. Radio inputs may need to be more carefully orchestrated with the activities of existing organizations. such as agricultural extension or family planning centers.

Finally, the evaluation encountered repeated instances where the effect of the broadcasts reduced the differential between urban and rural segments of the audience. Normally, rural areas are disadvantaged, LRCN has begun to demonstrate its ability to redress that imbalance. This is a unique advantage of development communication systems

In a remarkably short period of time, LRCN has established itself as the preferred radio station in its broadcast areas. LRCN's impact on listeners' knowledge and behavior has been greater--and has happened faster--than original expectations. The evidence is clear and strong. LRCN radio broadcasts have caused significant changes in many of the dependent variables examined by the evaluation From this perspective, LRCN has been an unequivocal success. ■

Dr. Dennis R. Foote is President of Applied Communication Technology in Menlo Park, California. A copy of the LRCN evaluation and other materials describing the program, including a videotape and sample audiotapes of broadcasts, are available through the Clearinghouse.

The Voice of Choice: Sustaining Local Radio

If local radio stations are unlikely to receive financial support from central governments, how can radio stations build support from their communities?

- *Recruiting Volunteers* Half of the production staff at LRCN stations are volunteers. Young, unemployed volunteers can learn new skills and often become paid employees as vacancies arise in the system.
- *Offering Competitive Airtime Fees* Local radio reaches a smaller audience than national systems, this means local stations charge less for airtime. For development agencies and other clients, it's a better deal since local radio also "reaches the right market"
- *Hustling* Station staff can build and sustain community support by visiting potential clients first, instead of waiting for them to come to the station. Staff should explain the ways local radio can help their clients get their message across. When talking to clients, local radio stations should sell opportunities, not dwell on funding or other problems.
- *Becoming Indispensable.* Local stations become the voice of choice for local leaders, extension services, clinics and hospitals They gain listener loyalty and support by staging local events, covering local news and sports. sponsoring contests with prizes donated by local merchants, and broadcasting birth and death announcements

By learning how to tap and rely on community support from the start, local stations also have a better chance of surviving and growing over the long term, even if government funding is limited.

Expectations for Local Radio : Looking Beyond Immediate Impact

by Richard Burke

Development is a widely participatory process of social change in a society, intended to bring about both social and material advancement (including greater equality, freedom, and other value qualities) for the majority of the people through their gaining greater control over their environment

Everett M. Rogers

Expectations of Broadcasting

According to Everett M. Rogers, development should bring about social and material change. If this is so, what can we expect community radio to accomplish to help meet this goal?

First, a community radio station has an obligation to act in concert with the national broadcasting service. If the national service can't reach everyone in the country, then it is up to community radio stations to gather national development programs and messages and transmit them to the people who might not hear them any other way. Even if the national service reaches every part of the country, community radio can still *localize* national development programming. *Localization* may mean broadcasting in one or more languages, or more important, it may mean re-interpreting messages to suit local needs and conditions, for example, when the traveling vaccination team will be visiting the community, what prices are being paid in local markets for coffee, beans and bananas, or where to go to register your child for the first day of school.

Second, the manager and producers of a community radio station should spend a large part of each week talking with people in the communities they serve--not just to the mayor, village leaders, and prominent business people--but to small farmers, school children, young parents, and to people whose ideas are sometimes considered unpopular or impractical--day laborers, out-of-school and unemployed youth and others on the fringe of development activities. The radio staff should try to find out what concerns all of the people, what problems they face daily, and what kinds of information they need to make better sense of their lives.

Radio producers can do two things with the information they gather: they can refine it, summarize the most important concerns, and forward it from the community to the appropriate development agency, government office or private organization for further action, and, at the same time, they can re-shape the information into program materials to benefit the community. Programs can be on a wide variety of subjects, of any length and broadcasted any number of times. Messages can be of general interest to the community, or they can be the means of informing families in a distant village that a relative in another village is sick or dying Announcements can deal with market prices and weather warnings, or simply with birthday, wedding or anniversary greetings from one person to another. In countries with few telephones, irregular postal service and often impassable roads, community radio can serve as an all-purpose means of communication.

Third, radio producers should make it abundantly clear to members of the community that the station does not belong exclusively to the radio staff. The radio station exists to give the community its *own voice,* or, as Robert White, a well-known communications scholar puts it. "Local stations with alert management and good contacts with popular organizations know how to spot peasant or worker actions with social change significance, seek out the people involved, encourage them to speak out, and most important, train representatives to use radio effectively. "

Fourth, the community radio station can be the means of getting development organizations to take off "sectoral blinders" Quite often, a community radio station will have an advisory board or a community council whose members typically include the agricultural extension agent, the public health worker and the teacher of adult education, among others As these development specialists participate in helping the radio station decide what kinds of programming to produce, they cannot help but realize that individuals don't live their lives in "sectors".

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$1000 RADIO STATION

Village radio stations vary in cost from less than $1000 to more than $10,000. The stronger the signal--and the further it reaches--the higher the cost. A typical mini AM or FM station ranges between $200 and $2,000. A $1,000 station features a four-channel mixer, two microphones and mike stand, a D.C. servo turntable with extra stylus and cartridge, headphones, and four interchangeable portable cassette recorders for both field and studio use. The cost of the studio package can be as little as $385. The transmitter, tuning unit and antenna can be bought for about $375 for either a three-watt AM package or one-half watt FM system capable of covering ten kms. A solar power supply costing $240 and including a 30-watt photovoltaic panel, battery and wiring, maintains the station on the air for up to four hours a day. A more elaborate village radio station might cost $2,000, including $1,000 in studio equipment and a similar amount for a 20-watt AM transmission package transmitter, antenna and tuner capable of radiating 1-to-30 kms or more, depending on frequency, terrain and interference conditions.

Cable Radio Systems. Another type of system, employing "leaky coaxial cable" instead of a radiating antenna, requires an additional $5,000 per mile for the cable. More expensive and complex to set-up, a compact village communication system serving 100 households that includes studio, transmitter, cable, AM receiver in each home, and electric power, can be put together for about $6,000. The radio signal and power for the receivers are sent through a cable going to every dwelling. A central power supply charges a heavy-duty, 100 amp/hour battery to power the station and all the receivers. Despite its complexity, such a system does overcome two of the greatest obstacles to community radio in isolated areas:

- 1) that radio receivers are unevenly distributed; and
- 2) that the majority of the sets in a community lack batteries.

-Dean Stephens

(**Burke** *from page 7)*

Their lives are complex mixtures of wants and needs, and development agencies can be more effective by responding to the community in a more integrated and holistic manner.

Finally, a cautionary note. Radio people are generally optimistic about the role they can play in promoting development. It is tempting for them to think that if they pour enough information into a community, development will take place. There are, however, many development problems that cannot be solved simply by added amounts of information. Experienced radio staffs must learn how to order information priorities, identify problems that require other kinds of inputs, and avoid problems that, because of constraints on resources, are not possible to solve at the present time.

Measurement of Long-term Change

If we expect community radio to be responsive to the community it serves, to develop productive linkages with development agencies, and to establish a *community voice*, how can we find out whether or not community radio is in fact contributing to long-term development?

I am not talking about *system* features of radio, i.e. the number of listeners reached, the number of programs produced and so forth. Nor am I concerned in this article with measurement of information acquisition--i.e. what messages people recall, and how long they retain the messages. These are obviously important questions, but often lead to the ultimate question in development communication: "So what?" What does community radio contribute to long-term development? How can you measure the degree of participation? Level of self-sufficiency? Amount of individual and community self-reliance? Amount of improvement in the quality of life?

Traditional methods of audience research may not be appropriate to measure the structural impact of community radio. We may need a different set of criteria and a different set of measuring tools. Let us look then, at some of the questions that can be asked about community radio's structural impact.

Taking the Initiative. How many times have individuals, small groups or elected representatives of the community taken the initiative to approach a regional health or agriculture office with a specific request for assistance or a specific proposal for community improvement?

Demanding Better Public Services. Have the national ministries in the capital cities received letters or visits from members of the community in which they express complaints about the quality of services they have been receiving?

...this often leads to the ultimate question in development communication: "So what?"

Using Existing Government Services. Have families in the community responded to specific short-term campaigns that promoted infant vaccination, the acceptance of free fish to stock a home fish pond, or some other tangible benefit?

Cooperating Across Sectors. Have regional development offices which normally operate on a sectoral basis participated in cooperative projects where sectoral lines are diminished or abolished?

Cooperating with Other Communities. Have two or more communities gotten together to improve a road, repair a bridge, or exchange services?

Strengthening Mutual Assistance. Have small farmers started to form marketing cooperatives so they can sell their products at fair prices? Are the cooperatives providing higher incomes for their members?

What Role Does Local Radio Play? In what ways do local people use radio to promote all the above? Does local radio take a leading role in identifying issues and exploring local solutions?

Summary

These are just a few of the questions we can ask about activities associated with long-term community development. It should be possible to get the answers to some of these questions through interviews and observation, but evaluators must be patient. Some of these changes take place after communities have developed a sense of confidence and self-direction. An accelerated pace of development may not be evident in the short term.

Finally, community radio is not a sole, or even a main causal agent of change. But if you can connect advances in community participation, social and material advancement, and greater control over the environment with the programs, campaigns and objectives of broadcasting, then it is not unreasonable to assume that community radio is a significant and valuable contributor to social change and community development.

Note: The reference on development from Everett Rogers is from an article called "Communication and Development. The Passing of the Dominant Paradigm" published in *Communication Research*, Volume three, Number two, April, 1976.

The reference by Robert White is from his article "Communication Strategies for Social Change. National Television versus Local Public Radio" published in *World Communications: A Handbook* edited by George Gerbner and Marsha Siefert (New York and London. Longman, 1984). ■

Dr. Richard Burke teaches development communication at Indiana University. He has worked in Latin America, Africa and the Middle East.

Power to the People: Not Just in Developing Countries

There are thousands of local radio stations worldwide, many of them tiny one- or two-person commercial stations operating within equally tiny geographical areas. This pattern is repeated in many Latin American countries and in many towns of the rural United States. Generally speaking, these stations copy the urban sound and the values of national broadcasting networks. Dean Stephens discusses a style of local radio that voices, reflects and celebrates the sound of the people.

by Dean Stephens

The invention of the transistor made radio receivers available almost universally. But who participates in the messages radio broadcasts? Who owns and controls it? And what is it used for?

By and large, each of these three questions has the same answer. A small group of owners or civil servants determines what will be broadcast to listeners who are often the rural poor in villages all over the world. Commercial interests purchase air-

time to promote patent medicines, baby products and soft drinks. Many of these products are highly inappropriate for the needs and diets of the poor. Packaged entertainment originates in cities. Native languages are often swept away, and indigenous cultures either belittled or ignored.

Even radio dedicated to development has suffered from these maladies, as urban government officials or well-meaning foreign development professionals planned strategies and messages designed to market development to the masses. As campaigns stuttered, often failing to achieve the hopes of the professionals, two schools of thought emerged. One school said, "Let's try to do the same things better." Research techniques were improved, multimedia strategies developed, and lessons about product marketing applied. The other school said, "Well, maybe *we* are the problem. Rural people are neither faceless masses nor ignorant of goals for their *own* development." Words like *access, participation,* and *self-management* came into vogue, and greater efforts were made to involve rural people in development.

As it turned out, involving rural people required some pretty radical thinking. Participation in well digging was one thing, running a radio station quite another.

Radio was traditionally an aloof medium, a one-way transmission of professional-sounding programs from studios in an urban center. *Access* meant taking radio to the people through taped interviews or live outside broadcasts. But this was at best a sporadic process, creating little real participation and less local control of the medium. How could radio really open its doors to the community and truly serve its needs?

The answer was that radio had to become a local institution in each community. Radio had to be scaled to the size and needs of the village. The issues were neither technical nor financial, since inexpensive, relatively simple hardware and technology existed (see *$1000 Radio Station*). The real challenge was philosophical and structural.

This is still the challenge not only in Third World countries, but in the First World as well. Local radio is being successfully used in North, Central and South America to preserve language and cultural values, to educate, and to stimulate and promote community development.

Tiny stations--some licensed, some not--have proliferated in isolated villages in Alaska and northern Canada. These miniature communication centers cater to local music tastes, feature news of community interest, and serve as clearinghouses for messages ranging from medical emergencies to greetings and chatter. Many are totally voluntary in nature, operating from stores and other public gathering places as well as private homes. In both areas, special laws make it possible to obtain a license for low-power community broadcasting: Class 10-watt educational FM transmitters are permitted by the FCC in Alaska, and new license categories have been established in Canada. In several areas, villages are even linked by satellite (*DCR* 36).

- Wataway "northern lights" is a community development network of and for 20,000 Indian people living in 40 isolated reserves and settlements in northern Ontario. The Wataway Native Communications Society began in 1973 to help indigenous people in the region to "develop their communities according to their own culture, beliefs and vision of the future". In addition to providing two-way radio communication services, preparing a monthly newspaper and producing native language programming for the Canadian Broadcasting Corporation (CBC), Wataway has assisted 23 communities to set up village radio stations using 1/2-watt transmitters to broadcast local news, weather and music in the Indian language.

Wataway assists with personnel training and equipment maintenance, while local community councils provide human and material resources for the stations and come together in regional conferences to discuss programming, funding, cultural preservation and other items of mutual interest.

- In Porcupine Butte, South Dakota, Milo Yellow Hair awakens the Sioux each

(Continued on page 10)

(**STEPHENS** *from page 9)*

morning with the *Wakalpi Shou*--literally "to warm you up." The broadcasts are in Lakota, and the station is KILI FM, voice of the Sioux nation. Not all village stations are tiny: this one radiates 100,000 watts from the Pine Ridge Indian Reservation to Sioux listeners scattered over hundreds of miles. Besides Lakota--the language of the Oglala, the largest Sioux tribe--programs originate in English. Only 60,000 people speak Lakota, but the station is teaching it to many more youngsters and non-Indians in neighboring communities. Other programs include *Rumor Control*, which gives voice to the week's newsmakers and troublemakers, *Swapshop*, a radio trading post, job announcements, and music from rock 'n roll to traditional songs and drumming taped by station staff.

Radio has traditionally been an aloof medium, a one-way transmission of professional-sounding programs from studios in an urban center.

Public broadcasting station KILI is the electronic cultural connection of the Sioux, only 6% of whom have telephones. Radios everywhere are tuned to the station for 18 hours per day. "We are not alternative radio," says a station manager Hobart Yankton, "we are the radio." Most of the station's 20 announcers are volunteers, working there for love and gasoline money. KILI, founded by the American Indian Movement, operates independently of tribal control, but tries to respond to both tribal officials and the general audience.

Yellow Hair plays traditional songs that he has recorded at dances, gatherings and in people's homes, sometimes in honor of a veteran or an exceptional student. "You can't see them, but they are out there standing up. I keep an image in my head of an older man, like my grandfather, sharing someone's sorrow, playing music and making someone's life wiser."

● In South America, indigenous stations range from the *bocinas* (loudspeakers) of the plazas and markets in Peru to *radio mineros* (miner's radios) in Bolivia. In Peru, Catholic-sponsored *Radio Onda Azul* (Radio Blue Wave) functions through the participation of indigenous communities around Puno (*DCR* 48), and a program called *Inquietudes* (restlessness) serves as a communication outlet for the *pueblos jovenes* (growing urban areas) in Arequipa (*DCR* 52).

● Free-forum village radio is appearing in one form or another all over the globe. Examples in the United States include the Pacifica group and the old "Krab nebula" of open-access stations KRAB Seattle, KBOO Portland, KDNA St. Louis, KTAO Los Gatos, and KCHU Dallas. Founder Lorenzo Wilson Milan published a delightful collection of essays called *The Radio Papers* (Mho & Mho Works, San Diego) on the life and times of the nebula.

"KDNA was fearless and magical. It returned the community to the radio studio, it opened its doors to the poets, and musicians, and political freaks--the dispossessed and longing who had been in their seedy rooms too long, waiting for someone to come along and spring them from their isolation. KDNA was radio reversing itself: asking that the people who lived in a city bring the city into the radio station, and cascade it out to the far reaches of men's minds and the horizon . . . At its best, KDNA could count on 200 people a week who volunteered around the hard-core of a dozen or so who made the station work. They created the words and ideas and feelings that came out of the hot-house on Olive Street. We could hardly believe our ears.

"Community radio, . . . means that there is--or should be--a hole in the dial for us to stuff our words or musics into. Most of the holes have gone: into the hands of the moneymeisters who sell our ears at cost-per-thousand to those who want to sell their wares to us..." Milan's village radio is "the experience of direct communication with our villages of the mind, and it is called 'community-access free-forum radio'" (pp. 109-110). Such stations often operate from listener contributions received in funding drives, from subscriptions, auctions and similar sources.

● All over Europe, low-power *radios libres* (free radios) have sprung up to give ownership as well as access to local community members. In Sweden, "*nar*" (neighborhood) stations covering about two and one-half square miles have been authorized. *Nar* radio is strictly non-commercial, operated and programmed by such diverse groups as labor unions, political parties, religious organizations, sports clubs, art and cultural societies, consumer and tenant associations, environmentalists and community colleges. To maintain access, each group must broadcast at least once a week. Community groups combine to build the stations, then share the facilities.

● In Japan, thousands of mini-FM community stations began broadcasting after a man named Tetsuo Kogawa noticed that Japanese law allowed very low-power transmissions without a license in 1981. Setagaya MaMa is one of the hundred or so stations remaining. Located in a middle-class area in South Tokyo, Setagaya MaMa's village is a community of 10,000 or more located within one kilometer of the 1/10 watt transmitter. The station's studio is an open microphone in a small store which serves as health bar and gathering place for neighbors.

... stations of and for the people of each community have achieved immense popularity and acceptance.

Sometimes just background noises are on the air; during other occasions, the store might be filled with community members who have rushed there to take part in some neighborhood issue. "Come in and talk" radio serves a centripetal function, bringing people together who are otherwise isolated by urban systems and by conventional, one-way centrifugal media.

● Radio Baha'i stations are a part of indigenous community life in Africa and North and South America. Local people air programs in local languages, music of the culture, news of interest to the region, and educational and spiritual fare pertinent to the needs and holistic development of the listeners as human beings. DCR has featured several articles on Radio Baha'i Ecuador (40, 42, 44), as well as one on the use of appropriate technology and alternative energy in the facilities (58). These stations, of and for the people of each community, have achieved immense popularity and acceptance. All are non-commercial, with volunteer and semi-volunteer staff, and look principally to the Baha'i community for operating revenue.

(Continued on page 11)

(Stephens *from page 10)*

The Future

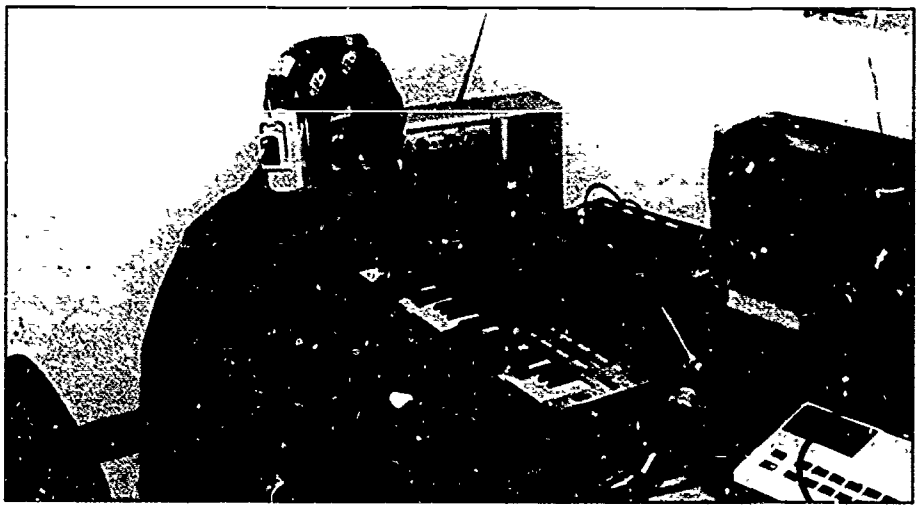
In Fall River, Massachusetts, two primary school teachers are preparing classroom village radio projects centered around wireless microphones which cost less than $8 with batteries. Although sold as toys, these "micro-power stations" can nevertheless broadcast across a room on a desired frequency on the FM band, helping bilingual Portuguese- and Cambodian-American kindergarten students learn English and adjust to a new culture while retaining the traditions of the old.

Another group of 8-to-12-year-old special needs children will broadcast from the class station to develop self-confidence and learn communication skills. In Canada, one community media entrepreneur has asked why every school in the country should not have a station of its own Similar village radio projects have been proposed for communities of people in nursing homes, terminal care hospital wards and prisons. The uses of this non-licensed broadcast form are limited only by the imagination.

Many conventional radio systems can be scaled down to village size: indigenous populations might have a station in each community, joining together to form networks and multi-community roundtables from time to time. Very isolated communities, no matter how small and poor, could benefit from low-cost village radio In fact, the technology exists to not only power a village station from the sun, wind or a small stream, but to extend this power to the community as well: to light a plaza, street, school or center, or to provide low-voltage D.C. energy to a radio receiver in every home.

As this article goes to press, the governments of several countries are studying the possibilities for grassroots development communication using village radio. Inexpensive and appropriate, these people-powered, community-sized tools are about to make their debut. ■

Director of the Vanguard Trust, K. Dean Stephens is currently Professor of Development Communication at the Amoz Gibson Center in Puerto Rico. Stephens has designed and installed AM, FM and shortwave Baha'i radio stations on three continents. He is preparing ***A Village Radio Owner's Manual*** *for worldwide distribution later this year.*



Development Broadcasters on Development Broadcasting

A recent FAO publication, ***Communication for Rural Development,*** *said, "It has been estimated that less than 5 percent of broadcasting hours in the Third World are devoted to educational purposes--as distinct from entertainment and propoganda." In this article, Heidi Schaeffer talked to producers from India and Indonesia who are making development programs for radio.*

The strategies discussed by development broadcasters here give a strong sense of central personnel visiting local, rural communities. The speakers represent the Development Broadcasting Units (DBUs) of centralized systems that are attempting to reflect the concerns of rural listeners. The program development strategies they describe convey the nature of development broadcasting as it is practiced in most countries.

Compiled by Heidi Schaeffer

A workshop was held in January 1989 in Kuala Lumpur, Malaysia, for broadcasters who are producing development programs. The regional workshop brought together radio producers from Development Broadcasting Units (DBUs) in three countries--India, Indonesia and Papua New Guinea--to share their experiences producing development programs. We recorded their responses to three questions:

- How do you select development program ideas?
- What techniques have you found work best for development radio broadcasting?
- What distinguishes development broadcasting from the programs you made before?

Selecting Program Ideas

At Bandung, in Indonesia, radio producers visit villages to research program ideas. Then these ideas are developed in cooperation with a local advisory council for development programs.

"Ideas are selected that are in keeping with government programs but producers keep their ears open in the villages and are always prepared to gather information on a new topic that has emerged from a village visit "

Ella Nurmaela Judadibrata, RRI Bandung

Not all programs are planned in advance as part of a broader development agenda Development communicators also deal with immediate issues that are important to their constituents Mr R.P Meena from Kota described how the development of a program at his DBU grew out of a newspaper article.

"One day I saw an article in the newspaper about one village, Naya Gaon,

(Continued on page 12)

(SCHAEFFER *from page 11)*

where village people were suffering from the Guinea Worm disease. I went there and saw that 60 percent of people in the village were suffering I spoke to the Village Headman, who told me that no treatment facilities were available in the village. They felt that no one bothered about their helpless situation. I recorded all these problems and came back to Kota.

"I contacted Dr. B.K. Sharma, Deputy Chief Medical Officer and played back the recorded interview of the villagers. Dr. Sharma and his medical team went to the village. The villagers told him that they get water from the village well. Dr. Sharma found that there were steps so anybody could go in the well. Patients of Guinea Worm were going down into the well easily and thus caused infection.

"Dr. Sharma suggested to the villagers that they use only hand pump water for drinking purposes. They put disinfectant powder in the well and instructed the villagers not to use this well water for drinking. He suggested that this well water be used for irrigation purposes. After some time, I again went to the village and I saw that the steps of the well were covered and people were using only hand pump water

"I recorded a program, and we got many letters from the listeners.

"After six months, I again went to Naya Goan and the people of the village told me that nobody was now suffering from the Guinea Worm disease. I prepared a follow up program also."

R.P. Meena, AIR Kota

Program ideas often lead to program action by the producer. Development broadcasters are often more than just commentators. Like Meena, Sudiman Bonaparte played the role of middleman between village and development agency.

"We went to visit a village listener/viewer group and by chance I came across a woman who makes key chains from left-over materials she obtains from a nearby chopstick factory. I asked the woman about how she makes the key chains and what problems she faces. She told me the biggest problem is getting a loan to market the key chains. I then contacted the Indonesian business women's association and other organizations on how she could obtain a loan... And the story became the success story of how a woman makes income at her home and the problems that must be overcome."

Sudiman Bonaparte, RRI Bandung

Strategies for Development Broadcasting

"In order to make development programs, one has to be very clear about planning. You have to think a lot about the topics you choose for your programs. You have to ensure that the length of the program and the time it is aired serves the target audience."

Ella Nurmaela Judadibrata

"(Producers) must evaluate the programs after they have been aired to ensure that the programs have reached the target audience or, if not, then how they can make the programs more interesting so that people can get information out of the programs."

Dadang Romansyah, RRI Bandung

The producers also discussed methods for involving the community in their broadcasts. Girish Verma of the Kota DBU finds that giving the tape recorder to the villagers and allowing them to make their own recording is a good way to encourage people's participation. Since working with the Kota DBU, M.P. Modi has changed his interview style to encourage more participation. He uses what is essentially a recorded and edited focus group technique.

"Before, I used the traditional question and answer style. Now I prefer conversations with two or three people where I keep the recorder on and we talk together ... When the time is right you direct the conversation to a specific subject."

M.P. Modi

In Indonesia, getting people's participation can be more difficult. As government representatives, producers cannot freely go to a village and people will not necessarily talk openly with them about problems

"In approaching a village, we try to merge with the people so that when we come back for recording we will be accepted by the community and no longer be strangers ... so that they are more free to speak with us."

Sudiman Bonaparte

From Broadcaster to Development Broadcaster

Producers compared their current work at Development Broadcasting Units with their former jobs as regular broadcasters. They agreed that considerably more time was being spent on planning and research for DBU programming, than on regular programming

"In our development broadcasts, we select a problem and we work on that problem for a longer period than with routine broadcasting."

M P. Modi

This leads to more narrowly focused objectives for broadcasts and a more clearly defined target audience than is customary in general broadcasting.

When asked what additional advice they would give to broadcasters who are just beginning to produce development programming, the DBU producers suggested a number of essentials

"They must involve themselves very well with the problems of the people. People must feel that these producers are well wishers ... These people are very close to us. Then they will be able to tell everything about their problems. Only then can the producers produce a good program "

M.P. Modi

■

Heidi Schaeffer is the Project Assistant on the Project for Broadcasting in Development based at Ryerson International Development Centre in Toronto.

Project for Broadcasting in Development

The Asia-Pacific Project for Broadcasting in Development is a five-year project designed to build capacity to implement and carry out development broadcasting in the Asia-Pacific region The project is based on a partnership between All India Radio; Doordarshan TV; The Papua New Guinea National Broadcasting Commission; Radio Republic Indonesia and TV Republic Indonesia; as well as The Asia Pacific Institute for Broadcasting Development, Kuala Lumpur, Malaysia, and The Ryerson International Development Centre, Toronto, Canada. Funding for the project is provided by the Canadian International Development Agency.

Readers interested in more information should contact: Project for Broadcasting in Development, Asia-Pacific Institute for Broadcasting Development, P.O. Box 1137, Pantai, 9700 Kuala Lumpur, Malaysia.

Videoletters

Local radio for development is the focus of this DCR, but radio isn't the only communication channel open to local people. In this feature, Claire Burkert describes videoletters and illustrates how Nepalese women have used video to effect positive change in their communities.

by Claire Burkert

In remote villages of Nepal, illiterate women have been trained to produce short, videotaped messages or videoletters to communicate village needs and realities to development policymakers, planners and project implementors. In many cases, these letters have been answered with tangible, productive results. In other cases, the replies have given the senders a better understanding of the obstacles facing their needs in the capital, Kathmandu. These videoletters have reduced the communication gap between villagers and central authorities. They have also helped women in Nepal learn how they can play an essential role in the development of their communities.

Women in Nepal are the mainstay of the country's rural economy. Women fetch water, search for fodder and fuel, look after the livestock, work in the fields, cook, care for the children and often generate income in market economies. Women often devote eleven hours a day to work--three to four more hours per day than the average Nepalese man. Few Nepalese women attend village meetings or serve as members of local committees, therefore, they must normally rely on men to act on their behalf within Nepal's legal and governmental systems.

In the village of Ramghat in the Surkhet district in mid-western Nepal, women's isolation from decision-making processes is compounded. Many of the men have left the region to look for work. However, the Ministry of Panchayat and Local Development runs a Production Credit to Rural Women (PCRW) project in Ramghat that helps women start income-generating businesses. But because communication between Ramghat and Kathmandu was difficult, support for the project threatened to be withdrawn. To help the women of Ramghat, Worldview International Foundation (WIF) set up a small communication project. The project's three main objectives were :1) to strengthen communication between PCRW and the Village; 2) to strengthen communication between the village and Kathmandu, and 3) to develop educational materials for village use.

Twelve women from Ramghat participated in the first training session. Using video, the project's participants learned how to establish better dialogue between PCRW beneficiaries and implementors. The women learned how to assemble two camcorders, perform simple maintenance, and conduct interviews. They had to list and prioritize their needs, draw up practical, possible solutions, and discuss how to best use video to convey their messages.

... it convinced the group that they were legitimate representatives of their community; they didn't need videos or cameras to voice their concerns.

In the first video the group produced, each woman spoke directly to the camera, recording their first videoletter to the project sponsors. The letter had an immediate result. One of the producers, a woman with a harsh voice, was shocked to see herself sounding angry when she meant to be giving thanks. The woman softened her voice and her attitude, and as a consequence, the whole group grew more cohesive.

Because the women are illiterate, the letters were shot without formal scripts. Each letter's objective was discussed before shooting. For the first session, the narration and editing were performed in Kathmandu. In the second training session, the editing machine was brought to Ramghat to help the women gain a clearer understanding of the editing process so they could maximize their use of film time.

In the second session, the women decided to focus on legal issues. They began to record a series of interviews with women who had been mistreated by their husbands or who wanted to get divorced and needed legal advice. The video documenting their cases was sent to the Women's Legal Services Project in Kathmandu. They returned taped solutions. The videoletters were also shown to the larger community during Saturday night movie screenings in Tamghat. After that, the women from Ramghat produced videoletters on deforestation, the PCRW program, health and irrigation.

WIF provided additional educational films for screenings on Saturday nights and for smaller screenings organized by each woman for her ward. Short instructional films produced by the women on topics such as fertilizing methods or livestock feeding were also shown. Each woman would arrange for the time and place of the screening, borrow the camera and monitor, and lead fellow ward-members in a question and answer period following the film.

In July 1986, eight months after the project began, the Ramghat women went to Kathmandu for three days to discuss the needs presented on the videos with officials. This trip marked a watershed for the project since it convinced the group that they were legitimate representatives of their community and didn't need videos or cameras to voice their concerns.

Next, the program was extended to the village of Uttarganga. The Ramghat production team took the lead in training the novices from Uttarganga. The Uttarganga women were very quick to learn from women who had similar backgrounds and experiences. The second group began to shoot interviews throughout the village that were then shown during informal workshops in Uttarganga. From these workshops, the women gained the confidence to put forth their ideas and have begun to participate in local political meetings, traditionally an all-male domain.

It was clear that the project's initial aim was met. Two-way communication had been established between villages and the central government and between villages and local agencies. Furthermore, as evidenced by their active participation during their trip to Kathmandu, the women had learned to voice their needs without the aid of a camera.

As Subhadra Belbase, WIF Program Director, said to the women, "It is your personal growth that has taken place and your growth as a group that really matters. That growth has been the greatest achievement of this project."

■

Claire Burkert is a free-lance writer who has lived and worked in Nepal for the past three years. She writes about women and development and development communication issues.

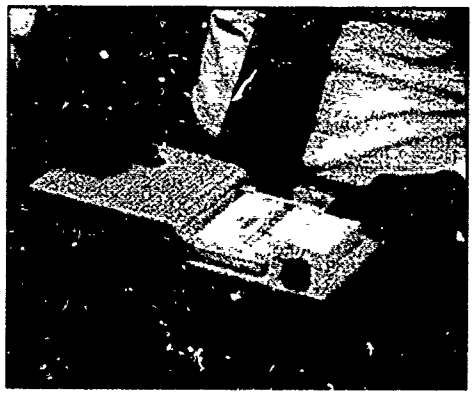
The Wind-up Revolution?

by William Mackie

A frequent complaint from rural radio listeners in developing countries is that batteries for their radios are either unavailable, too expensive, or of inferior quality. The lack of batteries can seriously limit the impact of development campaigns built around the use of radio.

In Malawi, for example, the Malawi Broadcasting Corporation covers approximately 85% of the country, but rural listenership was estimated at only 14% in a 1984 survey. This is a tragic loss to the country's development efforts since MBC broadcasts a wide range of development-oriented radio programs.

The inability of many people to afford batteries is one reason given for low listenership. In Malawi, a set of four batteries costs more than five dollars, a major investment for people living in a country whose annual per capita income is less than $150. This cost becomes even more prohibitive when several sets of batteries would be required to a operate a radio for one year. Also, fresh batteries are not always available in rural areas. These constraints also limit the use of audio cassette players. One solution is to use radios and cassette players that don't need battery power and that are easily recharged.



The Dynamo radio, available from B-N-Genius, contains a nickel-cadmium battery that can be charged from a wall outlet or by cranking a built-in generator. The radio receives AM and FM and also has a built-in flashlight. The Dynamo is reasonably sensitive and selective and has good tone quality for a radio of its size (about 7" x 5" x 3"). However, the speaker size and the level of audio output limit its suitability for group listening. The unit has a telescoping rod antenna and a jack for using headphones or an external speaker.

The Dynamo comes with a power adapter to operate the radio from a wall outlet and for charging the battery. It takes roughly 12 hours to fully charge the battery with the adapter. The radio operates continuously at a moderate volume level for more than 72 hours when fully charged.

The Dynamo's unique feature, however, is its built-in generator. It operates by turning the radio's crank at a rate of 120 revolutions per minute. Tests reveal that the radio will operate for approximately two hours after about 10 minutes of cranking, depending upon the listening volume. In practice, one simply turns the generator crank when the radio stops playing. The longer you crank, the longer the radio will operate.

The retail cost of the Dynamo radio in the United States is $44.95. It is supplied with an AC adapter/charger and an extra flashlight bulb that is stored inside the radio's plastic case. The nickel-cadmium battery is also replaceable. The radio is manufactured in the People's Republic of China.

The TapeTalk cassette player, available from Recording Products, contains no battery at all. It is operated by a built-in generator which powers the unit as long as the crank is turned. This sturdy unit is a play-only device with amazingly good tone and ample volume for listening by relatively large groups, especially when connected to an external speaker through the built-in headphone/speaker jack.

It does require a bit of practice to turn the generator handle at the correct speed, but this is not critical for voice playback. Even music can be reproduced with reasonable fidelity by an operator with a steady hand.

Cassettes can be rewound with the generator crank by turning them over and sliding back the playback head. The unit is monophonic and weighs two pounds and four ounces. It is about the size of a standard portable cassette recorder. The TapeTalk costs $27 in the United States. Tests on both units were conducted by the Institute for International Research (IIR) as part of the A.I.D.-funded Communications Support Project. ■

William E. Mackie is a Media Production Specialist from Austin, Texas. He has worked in Malawi, Liberia, Botswana, and Nigeria as a radio producer, writer, director, manager and educator.

For more information on the Dynamo Radio or the TalkTape cassette player, contact:

Dynamo Radio
B-N-Genius
22121 Crystal Creek Blvd. S.E.
Bothell, Washington 98021 USA
US$44.95 plus delivery

TapeTalk Cassette Player
Recording Products
800 East Main Street
Santa Paula, California 93060 USA
US$27.00 plus delivery

Communicating about the Environment

The Clearinghouse is looking for samples of development communication materials on the environment. We would especially appreciate copies of comic strips, photonovelas and materials developed specifically for children and adolescents. Please send materials to: Mr. Jim Dunn, Clearinghouse on Development Communication, 1815 North Fort Myer Drive, Suite 500, Arlington, Virginia, 22209 USA.

(YES, BUT ... *from page 16)*

In countries where extension services are breaking down under the weight of increasing costs and diminishing resources, it may make sense to integrate some staff and operational costs into the local radio system *providing it remains local* If this kind of integration were practiced by several sectors, the amortization of basic communication service costs across the sectors could realize substantial economies and improved effectiveness.

➤ *What It Costs to Run a Local Radio Station.* To keep a station on the air every day with local news bulletins, at least four hours daily of development programs, and music to fill in the rest of the airtime, a station needs a well-qualified manager, a secretary/bookkeeper, a program director, about six full-time producers, the same number of volunteers, and two technicians to maintain the equipment. Commercial stations often have more salesmen--operating on a commission basis to sell airtime and bring in revenues--than producers to make programs. Development broadcasting should bear this in mind since governments rarely provide complete support. Salaries are likely to be at least half of the operating costs, producers in government systems generally earning the same as extension agents and teachers.

Other direct costs include electrical power, transportion for producers, honoria and talent fees, equipment replacement and spare part funds, research costs, and marketing costs.

Communication Strategy Issues

➤ *National vs. Local Radio as a Development Tool.* Where they have operated, local radio stations have generally been more popular than national systems. As accounts in this DCR have shown, given the opportunity, communities have valued and supported local radio stations with an enthusiasm unknown to national systems. Nevertheless, governments in most countries support the broadcasting system that provides them with nationwide coverage before funding local systems, regardless of listener preferences. They believe that national radio systems can supply development information, but on a larger scale. If a local campaign is good, a national campaign is better. It reaches more people, and therefore is both cheaper per person and more effective. Governments tend to think in national terms even when they acknowledge that most development takes place at a local level.

... the amortization of basic communication service costs across sectors could realize substantial economies and improved effectiveness.

➤ *Benefits of Local Radio.* Given that local radio stations constitute an extra cost to development, what extra benefits can the system provide? Dennis Foote's evaluation demonstrates that local radio can be an effective channel to disseminate information and education, but it should operate in conjunction with other systems Radio's key benefits were found to be:

- that local radio closes the knowledge gap between urban and listeners;
- that although local radio is perceived as a new primary source of information and knowledge, people still want and need traditional face-to-face sources, such as extension agents, teachers or clinics, to answer follow-up questions; and
- that local radio *radically increases* the use of existing development services.

Administrative Issues

➤ *Local Radio and Nervous Administrators.* If a local station is part of a wider system, it will require an uncomfortable degree of autonomy to be effective. Decentralized systems worry administrators because remote locations are difficult to monitor and control. Local stations identify with local populations more than with central institutions. Their staff work early in the morning and late at night when their audience is listening rather than usual office hours. These differences in ethos and practice demand unusual tolerance on the part of those at the center. Central administrators may simply say: who needs these problems?

Conclusion: Is Local Radio Worth All the Trouble?

If investors in development conclude that a) the locus of development activity is essentially agricultural and therefore rural, local and probably remote, and that b) it therefore makes sense to promote information systems that reach local people with maximum efficiency, then it is possible to make a strong case for local radio

If planners believe that national radio is less expensive and less risky than local radio, and that it is doing an adequate communication job, then they will perpetuate the status quo. ■

Since 1972, Michael Lafiin has worked in Kenya, Kuwait and Liberia in radio production and media systems planning and management. He is currently Director of the Clearinghouse on Development Communication.

New Books

The Mass Media and Village Life (1989) by Paul Hartmann, B.R. Patil and Anita Dighe is an assessment of the potential contributions of communication media to development--What, again??

This book offers unusual details and insights into the role communication plays in the social processes that bear on development. These fascinating case studies conducted in five Indian villages provide both qualitative and quantitative data and track the way that communication--like any other development process -is affected by class structures. It concludes that locally-based rather than centralized strategies for communication show the most promise of success. *Mass Media* is part of a series on communication and human values. Available from Sage Publications, 2111 West Hillcrest Drive, Newbury Park, California, 91320, USA (in New Delhi: Sage Publications, M 32 Greater Kailash Market I, New Delhi 110 048; in London: Sage Publications, 28 Banner Street, London EC1Y 8QE). US$14.00 paperback; US$28.00 hardcover, plus shipping.

Audiocraft: An Introduction to the Tools and Techniques of Audio Production by Randy Thom is an indispensable guide for anyone interested in radio. The 1989 edition explains the basic concepts of audio production from the principles of sound to the production of full scale documentaries and concert recordings. Explanations of technical subjects are clear and easy to understand. Available from the National Federation of Community Broadcasters, 1314 14th Street, NW, Washington, DC 20005 USA. Telephone: (202) 797-8911. US$22.00 plus shipping.

Local Radio: Hard Questions

By Michael Laflin

Local radio may be an effective way, even *the* most effective way, to reach rural people with information for better health, to mobilize community action and resources, or to promote sales of fertilizer, but who supports it? There are two primary professional groups who could act as advocates. broadcasters and development agencies. Broadcasters' careers are bound up in national broadcasting systems, not in the backwaters of local radio. Development agencies disseminate both information and services, and support their own extension services, clinics and schools. In some countries, local communities and private voluntary organizations may be proponents. If we asked development communicators--who rely heavily on broadcasting to get their messages across--to cite five key communication strategies or technologies, would local radio services be on the list?

We can say local radio costs less than traditional means of development communication, such as extension, but national mass media are even cheaper and offer greater coverage. And we can point out the fact that local radio is multisectoral. But if we do, we risk losing the support of the powerful agricultural, health, and population constituencies that sponsor systems in their own sectors.

So, who will pay for local radio? What will it cost? What benefits will it accrue? Let's consider the issues.

Policy Issues

➤ *Broadcasting as a Symbol of Modernity.* Broadcasting is a symbol of national development status, like a national airline. A country with television is considered more advanced than one with only radio, color television is better than monochrome. Empirical data says radio is more cost-effective for most development purposes. But, governments want television services, regardless of the cost of programming. Governments respond to the fact that people like pictures with their sound. Audiences the world over prefer television to radio. If there is money to be spent, local radio stations are not going to be the first choice. Local radio will remain low man on the symbolism totem pole until it is recognized as a sign of the growing sophistication of a country's array of media.

➤ *Urban vs. Rural Expenditures* By local we mean rural radio stations broadcasting perhaps fifty miles at the most. If a government is faced with distributing scarce resources among several rural districts or to a single large urban center, the latter decision is easier to take First, urban constituencies are more consolidated and powerful Second, it may not be possible to satisfy all rural districts, and uncomfortable choices may have to be made and justified.

➤ *Ideology* Governments regard national unity and integration as a priority Legitimization of local languages and identities often seem destructive to that end. For this very reason, Nicaragua closed down the Miskito station and Kurdish is an outlawed language in Turkey. Most governments sustain, control and protect national broadcasting systems at the expense of local radio stations unless there is a conscious policy to promote the expression of local opinion and to mobilize local communities.

➤ *Local Radio as a Security Risk.* "The safest radio station is securely locked up in the capital city It can be protected from coup attempts and easily monitored. Local radio is remote, difficult to secure, and might be saying anything especially when it broadcasts in local languages." So the argument goes Certainly, insurrectionists try to control broadcasting, but they usually target national stations, not a series of little stations that broadcast for only a few miles. On a daily basis, the content and flow of information generally reflect the ownership of the station and the prevailing political ethos of the country.

Cost Issues

➤ *Local Radio as an Expensive Add-on* In some of the poorest countries, a lack of operating funds has silenced even national broadcasting systems for days at a time. In others, governments essentially divest themselves of radio stations by instructing stations to generate increasing proportions of their budgets from airtime sales. Many government broadcasting systems are inefficient, underfunded and wasteful. Why add to the mess?

The irony is that the poorest countries stand to gain the most from local radio. The same conditions that make it difficult to fund radio systems also create immobile extension services and absentee teachers. In economically constrained countries, field extension staff are usually undertrained and poorly motivated. Information and knowledge just do not reach the people who need them most. Local radio is one of the most efficient ways we know to bridge the gap.

➤ *What it Costs to Start a Local Radio Station.* Dean Stephens proposes a system that costs $1000, assuming a building is available. Religious stations all over the world are constructed for a fraction of the $250,000 spent on each LRCN station in Liberia. This author has seen pirate radio stations in Ireland built in derelict houses and equipped for a few thousand dollars. A realistic figure would be about $100,000 to install a station that accords to generally accepted professional standards, in an existing building, equipped with new recording equipment, a 10 KW transmitter, airconditioning, and a generator.

But here two caveats apply. First, local conditions--i.e. mountains, available frequencies, iron ore in the ground--will affect transmission of the signal and may require higher towers, booster stations or larger transmitters Second, assumptions about future funds to buy spare parts, routine maintenance practices, and operating conditions--dust, heat, sudden electrical surges, power outages--dictate whether one invests in the best and most durable equipment--which is expensive--or whether one buys something else.

Training needs and costs vary according to the number of people to be trained, their skills, general education on entry to a program, training objectives, and whether the broadcasting system is new or well-established.

Radio stations of any kind do not just appear on the dial and draw an audience. Start-up costs should include marketing activities just as commercial radio stations do.

Radio has three cost features that make it competitive:

- it requires relatively few staff compared to alternative systems;
- it puts out so many hours of programming that, even with a relatively small local audience and modest audience share, the number of listener hours per year is massive; and
- its costs can be amortized across all sectors.

(Continued on page 15)

Development Communication Report

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Grassroots Communication: Lessons From a Tree-Planting Campaign

by Philip Decker

Tijuana is Mexico's boom town Urban planning hasn't kept pace with population growth. Residents must organize themselves into neighborhood associations to pressure government authorities and to promote self-help development efforts to meet basic needs such as land tenency, housing, electricity, water, schools, parks, sewage systems, cultural activities, trash collection, health care and economic security.

One of these neighborhood associations, CUCUTAC *(Comité Union de Colonias Unidas de Tijuana, Asociación Civil)* represents more than 5,000 families from a dozen of Tijuana's poor neighborhoods. In the summer of 1988, the largest neighborhood, "El Florido," formed a grassroots communications workshop--*Taller de Comunicación Popular*--to produce media works that would complement community development projects.

To date, the Taller has experimented with an array of media tools--newsletters, flyers, pamphlets, plays, videos, photo-albums, photo-murals--and integrated them all into various community development projects. All the Taller's media works are created by members of the local community The impact of the Taller's work can be seen in the effect that its products have had on the audiences that read or view them For example, more people join the housing project and first aid classes thanks to the awareness the Taller's pamphlets and newsletters generate But the Taller's impact is also seen in the process of creating the materials Creating within a group stimulates dialogue and investigation among the participants about the community's strengths and weaknesses, problems and resources. Community members who work with the Taller enjoy greater self-esteem and feelings of responsibility for the community The creative process serves as an effective organizing approach for community mobilization and acts as a catalyst for forming committees for collective action. This article concentrates on one of the Taller's projects--using a photo-mural to promote a tree-planting campaign

(Continued on page 3)

In this issue . . .

Biological Wealth and Human Poverty: A Tragic Embrace?

by H. Jeffrey Leonard and Katrina Eadie Brandon

The cumulative actions of humankind are contributing to gradual and inexorable global ecological changes that could profoundly alter life on Earth and the liveability of the planet. Water pollution, toxic industrial waste, ocean contamination and acid rain are a few examples of serious problems recurring around the globe Three global ecological trends are particularly foreboding

- the warming of the Earth's climate due to human activities,
- the diminution of the Earth's pool of genetic resources; and
- the declining productivity of much of the Earth's arable land

Climate Change Scientists now widely acknowledge the prospect of global climate change. The continued burning of fossil fuels, release of chemicals that destroy atmospheric ozone and large-scale clearing of tropical forests are all partial factors Within the next century, the *greenhouse effect*--increased concentrations in the atmosphere of carbon dioxide plus trace gases such as methane and nitrous oxide--could lead to a global climate warmer than any experienced in human history.

Despite increasing scientific evidence about the imminence of climatic changes, much uncertainty still exists about the regional and local consequences of global warming. We may see widespread alterations in rainfall which will affect agricultural practices, cause rises in sea levels and threaten the survival of plant and animal species These changes would necessarily affect the economies and societies of developed and developing countries alike and scientists and policy-makers are just beginning to con-

(Continued on page 2)

d by the Bureau for Science and Technology, Office of Education of the U.S. Agency for International Development

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Clearinghouse on Development Communication
1815 North Fort Myer Drive, Suite 600
Arlington, VA 22209 USA
Telephone: (703) 527-5546
Fax: (703) 527-4661
Telex: 710-833-0320 IIRINC VA

Michael Laflin, Director
Desiree deGraeve, Editor
Andre Roussel, Information Specialist
Stephen Mitchell, Librarian
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F/FRED wants you

The Forestry/Fuelwood Research and Development (F/FRED) Project is interested in learning about organizations that produce agroforestry videos, filmstrips and other audiovisual training materials. Contact: Norma Adams, F/FRED Project Editor, Winrock International, 1611 North Kent Street, Suite 600, Arlington, VA 22209 USA. Telephone: (703) 525-9430.

(LEONARD & BRANDON *from page 1)*

template possible responses to their long-term consequences.

Loss of Biological Diversity. An estimated 7.5 million hectares of tropical forest are cut down each year in developing countries and the pace is increasing. The second global ecological threat is the loss of genetic resources caused by the cutting and burning of the Earth's rich tropical forests that house up to three-quarters of the species found on the planet. The irony of this genetic destruction, says sociobiologist E.O. Wilson, is that scientists still do not know the true number of species on Earth because so many plants and insects remain undiscovered and uncatalogued.

... developing countries are still in the early stages of aggressive national campaigns to industrialize ...

Degradation of Productive Land. Soil erosion, salinization and other forms of land degradation are often perceived as less urgent than other ecological threats to the planet. However, the pervasiveness of soil erosion and its endurance despite major interventions in some countries support ecologist Vaclav Smil's view that "soil erosion, rather than climate changes, must rank as the world's leading global environmental worry."

In contrast to climate change or biological diversity, the consequences of worldwide loss of productive land are difficult to measure at the global level. Some estimates suggest that of all the hectares of tropical rain forest cleared and converted to agriculture each year, one-third to one-half will show a fertility decline greater than 50% within three years. And the FAO estimates that without long-term conservation measures, erosion threatens 544 million hectares of cropland in developing countries.

Responding to these global changes will be the greatest ecological challenge to humankind in the 21st century. Although climate change, loss of biodiversity and degradation of productive land can be expressed as separate missions, in reality they are inseparable. Destruction of tropical forests contributes to the impoverishment of the Earth's biological diversity, land degradation and significant releases of carbon dioxide that exacerbate global climatic changes. Industrial pollution not only threatens human health, but also adds a variety of greenhouse gases to the atmosphere and has been linked to the death of forests and to reductions in agricultural productivity. In turn, climate change could lead to accelerated species extinction and diminished productive capacity of many agricultural regions.

The Importance for Developing Countries

Developing countries account for virtually all of the remaining tropical forests that contain most of the Earth's genetic resources. They will also experience the greatest population increases. Many developing countries are poised to undergo rapid industrial development. And it is in the developing countries that the most spectacular incidents of large-scale land degradation on the planet are now found. The Worldwatch Institute has pointed out that in developing countries "human poverty and biological wealth seem locked in a tragic embrace."

While deforestation and chemical emissions are turning downward in the industrialized nations, developing countries are still in the early stages of aggressive national campaigns to industrialize and develop their territories. Thus, while they are not the major contributors of greenhouse gases to the Earth's atmosphere today, their share will increase as industrialization grows and as the clearing of tropical forests accelerates. Rapid, fossil fuel-dependent development and continued forest clearing among the newly industrialized countries such as India, Brazil, Nigeria and Indonesia could add significantly to global carbon emissions. For these and other reasons the cooperation of developing nations will become crucial to concerted worldwide efforts to slow climate change, preserve biological diversity and maintain the Earth's productive soils.

Dr. H. Jeffrey Leonard is Vice President of the World Wildlife Fund and the Conservation Foundation. Dr. Katrina Eadie Brandon is an Associate for Agriculture and Rural Development at the World Wildlife Fund and the Conservation Foundation.

(DECKER *from page 1)*

Promoting Tree-planting

In one part of Tijuana, the neighborhood name "El Florido" represents a hope, not a reality. El Florido is not very "florido" (in bloom). On the contrary, although the soil is fertile, El Florido winds through dry, bald, desert hills. Nonetheless, the soil is fertile. One of El Florido's plywood and cardboard homes stood out from the rest, it had a nice garden with several small, healthy trees, rows of medicinal herbs, bright flowers and vines spiraling around the porch. A woman named Alejandra lived there.

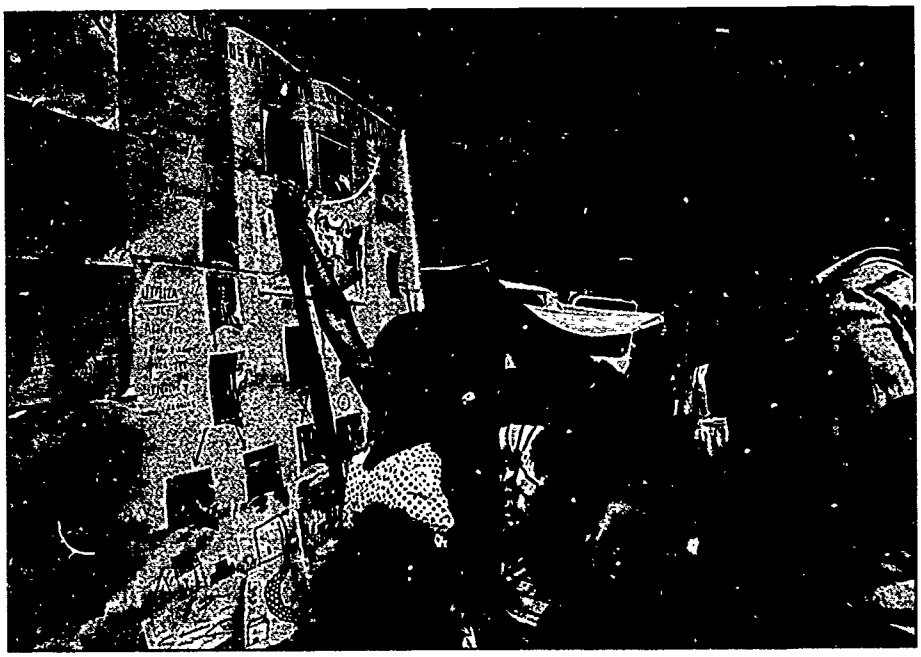
If the group had tried to form a reforestation committee right off the bat, the other community members would have thought it was a crazy idea.

I talked with Alejandra about her garden and asked if she would work with members of the Taller to create a photo-mural. She agreed to host a meeting at her house the following evening. Alejandra also invited other housewives from her block. At the meeting we looked at a manual on photo-murals and began planning. One family took charge of building a large, free-standing wooden bulletin board on which to display the mural. The others concentrated on the mural's design and content.

The group decided to employ visual language with color photos. The message was communicated through a basic juxtaposition of two images: a photograph of houses on barren hills with no green in sight next to a photo of a healthy green tree in front of a house with a garden. Under the first picture was written "Asi Esta" (This is how it is), and under the second picture was written "Asi Puede Ser" (This is how it could be). Alejandra and her neighbor Rosario decided what to photograph. We took pictures of nice gardens and close-ups of vegetables and flowers. We also took pictures of bald yards and of trash dumped on hillsides.

In addition to showing the good and the bad, the group also decided to use photos to illustrate gardening techniques designed to make more efficient use of costly and scarce water. El Florido residents must pay for household water, which is delivered by truck to each family's plastic barrel. Drinking water is bought in large bottles. The water used to wash clothes, dishes and people is usually thrown into the yard or the street. But used water can irrigate plants. To illustrate, we took a photograph of a man washing clothes with his garden visible beneath the wash basin. Then we took a close-up of a watermelon in his garden. Finally, we took a photo of the man eating the watermelon. When the images were connected by arrows, they represented a cause-and-effect relationship, between the water saved from washing clothes and the watermelon. We also took a picture of Rosario throwing a bucket of used water into the street and a picture of Alejandra throwing a bucket of used water at the base of a tree. Since many community members have had few years of formal schooling, a basic visual language was appropriate. We wrote "No" beneath the first image, we wrote "Si" beneath the second.

Then the group met to edit the photos, to write the text and to lay out the mural. The group decided on several slogans, such as "Luchemos por un Florido . 'Florido'" (Let's Work for a Community In Bloom), "Transforma lo Seco en Verde, lo Triste en Alegre" (Transform the Dry into Green, the Sad into Happy!); and "Pónle Pulmones a tu Comunidad, Creando Areas Verdes" (Put Lungs into Your Community by Creating Green Areas). The photo-mural was then stapled to the bulletin board in the marketplace during a Sunday morning community meeting. The group set up a table next to the photo-mural and invited children to draw pictures of what their neighborhood would look like if there were more trees, gardens and flowers. The drawings were tacked up to frame the mural. Alejandra and her neighbors also stood by to explain the details of the campaign and to take down the names and addresses of people interested in helping out. The mural was hung on three consecutive Sundays, until it became too tattered to use again.



Community members view a photo-mural

The photo-mural was seen by several hundred neighbors. People strolled by, all day long, stopping to look at it. The mural was almost always read and viewed collectively--unlike newsletters, which are understood alone. Small groups would gather around, discuss the photos and make comments while other groups listened and responded.

The Impact of the Process

Evaluating the impact of the photo-mural was not just a matter of measuring the number of neighbors who signed the mailing list or the number who came to subsequent meetings. Instead, the biggest

(Continued on page 4)

Traditional Theatre and Environment

In 1986, the Asian Mass Communication Research and Information Centre (AMIC) initiated a project to test the feasibility of using traditional folk media to communicate environmental messages to mass audiences. With support from the United Nations Environment Programme (UNEP), the project evaluated the effectiveness of traditional theatre to generate awareness of environmental issues through traditional storylines, dialogues, songs, skits, riddles and dances.

The project was conducted in three countries. In Indonesia, environmental messages were presented to local audiences through ketoprak performances--characterized by comic satire, social criticism, colorful costumes and acrobatic movement and dance. In Thailand, Lakon Saw (sung drama) performances with environmental themes were televised to test the possibilities of using traditional media combined with a mass medium to reach large audiences. And in the Philippines, messages were integrated into traditional dula (folk drama) theatre--dulang nakakatawa (comic sketches), balagtasan (debate in verse), kuwentuhan (storytelling), tula (folk poetry); tula-dula (drama in poetic form), and bugtungan (riddles).

A summary of the project *Using Traditional Media in Environmental Communication* by Victor T. Valbuena (Occasional Paper No. 21) is available from AMIC. This publication highlights project methodology, selection of media and performing groups, production workshops, collaboration with other groups and agencies, pre-testing and evaluation, including sampling of audiences, simple questionnaires and other indicators of increased awareness and knowledge. The report also describes the difficulties of mounting traditional media performances with developmental messages.

For more information, contact the Asian Communication Research and Information Centre (AMIC), 39 Newton Road, Singapore 1130, Republic of Singapore.

(DECKER *from page 3*)

impact the mural had can best be seen in the process of creating it.

The collaborative process of creating the photo-mural proved to be an effective catalyst for organizing the community. During the meetings, Alejandra, her neighbors and members of the Taller entered into a productive dialogue concerning the lack of trees and gardens in their community. They discussed the campaign's benefits, they shared water-saving techniques and they decided how to pitch the campaign to other members of the community. While taking the photos, they were actively investigating community problems and explaining their efforts to their neighbors.

Most important, in order to write the action section of the photo-mural, they had to decide where to go once the mural was taken down. After investing several evenings in the project, it made no sense to just hang it up and leave it at that. It was evident that those who gathered to create the photo-mural now shared an interest in working for a more beautiful El Florido.

The group had to propose a plan for further action. And once they had proposed a plan, responsibilities had to be divided and carried out. At that point, the idea of forming a reforestation committee to facilitate and legitimize a tree-planting campaign was suggested.

A reforestation committee was formed. Members of the committee went to visit government authorities to solicit participation in the government's tree-donation program. After waiting a few months, a truck arrived in the neighborhood to distribute about 200 small trees, now firmly planted in El Florido's soil. And the government has promised more trees for El Florido in the future. Committee members also organized a pilot project in family gardening. They obtained technical help from gardening specialists working for a local development agency. Fifteen families have planted model organic vegetable gardens. And these families will continue to spread their knowledge throughout their community. (The total cost of materials for the photo-mural did not exceed US$30.00 dollars.)

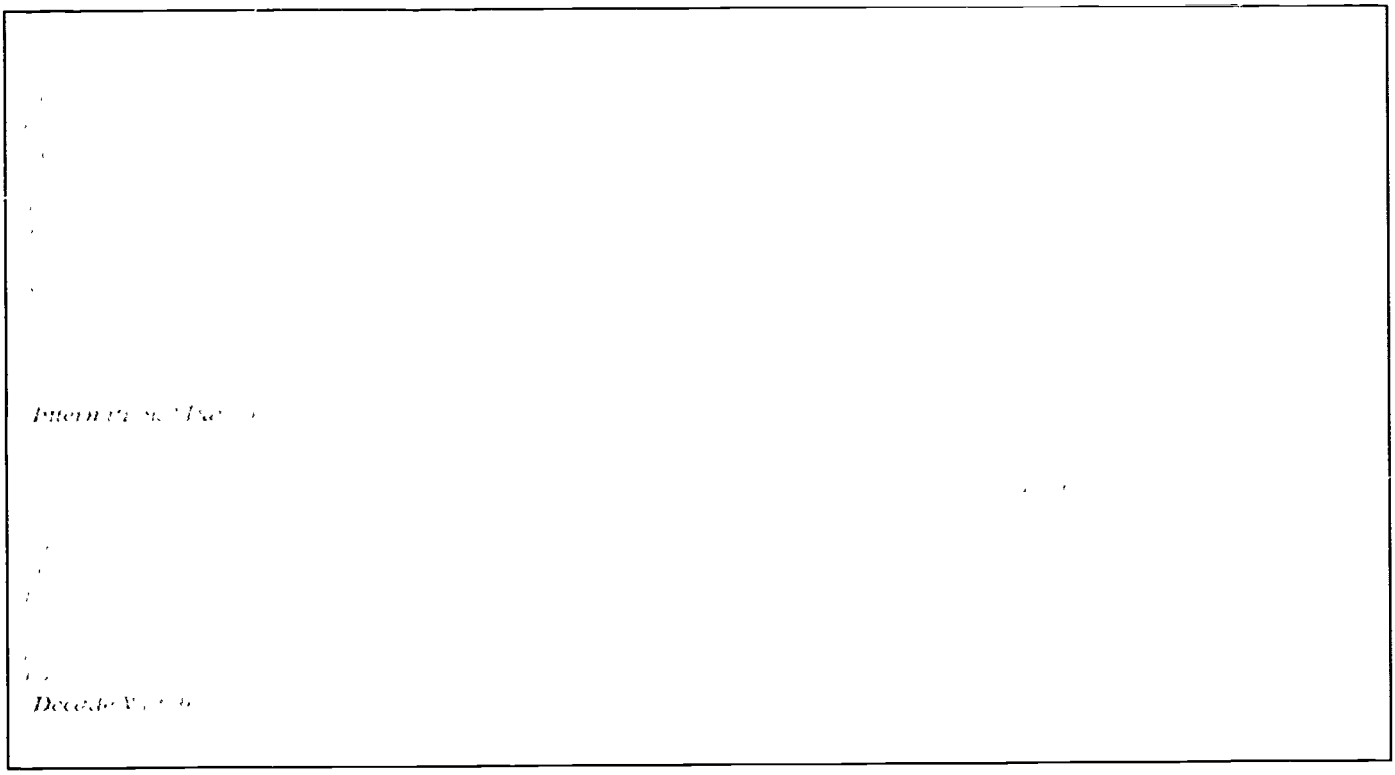
Making the photo-mural proved to be a creative organizing strategy. If the group had tried to form a reforestation committee right off the bat, the other community members would have thought it was a crazy idea. But by first working together to create the photo-mural, we began a rich dialogue and collaboration within the community. We invested time and energy working toward a shared goal. And we had lots of fun. It became a natural step for El Florido's residents to formalize their work by selecting a committee and by planning future activities. What started out as a simple photo-mural grew into a solid new community development project.

Philip Decker is the Director of Enlace: Centro de Comunicación Fronteriza, an organization that promotes grassroots communication and development projects in Tijuana. He also teaches communication-for-development courses at the Universidad Iberoamericana in Tijuana and at the University of California, San Diego.

What Are Debt-for-Nature Swaps?

A funding mechanism to finance conservation activities in developing countries, debt-for-nature swaps usually occur when non-profit environmental organizations buy a portion of a country's external commercial bank debt. The debt is converted into local currency and used to fund local conservation projects. For example, environmental groups recently purchased US$5.4 million of one country's debt at 17% of the face value. Local currency bonds were then issued for 75% of the face value. The bonds will mature in five years and will pay an average of 25% annual interest. The difference between the purchase price of the debt and the redemption value in local currency causes a multiplier effect, increasing the amount available to fund conservation efforts. The commitment of the host governments to improving the management of their countries' natural resources is the most important criterion for success. The money is used to fund a variety of conservation activities, including improving the management and administration of national parks, conserving buffer zones in remote areas, establishing research and training facilities, and increasing public awareness of environmental problems. Other development organizations are exploring the possibility of using similar financing to fund activities in other development fields. Also, debt-for-nature financing is not limited to environmental non-profit groups. Two European governments have already initiated debt-for-nature swaps.

Population and Environment: A Global Report



by Winthrop P. Carty

How are Third World editors writing about population and the environment? Do they stress one issue in favor of the other or do they tightly link the two problems? IMPACT, an AID-funded project of the Population Reference Bureau, communicates population information to LDC leadership groups. IMPACT planned to focus attention on the link between population and environment by asking members of the international press to join us in addressing the theme on a global basis.

We asked 11 editors of national publications in Third World countries to join us in Nairobi, Kenya, for a seminar co-hosted by the United Nations Environment Programme (UNEP). UNEP's participation increased the project's acceptability. We asked the editors to work on a special supplement publication for their journals that would focus on population and the environment. The supplement, called ***Global Edition,*** would be 16 pages long. *Sustainable Development: The Challenge of Our Times* would be the first theme.

The first eight pages of Global Edition focused on worldwide issues. Many editors won't publish articles that smack of family planning advocacy, so the first section stressed population data and demographic information only. The theme "Child Five-Billion," a symbolic Third World newborn, was used to write about how societies will need to draw on environmental resources to support "Child Five-Billion" and the other children that will follow. The piece was written in cooperation with all of the editors, who requested only minor changes.

The second eight pages focused on regional considerations. The editors each prepared an eight-page section exclusively for their own publication. Final supplements were printed in Arabic, Bengali, English, French, Spanish and Thai. Including pass-on readership, the supplement had the potential to reach two million readers in 25 nations.

Different Sides of the Story

National journals often face manifest problems of censorship. They also may need to cater to special religious, political, economic or tribal interests. Stories about the degradation of the local environment or the failure of family planning programs can easily be construed as intolerable criticism of the government. In this regard, it was interesting to see how individual editors played the story.

One editor from Kenya, where the press recently has been under government pressure, wrote that "the solution of Kenya's population problem seems to lie more in a pragmatic approach to the hardened attitudes of the majority of the childbearing population and less in the area of...indiscriminate importation of drugs and technology." He concluded that poverty was the basic cause of the environment's destruction. He added, somewhat ambiguously, that Africa must reduce its population growth, "but it is erroneous to think that reducing population will decrease poverty. Only the rationalized utilization of local resources, much of it locked up in the energies of youthful populations, can create the much-sought-after wealth." The problem is presented as the poor's resistance to change. "Foreign gadgets and personnel have not been able to come to grips" with a complex issue. The government, lavished with funds for family planning and pursuing a develop-

(Continued on page 6)

A Children's Magazine

By Jim Dunn

To promote health and environment education in Kenya's primary schools, the Mazingira Institute, a non-governmental organization based in Nairobi, publishes an annual magazine for primary school children. Mazingira Magazine uses articles, short stories, songs, games, puzzles, comic strips, illustrations and competitions to communicate health and environment messages. In 1986, with support from Canada's International Development Research Centre, the Institute conducted an evaluation of the magazine. Using the competitions included in the magazine as a survey tool, the Institute measured readers' existing knowledge about water and sanitation practices. Based on this information, the Institute prepared a special issue focusing specifically on water and sanitation messages that emphasized water quality, disease prevention, rainwater harvesting, sanitation and diarrhea treatment and oral rehydration therapy. A teacher's guide and orientation were developed to help teachers use the materials in the classroom.

A second survey revealed that the magazine had a moderate impact on children's knowledge and behavior. Despite teachers' orientation emphasizing the practical uses of the magazine in the classroom, a majority of the teachers considered the magazine an extra-curricular activity that students should study on their own. When teachers did use the material in class assignments or discussion, impact was much higher.

About 60 percent of the children brought the magazine home to share with their parents and of those, 60 percent attempted to relate the material to their parents. Newly acquired knowledge wasn't generally shared with brothers or sisters. Girls were more likely than boys to discuss behavioral change with their parents--usually their mothers. Suggestions were received with less resistance from girls than from boys.

While the evaluation did not focus specifically on communication techniques, the study clearly indicated that students enjoyed the articles and short stories the most, followed by the comic strips. Half of the students had trouble understanding the magazine's games, contests and articles; however, they still enjoyed them. Students viewed the magazine as study material rather than as entertainment. Educational messages had the greatest impact when they were conveyed repeatedly using several communication modes--e.g. comic strips, illustrated text, games. And the magazine was more successful at imparting specific terminology and activities than wider concepts or analytical skills.

Jim Dunn is a research assistant at the Institute for International Research. For more information, contact: Mazingira Institute, P O. Box 14550, Nairobi, Kenya. Telephone: 47066 or 47097

Development Communication Resources

World Neighbors is a private, non-profit organization that helps people in developing countries analyze and solve their own problems. By providing training materials at a low cost, World Neighbors tries to counteract three basic problems in development:

* inadequate supply of development materials that can be understood by local groups;
* insufficient training by local peoples in communication and nonformal education methods; and
* lack of inexpensive, reliable teaching materials

Word Neighbors offers filmstrips, books and other materials on community improvement, water, health and nutrition, family planning, small animal raising, agriculture, trees and soil conservation. World Neighbors also publishes two newsletters, the quarterly *World Neighbors in Action* and *Soundings*, a biannual communication exchange newsletter. Subscriptions are available for free for readers in developing countries and for US$5.00 for readers in industrialized countries.

For a copy of their training materials catalogue or subscription information, contact: World Neighbors, 5116 North Portland Avenue, Oklahoma City, OK 73112 USA Telephone: (405) 946-3333. Telex: 5106002674.

(CARTY from page 5)

ment-at-all-costs policy, is caught in the middle.

The editor from Zimbabwe was a clear advocate of family planning and con va- tion. He wrote "Economic growth will now have to be sustained and efforts to keep population growth under control continued . if the country is to start tackling its enormous problems of unemployment, uneven development and growth that have built up over the last few years." In addition, the Zimbabwean supplement had no trouble pointing out the shortcomings of neighboring governments' population and environmental programs. The editor focused very sharply on what Africans should and could do about their problems, virtually without mention of outside factors.

Stories about the degradation of the local environment or the failure of family planning programs can easily be construed as intolerable criticism of the government.

Different Approach

The two national journals from Africa were very different in tone and content. Differences of personality and opinion surely existed, but it is difficult to say to what extent self-censorship and anti-government sentiment played a part in shaping opinion. A London-based participant, whose magazine circulates in English-speaking Africa, wrote that "the two major problems facing Africa are desertification and the population explosion. Both these problems feed on each other to create the nightmare scenario for Africa's future." The editor advocated a "vigorous" family planning program for the region. The magazine's sister publication for the Middle East, however, treated population and environmental issues very gingerly. Except for Egypt, the magazine doesn't circulate in nations where the readership is popularly concerned about population. In general, magazines sold in the Arab world must be careful about stirring passionate feelings.

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(**CARTY** *from page 6)*

The editors from Colombia, Mexico and Thailand--countries where family planning is now widely accepted--focused more attention on environmental issues. The Colombian, as well as the editor from Bangladesh, tended to think that environmental degradation was the product of broad economic effects. The Mexican and Thai participants, by the way of contrast, thought that their societies should do much more to defend their own environment. Some of the editors had also asked environmentalists to contribute signed pieces to the supplement. The conservationists completely ignored or greatly down-played the link between environment and population.

Future Editions

The Nairobi seminar was instructive. I was surprised at how easily the meeting produced a sense of common purpose among the 11 editors. What they had originally thought were national or strictly regional problems turned out--in most cases--to be universal ones. Most of the editors brought copies of their publications to the meeting, allowing everyone to see that they were indeed working on global issues. In part for this reason, the editors wanted more and better information on international environment issues to strengthen their ability to write more authoritatively on the world scene.

Does the Third World press link environmental problems to population growth? There seems to be no pat answer. My hunch is that editors are often reluctant to burden environmental issues with the taboos of population. Urban environment was suggested as the next topic for ***Global Edition.*** The group quickly agreed. One editor then suggested global warming. Initially, the other editors rejected the topic as too futuristic and abstruse for nations whose poor are fighting to survive the week. Some editors felt that global warming was strictly an issue for industrialized countries. But after kicking the idea around, agreement began to develop: global warming was an important and immediate issue that could be made accessible to readers.

Winthrop P. Carty is the Population Reference Bureau's Director of Publications. Formerly, he was Director of Communications for IMPACT.

Television for the Environment in India

by Kreg Ettenger

India is a rich tapestry of cultural and ecological diversity. With many climates, landscapes and peoples, India also faces considerable environmental challenges. A population of 800 million takes a heavy toll on India's natural resources. But India is taking steps to protect her natural and cultural heritages while providing for the needs of her people by educating her citizens about the country's environmental problems and possible solutions--using video.

Television in School

India is in a strong position to carry out this goal. Growing availability of television sets and expanded ground and satellite transmissions have increased India's television audience by over 1000 percent in the last ten years. Many of India's schools now have access to television and video players. So, in collaboration with the U.S. Fish and Wildlife Service (FWS), the Indian Government has begun to develop environmental television programs for the country's school systems. The Children's Environmental Education Television Project (CEETV) combines advances in educational technology with up-to-date environmental information to promote knowledge and awareness about the environment among India's youth. CEETV will produce a series of educational videos focusing on various aspects of India's environment as part of larger environment education modules. The modules will also include teachers' guides, workbooks and other classroom materials targeted to reach Indian school children 10-14 years old. The project is administered by the Centre for Environment Education (CEE). Phase I of the project--development of topic ideas, production and pilot testing of the first module--is near completion. Phase II, production of the remaining modules, their distribution and broadcast and evaluation of the project is set to begin soon.

Form and Structure

A major goal of the project is to create a sense of individual capability and motivation among the students. Modules are designed to encourage open classroom discussion and active participation. Students should believe that they can improve their environment and be given the knowledge and skills to do so. Teachers are also encouraged to develop their own activities and lessons to complement the program.

A network of TV- and VCR-equipped schools is being formed for initial testing and evaluation. CEE is also training personnel from non-government organizations (NGOs) throughout India to hold teacher-training workshops. Participating teachers and schools will provide important feedback for evaluating and modifying modules. Plans also include airing the programs on India's national television network.

Each video is researched by project team members at CEE. CEE has produced materials for urban and rural schools, mass media, several national parks and the Government of India's annual National Environmental Awareness Campaign. CEE staff work with the episode producer to develop story ideas and decide on locations. The producers in turn work within CEE guidelines for length, content and specific learning objectives. Beyond this, producers are largely free to choose approaches that suit their style and the topic.

The format for the videos was developed by looking at existing Indian programming and at educational television programs from around the world. The project settled on a magazine format. Each program consists of individual segments tied together by a major theme. Programs can feature segments of real people in actual settings, puppets or animated sequences. The segments don't follow a rigid structure and are connected by storylines and major themes. Common opening and closing credits, theme music and characters used throughout the series provide additional

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Environmental Education: A Fast-Growing Field in Latin America

by Diane Walton Wood

Nonprofit conservation organizations have proliferated throughout Latin America in the past ten years Non-governmental organizations--NGOs--are taking the welfare of their countries' natural resources into their own hands. Some are well staffed, well funded, internationally recognized organizations; others are small, underfunded, volunteer groups operating with little outside recognition However, all are committed to protecting and managing their countries' biological resources--resources that are disappearing at an alarming rate

Latin America's NGOs are diverse They cover national park management, protection of wildlife, reforestation, environmental contamination and other pressing issues. Some groups work closely with their governments, implementing complementary programs that fill gaps left by limited public sector funds Others are activists, monitoring government policies and denouncing environmentally unsound policies. Some groups have united forces while others resist collaboration and compete for territory. They all share a respect for environmental education and recognize its potential for getting conservation messages out to the people who make the biggest difference. Latin America's NGOs understand the value of environmental education to bring about behavioral change and positive action. In Latin America, environmental education has become an integral part of natural resource conservation programs. And NGOs are gaining credibility as effective voices to address severe environmental problems.

Growing Networks

In Guatemala City there are at least 14 operating conservation NGOs. To coordinate their activities, they have formed the Conservation Federation of Guatemala and are now part of the Regional Network for Non-Government Organizations for Sustainable Development (REDES) At least half of the NGOs in the Federation identify environmental education as a priority Several are planning a joint venture to establish a permanent environmental education center REDES has also identified environmental education as a major objective When funding becomes available, REDES plans to place an environmental education coordinator in each member country

NGOs are gaining credibility as effective voices to address severe environmental problems

Latin America's environmental education programs are as diverse and creative as the NGOs that are implementing them. Perhaps the most sophisticated program is that of Fundación Natura, an NGO established in 1978 by citizens concerned about Ecuador's natural heritage Launched in 1980 with a grant from the U.S. Agency for International Development, Natura's environmental education program attempts to raise the environmental consciousness of Ecuador's high-level decision makers The program has been so successful that, in 1983, Natura implemented a second phase of the project designed to reach government decision makers, industry, school children, universities and the general public. Over the past four years, Natura has produced hundreds of education materials: slide programs, television spots and programs, booklets on Ecuador's flora and fauna, a complete primary school curriculum in collaboration with the Ministry of Education, a series of educational posters, radio programs and a comprehensive profile of the state of Ecuador's environment Natura has also sponsored numerous seminars and conferences including Ecuador's first national congress on the environment in 1987

Using Radio for the Environment

Of the media used in its education campaigns, Fundación Natura's radio series deserves special highlight. Composed of 12 thirteen-minute presentations, the program Mister Halley Superstar broadcasts conversations between Halley's Comet and a satellite as they lament the environmental demise of planet Earth. The comet and the satellite discuss the changes that Mister Halley has seen on Earth as he passes by every 76 years. Series titles include "Drowning in Trash" and "What Will the Future Bring?" Mister Halley has also been translated into Portuguese for use in Brazil.

Equally creative is the series Amergildo and His Truck In this program of 64 four-minute presentations, environmental messages are communicated by Amergildo, a truck driver who picks up various passengers as he drives around Ecuador. Amergildo shares his observations about Ecuador's deteriorating environment with his passengers and with program listeners. The messages cover many topics including the environmental impact of industrialization, mass transport and deforestation. The language is pitched to the campesino, using regional colloquialisms and humor. Natura's director of its environmental education program, Marco Encalada, a specialist in mass communication, is the mastermind of these popular programs.

they understand the value of environmental education to bring about behavioral change

What makes Natura's Programs so Successful?

Aside from the creativity and excellent technical qualities of the materials produced, Natura's success is a result of a conscious effort to analyze its target audience and tailor its programs to their needs and priorities. Natura didn't undertake its education programs with preconceived notions of what had to be communicated or how best to communicate its messages Instead, Natura researched how people best receive information. Findings were documented, analyzed and stored in a database that became integral to project design All of the radio programs were pilot tested before final dissemination and were followed up with evaluation questionnaires. As an indication of the program's effectiveness, 100% percent of 45 radio stations surveyed indicated that Natura's radio programs were appropriate for their audiences.

Reaching Rural Communities

By Natura's own admission, the areas not adequately reached have been rural

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communities. Natura doesn't have the staff or resources to maintain a strong presence in rural Ecuador As a national organization based in Quito, it is difficult for Natura to implement effective programs in rural areas. This is not uncommon for conservation NGOs. Some national NGOs are tackling the challenge by establishing environmental education programs in rural communities through alliances with development assistance organizations For example, Bolivia's Center for Interdisciplinary Community Studies (CIEC) has joined forces with the Bolivian League in Defense of the Environment (LIDEMA), an association of conservation groups established in La Paz in 1985. An NGO dedicated to researching social factors that influence rural life, CIEC has teamed up with another LIDEMA member, the Beni Research Station, to carry out environmental education programs in the Beni Biosphere Reserve. With funding from the World Wildlife Fund and Conservation International, CIEC has developed a multiphase project to diagnose the socio-educational status of school-age and adult individuals in the Beni Reserve area to develop environmental education programs in 11 schools and to train teachers in environmental, health and community organization issues Extension services, public awareness and education programs are also planned. CIEC relies on the Beni Research Station for the ecological content of the program. The Research Station in turn benefits from CIEC's expertise in understanding and working with rural communities. Such alliances are critical to the effective protection of wild areas where sensitivity to human needs must be balanced with long-term ecological priorities.

Rural-based Conservation Groups

In the last few years, there has been a surge in the number of rural-based conservation groups that are undertaking their own environmental education programs on local and highly effective scales The examples given here are only the tip of the iceberg and the influence of these groups is just beginning to emerge. These groups have begun to develop specialized materials such as coloring books, short stories, posters and booklets addressing the environmental problems of local communities. As alliances between development NGOs and conservation groups increase and grow stronger, there is room for optimism. The growing wealth of creative environmental education materials and programs in Latin America has begun to have an impact and may begin to outrun the pace of environmental destruction.

Diane Walton Wood is Director of Latin American and Caribbean Programs at the World Wildlife Fund More detailed information about Fundación Natura's programs can be found in ***Final Evaluation of Environmental Education Project II*** *and* ***Mid-Term Formative Evaluation of Environmental Education Project EDUNAT II*** *produced for USAID/Ecuador*

New Books

☆ *Tree Growing by Rural People* (1988) highlights forestry activities that directly benefit rural peoples in developing countries The book is divided into three parts: 1) Trees in the Rural Context; 2) Strategies to Encourage Local Tree Growing, and 3) Developing a Sound Basis for the Introduction of Rural Forestry Innovations. Available for US$9.00 in English, French and Spanish from FAO Distribution and Sales, Via delle Terme di Caracalla, 00100 Rome, Italy.

☆ Also from the FAO, *Community Forestry. Lessons from Case Studies in Asia and the Pacific Region* explores social and technical issues that are keys to community forestry success. Thirteen case studies cover lessons learned from India, Indonesia, Korea, Nepal, Pakistan, Papua New Guinea, Philippines, Taiwan and Thailand. To order, contact the Regional Forestry Officer, FAO Regional Office for Asia and the Pacific, Maliwan Mansion, Phra Atit Road, Bangkok 10200, Thailand

Conference for Environmental NGOs

Environmental Education for Sustainable Development is the theme of a conference planned this fall by the International Society for Environmental Education. The conference will be held October 3 through 6, 1989 in Goa, India.

For more information, contact Dr Desh Bandhu, P O Box 7033, New Delhi, India 11 00 02

(**ETTENGER** *from page 7)*

continuity In this way, the magazine format remains cohesive while allowing for creativity of individual program producers.

The first video was produced and directed by noted Indian filmmaker Sai Paranjpye The video tells the story of Somu, a young villager and his cow Drakhi When a prolonged drought severely affects his village, Somu is forced to take the cow to a public cattle camp. During his journey, Somu learns about drought, its effects on the environment and how he can help his village prepare for the next one "Drakhi" was completed earlier this year

Essential Lessons about the Environment

Print materials that expand the ideas expressed in the videos are developed at the CEE Materials include teachers' guides, workbooks and activity plans for the classroom Like the videos, the print materials are designed to stand alone However, using the videos and print materials together will yield maximum benefits, especially when teachers have been trained to use the materials at project workshops As part of the project, CEETV has developed *Essential Learning in Environmental Education*, a handbook containing over 600 environment lesson ideas. Used to develop CEETV program content and objectives, *Essential Learning* will soon be available in book form and as a computer database from the National Association of Environmental Educators (NAEE) late in 1989. Another resource, *Experiences of Children's Television,* developed by CEETV, compiles findings and opinions from the field of children's educational TV worldwide. No doubt CEETV will serve as a model for future efforts, but CEETV addresses only one aspect of the need for educational television programs that address environmental, political and social problems There is much room for further work.

Kreg Ettenger is a research assistant and Master's degree candidate in environmental communication at the State University of New York, (SUNY) Syracuse CEETV is a collaborative effort of the Centre for Environment Education (CEE) in Ahmedabad, India and the State University of New York, College of Environmental Science and Forestry (ESF) in Syracuse, New York USA. The U.S. Agency for International Development also supports the project.

The Chonogololo Club: Environmental Education On the Air

Since 1953, the Wildlife Conservation Society of Zambia (WCSZ) has promoted conservation awareness whenever manpower, skills, money and enthusiasm have allowed. In 1981, WCSZ began broadcasting the Chonogololo Club of the Air (CCOA), a 30-minute weekly conservation radio program in English for primary school-age children. The broadcasts are based on Chonogololo Magazine, an environmental education program that provides basic information about nature and conservation to young people. The magazine and radio programs are organized in three-year, 18-issue cycles, to keep costs down. Over 800 primary and 100 secondary schools receive regular issues of the magazine, accompanied by teachers' guides.

WCSZ relies on sponsorship, donations and membership subscriptions for funding. From scriptwriting to recording, WCSZ staff volunteer their time and skills to produce the radio programs. In addition to school students, CCOA reaches children who cannot go to school to learn about conservation. As of December 31, 1988 membership stood at 18,332. In 1987, WCSZ began producing the programs in two local languages, boosting annual membership totals by well over 200%. An analysis of addresses showed increased membership came from the regions where the local languages were spoken. But because of financial constraints, the programs were discontinued. Increased sponsorship has seen the re-introduction of one of the programs (in Bemba). The Society also produces an array of educational materials, encourages members to participate in research surveys, provides a weekly conservation column to the national Sunday newspaper and produces the Society's official magazine. A small library of 16 mm films and slide shows is maintained at the national office. As an added service to the clubs, WCSZ also operates a bus to transport members on field trips. Contact the Wildlife Conservation Society of Zambia, P O Box 30255, Lusaka, Zambia. Telephone 254226.

Pesticide Communication in the Cotton Fields of Nicaragua

Flipchart developed in Nicaragua sparks discussion in Ecuador.

Much of the attention environmental issues have received in industrialized countries in the last few years has increased public awareness and pressured changes in legislation and industry. Here Merri Weinger describes a communication project that increased Nicaraguans' awareness about an environmental issue. More importantly, the project also succeeded in bringing about positive behavioral change--something that many developed countries' environmental awareness campaigns have yet to undertake.

by Merri Weinger

In a community near Leon, Nicaragua, a fifteen-year-old boy was applying methyl parathion to his father's small parcel of cotton using a backpack sprayer. He began to feel nauseous in the morning. When he returned home at the end of the day, he still felt ill and went to bed. By the time his father got home that evening, the boy was dead.

This is not an uncommon story in Nicaragua, where the incidence of human poisoning and deaths is one of the highest in the developing world. Historically, pesticide use in Central America has been concentrated in cotton production. As the region's leading producer of cotton, Nicaragua also leads Central America in the volume of pesticides used--with dramatic consequences for both the human population and the environment.

In 1985, Nicaragua initiated a multidisciplinary pesticide health and safety project involving several governmental ministries and the largest farm worker and small farmer organizations. The project was financed by Nicaraguan, Canadian and Norwegian government funding with assistance from several private voluntary organizations, including CARE Nicaragua, the American Friends Service Committee and Oxfam. In addition to a strong educational component, the project also developed improved systems for pesticide mixing and loading, for medical monitoring to screen workers for overexposure to pesticides and for data collection and record keeping.

Educating Workers and the Community

Project educators were challenged to develop effective and creative methods and materials for reaching farm workers and the community with information about pesticides, their hazards and safe use. The information had to be accessible to large

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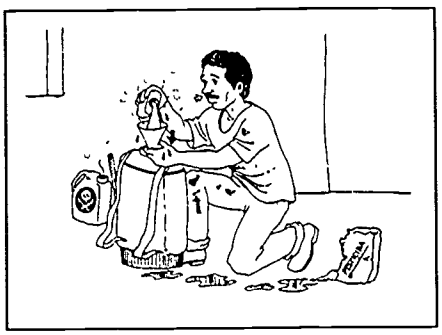
numbers of pesticide users with low levels of literacy To provide more than one source of information, the educational program developed curriculum materials and conducted workshops to train trainers or "multipliers"--technicians, health educators and inspectors who could spread information within their communities. These new trainers helped train hundreds of farm workers and health promoters.

In coordination with the farm workers union, posters were also developed using photographs to present hazard information and safety guidelines. This article focuses on worker education, but the broader communication strategy also included radio public service announcements, special programs on pesticides by popular radio artists, newspaper interviews with Nicaraguan project staff and the development of a pesticide curriculum for schools.



Drawing 1

Drawing 2

Drawing 3

Popular Education Methods

The methodology which shaped the program, known as popular education, has become quite familiar in Nicaragua. It is a collective or group process, where the teacher and students learn together, focusing on the concrete experiences of the participants and reflecting on these experiences to effect positive change Project educators utilized this approach in the development of curricula and materials They also needed visual educational tools that were easily portable for use in the field and in conjunction with medical screening A flipchart was designed and then assembled by participants in one of the training-of-trainers workshops. The flipchart included 18 drawings that used familiar images or problems to convey the health risks of pesticide exposure, common causes of poisoning and prevention advice Designed for use as discussion starters, each picture had specific objectives and key questions that were outlined in an accompanying guide for instructors.

Some of the drawings were designed to provide factual information Drawing 1--depicting one route of entry of pesticides into the body--was used to provide information and to generate analysis of how people are poisoned and what can be done about it A series of inductive questions invited participants to identify the problem, project themselves into the situation presented, discuss their own experiences, analyze the causes of problems and suggest strategies to address them

Pictures are most effective when they mirror the reality of the learners. Participants are more likely to analyze and identify with situations that portray scenes, actions and characters that are similar to themselves. Drawing 2 was inspired by a photograph of two children bathing in an old pesticides barrel. The introduction of two or more people into a drawing--Drawing 3. two people entering a recently sprayed field--encourages discussion of suspected motivation and feelings "Why is she reading the sign? Why did he go right in?" With effective visual images, the same picture may trigger a variety of discussions depending upon the group

Interactive Training

The training component of the program was equally interactive One of the basic principles of popular education is that learning is most successful when it's active and participatory. In the classes, many of which were conducted on farms, the instructors acknowledged training participants' experience by inviting volunteers to demonstrate their knowledge. the correct use of the backpack sprayer or how to dress for working with pesticides. During demonstrations, classmates offered advice and jokingly critiqued their peers' performances, leading to a lively interchange Other skills were taught using role plays or scenarios. For example, two volunteers were asked to come to the aid of a third who had been doused with pesticides in the field They advised him to remove his contaminated clothing and wash with soap and water

Both trainers and farm workers learned to read pesticide labels in small groups Where literacy skills were limited, readers assigned to each group read the labels out loud and led discussions on what the labels meant Participants were also encouraged to use warning symbols and color codes to assess the relative hazards of products

Based on their experiences, trainers were encouraged to develop their own educational materials, such as posters or games, for use in their communities A very successful puppet show entitled "It's Better to Prevent than Lament" became the finale for the program, with both the puppets and script created by trainers The story, typically enough, involved a conscientious worker and a careless worker The careless worker goes to work with a hangover--increasing his susceptibility to poisoning--doesn't wear his protective equipment, smokes on the job and dies as a result. Although the story seems morbid, it's told using jokes and familiar expressions--an entertaining delivery of a very serious message The discussion that followed used the same processes employed with the flipchart to pose and analyze the problem and identify a plan of action

Education for Action

Probably the most important principle of popular education is that it promotes action and change Before developing the

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program, it was important to identify issues or problems that could become obstacles to change. As part of the needs assessment, the project team visited farms throughout the cotton-growing region to observe and analyze common work practices and the ways pesticides workers could become exposed to pesticides. The team also listened for emotional issues that might prove to be barriers to action--issues that make people angry or frustrated such as the unavailability of personal protective equipment, lack of access to soap and water and the absence of viable alternatives to chemical pesticides People are more inclined to take action on issues which they feel strongly about.

Listening to people before the program began helped identify people's perception of risk and the prevailing beliefs that could effectively block communication.

Listening to people before the program began also helped identify people's perception of risk and the prevailing beliefs that could effectively block communication. Many farmers in Nicaragua believe that bathing after work causes the flu, arthritis and a variety of other maladies. Other farmers believe that milk can prevent poisoning as well as serve as an antidote. Bathing at the end of the work day is one of the most economic and effective prevention tools. Although a valuable nutrient, milk does not protect against poisoning.

Following the listening phase, these key issues and themes were translated into visual images for use in the flipchart and poster. The appropriateness of the images was key to their success Testing prior to use was essential. In training, key issues were also incorporated into the puppet show, the case studies, role plays and slides shows. For some examples, the careless worker in the puppet show claimed that he was not vulnerable to poisoning since he drank milk. What's more, he had been working with pesticides for years without any problem. Similarly, a case study for inspectors asked how they would respond when encountering the same attitudes on farms Responses were generated and practiced in class.

Adapting the Model to Other Settings

The educational approach used in Nicaragua's cotton fields is applicable to other settings from Texas and California to Costa Rica and Ecuador. In 1986, the flipchart travelled to the highlands of Ecuador and was used to train agricultural extensionists there. These trainers have now developed their own visuals and use them in their communications efforts.

When implementing a pesticide communication program, a commitment to understanding the audience--their perceptions of risk and the issues that can prevent change--must precede program development. Program participants often have a good understanding of the issues and should be involved in the development of materials and curricula whenever possible. When barriers are identified, they should be translated into discussion starters--pictures, slide shows, case studies, skits--for analysis by the group.

A multidisciplinary approach is also essential Education and communication efforts without enforcement strategies, engineering controls, medical monitoring and investigation into alternatives will be ineffective Simply understanding the risks without the legal, technical and medical support to prevent them will lead to increased frustration.

Patience is another prerequisite While the project observed a general increase in the level of awareness and preventive activities on the part of farm workers, national organizations and the government, it will be several years before these changes are reflected in a decrease in the number of pesticide poisonings In fact, the number of reported poisonings continues to increase as surveillance systems improve--a feature common to educational programs to prevent pesticide-induced illness On a positive note, the application of popular education methods to pesticide health and safety is a major contribution to communication efforts in the field

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Merri Weinger, MPH, is an occupational and environmental health specialist with the California Department of Health in Emeryville, California. She has worked in environmental health, education and communication for the past 15 years, in the U.S. and overseas.

Conservation in Context

Costa Rica has one of the best conservation programs in Latin America, but it also suffers one of the highest rates of deforestation. Nearly one quarter of the country is designated park or protected area. But pressures for quick resource exploitation caused by debt problems, combined with population surges into vulnerable forested areas, threaten remaining forests. Despite conservation efforts and donor assistance for research and environmental protection, the role that small farming and rural Indian communities play in rainforest protection hasn't received much attention--until now.

Production is underway on a new film that will focus attention on the conflicts, opportunities and frustrations of rural communities living on the "resource frontier". Conservación en Contexto (working title) is a dramatic film, flavored by popular culture, rich in romance, music, heroics and humor. The film seeks to strengthen Costa Rican grassroots initiatives in rainforest preservation and to encourage campesino participation in forestry conservation. People are more likely to model the behavior of characters with which they can identify, so a dramatic format instead of a documentary was chosen as the best approach. Support for the project has been overwhelming. The project has received input and guidance from Costa Rican grassroots environmental groups during every stage of production. Conservación en Contexto is expected to appeal to a wide audience. The inclusion of local figures in the subplot--doctors, teachers, religious leaders and local officials--further legitimizes the message.

Interlock Media Associates and Costa Rican co-producers Fundación Argos and Comunicación Alternativa Vision are producing the film. When completed, it will be distributed to conservation groups and aired on Costa Rican national television. An English subtitled version and a dubbed version in Portuguese are planned. For more information, contact: Interlock Media Associates, P.O. Box 619, Cambridge, MA 02238 USA. Telephone: (617) 491-3111.

Reporting on the Environment

by Mike Laflin

A new book from the Asian Forum of Environmental Journalist, (AFEJ) *Reporting on the Environment: A Handbook for Journalists* sets out to acquaint journalists with key concepts in environmental issues and journalism, to establish "a kind of uniformity and consistency of reporting on a sustained basis" and to point out the subtle differences between general reporting and environmental reporting.

The handbook begins with a discussion of broad environmental issues. Journalists are warned against focusing solely on the political and social aspects of environmental issues and are told to educate themselves about the technical aspects of their subject. The coverage of the Three Mile Island nuclear reactor incident in the USA is cited: at the time, journalists knew little about how a nuclear reactor worked, did not understand radiation terminology or concepts and did not know which experts to seek out nor what questions to ask. The book makes the important point that journalists need to educate the public, but in order to do so they must first educate themselves.

The book stresses that the reporter has the role of watchdog as well as educator. This requires persistent, long-term monitoring of problems that need to be kept in readers' minds. Follow-up stories three months later are as important as headlines. Moreover, not every environmental story is about a supertanker spilling oil. Instead, for example, it can be about the number of myna birds exported from north-east Thailand and can require that the reporter learn about international treaties concerning endangered species, government policies and the myna bird's place within the ecosystem.

That environmental reporting often deals in uncertainty is another important point. Experts may not be able to explain the source of pollution or may disagree on how to stop deforestation while still providing fuelwood for local people. Environmental stories are often complicated. There can be many sides to a story that can build over time. Environmental stories are usually more technical than other issues and use jargon unfamiliar to most readers For example, how do reporters deal with post-Chernobyl exports of dried milk from Poland to Nepal and Bangladesh without reference to the number of bequerels per kilogram to measure radiation?

Reporters must try to balance a multiplicity of viewpoints and provide equal coverage to each one even though objective validity is difficult to measure. Often viewpoints are highly emotional or controversial--people's safety or jobs may be at stake. The reporter may find it hard to remain objective or to avoid being manipulated. The book also reminds readers that the imperative to sell newspapers can encourage sensationalism and controversy and can discourage responsible coverage.

The central section of the book deals with technical issues facing journalists' sources of information, how to simplify complex information and how to deal with journalistic constraints on environmental writing There are checklists for reporters working on environmental stories

Finally there is a section called "Brief Guides to Environmental Issues." The handbook devotes between two and five pages to acid rain, air pollution, deforestation, ecosystems and the web of life, the greenhouse effect, ground water and surface water, overfishing, ozone and the atmospheric ozone layer, pesticides, radiation and toxic chemicals and metals. The descriptions are clear and objective. For example, when describing toxic chemicals, the effects on people are described this way: "Entry by inhalation is the most dangerous route. When a person breathes in a toxic chemical, as did the people in Bhopal, it goes to the lungs and straight into the bloodstream in almost a 100-per cent concentration "

The same section provides practical advice to journalists on how to handle the issues. For example, they are cautioned against oversimplication." One of the most difficult tasks a journalist faces is explaining safe and harmful doses of toxic chemicals." Several problems are then listed. "You should be aware of these problems, particularly when interviewing scientists who often resist giving "yes" or "no" answers to journalists looking for clear-cut answers Often the reason they do not give clear-cut answers is because the situation is so complex they cannot."

The handbook ends with a glossary of terms and a bibliography that for the most part includes technical environmental reference works rather than books on communicating environmental issues.

We recommend this small but tightly written text. If there were only one book that practitioners could read, we would suggest that they choose this one.

Reporting on the Environment: A Handbook for Journalists *is published by the Asian Forum of Environmental Journalists in cooperation with the U N. Economic and Social Commission for Asia and the Pacific (ESCAP), 1988.*

The Asian Forum of Environmental Journalists (AFEJ) was formally constituted in January 1988. It provides workshops, publications, a newsletter and clipping service, technical assistance, journalist exchange programs and awards for excellence. ***Reporting on the Environment*** *contains a list of the national chairmen Copies are being distributed to members of the mass media in developing countries free of charge. There are plans to translate it into national languages of the 11 national environmental forums of the Asia region.*

Write to the Senior Expert on Environment, Environmental Coordinating Unit, United Nations/ESCAP, United Nations Building, Rajadamnern Avenue, Bangkok 10200, Thailand.

Award for Environmental Reporting

The Asian Forum of Environmental Journalists (AFEJ) is sponsoring the Best Story Award for environmental reporting in Asia in cooperation with the Friederich Naumann Foundation. Print, television and radio reports are eligible. A cash prize of US$4,000 will go to the winner. All stories published or aired before December 31, 1989 are eligible.

For details, contact: AFEJ, GPO Box 3094, Kathmandu, Nepal. Telephone: 977-1-410419. Telex: 2567 KMTNC NP. Fax: 977-1-226602 Nepal.

Glossary of Environment Terms

Agroforestry: the use of woody perennials as agricultural crops on a farm in a spatial or sequential arrangement which permits economic and ecological interactions between woody and non-woody components.

Biodegradable: any substance that can be readily decomposed by living organisms.

Biodiversity: the sum total of all species that creates and maintains ecosystems.

Community Forestry (Social Forestry). the use of communal or public lands for tree growing in cooperation with a forestry department to meet community needs.

Conservation Farming (Regenerative Farming): a system of farming that aims to be productive and self-sustaining by conserving natural resources of soil, rainwater and nutrient recycling.

Deforestation: the mass clearing of trees from forests and woodlands, which contributes to soil erosion and species extinction through the reduction of biodiversity.

Desertification: the process by which lands that have been disturbed by natural phenomena (drought, flooding) or human intervention (improper farming processes) are converted to deserts.

Ecosystem· a group of plants and animals occurring together plus the physical environment with which they interact. Example ecosystems include. aquatic (rivers, ponds), coastal, desert, forest, grassland and tundra.

Farmer Participatory Research: direct involvement of farmers in research, via surveys and interviews concerning their indigenous technical knowledge, to tailor agricultural technology development to their needs.

Farming Systems Research: a method of applied problem-solving, assessment of potential technology change and field experimentation to identify opportunities for appropriate technology change among farmers.

Integrated Rural Development: a project format in which a project is limited to a specific area and target group, but involving multi-sectoral activities and community participation.

Land Degradation: the reduction of land quality and productivity through human activity, improper land use and natural degradation.

Ozone: a variant of oxygen concentrated in the stratosphere. It absorbs harmful ultraviolet (UV) radiation which is damaging to plant and animal life.

Ozone Depletion: the destruction of the ozone layer caused primarily by the release of chlorofluorocarbons (CFC's) to the atmosphere. Chlorine and other gas molecules break down ozone in a chemical reaction.

Salinization: the accumulation of mineral salts in soil. This is generally caused by the evaporation of irrigation water and can impair soil fertility.

Soil Erosion: the process which moves soil from one location to another by wind, water or other natural action, often accelerated by poor farming and development practices. Soil erosion reduces soil fertility and increases water pollution and flooding.

Soil Fertility: the capacity of soil to supply nutrients to plants.

Sustainable Development: the concept of meeting present needs while preserving the capacity to meet future needs In an environmental context, this includes maintaining ecological processes, preserving biodiversity and protecting species and ecosystems.

Watershed: the land area that drains into a stream or stream system, outlined by the highest ridges around a stream.

Windbreak: rows of trees, bushes or tall grasses planted at a perpendicular angle to the wind which reduces windspeed at the soil surface, thereby reducing soil erosion

-Stephen Mitchell
Librarian

Resources for Environmental Communicators

ACCIS (Advisory Committee for the Co-ordination of Information Systems for the United Nations) has produced *A Guide to United Nations Information Sources on the Environment.* It lists the sources of United Nations environment information and UN depository libraries for 154 countries. It also lists the addresses of online hosts for United Nations databases. For ordering information, contact. ACCIS Secretariat, Palais des Nations, 1211 Geneva 10, Switzerland.

L' Association des Trois Mondes produces a French edition of the *Moving Pictures Bulletin* (see separate entry). L' Association is an audiovisual information center specializing in film and video from developing countries. L'Association des Trois Mondes, 63 bis, rue du Cardinal Lemoine, 75005 Paris, France. Telephone: (1) 43 54 78 69.

- *BIOCENOSIS,* a quarterly environmental education newsletter for all of Latin America is published in Spanish and focuses on children's materials, biodiversity, marine resources and protected areas. Write: the Editor, *BIOCENOSIS,* Programa de Educación Ambiental, Universidad Estatal a Distancia, Apdo 474-2050, San Pedro de Montes de Oca, Costa Rica.

- *Biological Diversity in North Africa, the Middle East and Southwest Asia: A Directory of Organizations and Institutions* lists conservation organizations from 24 Middle-Eastern countries. For information, write: Brunn/Montague, HLCF, 969 Park Avenue, New York, NY 10028 USA.

CARE currently administers agriculture and natural resource projects in 31 countries. For information, contact CARE, 660 1st Avenue, New York, NY 10016 USA. Telephone (212) 686-3110. Fax. (212) 696-4005 Telex ITT 4900009950 CARUI.

- *Caribbean Conservation News* is the quarterly publication of the Caribbean Conservation Association (CCA), Savannah Lodge, The Garrison, St Michael, Barbados, West Indies.

- *CONNECT* is the quarterly environmental education newsletter of UNESCO

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CONNECT, 7 Place de Fontenoy, 75700 Paris, France

- The A.I.D.-funded DESFIL (Development Strategies for Fragile Lands) provides technical assistance to groups and individuals in Latin America working to slow the degradation of fragile lands using sustainable technologies The project also produces a newsletter. Contact Project Manager, DESFIL, c/o Development Alternatives, Inc., 624 Ninth Street, NW, #600, Washington, DC 20001 USA. Telephone (202) 783-9110. Fax. (202) 783-2962. Telex. 424822 DAIIU. Cable DEVALT

- *Directory of Environmental NGOs in the Asia Pacific Region*, produced by Sahabat Alam Malaysia (Friends of the Earth-Malaysia) lists the names, addresses, activities and publications of Asian environmental NGOs (US$7.00 plus postage). Sahabat Alam also publishes the Environmental News Digest, a compilation of news and articles from over 300 periodicals and magazines on development and the environment (US$30.00) Order from Sahabat Alam Malaysia, 37 Lorong Birch, Penang, Malaysia

- *ECOFORUM* is a bimonthly newsletter for non-governmental environmental organizations around the world to share information and ideas about the environment and sustainable development *ECOFORUM* is published in English, Spanish and French by the Environment Liaison Centre (ELC), P.O Box 72461, Nairobi, Kenya Telephone: 24770 or 340849 or 336989. Telex: 23240 ENIVICENTE

A.I D 's Natural Resources Management Support (NRMS) project is preparing a series of special studies including reports on successful local-level sustainable development efforts, forestry management projects and the roles of local NGOs in conservation. For more information, write: NRMS, c/o EDI, 1400 "I" Street, Suite 700, Washington, DC 20005 USA. Telephone. (202) 289-0542. Fax: (202) 289-7601

The Environment Policy Institute (EPI) publishes *NGO Directory. Tropical Forest and Multilateral Development Bank Campaigns* EPI, 218 "D" Street SE, Washington, DC 20003 USA They have also prepared *Bankrolling Success. A Portfolio of Sustainable Development Projects* in collaboration with the National Wildlife Federation.

- Friends of the Earth, 26-2B Underwood Street, London N1 7JQ England, has produced *Tropical Forest Conservation and the Timber Trade* as part of their Campaign to Save Tropical Rainforests.

- The *Environmental Sourcebook* from Island Press offers over 130 current books on global warming, hazardous waste, water management, solid waste and incineration, sustainable development, public lands, wildlife, forestry and biodiversity. For a copy of the catalogue, write. Center for Resource Economics/Island Press, 1718 Connecticut Avenue NW, Suite 300, Washington, DC 20009 USA.

Flora, Fauna y Areas Silvestres is a publication of the FAO Regional Office of for Latin America Published in Spanish three times a year, *Flora* reports on environmental news and activities from throughout Latin America Contact FAO Regional Office for Latin America/Caribbean, Avenida Santa Maria, 6700 Casilla, 10095 Santiago, Chile.

Haramata is a quarterly publication in English and French that focuses on arid lands management. Its free from the International Institute for Environment and Development (IIED), 2 Endsleigh Street, London WC1 ODD England.

The International Environment Information System (INFOTERRA) has published the sixth edition of the *International Directory of Sources* Write the United Nations Environment Programme (UNEP), P O. Box 30552, Nairobi, Kenya UNEP also maintains an environment clearinghouse at the same address.

Climate Change Discussions

In response to growing concern about the potential health effects of climate change, the World Health Organization invited a small group of experts to take part in initial discussions in Geneva this past June.

Under the auspices of the World Meteorological Organization (WMO) and the United Nations Environmental Programme (UNEP)—the Intergovernmental Panel on Climate Change is working on a comprehensive report on the effects climate change could have on agriculture, society and the global economy. The report will be presented at the World Climate Conference in late 1990. For more information, contact WHO Media Service, 1211 Geneva 27, Switzerland. Telephone: 791

ECOVISION '89

In May, the European Centre for Environmental Communication (ECEC) hosted ECOVISION '89, the fifth European Environmental Film Festival at Lille, France The festival highlighted European films on the environment and also showcased films on sustainable development from Third World countries. ECOVISION '89 also demonstrated specialized audiovisual and environment databases including CORINE, ECOTHEK, ECODISC, ARCHIMAGES, GENERIQUE and VENICE The ECEC supports increased collaboration cooperation and information sharing in environment fields. For more information, contact ECEC, 55 rue de Varenne, F75341 Paris, Cedex 7 France. Telephone: (33) 1 45 44 40 60 Fax (33) 1 42 22 65 54. Telex: 201220 FECPAR

- In cooperation with the U.S. Fish and Wildlife Service, the International Institute for Environment and Development (IIED) has developed two publications *A Directory of Selected Environmental Education Materials* and *How to Plan a Conservation Education Program* Both are available in Spanish Titles include *Thinking Globally and Acting Locally Environmental Education Teaching Activities, Teaching Soil and Water Conservation. A Classroom and Field Guide* and *A Manual of Environmental Education: Practical Guide for Educators* (from Bolivia). Most of the materials listed in the directory have been developed in the U.S. It is available for free from the Office of International Affairs, Fish and Wildlife Service, United States Department of the Interior, Washington, DC 20240 USA, or from the International Institute for Environment and Development (IIED)-North America, c/o World Resources Institute, 1709 New York Avenue, NW, Washington, DC 20006 USA. Telephone. (202) 638-6300. Fax. (202) 638-0036. Telex. 64414 WRIWASH.

Moving Pictures Bulletin is a quarterly guide to films on development and the environment. Produced by the Television Trust for the Environment (TVE), the bulletin summarizes the contents of each film and gives information on how to order films from distributors free of charge or for a small fee. TVE also maintains a database on environment and development films.

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Contact Television Trust for the Environment (TVE), 46 Charlotte Street, London W1P 1LX England Telephone (01) 637 4602 Fax (01) 580 7780. Telex 291721

The Panos Institute works with journalists, NGOs and decision-makers to tackle the problems of sustainable development by disseminating information on environment and other problems in Third World countries. The Institute prepares case studies on sustainable development and provides articles, news stories, photographs and graphics on development and environment topics to leading newspapers and magazines in 90 countries Many of the reports are written by Third World authors It also publishes *Panoscope*, a bimonthly magazine on sustainable development (US$18 00) and various books on urgent development issues The Panos Institute, 8 Alfred Place, London WC1E 7EB England Telephone (01) 631 1590. Fax. (01) 436 8293 Telex. 9419293 PANOS G L'Institute Panos, 31 rue de Reuilly, 75012 Paris, France Telephone (1) 43 79 29 35 The Panos Institute, 1409 King Street, Alexandria, VA 22314 USA Telephone (703) 836 1302 Telex 4900008533

Partners of the Americas has produced *A Natural Resources Directory, Latin America and the Caribbean* (US$15 00) which lists over 400 conservation organizations. Partners of the Americas, 1424 "K" Street NW, Suite 700, Washington, DC 20005 USA

The Smithsonian Museum of Natural History publishes a free monthly newsletter emphasizing biodiversity and tropical forests Issues include a bibliography of recently published articles in related fields *Biological Conservation Newsletter*, Smithsonian Institution, Department of Botany, NHB 166, Washington, DC 20560 USA

Unesco's Division of Marine Sciences publishes the International *Marine Science Newsletter* in English, Spanish, French, Russian and Chinese Free from IMS Newsletter, Division of Marine Sciences, Unesco, 7 Place de Fontenoy, 75700 Paris, France

SPORE, the bimonthly bulletin of the Technical Centre for Agricultural and Rural Cooperation in the Netherlands, focuses on environmentally sound, sustainable agriculture techniques Published in English and French. Contact: Technical Centre for Agricultural and Rural Cooperation (CTA), Postbus 380, 6700 AJ Wageningen, the Netherlands. Telephone (31) 8380-20484. Telex (044) 30169.

The United Nations Development Programme's (UNDP) journal *Development in Action* often features environmental news. *Development in Action*, United Nations Development Programme (UNDP), Division of Information, One United Nations Plaza, New York, NY 10017 USA.

In addition to the International Environmental Information System (INFOTERRA), The United Nations Environment Programme (UNEP) houses the Oceans and Coastal Areas Programme, the Industry and Environment Office (IEO) and the Desertification Control Programme (UNEP). All maintain libraries and databases and produce quarterly newsletters and other publications Contact the United Nations Environment Programme (UNEP), Box 30552, Nairobi, Kenya.

Our Common Future. From One Earth to One World. An Overview by the World Commission on Environment and Development is the 1987 report by the United Nations Commission on Environment and Development. For information on how to obtain a copy, contact. Oxford University Press, Walton Street, Oxford OX2 6DP England, or the UNEP Information Service, Publications Unit, Box 30552, Nairobi, Kenya. The Commission's original papers are now available to users of the BIBLIOL library database at Canada's International Development Research Centre (IDRC).

VITA Publications has produced five books as part of a series on environmentally sound, small-scale development projects The series offers guidelines for planning community-based agriculture, water, forestry, energy and livestock projects For information, contact. VITA Publication Services, 1815 North Lynn Street, Suite 200, Arlington, VA 22209 USA. Telephone. (703) 684-7937.

The World Resources Institute is a research and policy organization helping governments, business and environmental and development organizations address the fundamental question. How can societies meet human needs and nurture economic growth while preserving natural resources? In collaboration with the United Nations Environment Programme (UNEP) and the International Institute for Environment and Development (IIED), it publishes World Resources: *An Assessment of the Resource Base that Supports the Global Economy* which includes statistical data from 146 countries. It also produces numerous excellent policy and research reports on specific environmental topics For a catalogue of publications, write. WRI Publications, P.O. Box 620, Holmes, PA 19043 USA. Regional distributors in Bangladesh, Israel, Japan, Malaysia and England also carry WRI publications. For more information, contact. World Resources Institute, 1709 New York Avenue NW, Washington, DC 20006 USA. (202) 683-6300. Fax. (202) 638-0036 Telex. 64414 WRIWASH

The Worldwatch Institute is another excellent resource for information on environment and development. The annual *State of the World*, a report on progress toward a sustainable global society, assesses the Earth's vital signs focusing on the state of global resources. Worldwatch publishes a bimonthly magazine, *World Watch*, that often reports on Third World environmental issues and also produces a series of policy papers on development and the environment. Recent policy paper titles include *Action at the Grassroots. Fighting Poverty and Environmental Decline, Reforesting the Earth, Planning the Global Family*, and *Beyond the Green Revolution. New Approaches for Third World Agriculture*. A subscription to *World Watch* (US$25.00) includes the annual State of the World report and all Worldwatch papers. (Add US$15.00 for overseas mail.) Contact the Worldwatch Institute, 1776 Massachusetts Avenue NW, Washington, DC 20036 USA.

The World Wildlife Fund (WWF) makes small grants available to grassroots conservation efforts in developing countries that directly contribute to biological diversity and the sustainable use of resources. They also provide technical assistance to conservation and sustainable development efforts through the Wildlands and Human Needs and Biodiversity projects. With support from A.I.D., the Conservation Foundation (CF) operates the Environmental Information Service (EIS) to provide developing countries with technical assistance and information on environmental issues. The Foundation also produces a newsletter. For more information on WWF/CF programs, contact. The World Wildlife Fund/Conservation Foundation, 1250 24th Street, NW, Washington, DC 20037 USA Telephone. (202) 293-4800. Fax. (202) 293-9211. Telex. 64505 PANDA.

What's New, What's Coming

Communication for Rural Development

The Communications Division of the Inter-American Institute for Cooperation on Agriculture (IICA) in Costa Rica regularly offers courses on development communication, among them: *Mass Communication for Rural Development* focusing on radio and audiovisual production techniques and printed materials development, planning and methodology, *Planning Communication Projects to Support Rural Development* including training strategies for Latin American farmers, basic elements of message analysis, community communication and integration of farmer experiences into project planning; *Video Production* including basic components of audiovisual production using film and editing equipment and *Principles of Distance Education.* IICA is also developing distance education courses in agriculture and health care for Costa Rican farmers in cooperation with the Radio Nederland Training Centre.

Contact. Antonio Cabezas E., Dean of Studies, IICA-RNTC, Apartado 55-2200 Coronado, Costa Rica. Telephone: (506) 29 0222. Fax: (506) 29 3486 Telex: 2144 IICA. Cable: IICA San Jose.

Forestry Conservation

The Institute of Forest Conservation at the University of Philippines at Los Banos (UPLB) offers a series of short courses in forestry techniques including: Research Techniques in Agroforestry, Forestry Extension Officers Development Course, Agroforestry, Applied Communication Development, Reforestation Planning and Plantation Establishment and Management, Management of Agroforestry and Community Forestry Projects and Forestry for Community Development. For more information and applications, write Cesar Nuevo, Director, Institute of Forest Conservation, UPLB College of Forestry, College Laguna 4031, Philippines.

Helping Learners Learn

The Fifth Annual Conference on Teaching at a Distance will take place August 8-10, 1989 in Madison, Wisconsin. This year's theme is *Helping Learners Learn at a Distance.* For more information, contact Chris Olgren, Coordinator, Continuing and Vocational Education, University of Wisconsin-Madison, 225 North Mills Street, Madison, WI 53706 USA. Telephone (608) 262-5526.

Student Support in Distance Education

The International Council for Distance Education and the British Open University will host an international conference on *Interaction and Independence: Student Support in Distance Education and Open Learning* September 19-22, 1989 at Downing College, Cambridge. For more information, contact Alan Tait, Open University, East Anglia, Cintra House, 12 Hills Road, Cambridge CB2 1PF England. Telephone (44) 223 64721.

Distance Education Conference

The International Council for Distance Education will hold its fifteenth world conference in Caracas, Venezuela, November 4-10 1990 The conference theme will be *Distance Education Development and Access* Special topics will include building political support, distance education and human resources development, addressing the needs of the private sector, literacy, media choices, materials development, student support, technology applications, joint ventures, networking and consortia. The conference will be held in Spanish and in English This year's organizer is Venezuela's Universidad Nacional Abierta.

For more information, contact. Armando Villarroel, Oficina de la XV conferencia ICDE, Apartado 797, Caracas 1010A, Venezuela Telephone. 58-2-573-1346 or 58-2-571-0186 Fax. 58-2-573-6642. Telex. 26111 UNA VC

Community Radio Conference

The Second International Congress of the European Federation of Community Radios (FERL) will be held August 6-13 in Forcalquier (Provence), France. Community radio groups will have the chance to display and exchange their programs, demonstrate unique innovations and attend a radio flea market. Among conference themes are: how can communication be developed in the Third World so that it serves the people?; culture: forms of resistance against North American uniformity; and regaining access to and control of technology. For further information on FERL and the Congress in English, Spanish, French, German or Portuguese, contact: FERL, Les Quatre Reines, B.P. 42, 04300 Forcalquier, France. Telephone: 92 76 05 98. Or in England: Alain Hertzmann, 7 Montague Road, London E8 2HN England. Telephone: (01) 249 9718.

20th Annual Communications Conference

The twentieth Annual Conference of the International Institute of Communications will be held in Paris, France, September 6-9, 1989. The conference will focus on telecommunications, broadcasting and information services. Among conference topics: Cables and Satellites Who Needs Them?; Telecom Trade: Why New Rules are Needed and New Telecom Services Who Benefits? For more information, contact Gerry Jayasuriya, Assistant Director, International Institute of Communications (IIC), Tavistock House South, Tavistock Square, London WC1H 9LF England. Telephone (01) 388 0671. Fax. (01) 380 0623 Telex. 24578 IICLDN G. Cable Widecast London.

International Conference on Telecommunications

The International Telecommunication Union has begun plans for TELECOM 91, a major convention on international telecommunications and electronics to be held October 8-15, 1991.

As part of TELECOM 91, the ITU will host the sixth International Film and Video Festival on Telecommunications and Electronics--Golden Antenna 91. The Fes-

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tival will be held during TELECOM 91 and will highlight film and video productions on telecommunications and electronics and their impact on socio-economic development Films entered in the festival must be less than five years old They can be in black and white or in color Films must be either on 16 or 35 mm videotape that conforms to PAL, SECAM or NTSC standards, videos must be U-MATIC, VHS, or BETA compatible Entry categories include public information, publicity and advertising, technical resources for telecommunications or electronics techniques and vocational training An official catalogue with information on all the productions presented will be published and made available on request.

The fourth World Book and Audiovisual Fair on Telecommunications and Electronics--Book Fair 91--will take place at the same time, highlighting books, publications and technical literature on telecommunications and electronics. The fair is open to all publishers. Some categories are radio, satellite technology, computers, electronics, fibre optics, high definition television and telephones.

For more information, contact: Golden Antenna 91 or Book Fair 91, Public Relations Division, International Telecommunications Union, Place des Nations, CH-1211 Geneve 20, Switzerland Telephone: (+41) 22 730 52 48 or (+41) 22 730 52 36. Telex. +421 000 uit ch. Fax. (+41) 22 733 72 56.

Low Cost Health Materials

Teaching Aids At Low Cost (TALC) has an extensive list of health education materials available to developing countries at low costs. The list includes books on health care services, AIDS education and communication, mother and child care, nutrition and child growth, education and communication, disability and appropriate technology and medicine. TALC also provides teaching transparencies, flannelgraphs, oral rehydration spoons, arm circumference tapes, weight charts and technical slide sets for doctors, nurses and health workers.

Contact: Barbara Harvey, TALC, P.O. Box 49, St. Albans, Herts All 4AX England. Telephone: 0727 53869. Telex: 266020 CORALP G Ref. TALC.

Films and Videos for Medicine

The deadline for entries in the British Medical Association (BMA) Film and Video Competition is July 31, 1989 The competition was established in 1957 to encourage the production of outstanding medical films Entries are judged for creativity, subject accuracy and educational effectiveness Entries from the UK must be less than two years old; entries from other countries must be less than four years old BMA also maintains a medical film library. Contact Media Resources Officer, BMA Film and Video Library, The Nuffield Library, BMA House, Tavistock Square, London WC1H 9JP England Telephone. (01) 388 7976. Fax. (01) 388 2181.

Development Communication Case Studies

The Food and Agriculture Organization (FAO) in Rome has completed five development communication case studies: 1) *Education through Entertainment: The British Radio Drama Series 'The Archers-An Everyday Story of Country Folk'* describes the uses of radio and entertainment to reach rural audiences with agriculture messages It also explores applications for rural broadcasters in developing countries. 2) *Filmstrips in Extension and Training in Burkina Faso* discusses the introduction, problems, effects and results of using filmstrips as a communication tool to reach rural farmers. 3) *Perspectives on Communication for Rural Development* details the FAO's Development Communication Support (DCS) unit, its services and how DCS information and training programs are implemented. 4) *A Rural Communication System for Development in Mexico's Tropical Lowlands* examines the strengths, weaknesses and lessons learned from this highly successful project 5) *Rural Radio in Mauritania* outlines the goals, methodology and implementation of a radio project for rural development

For additional information or copies of the studies, contact: FAO, Via delle Terme di Caracalla, 00100 Rome, Italy

Environment Newsletter from the World Bank

The World Bank recently began publishing *Environment Bulletin,* a bimonthly newsletter focusing on the regional and departmental environment activities of the Bank For more information, contact *Environment Bulletin,* The World Bank, Room S-5029, 1818 H Street NW, Washington, DC 20433 USA.

Hazardous Waste Manual

The World Bank, the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) have published a new three-volume manual on hazardous waste disposal entitled *The Safe Disposal of Hazardous Waste. Special Needs and Problems of Developing Countries.* It will be available from World Bank Publications, P.O Box 7247-8619, Philadelphia, PA 19170-8619 USA.

Environmental Accounting

In June 1989, the World Bank will publish *Environmental Accounting for Sustainable Development,* a collection of selected papers from five joint UNEP/World Bank workshops on the environment and resource accounting.

Coping with Disasters

The World Health Organization (WHO) recently published *Coping with Natural Disasters. The Role of Local Health Personnel and the Community* (pp.92; ISBN 92 4 154238 1) *Coping with Natural Disasters* is a well-structured collection of facts, advice and recommendations to help local communities manage disasters by explaining what communities can do for themselves to save lives immediately after disaster strikes The book includes information specific to various natural disasters including earthquakes, volcanic eruptions, floods, hurricanes, gales, tidal waves and droughts Produced in cooperation with the League of Red Cross and Red Crescent Societies, *Coping with Natural Disasters* is available in English and French and can be ordered from WHO publications sales agents worldwide.

For the agent nearest you, contact the Clearinghouse or write: WHO, Distribution and Sales, 1211 Geneva 27, Switzerland. (Sw.Fr.18, US$14.40. Order no. 1150310.)

(LAFLIN *from page 20)*

The "green" issues, such as the extinction of species both known and as yet unidentified and global warming, will have long-term effects that are harder to quantify. Most development agencies have not yet fashioned a response to green issues, although some have experimented with debt-for-nature swaps or mounted projects to tackle issues in biodiversity. Gene banks have been set up. Nevertheless, the response to green issues has been rhetorical rather than real and is likely to remain so until developed nations put their own houses in order as a preface to serious international agreements.

Long-term Strategies for Sustainable Development: Necessity or Pipedream?

As arable lands decay and supplies of firewood dwindle, it is the poorest people in developing countries who feel the effects of environmental degradation most keenly. Governments lurch from one economic crisis to another. It is hard under these circumstances to consider long-term environmental remedies.

Ideally, countries would develop collaborative long-term plans that would integrate economic and environmental security. Agricultural, population and industrial policies would take into account economic, human and environmental needs that everyone could understand and work toward. In practice, the realities of industrial and economic development are usually in conflict with environmental concerns. Short-term decisions must choose between death or survival for the woman who needs fuelwood to cook for her family; profit and employment vs bankruptcy for the factory that belches fumes and toxic waste; or between making or defaulting on interest payments for governments that are devastating forests for the hard currency that timber exports bring.

For most of the world's population, therefore, human accommodation to the environment is centered on sustaining the production of sufficient food and fuel and access to clean water. Saving whales, elephants and the Amazonian forest is a concern for richer societies that can afford such angst. Do the world's poor objectively believe that life for their children will be better or worse than their own? Do they believe that their present actions will significantly affect that future? If they do, then what technical solutions are available to them? These are key questions for environmental planners and communicators because it is individual and community decisions to consume and pollute or to conserve and regenerate that determine the future

What Role Should Communication Play?

- *Awareness* The media have been successful in raising the consciousness of the developed world that there is an environmental problem. Beginning with the success of the "Greens" in West Germany, a political party whose reason for existence is based on concern for the environment, the environmental movement has gained credibility and political influence throughout the West. At both national and local levels, elections are fought increasingly on environmental matters.

Fundacion Natura in Ecuador has mounted sophisticated multimedia campaigns, Kenya has produced newspapers for children focused on environmental education, and middle-class urban dwellers in most countries have been exposed to media reports on the environment By and large, it is true to say that awareness messages have been directed at the educated middle-classes. It is also true that denial of responsibility is manifest in most countries. It is "they" who destroy forests, massacre elephants, whales and gorillas, drive big cars, dump toxic waste. While there may be an acceptance that "we" are responsible, the major step of acknowledging that "my" actions matter is dependent on being reassured that "they" will also play their part.

- *Community Mobilization.* Communication strategies to support specific actions, such as planting trees, have been designed to promote community mobilization. Decker's Mexico case study, described on page one of this DCR, is a good example. Such strategies are one component of a community-based plan to accomplish concrete environmental goals, developed and agreed upon by the community. The role of communication is to inform, popularize, legitimize and report on these goals and activities

- *Strategies to Promote Individual Behavior Change.* The most successful examples of communication to initiate or support individual behavior change have occurred when the behavior in question was relatively simple and susceptible to research, description and then prescription Environmental change is contingent on changing whole lifestyles and industries.

Individual and community values and behavior interact continuously to determine the quality of water supplies, the use of wood and soil, the use of pesticides, waste disposal and the choice of local enterprises. Communication strategies must take account of the fact that decisions made today will produce consequences that may last for generations They must also take into account that the same or similar decisions will be made and remade many times over in the years to come. For all these reasons, communicators must weigh very carefully which communication and education strategies are appropriate to transfer from other development sectors.

Two Major Constraints

- *Policy.* Life for the communicator is made much simpler when there is a clear-cut, coherent policy from which to develop messages and identify audiences. For environmental communicators, the situation is rendered problematical by.

  - lobbying groups who believe that their cause is the most important when it is but one of many;
  - agricultural policies which are unclear, contradictory, plainly unsustainable or nonexistent; and
  - the compartmentalization of governments and aid agencies into agriculture, health, population, forestry or education sectors which makes coordinated approaches to sustainable development difficult.

- *Communication Infrastructure*

While policy and legislation may be influenced at the national or central level, the locus of action is mainly at the community level Most investment in communication infrastructure has been in national and urban systems If sustainable development is to become a reality, then low-cost local communication systems will have to be developed, sustained and operated by their communities

Michael Laflin is Director of the Clearing House on Development Communication

Environmental Communication: New Roles, Hard Choices

By Mike Laflin

Many donor and lending agencies have stated that environmental concerns will provide the foundation for development planning in the next decades. What does that imply for development communicators?

While we talk about the environment, what we do about it carries different names, each name reflecting the emphasis of those who use it. *Conservation* of the environment suggests maintaining the status quo or returning to a previous--presumably better--one. It reflects most strongly the belief that the planet is endangered

Natural resources management is more neutral and calming, implying that the Earth's resources can be managed. It raises such questions as to whom they belong and who should be managing them and perhaps misleads by implying that there are scientific management solutions to problems that are enormously complex. Managers of large corporations also face complex issues, but usually have the power to solve them. In this field, one might ask, "Where are the managers?"

We prefer the term *sustainable development*. Environmental issues have served to remind us that development policies need to look beyond the present generation, that we all belong to the same world and that the destinies of all nations are linked Indeed, it is possible that global environmental issues may reshape relationships among nations. Responding to environmental concerns makes policies of self-interested isolation more difficult and reinforces the need for long-term policies rather than short-term strategies in economic and political relationships.

Sustainability has an evident time dimension Some development planners take a distinctly short-term view for them, sustainability is equated with food sufficiency. First, feed the world, then worry about sustaining the natural resource base Others see sustainable development as an ecological issue. Systems which deplete, pollute or disrupt the ecological balance of natural resource systems cannot be sustained. They see the physical environment as finite and would restrain population and human practices to levels that the ecosystem can bear Indeed, some see environmental degradation purely as a function of population growth stabilize population growth and environmental issues will disappear.

Other schools of thought see sustainable development in much broader terms They place greater emphasis on issues such as participation in decision-making and the political process, the quality of justice, population control, preservation of flora and fauna, the efficient use of energy and the quality of life for present and future generations Sustainable development embodies participatory principles exemplified for many years by the most successful community-based projects and grassroots organizations They have demonstrated that efficient and effective development can be sustained if technical objectives are linked to the social and economic needs of the participants It is in these terms that we view sustainable development.

How Serious Is The Problem?

Leonard and Eadie Brandon (page 1) point to three global ecological trends

- the warming of the Earth's climate due to human activities,
- the diminution of the Earth's pool of genetic resources; and
- the declining productivity of much of the Earth's arable land.

We know that these trends are real, but what perspective should we take? Is the world in crisis? How much time do we have to take corrective action? Is the increase of the world's temperature by a few degrees really going to make a difference? If the polar caps begin to melt, will significant areas of land disappear under water? So what if global warming implies changes in agriculture? The whole history of agriculture is one of change and adaptation to circumstance

The economies of many countries declined during the last decade and millions of young people under the age of fifteen can look forward to a quality of life that may be worse rather than better than that of their parents. Under the broader rubric of sustainable development, how do specifically environmental concerns fit in with longstanding issues of poverty, infant mortality, economic stagnation, illiteracy and injustice?

Should we devote funds specifically to environmental concerns and if we should, should those funds be brokered through environmental agencies? Or should the implementation of environmental policy become part of the fabric of traditional sectors such as agriculture, population, education and industrial development?

Are There More Fundamental Issues?

Perhaps this is simply a global population issue There are vastly more people burdening the world's resources today than at the beginning of this century. Many parts of the world can no longer sustain growing populations.

As well as more people demanding more resources, extra ingredients have been added to the ecological mix For example, we have invented new toxic wastes that we cannot get rid of. We have introduced ecologically aberrant behavior, such as burning gasoline and squirting aerosols, that until now the planet has tolerated. But their cumulative effect is becoming overwhelming.

Will we change our behavior? Or have we become so socially and economically dependent on the new patterns of consumption, especially in richer nations, that we are unwilling to change?

...efficient and effective development can be sustained if technical objectives are linked to the social and economic needs of the participants.

"Green" vs "Dirty" Issues

In terms of policy and funding, we are better at cleaning up our messes than controlling our excesses. The "dirty" issues, such as pollution and how to dispose of human and chemical waste, are tangible and can be quantified. The costs of ignoring the hazards of sewage or toxic waste can be counted in both human and economic terms. Bhopal and Chernobyl tragically illustrate the penalties for not controlling toxic materials.

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Popular Video for Rural Development in Peru

by J. Manuel Calvelo Rios

Fourteen years ago, Peru began its first effort in the systematic and massive use of video for education and training in rural areas of the country The project was funded by the FAO and the UNDP in cooperation with the Centro de Servicios de Pedagogia Audiovisual para la Capacitacion--CESPAC (Audiovisual Center for Educational Services)--a part of the Peruvian Ministry of Agriculture By the time the project ended in 1986, the following results had been attained·

- Four hundred ninety thousand peasants from the mountains of Peru had attended video-based courses lasting five to 20 days with three to four hours of training each day The courses covered rural health, housing, family planning, reforestation, agriculture, animal husbandry, nutrition and water sanitation
- One hundred twenty different course packages were produced Each one included three-to-five audiovisual programs, as well as printed student and teacher guides. In all, 1,260 different video programs, each 10 to 18 minutes in length, were produced
- An additional 780 video programs were produced on institutional information, human resource development, culture and socioeconomic diagnostics.
- One hundred sixty audiovisual specialists completed training in video production, learned to produce audiovisual materials and to run the training programs Seventy trainers from other countries also completed the program
- A total of 280 group discussion leaders learned how to use audiovisuals in the training process Many of these were peasants from Andean communities
- Considerable research on the adaptation of video technology for use in rural areas was conducted. Among several devices developed were pedal-operated electrical generators and special voltage adapters
- Numerous examples showed that the ideas presented in the courses were carried out in practice--domestic vegetable gardens, new adobe buildings, increased animal vaccination, restorations, reforestation, etc

Why Use Video?

In 1975, Peru decided to support rural development through education and training This decision was seen not only as a means to increase production and productivity, but also as a way to improve the living conditions of subsistence peasants in real terms It was hoped that education and training would enable peasants to take better advantage of the resources that came within their reach

Any attempt to promote rural development requires two basic elements The first element is capital--access to affordable credit, investments and equitable pricing policies The second important element is physical inputs--machinery, fertilizers, pesticides, improved seeds, etc The CESPAC video project was designed to give peasants an additional input beyond these two· the skills to help them manage both capital and physical inputs more productively and the knowledge to improve their own living conditions Knowledge and skills are intangible and unique they do not disappear with use and, without them, other inputs can be misused and wasted

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In this issue ...

S[illegible] by the Bureau for Science and Technology, Office of Education of the U.S. Agency for International Development

Development Communication Report

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Clearinghouse on Development Communication
1815 North Fort Myer Drive, Suite 600
Arlington, VA 22209 USA
Telephone: (703) 527-5546
Fax: (703) 527-4661
Telex: 710-833-0320 IIRINC VA

Michael Laflin, Director
Desiree deGraeve, Editor
Andre Roussel, Information Specialist
Stephen Mitchell, Librarian
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Letters to the Editor

Your term "sustainable development" (in DCR No. 65 1989/2) is understandable and laudable from an idealistic perspective. But in practice, it has been a dismal failure for the most part. The problem, as you point out, is that managers think of now, to the exclusion of tomorrow.

[American] society is based on a quick fix philosophy. We are short-term and linear rather than long term and holistic. We train managers to breed efficiency at the expense of labor, [to expect] immediate gratification rather than goal planning...How can we hope to sell developing nations on the notion of not forsaking their legacy if we are selling ours faster than McDonald's sells burgers? If we have controlled our impulse to raise large families it is only because of economic reasons. [Developing countries] haven't begun to scratch their soil for rich minerals and we're asking them to leave them in the ground? Ludicrous! Do as we say, not what we do is the prevailing message.

Only when we begin to change the perception of our own people--ourselves, our politicians and our managers--will we begin to earn the right to ask others for the same sacrifice. In the Northwest, the Forest Service has cut 85% of old growth trees. Yet, it wags its finger at cutting practices in Latin America, where 15% has been cut. If we won't practice honest "sustainable development" in our own country, we should be careful about how loudly we preach to our neighbors. After all, if they start practicing what we preach, won't they later demand that we comply as well?

Best Regards
Timothy Buckley
Salem, Oregon, USA

I have just read through a copy of *Development Communication Report* No. 64 (1989/1) and found it to be most interesting and full of some very useful information. However, I have to question one of the "facts" mentioned in the article by Michael Laflin entitled "Local Radio: Hard Questions." Under the heading "Ideology", the author states " Governments regard national unity and integration as a priority. Legitimization of local languages and identities often seem destructive to that end. For this very reason, Nicaragua closed down the Miskito station and Kurdish is an outlawed language in Turkey.. "

The fact is there are two stations broadcasting in the Miskito language in Nicaragua . It is true that the stations have been temporarily shut down on occasion, but not by the government. Apart from periodic closures because of the shortage of fuel for the generators, two instances come to mind.

Radio Zinica in Bluefields broadcasts in English, Spanish, and Miskito. Last October it--and most of the city of Bluefields--was destroyed by a hurricane. Despite a shortage of both money and equipment the station was back on the air within a week.. The other case involves Radio Tasba Pri, which broadcast in four languages from La Rosita near the Honduran frontier until it was blown up by the Contras in December 1987. "Tasba Pri" is Miskito for "free land"... This time, however, they had less success and due to a series of technical problems....almost a year passed before the station reopened in another town in the same region.

As the above indicates, Nicaragua has in fact supported Miskito and other language broadcasting as a priority and not suppressed it as Mr. Laflin suggests. Thank you and your staff for an otherwise valuable publication.

Yours Sincerely,
Bruce Girard
Montreal, Quebec, Canada

A Letter to Contributors

The *Development Communication Report* always welcomes contributions to the DCR from its readers. Periodically, the DCR lists proposed topics for future issues. Authors working in these areas are encouraged to submit summaries of their research, case studies and field experiences. Book and material reviews are also welcome. While the DCR will consider any legible work written in English, Spanish or French, guidelines for submissions are as follows: Articles should be no longer than 1,500-2,000 words. They should be typed, double-spaced, on white paper and include the author's name, professional affiliation and address. Telephone, telex and fax numbers are also helpful if available. Pages should be numbered consecutively. Titles, section headings and descriptions for illustrations should be as brief as possible. Spell out acronyms the first time they appear in the text followed immediately by the abbreviated form in parentheses. Include a brief biographical note (25 words) about the author. Submitted material will not be returned unless a written request to do so accompanies the submission when it is first received. Photographs, illustrations, tables and graphs are appreciated.

Future issues of the DCR will focus on Information Technology, Literacy, Evaluation and Women in Development.

Teaching Health Care: An Upate

One obstacle to improving the quality and availability of basic health care in developing countries is the lack of effective, appropriate teaching materials to train health care professionals. In issue No. 60 of *Development Communication Report,* Dr. Roberta Ritson outlined the work of the Health Learning Materials (HLM) Programme at the World Health Organization to help developing countries produce, update and improve the quality of the materials they use to train national health care staffs. Many of the existing materials being used have been adapted or translated from text prepared in other countries. But language, culture, educational levels, job responsibilities and the types of health tasks performed can differ from country to country. HLM helps participating countries [illegible] materials to make them more appropriate and relevant to specific country's needs

The HLM Programme works with more than 70 developing countries to help them produce their own teaching, learning and promotional health materials The HLM Programme also encourages the sharing of resources and expertise between countries. In January 1989, the Programme sponsored a workshop to promote greater collaboration and information sharing between participating countries As a result, the Programme has produced *Intercountry Networking for Health*, a report that outlines strategies for developing stronger collaborations between countries and the special advantages intercountry cooperation can bring to basic health care training. Three language networks are already taking shape: one in Southern and Eastern Africa, another in South-East Asia and a third for Arabic-speaking countries A new pilot project is also underway to promote the exchange of learning materials on microcumputer diskette. The diskette system facilitates the revision and updating of materials without the need for retyping and allows participating countries to spend more time tailoring adjustments to meet local needs

For for information on the HLM Programme and its projects, contact: Dr Roberta Ritson, Division of Health Manpower Development, World Health Organization (WHO), 1211 Geneva 27, Switzerland. Telephone: 791.21 11 Fax 791.07.46. Telex: 415416.

New Tools for Training at a Distance

by Will Shaw

Educators are continually searching for new and better ways of reaching learners Distance education systems can be an effective means of increasing access to education and training among people who cannot study in regular programs either because of their distance from appropriate institutions or because they lack the time to attend classes during regular hours. Distance education systems allow such people to continue their formal education or to acquire special training despite these obstacles In industrialized countries, distance education systems are increasingly being used for in-service training in the private and public sectors and for supplemental courses at the formal level. In the developing world, distance education systems are used to expand access to formal education at the tertiary and secondary levels and to compensate for a lack of teachers and facilities How will advances in technology expand and enhance distance education in both the developed and developing world? How can it lessen the educational barriers between them?

Keeping Up with Technology

Print materials have traditionally formed the heart of most distance education programs, occasionally supplemented with audiovisual aids But a weakness of these programs has been the missing element of immediacy--of not being in live-time contact with a real teacher. Complex tasks may be difficult to convey by static media However, recent developments in telecommunications and satellite communications are making it possible to offer regular two-way contact with widely scattered learners These technologies can also provide the visual teaching aids necessary to support complex training tasks.

The ongoing telecommunications revolution is creating a global communications network which can offer endless opportunities for two-way communication between people at multiple and remote locations. Although educators are wary of technological solutions to educational problems, the rapid development of telecommunications facilities is creating profound changes in the way people interact, learn and work. After thousands of years without any distance communications systems, humankind has quickly moved from an initial six-mile telephone call in 1876 to routine telephone, telex, radio and television traffic beamed to and from satellites orbiting 22,400 miles above the earth. Developing countries have not been left out of the telecommunications revolution. In some cases their lack of investment in existing infrastructures has enabled them to jump ahead of some Western nations in adopting new technologies. Indonesia, Mexico, India, Brazil and the Arab nations, for example, now have their own national satellite systems.

There has also been tremendous growth in what can be done over simple telephone lines. Large groups of people at many locations can talk to one another through audioconferencing equipment X-rays and photos can be sent cheaply over telephone lines via slow scan television. Live handwriting and graphics can be delivered by a wide variety of computer-powered systems that can activate local video disk displays. New modems enable voice and computer graphics signals to be transmitted simultaneously over a single, telephone line to a distant PC user. Educational audioconferencing networks have been developed in Indonesia, Peru and the West Indies. Students from around the world are participating in courses given by computer. Computer systems, electronic blackboards and teleconferences can span the globe and all its time zones. Satellites are offering new options for distance training. Direct broadcast satellites (DBS) in use in some areas can beam TV signals directly to users, one-foot square flat antennas costing less than $450 each will be available shortly. All of these changes are occurring in developing nations as well as developed ones and in home settings as well as institutions

Facing the Challenge

Educators around the world are facing up to the challenge of understanding and responding to these developments. In the U.S., private companies are routinely using telecommunications networks for in-service training, management meetings and data transfer. Large corporations have bypassed phone companies and have created their own satellite networks linking thousands of sites. Formal education institutions are

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(**Shaw** *from page 3)*

moving from statewide to nationwide networks that link universities, schools and communities. Medical networks link hundreds of hospitals together, and entrepreneurs are creating and marketing a wide range of educational programs including in-service professional training for doctors, lawyers and engineers.

Parallel activities in developing nations have been slow to occur. Despite promising pilot projects using satellites and telecommunications that have taken place over the last ten years, current multilateral donor agency funding for such projects has fallen nearly to zero. Although education needs are more pressing than ever and although telecommunications infrastructures in many developing countries continue to grow in size, sophistication and reliability, only two or three governments in developing countries are supporting ongoing social applications in these areas.

Powerful Tools

Telecommunications networks could be powerful tools to address the scarcity of expertise and lack of educational opportunities and resources in the Third World. Telecommunications could also help reduce educational equity problems, as well as regional imbalances in skills. In the limited space available in this forum, let me raise a few issues that educators will need to address as they consider how to utilize telecommunications systems for educational purposes in developing countries.

- *Affordability.* High tech is expensive, but costs are dropping due to excess capacity, more efficient equipment and economies of scale. Educators must be careful to choose communications tools on the basis of need: what facilities are really necessary in order to accomplish your goals? Full motion television is often desired, but a telephone channel using voice and graphics costs a fraction of TV and is just as effective for most uses. Cost-effectiveness is also a function of use. The training of doctors, for instance, may be more valuable than holding administrative meetings via audioconferencing--or vice versa. Telecommunications can not only allow you to do things less expensively than face-to-face alternatives--by saving on travel costs--it can also allow you to do things you might not think of doing at all, such as holding a two-hour meeting of 200 people spread across an entire country.
- *Access.* In most developing nations, telecommunications networks are controlled by governments which levy high tariffs in order to recoup capital investment costs--even when excess capacity exists. Educators must persuade policymakers that these communications facilities represent a national resource that should be used for social development purposes at concessionary rates.
- *Effectiveness.* Instruction should fully utilize the advantages of the medium. Poor teaching and instructional design will not magically improve when transmitted by satellite.
- *Interaction.* Two-way interaction between instructor and learners must be planned and enthusiastically implemented. Many educators continue to teach in a unidirectional "broadcast" mode, even in face-to-face situations.
- *Program coverage.* Regional, national and international programs are all possible through telecommunications, however, political barriers may be harder to surmount. Some governments and organizations may not want a free flow of information occurring without maintaining some degree of control. Educational programs developed in other countries may threaten feelings of sovereignty and self-sufficiency.
- *Program models.* Educators have to be creative in exploiting the opportunities made possible by telecommunications. Private companies and universities now market their courseware to school systems and private industry. New groups of learners wait to be identified and served. Quality control and certification are issues that need to be addressed.
- *Support.* Educational innovations require a basic core of staff and political support to be successful. Sufficient, permanent financing is crucial and depends on political and institutional support.
- *Sustainability.* Applications for telecommunications have to be carefully planned. Is there a market for your educational product? Will usage be enough to warrant full time leased capacity or only part-time rented facilities? Are you avoiding the pitfall of designing a gold-plated system that is too expensive for your needs? Will your system be able to grow with you?

Telecommunications is the driving force behind a new age of human communication. It is changing the world we live in and its impact cannot be halted or ignored. The challenge for educators is to harness its power for social development and to convince policymakers that they should receive adequate access to this powerful resource. ■

Willard D. Shaw, Ed.D., is a Senior Program Officer at the Academy for Educational Development, in Washington, DC.

Visual Communication Materials for Rural Audiences: Re-orienting Artists and Copy-writers

by Peter Chen

It all started when I met with Mr. S.M. Khan, in the Directorate of Advertising and Visual Publicity (DAVP) of India's Ministry of Information and Broadcasting to discuss the possibility of a joint venture between the DAVP and the United Nations Children Fund (UNICEF) to produce posters in support of our Child Survival and Development Programme. DAVP is the government agency responsible for the production and distribution of all government produced communication materials and is the largest advertising agency in India. It has full fledged creative design and production departments and functions much the same way as any commercial advertising agency, with a large number of artists, visualizers and copy-writers on its payroll. The idea was to have UNICEF sponsor a creative workshop for the visualizers, copy-writers and artists responsible for the production of health communication posters and related visual communication materials to increase the artists' awareness of their intended audiences and to make the posters and other visual materials more effective.

Why the Need for Re-orientation?

Development agencies, especially those in the field of health care, produce and use large numbers of visual communication aids in their efforts to train, inform, educate and communicate health care information. UNICEF has had its share of experiences in developing and producing prototype visual communication materials from posters, flip-charts and flashcards to films and video programs. How effective are these visual aids in conveying the desired message to rural audiences? Over the last seven years,

(Continued on page 5)

(**CHEN** *from page 4)*

from 1982 to 1989. UNICEF has collaborated closely with the Ministry of Information and Broadcasting to orient media personnel on the issues of mother and child health and to produce weekly radio and TV serials on maternal and child health for broadcast in different parts of India. The DAVP produces additional supporting communication materials such as posters and exhibition kits for display in rural areas However, field officers reported that these materials weren't always well-oriented to local contexts and, because of this, were not always effective. Villagers often misinterpreted the messages presented to them by the graphics and illustrations The DAVP and UNICEF agreed to bring 21 artists and copy-writers from the DAVP and other agencies together with their rural audiences during a 12-day workshop to help re-orient artists to audience needs. The workshop was held at the National Institute of Design (NID), in the state of Gujarat in November 1988.

Designing With and For the People

Hardly any audience research and pretesting of artwork is done before health communication posters are mass produced for distribution in India.There is little thought given to the visual literacy of the target audience. Visuals presented on posters are normally the artist's individual perceptions of what he or she thinks rural audiences will recognize With this in mind, the first item on the workshop's agenda--after an orientation outlining goals and principles--was to have artists and copy-writers visit nearby villages to "pretest" (in reality, post-test) posters already in circulation

This exercise set the tone for the next eleven days of the workshop. At first, some of the artists, many with years of professional experience, felt the workshop would be a waste of time. What more was there to learn? They had been professional artists for so long. Some had held exhibits of their works in galleries But when they showed the posters to the villagers, the artists were surprised to find that their audiences didn't understand them The audience's perception of the ideas being presented in the visuals on the posters was entirely different from what was meant to be. In some cases, the complete opposite message was being conveyed.

All people do not interpret pictures in the same way. For example, the villagers in Gujarat identified an image intended to portray an overworked, pregnant woman as a woman with a bloated stomach carrying pots on her head. The region is a drought-prone area Everyone must fetch water by carrying the water contained in pots on their heads over long distances--especially women.

Armed with sketch pads and pencils, the workshop participants went back to the villages This time, they sketched the villagers' own visual perceptions of common occurrences or sights related to maternal and child health To introduce the participants to the methodology and to use formative research in the preparation of communication materials, the participants were briefed on basic research methodology and interview techniques Each group was also asked to collect basic sociological data on the village they were assigned to visit.

Interpretation before pretest: Woman on left giving blessing to pregnant woman on right.

Interpretation after pretest: Older woman says "No, no" to pregnant woman carrying heavy load.

Some Useful Guidelines for Artists

The participants then spent the next three days preparing the preliminary versions of new posters according to themes they were assigned. During this period, grassroots workers--auxiliary nurses, midwives and multi-purpose health workers--were sent by the state government to give the artists additional insight into the needs of their target audience.

At the end of the first week, the participants pretested their new posters for the first time This again was an eye opener for the artists and a reconfirmation that not all people see things the same way. The immediate feedback from the target audience brought home to the participants the need for the pretesting of visual communication materials Some villagers even suggested improvements! The participants then reviewed and shared their field experiences before preparing corrected versions of the posters.

Before concluding the workshop, all the participants went back to the field for a second pretest and were gratified to find that the improved posters were more understandable. In order to achieve this, some of the posters had been redone completely. Based on what they had learned, participants made the following recommendations for the production of graphics and visuals for training purposes in rural areas:

Preparation: Visual communication materials require proper understanding of the subject matter, learning objectives, nature of other media being used and the target audience for whom communication materials are intended Considerations should also be made on how these materials will be used to support other media as part of larger multi-media packages

Pretesting: Before mass production of any printed visual communication materials, artworks must be pretested on a sample target audience and changes incorporated into the final products.

Incorporating Local References: Visual communication materials for rural audiences should incorporate images that reflect the local culture and landscape.

Minimizing Text: Posters for rural illiterate and semi-literate audiences should have as little written text as possible and take into account the visual literacy of the target audience. ■

Peter Chen is a Communications Officer for the South Central Asia Regional Office of UNICEF in New Delhi, India.

Figuring Vocational Training Costs: The Cookbook Approach

by Claudio Moura Castro

Why worry about training costs?

Unfortunately, it is common for vocational training to have enormous costs--higher than anybody cares to justify. Some records show costs up to twenty times higher than for regular schools. But these costs don't have to be so high. A well-run technical school will usually cost only about 20% more than a regular high school of comparable quality. According to one study in Asia, enterprise training--on-the-job training provided by the employer--costs significantly less, averaging about half the cost of formal vocational/technical training.

Is it difficult to estimate training costs?

No. Usually you simply add up what has been spent and divide the total by the number of people who have benefitted from the program. To be accurate, all expenditures must be added including those that are not usually tallied as direct training costs such as transportation costs, scholarships and foregone income. Capital costs are also very important.

What is considered expensive and what is cheap in training?

In non-technical programs, the cost of instructors can be as much as 95% of total costs. If students have to stop working to attend a program, they may forego an income that may be just as high or higher than the costs of the instruction. Scholarships can also be expensive. In technical programs, capital is the truly critical component in the costs of instruction. It can make up more than 50% of total cost.

Why worry about economies of scale?

Most training courses include a combination of variable and fixed costs. If most of the costs are variable, it will make little difference how big the program's enrollment is. If most of the costs are fixed, the size of enrollment can make all the difference in the world. Fixed-cost courses benefit from economies of scale. Technical schools have high fixed costs because of heavy capital outlays. To operate at a reasonable per-student cost, they usually must enroll at least 2 000-3,000 students.

Are new instructional technologies very expensive?

Technologies need not be restricted to the wealthy, northern countries, nor are they necessarily sophisticated and capital intensive. The variety of options means appropriate technologies can be used in any context. And the benefits of increased productivity and learning efficiency may be needed precisely where scarcity of resources is most acute. Economies of scale are very important for new technologies such as computers and television broadcasting. A high quality educational software program can cost from US$50,000 to US$100,000 to create. Many thousands of students must use it to bring down the unit cost to the same level as other teaching options. It makes little economic sense to use these high fixed costs solutions for small clienteles. In such cases, simpler technologies such as audiocassettes and conventional classroom lectures are less costly.

How do quality and learning efficiency relate to cost?

In one large vocational school, the best quality program was tool-and-die making. Painting and bricklaying were among the poorer ones. Despite the sophistication of its workshops, tool-and-die making was also one of the least expensive courses offered, while the two traditional courses had the highest per-student costs. The reason is simple. Tool-and die making is a popular course, the first students come in at seven in the morning and the last ones leave the school at eleven in the evening. In contrast, the other courses have very small enrollments.

Can we always benefit from economies of scale?

Unfortunately no. Producing 1,000 new air conditioner technicians per year would certainly permit economies of scale. But if a community only needs five, what do we do with the remaining 995 graduates? Nevertheless, there are ways to cope with the problems of market size. The most obvious options are to have joint programs with other communities, to have mobile programmes, or to use distance education.

Claudio Moura Castro works with the International Labor Organization (ILO) in Geneva, Switzerland

A Training Video about Training--from Africa

A trainer has arranged for a technical specialist to present development information to a group of villagers. As the session evolves, it becomes clear that the specialist is talking above the level of the group using complicated, irrelevant explanations and technical vocabulary. In another session, internal conflicts within the group prevent open discussion of the topic. In another session, one member of the group dominates discussion. In still another situation, the group appears bored, tired and confused. What can trainers do to improve these situations?

A new videotape produced in Zimbabwe by the Media for Development Trust is an excellent resource for trainers facing these and other common training problems. *Facilitation: Techniques in Training* is a 54-minute dramatic video. It tells the story of a group of African trainers attending a one-day workshop on common training problems. Presented in an entertaining format, the video recounts the personal experiences of the workshop participants in flashbacks as each member of the group discusses their own training styles, strengths and weaknesses. Designed as a training tool, the video also discusses the benefits and drawbacks of different training styles and their effects on groups. It defines training facilitation in practical terms and demonstrates the uses of facilitation skills in differing situations. The video stops periodically to allow viewers to discuss how they would react to situations presented on the screen.

The video and accompanying workbook are designed to be used by trainers to develop group leadership and facilitation skills. At the end of the program, the audience is able to identify common problems in training and can recognize a variety of group leadership techniques and interventions that trainers can use to improve training effectiveness. This can help trainers ease common training problems and redirect the group's attention back on productive discussion of the issues.

Facilitation: Techniques in Training was produced in Harare, Zimbabwe by the Media for Development Trust with support from Norway's Redd Barna. Copies are available from the Media for Development Trust, 135 Union Avenue, P.O. Box 6755, Harare, Zimbabwe, Telephone: 729-066 or from DSR, Inc., 9650 Santiago Road, Suite #10, Columbia MD 21045 USA. Telephone: (301) 964-0037. Fax. (301) 730-8322.

(CALVELOS RIOS *from page 1)*

Who Were We Trying to Reach?

The subsistence farmer who brings most of the food we consume to our markets in many developing countries is generally illiterate. He or she is likely to speak a language distinct from the official one. Farmers' activities and needs in training embrace diverse areas, from agriculture to business. Farmers make up a large percentage of the population and have high birth rates, high infant mortality rates and low life expectancy rates from birth. As the productive potential of farmers' surroundings disappear under demographic pressures and as farmers can no longer eke out an existence from the land, they are forced to use lands that may not be able to sustain agricultural activities, or migrate to the cities. To forestall the choice, entire families, including children must act as producers, artisans, or salesmen.

Traditional farmers master the techniques needed to live within a habitat without destroying it.

However farmers and their families are also well integrated with the land. For centuries, peasants in Peru have run the country's agriculture. Traditional farmers master the techniques needed to live within a habitat without destroying it. A successful training program for farmers recovers this traditional knowledge, combines it with modern science and then gives the new package back to farmers in forms that make the information both intelligible and practical.

If farmers' knowledge and culture are to be respected--even as imperfections are recognized and reduced--and if a dialogue is created to bring new knowledge to farmers, then, the theoretical model of communication --speaker-medium-receiver--is inadequate. A new model adapted to the need for participatory dialogue is called for, one that involves the final user of training knowledge in the communication process.

The CESPAC Approach

The CESPAC video project proposed to "recover, preserve and reproduce peasant knowledge" using multimedia. Video was used to enhance comprehension, printed guides--with many illustrations and few words--served as permanent memory aids. Interpersonal communication in group discussions served to reinforce practical learning. An old folk saying characterized the process. "If I hear it, I forget it; if I see it, I remember it, if I do it, I learn it." It is in the execution of practical tasks that knowledge is absorbed and assimilated.

The equipment chosen for the project had to be low in cost, easy to maintain and adaptable for use in rural areas. The systems were also designed to be flexible enough to accept technical modifications. We first started with black and white tape for economic reasons, then when costs went down and the personnel became more proficient, we began using color. Each editing unit--two video cassette recorders, two monitors and an edit control unit--served three field recording units--one camera and VCR or one camcorder. For each recording unit, approximately 20 playback units were purchased--one VCR and monitor with a 16-to-20 inch screen and additional speakers. The relatively high cost of the investment in audiovisual production equipment was amortized by the widespread use of the materials produced.

Audiovisual trainers worked in production teams of two, doing every task needed to create the video programs and learning packages including research, videotaping in the field, editing, field testing and then finally using the teaching modules. The production model guaranteed both educational quality and low cost. Forty-six percent of the audiovisual teachers were women which helped to counteract problems of machismo. In a rural context, topics related to fertility and family planning were more easily conveyed by women teachers.

Training the Trainers

The training courses for the audiovisual trainers were selective and very intense. They included theoretical material as well as practical training experience and produced usable audiovisuals. In the final stage of training, students worked in the field. The production of teaching modules followed five stages:

- initial field investigation and consultation with the persons to determine the themes to be taught and the best ways to convey them through video;
- academic research to develop answers to technical problems encountered;
- recording in the field;
- tape editing at the Center, and
- experimental application in the field with the same peasants who had facilitated the investigation and recording.

When the teaching video was shown to be effective, the tapes were duplicated and distributed to the training units that needed them. Once the CESPAC system became known to the peasants, demand for teaching modules exceeded production capacity.

Before each course was initiated, an agreement with the peasant group, with the community, or with the cooperative was negotiated. This helped assure full participation and also ensured that the resources necessary to apply the knowledge learned from the courses would be available for the group once training was completed. Audiovisual trainers supervised activities. He or she would locate the technicians who were to be present during the sessions, organize the discussions before and after the show and evaluate the results. Courses were always given to groups of no more than 30 participants.

...demand for teaching modules exceeded production capacity.

When, as a result of technical research, a hand-operated electric generator was introduced, it then fell to the users of the courses to pedal the machine to supply the power to charge the batteries. The participants charged the batteries if they were interested in the courses, otherwise there was no electricity to view the programs. This equipment became, in effect, a useful evaluation tool.

Total cost of the project was approximately US$34 per peasant per course. This figure included all of the costs generated by the training activities. The amount could have been even lower if there had been more production units. The Development Support Communication Branch of the FAO has produced a case study on the project including the feasibility study and additional documents for any one interested in this experience which has been described only briefly here. ■

J. Manuel Calvelo Rios is the Regional Advisor for Information, Education and Communication on Population at the FAO in Lima, Peru.

For more information, contact the Development Support Communication Branch, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

Facts for Life

The health of children in the developing world could be dramatically improved if families were empowered with today's essential child health information

Facts for Life

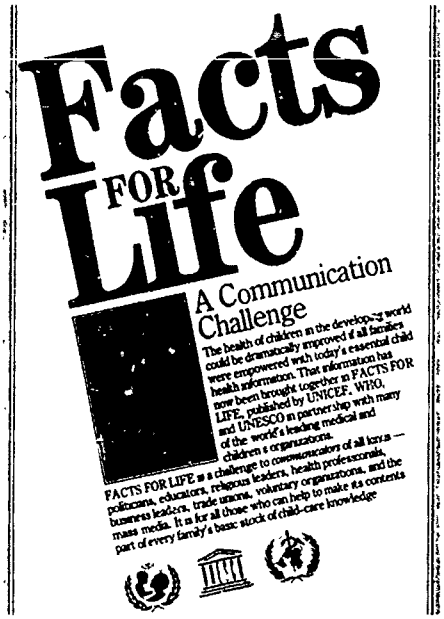
Every year in the developing world 14 million children die before the age of five. Millions who survive suffer continually from sickness, ill health, and disease. Much of the suffering can be prevented by providing basic health knowledge to parents and communities--knowledge that could prevent or alleviate serious health care problems simply by modifying unhealthful child health care practices. A major initiative sponsored by UNICEF, the World Health Organization (WHO) and UNESCO, **Facts for Life** attempts to provide and promote the dissemination of basic child health messages. It also challenges communicators of all kinds--politicians, educators, religious leaders, health professionals, business leaders, trade unions, voluntary organizations, and the mass media--to help make basic health information part of every family's child-care knowledge.

Developed in cooperation with child health and development agencies worldwide, **Facts for Life** is a single, straight forward 80-page handbook that outlines practical, no- or low-cost family-based ways to protect and improve the health of children. The handbook is divided into ten chapters, Each chapter contains four or five core messages about.

- Child Spacing,
- Safe Motherhood,
- Breastfeeding and Weaning,
- Child Growth,
- Immunization,
- Diarrhea,
- Respiratory Infections,
- Hygiene,
- Malaria,
- and AIDS

Messages in each chapter are followed by three-to-four pages of supporting information that explain why each message is important to child survival and health. By presenting health information in a clear, accessible format, **Facts for Life** serves as a resource and reference for all those who influence or control the principal channels of communication in societies. Experience shows that sustained changes in health behaviors occur only after frequent, varied repetition of new information from many sources and over a long period of time. By presenting basic health messages in a clear and concise publication, **Facts for Life** hopes that all communicators within a society--not just health care workers--will help reinforce these basic messages and thereby, increase the likelihood that the information will become a basic part of child-care knowledge.

To help health communicators and others enlist the support of traditional communicators within the community, the **Facts for Life** initiative has produced **All for Health**. This second, companion publication describes health communication strategies and experiences from all over the world that have succeeded in promoting new health behaviors using a variety of communiation approaches. **All for Health** profiles successful child health care programs and outlines basic steps in health communication that are crucial to the success of any child health care initiative. **All for Health** also discusses common breakdowns in the communication process often faced by health care programs. Most important, it stresses the importance of person-to-person communication to effect positive behavioral change and emphasizes the involvement and commitment of local community leaders in health care efforts. Local communicators who influence communities--political leaders, teachers, media producers, religious leaders, development workers, employers and business leaders, and entertainers--all have an important role to play in reaching local audiences. Using their knowledge of the audience--their own community--and relying on their own forms of media--communication strategies they use daily within their own societies--community leaders can act as powerful collaborators to help empower people with the knowledge and the confidence to improve their own and their families' health.



Children between the ages of six months and three years should be weighed every month. If there is no weight gain for two months, something is wrong.

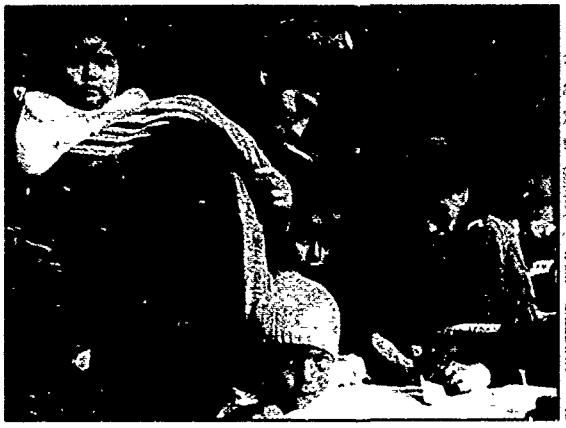


Photo: UNICEF/Ray Witlin

All women need more food during pregnancy. All pregnant women need more rest.

Facts for Life is being shared with governments, private and public organizations and ministries who are incorporating the messages into their own child health care strategies. By adapting, enhancing and adding to the **Facts for Life** messages, different countries and organizations are emphasizing the health messages that are most relevant to their country's and community needs and are also using their own communication strategies to reach people effectively. Brief descriptions of some of these efforts follow.

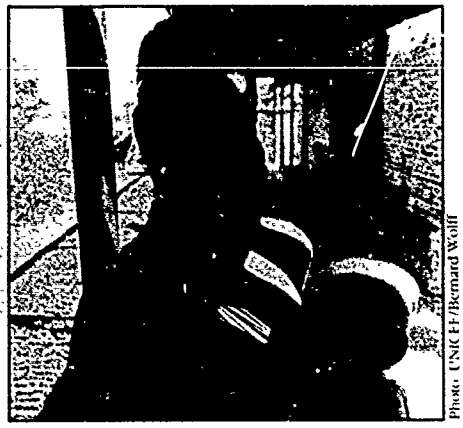


Photo: UNICEF/Bernard Wolff

If a child with a cough is breathing much more rapidly than normal, then the child is at risk. It is essential to get the child to a clinic quickly.

Photo: UNICEF/Shamsu Zaman

Illness can be prevented by washing hands with soap and water after contact with faeces and before handling food.

● In 1988, Afghanistan's Ministry of Information and Culture began producing weekly TV and radio series dramatizing **Facts for Life** messages. Afghanistan's leading comedy actor and actress are featured in the programs.

● In Myanmar (formerly Burma) the Department of Health is preparing a translation of **Facts for Life.** Thirty artists have volunteered to help illustrate key messages. Seven articles based on **Facts for Life** messages have been published in a popular

Diarrhoea can kill children by draining too much liquid from the body. So it is essential to give a child with diarrhoea plenty of liquids to drink.

monthly cartoon publication, Shway Thway, (circulation 150,000). The Department of Health also plans to produce radio broadcasts based on **Facts for Life** messages.

● China is also adapting **Facts for Life** for its own needs, placing greater emphasis on health problems of special concern to China's population--a growing number of smokers, child respiratory infections and the prevention of child disability. Half a million copies of **Sheng Ming Zhe She** (Knowledge of Life), have already been published and circulated. And the government is preparing additional versions in five minority languages. Cartoons are being used as illustrations instead of photographs to make health messages clear to general readers and semi-literate rural audiences. Community groups are helping with distribution and some are considering developing adapted versions of their own for local teachers, primary schools and extension workers.

Immunization protects against several dangerous diseases. A child who is not immunized is more likely to become undernourished, to become disabled, and to die.

Photo: UNICEF/Sean Sprague

● Indonesia is in the process of producing its own version, **Pedoman Hidum Sehat** (Guidelines for a Healthy Life). Religious tenets from Islamic, Catholic, Protestant, Hindu, and Buddhist faiths are being incorporated into the new version to appeal to Indonesia's largely religious society. In cooperation with community organizations and representatives from the Department of Religious Affairs and the Department of Information, the language of the adaptation has also been modified conform to local communication needs and norms. The Indonesian version will also feature drawings and cartoons to add interest and appeal. **Pedoman Hidum Sehat** will be used by government health workers and by professional and community organizations and other groups directly involved in Indonesia's nationwide family welfare movement and will become the basis of nationwide TV and radio spots.

● Other adaptations underway include a Vietnamese version of the **Facts for Life** publication that will use similar messages but a different cover and photographs. Uganda has also produced a special health message kit based on the **Facts for Life** chapter on AIDS. Turkey is incorporating **Facts for Life** messages into health programs working in the eastern section of the country. Tanzania has completed a Kiswahili translation that includes new illustrations, photographs and graphics and is also producing a special version intended specifically for non-literate citizens. Sri Lanka has finished work on Sinala and Tamil versions, reinterpreting some of the messages to make them more relevant to its people's perceptions and needs. Sri Lanka is also working with NGOs, the media and religious organizations to explain the importance of the messages to religious leaders, volunteer health workers, teachers, students, artists, writers and social service organizations. Bangladesh, Burundi, Ghana, Guatemala, India, Iran, Malawi, Nepal, Pakistan, Philippines, Rwanda, Senegal, Sierra Leone, and Thailand are also planning adaptations of their own.

● **Facts for Life** and **All for Health** are available in Arabic, English, French, Portuguese and Spanish from UNICEF, Division of Information and Public Affairs, 3 UN Plaza New York, NY 10017 USA and UNICEF regional offices. Requests for five or fewer copies of **Facts for Life** are free. Each copy over five copies of **Facts for Life** and copies of **All for Health** cost US$1.00 each.

Teen Teatro

"What you are about to see is a play on a subject that many of you have heard about, that some of you probably have even talked about between yourselves the people in the play are just like you, they come from your neighborhood, go to the same stores you do, go to the same schools. They speak the same language, eat the same kind of foods you do " The play is a 30-minute performance about AIDS and the HIV virus given by five teens from East Los Angeles, CA, USA Organized by Avance Human Services as part of their Teen AIDS Prevention Project (TAPP), *Teen Teatro* trained the teens to be community educators for their peers through theatre Staged in either English or Spanish depending on audience preference, the teatros attempted to clarify the myths surrounding AIDS and to describe HIV infection, its methods of transmission--risky behaviors--and the behavioral options teens have for reducing the risk of contracting the disease

Because of its cultural relevance and history as a teaching mechanism the *teatro* format was chosen as an effective way to reach teens. Also, because of a comparatively high degree of illiteracy and low literacy in the Los Angeles Latino population, theatre seemed especially appropriate Written materials on AIDS usually contain fairly technical information and are prepared for audiences with relatively high reading skills Theatre involves the audience in an interactive process as it entertains The audience tends to identify with the actors and comes to view the actors' struggles as their own Regardless of literacy level, the audience is more likely to receive and process AIDS prevention messages provided through theatre than through written instructional materials

The recruitment of the actors was crucial to the success of the *teatros* All of the actors were Hispanic, had bilingual English-Spanish skills and were in their teens or early twenties Just as important however, the actors chosen had to be outgoing, able to listen, not easily excitable, able to take criticism and able to handle difficult situations in a professional manner since they had to be prepared to handle unpredictable reactions from the audience In addition to training about AIDS, the HIV virus and the immune system, each actor received an intensive 42 hours of training regarding cultural and ethnic aspects of sexuality, the myths surrounding sexuality, AIDS treatment, testing and counseling, reproduction, contraceptives and sexually transmitted diseases, legal issues and insurance

The actors usually arrived early to spend time with their audience and to assess their peers knowledge and concerns about AIDS. Each *teatro* was followed by a 20-60 minute "rap" session led by the teen actors to answer questions and facilitate group and one-on-one discussion After seeing one of the performances, the Los Angeles School District asked *Teen Teatro* to conduct a series of presentations for the school system to help the District respond to its mandate to provide AIDS education to its students In all, the group staged 57 performances for 6,584 people The group has also performed for other organizations including English as a Second Language classes, churches and other agencies working with teens The project was sponsored by the U S Conference of Mayors.

For more information, contact, Avance Human Services, P O. Box 63245, Los Angeles, CA, 90063-0245 USA. Telephone (213) 726-2201 or the U S Conference of Mayors, 1620 Eye Street, NW, Washington, DC 20006 USA Telephone (202) 293-7330.

Training Needs in the U.S.--A Growing Problem

Every year, U S companies spend more of their operating budgets on training An increasing portion of this amount is being spent not on special, advanced-skills training but on teaching entry level workers basic remedial skills At New York Telephone, 60,000 applicants were interviewed before the company could fill 3,000 positions And at one large advertising firm in the Midwest the ratios of applicants to those who qualified for secretarial and clerical positions were 20 1 and 10 1 respectively Shifts in job growth from manufacturing and industry to the service sector have increased the demand for workers with better communication, reading, writing, math and problem-solving skills To upgrade its workforce, one in every three U S corporations is providing some type of basic skills training Some estimate that, by the year 2000 twenty-five million American workers will need to improve their basic skills by as much as 40 percent to meet the needs of a changing economy

To help U S industries re-tool their workforces, training experts are relying more and more on technology-based training Computer technologies--most specifically interactive video disc (IVD)--have begun to offer the best solutions IVD combines motion video with a color touch screen to deliver applications-based basic skills training It allows trainees to see and hear the skills they are learning in simulated working conditions It also lets trainees control the pace of instruction and to review and improve weak skills According to findings of some thirty studies comparing training methods, IVD proved to be the most effective new technology-based training tool The studies showed that trainees were more motivated to learn using IVD and preferred it over other training approaches Trainees showed significant gains in achievement compared to traditional classroom, videotape or other methods. Immediate feedback was one of IVD most appealing features, but the overwhelming advantage of IVD was its cost-effectiveness, delivering high quality training over long periods of time for large numbers of trainees On average, IVD saved companies 25 30% of the time usually needed to train workers In one cost analysis of an IVD program, the cost per trainee---including hardware costs--ranged from $40 to $150, depending on the number of trainees and the length of time the system was used The initial hardware cost $10,000 Two persons used the equipment at the same time The courseware cost $5,000 and provided 60 hours of instruction--30 hours on the delivery systems, and 30 hours in a companion workbook One hundred trainees required 1,500 hours on the equipment bringing the total cost of training to $150 per trainee in the first year. Over five years---or 500 trainees--total per-trainee costs were expected to drop to $30 per trainee The studies also indicated that trainees retained more knowledge of new skills over time and were able to transfer their new skills to the workplace more effectively Perhaps because of IVD's overall cost-effectiveness, by 1987, 54% of the U S.'s Fortune 500 companies were using computer-assisted training, 81% of the rest planned to do so in the near future

IVD also has major drawbacks As with most technologies used to support training, IVD's development and start-up costs are high. This discourages all but the biggest corporations from adopting it as a solution to a growing problem But unless more resources are committed to IVD and other training technologies, the problem--in the U S and elsewhere--may only get worse

Training for Sustainable Change in Honduras

We do not follow up the farmer anymore. We follow up the farmer. We have to train the person.

Honduran Extension Worker

by Gail McClure

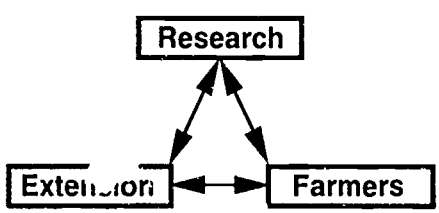
Agricultural extension and training have been essential components of effective international development for over 25 years. Recently however, many formal and nonformal agricultural training programs have been criticized for their high costs and for focusing on technologies rather than on helping farmers to solve practical problems. Critics argue that training programs in agriculture have seldom resulted in positive, sustainable change over time. While farmers usually benefit from agricultural training programs, decision-makers often view investments in training as misguided if the results are not visibly applicable to national needs. A recent study of the A.I.D.-funded Communication for Technology Transfer in Agriculture project (CTTA) in Honduras refutes these charges. CTTA demonstrates that nonformal training in a local context can indeed be the catalyst for institutionalized change if the right approach is taken.

The CTTA Approach

CTTA aims to strengthen the link between farmers and extension services, between farmers and researchers, and between researchers and extension services. In the three and a half years it has been operating in Honduras, CTTA has helped refocus Honduras' agricultural extension delivery system. Relying only on one long-term advisor and a modest budget for a pilot site in Comayagua, CTTA has helped improve the attitudes, motivation and management skills of Honduran extension workers. CTTA uses an integrated communications strategy approach involving interpersonal contact, printed material and radio programs to improve agricultural extension at a low-cost and in a sustainable manner. In Honduras, CTTA is training extension workers in audience analysis, evaluation techniques and management by objective to encourage extension workers to take an educational, farmer-focused approach to managing technology transfer.

Training the Communicators

Using media to support technology transfer activities was nothing new to Honduras' Ministry of Natural Resources (MNR). A communication unit had been established by the Ministry nearly 10 years before CTTA was initiated. However, its efforts had been piecemeal at best and had little chance of continuing once financial support from international agencies ceased. Communicators in the Ministry felt that earlier efforts had failed because agricultural communication had been seen in a limited way--as media production only--rather than as a broader process of development communication and education. MNR personnel wanted extension workers to view the communication specialists as co-workers who could help them reach farmers with their message rather than as rivals for the farmers' attention. CTTA began its pilot program in Comayagua by teaching the communicators how to understand the needs and perspectives of both farmers and extensionists. Communicators were trained in developmental investigation techniques (audience analysis), evaluation methods and management by objective. These new skills were then combined with their media training skills. CTTA emphasized a bottom-up approach to planning extension programs, a philosophy that supported new reform efforts by the Honduran government to have extension interventions begin by identifying farmers' needs rather than by imposing information from above. In practice, this meant that the extension process began with local audience analysis involving direct interaction with farmers followed by communication and education using multiple channels and completed by periodic evaluations to learn if audience needs were being met.



Linking Extension and Research

Looking beyond the communication unit, decisions on which technologies would be appropriate and available for transfer to farmers were made at the agency level. This crucial step determined the content of the messages CTTA helped disseminate and was used to guide the production of radio programming, print materials and other visual media. Staff agronomists in Comayagua led discussions among the extensionists. In time, agency personnel reached a consensus on what technologies should be transferred to farmers according to agro-ecological subsystems--flatland or hillside. This process also encouraged extensionists to update the technical guides they used to direct their own field work.

Honduran extension workers discussing technology transfer

Expanding the Project

After training communication staff in Comayagua and strengthening links between extension and research, CTTA's next challenge was to expand the program to other agencies and to improve communication interventions. Regional officials acknowledged that agricultural professionals were often unskilled in communication techniques, being preoccupied with the technical aspects of their work. They found it difficult to communicate effectively with farmers, particularly when farmers were from a different cultural context than their own or had little formal education. Training in oral and other communications was needed to help exten-

(Continued on page 12)

(McClure *from page 11)*

sionists deal with and overcome the social distance between themselves and their farmer clients. So, as part of the second phase of the project, CITA trained extensionists and agronomists in basic communication techniques.

During the third phase of the project, a decentralized implementation strategy was adopted. Once a spirit of cooperation and trust was established between communicators and extensionists, the extensionists became responsible for identifying training priorities and for designing the technology transfer projects to serve them. Communicators functioned as advisors and trainers to extension personnel who gathered data from farmers and designed the content of radio programs and printed materials. A manual outlining technology transfer projects was developed. The major steps included:

- Definition of project objectives based on audience needs analysis;
- Description of the types of messages to be delivered;
- Identification of the means and media needed to achieve the learning objectives;
- Characterization and organization of the steps necessary to carry out the process;
- Preparation of a schedule of activities based on the agricultural cycle;
- Identification of the persons with the responsibility for conducting and evaluating the project; and
- Preparation of a budget for implementing and evaluating the project.

This new approach helped tie the extension methodolgy to audience needs and helped incorporate the project design tools necessary to include farmers as full participants in the extension process.

Training Is Not Enough

Extension workers involved in the CITA project have developed a more enthusiastic, professional view of their work. Training efforts are rapidly expanding to other regions of the country with the Comayagua staff taking the major responsibility for the training. Until CITA, extensionists and researchers had not had the necessary training to place the farmer at the starting point of the extension process because they did not have the skills to make a precise diagnosis of farmer needs. When one extensionist was asked to list CITA's most important contributions, he responded: *CITA ...helped us get organized to implement surveys and to do diagnosis focused on the human aspects. We have learned how to reach the farmer and how to transfer projects. None of that existed before.*

For an innovation to be sustained and institutionalized in any government-run program, it must be integrated into ongoing policy and leadership initiatives. As successful as the CITA approach has been in Honduras, it is doubtful that training efforts could have achieved the results that they did without strong regional leadership, committed communication staff from the national office, financial support for local currency expenditures, and a long-term advisor with strong managerial and communication/extension skills. CITA recently finished helping design a Unified Service Delivery Methodology for the MNR's extension service. Its adoption at the national level will pave the way for widespread implementation and sustainability of the approach long after CITA finishes its work there. ■

Gail McClure is Vice President for Agriculture at the Academy for Educational Development in Washington, DC.

New Books

✸ *Radio, Television and Film Research: Low-cost Methods for Conducting Programme Evaluation* by Rainer W. H. Kabel documents how less formal, qualitative field work--interviews, casual talks, audience observation and group discussions--can be effective evaluation research tools to assess the success of mass media communication campaigns. Available from the Asian Mass Communication Research and Information Centre (AMIC), 39 Newton Road, Singapore 1130, Republic of Singapore.

✸ *The Copy Book: Copyright-free Illustrations for Development* (£9.95) edited by Bob Linney and Bruce Wilson contains over one hundred pages of drawings on development topics. Designed to be used by communication and education field workers, the book also encourages local artists to develop their own illustrations.

✸ *Low-cost Printing for Development* (£6.95) by Jonathan Zeitlyn offers guidance on "do-it-yourself" printing methods and gives advice on setting up a small-scale, inexpensive print shop capable of producing a variety of publications. Both books are available from Intermediate Technology (IT) Publications Ltd, Dept DC, 103-105 Southhampton Row, London WC1B 4HH England.

Using Interactive Radio to Teach Health

by Judiann McNulty

Can children learn easily applicable health concepts by interactive radio? The Radio Learning Project (RLP) attempted to answer that question by conducting a test of interactive radio's potential to change the health behaviors of young children in Bolivia this past year. Most health education efforts, particularly Child Survival initiatives, are directed at the mothers of young children. Targeting school-aged children is uncommon, although in many Third World cultures children have a major role in caring for younger siblings and in sharing household tasks related to food preparation, sanitation and water acquisition. Children learn more quickly and adopt new practices more readily than adults. And many ten-year-olds will become parents themselves within five or six years.

To test the feasibility of teaching health to children by interactive radio, USAID encouraged the Radio Learning Project to develop and field-test a 10-week module of health lessons for fourth and fifth graders. The RLP team worked closely with Fe y Alegria, a private, Catholic institution which administers many barrio and rural public schools in Bolivia. Health education was not included in the curriculum used in most of these schools. Both parents and teachers had expressed an interest in having health taught to their children.

For the field test, ten classrooms--five each of fourth and fifth grades--in the Cochabamba region were selected. These classrooms represented urban, barrio and rural schools, with students from varying socio-economic and cultural backgrounds. The 450 students included in the sample were pre-tested prior to the beginning of the program and post-tested after the final lesson. Follow-up evaluations were also conducted with teachers and parents.

The topic selected for the pilot module was diarrhea, including both prevention and treatment by oral rehydration therapy (ORT). According Ministry of Health statistics, diarrheal disease and the resulting dehydration is the single largest cause of hospitalization and death among children under five in Bolivia. The Ministry's most

(Continued on page 13)

Photo: Tom Tilson

Bolivian fifth graders learning about health

(McNulty *from page 12)*

recent data (1983) show diarrheal disease as the second-highest cause of hospitalization among children between five and fourteen years of age.

Because of the sensitive nature and complexity of this topic, an anthropologist conducted an in-depth study of the sociocultural context in the target population before the health team began to plan the module and individual lesson content. Interviews were conducted with children as well as with adults. Additional information was collected by the health team on the children's interests, home responsibilities, lifestyle and common terminology. The lessons and learning objectives were written to emphasize diarrhea-related health behaviors over which the children have control for themselves and could teach or perform for younger children. Among such behaviors were basic hygiene, garbage and feces disposal, optimal use and care of water supplies and preparation and administration of oral rehydration solutions.

Each weekly lesson lasted for 25 minutes and was followed by a 25-minute post-broadcast practical activity directed by the classroom teacher. The teachers had prior instruction during a brief workshop before the activities and received a detailed printed guide for each lesson. Each lesson included a story, discussion, songs, questions and answers and physical activity. The recordings incorporated a wide variety of music and numerous sound effects. Since the students all liked the stories best, efforts were made to use the stories to teach key points. Selected classrooms were observed during the transmission of each lesson to monitor student responses, clarity of instructions, recording quality and other aspects of lesson production.

Feedback was immediately applied to improving subsequent lessons. The interactive radio instruction (IRI) format was altered slightly to better accommodate the subject matter. Students answered most questions on an individual rather than group basis, less drill was used and the story took up three to five minutes of lesson time. Students were often called upon to demonstrate certain concepts in front of the classroom. For example, two students were asked to crawl around on the floor like babies. "When babies find an object on the floor, what do they do with it?" asks the recorded voice. "They put it in their mouths," answer the students. "Could this result in the baby getting diarrhea?" asks the lesson.

When the results of the pretest and posttest were compared, a significant difference was found ($F=31.32$, $p.001$). The average improvement in the post-test score was 18.8 percentage points over the pretest. This indicates that the interactive radio lessons did bring about a positive change in health knowledge. Constraints of funding and time made formal evaluation of changes in health attitudes and practices impossible, but in the informal evaluations conducted, both parents and teachers reported noticeable improvements in the students' hygiene and that of younger siblings and the adoption of such practices as filtering water, sanitation and the use of ORT.

The potential for teaching health to children using interactive radio is exciting. As this pilot project in Bolivia showed, even ten well-planned lessons can bring about positive changes in knowledge and practice of health concepts.

Judiann McNulty, DrPH, was the resident health education advisor for this project. She now teaches at the University of Wyoming. For further information, contact the Radio Learning Project, Education Development Center, 55 Chapel Street, Newton, MA 02160 USA. Telephone: (617) 969-7100. Telex: 922476. Fax: (617) 332-6405.

Resources for Media-Based Trainers

✔ The Manila office of the Asian Development Bank can provide information and resources to distance education specialists and media-based trainers. Contact: The Information Office, Asian Development Bank, P.O. Box 789, Manila 0800 Philippines.

✔ The Associacao Brasileira de Tecnologia Educacional (ABT) supports research on applications of educational technology in training and general education in Latin America, and can give information about where to look for relevant courseware. For information about publications and current activities, contact: ABT, Rua Jornalista Orlando Dantas 56, Botafogo, 22231 Rio de Janeiro, Brazil.

✔ The Centre Africain de Management et de Perfectionnement des Cadres (CAMPC) has experience implementing media-based training programs in Africa. Contact: CAMPC, B.P. 8?8, Abidjan 08 Cote d'Ivoire. Telex: 26170 CAMPC-CI.

✔ The Centre Internationale Francophone de Formation a Distance (CIF-FAD) has worked extensively with francophone African countries to develop distance education programs. Contact: CIF FAD, C.P. 2141, Succursale de Lorimier, Montreal, Quebec, H2H 2R8 Canada. Telephone: 514-522-2444.

✔ The International Labor Organization's (ILO) International Centre for Advanced Technical and Vocational Training can provide advice and assistance in developing media-based training programs. Contact the Centre at: 125 Curso Unita d'Italia, 10127 Turin, Italy. Telephone: 39-11-69361. Telex: 221440 CENTRN-I. Fax: 39-11-638842. Or write to the ILO's main office at: 4 Route des Morillons, CH-1211 Geneva, 22 Switzerland. Telephone: (+41) 7996111.

✔ The Ministry of Advanced Education and Job Training, Province of British Columbia, Canada actively supports dissemination of information, curriculum materials and general information about vocational and technical training in developing countries. For more information, write to the Ministry at: Parliament Buildings, Victoria, BC V8V 1X4 Canada.

(Continued on page 14)

(RESOURCES *from page 13)*

✔ The National Technological University is a for-profit training network that provides advanced engineering degrees at a distance via satellite in North America, and via videotapes for other regions NTU's *Uplink* magazine provides monthly information on their programming. For more information, contact NTU, 601 South Howes Street, 5th Floor, Fort Collins, CO 80522 USA

✔ The Open College in Great Britain has developed extensive curriculum materials on business, management and accounting topics currently available for learning at a distance to students in Australia and Hong Kong. For more information about availability in other regions, contact the Open College, 101 Wigmore Street, London, W1H 9AA England.

✔ The United Nations Center for Science and Technology's (UNCST) Department of Technical Cooperation for Development publishes the DTCD Newsletter, available at no charge, which covers UNCST seminar activities and fellowship programs. Write: DTCD Newsletter, Room DC-11254, UN Center for Science and Technology, New York, NY 10017 USA.

✔ The US Department of Labor's Bureau of International Labor Affairs (ILAB) offers information to developing countries on a wide number of programs and expertise available from the USDL ranging from Job Training Partnership activities to information about training curricula and course materials available from ILAB Contact. ILAB, US Department of Labor, 200 Constitution Avenue NW, Room S5006. Washington, DC 20210 USA.

Third World News

The Third World Network Feature Service spreads awareness of Third World issues in developing countries as well as in industrialized nations. Established in 1985, the Service covers a wide range of issues and topics. Its articles have been used in newspapers, magazines and news organizations worldwide including the Japan Times, the International Herald Tribune and Radio Deutsche/Welle. The Service also provides background information on many of the problems facing the Third World today The Service has branches in Indonesia, Thailand, India, Brazil, and Uruguay For more information, contact the Third World Network, 87 Catonment Road, 10250 Penang, Malaysia.

What's New, What's Coming

This classified section is available for clearinghouse members to address their needs and services free of charge. If you need information or have an announcement related to development communication that you would like to share with DCR readers, send it to the clearinghouse: 1815 North Fort Myer Drive, Suite 600, Arlington, VA 22209 USA

Courses

Distance Education for Agriculture

Wye College in England offers distance education courses in the economics, planning and management of agricultural development in Third World countries. The College's programs provide a unique opportunity for advanced study at a distance to qualified candidates worldwide Short courses offered at a distance include policy analysis, project planning, monitoring and evaluation, survey methods, data collection and analysis, livestock development, water resource economics, institutional organization and management, and agricultural business management Arrangements can be made to extend the short courses into a full University of London MSc or diploma degree program Contact University of London, Wye College, Department of Agricultural Economics, Ashford, Kent TN25 5AH England Telephone (0233) 812401 Fax 0233-813320 Telex 94017832 WYE C G

Conferences

Computers in Education

The Fifth World Conference in Computer Education **WCCE/90**--organized by the International Federation for Information Processing (IFIP), will be held in Sydney, Australia, July 9-13, 1990 **WCCE/90** will explore all aspects of computer-related education in all education environments For further information, contact **WCCE/90**, P O Box 319, Darlinghurst, NSW 2010 Australia Fax: (612) 281-1208

Computers

Projecting Population Growth

The Department of Technical Cooperation for Development (DTCD) is making available a very popular computer game that assists planners and policy-makers to understand how decisions about population and government spending can affect national growth. There has been tremendous demand for the program from government offices in developing countries, multilateral organizations and others interested in the potential effects of population growth on development planning. Copies of the diskettes and a companion manual are available free to government agencies and for a fee to private groups and individuals from the Population Branch, Room DC1-926, Department of Technical Cooperation for Development (DTCD), United Nations, New York, NY 10017 USA.

Medical Training on Videodisc

The Computer-assisted Curriculum Delivery Systems Program (CCDS) is producing and field-tesing computer-controlled videodisc medical curriculum materials to provide alternatives to traditional medical teaching methods. Four videodisc projects are currently under development and or are being field-tested: Medical Pathology, Orthopaedics, Radiology and Mental Health Additional information about CCDS can be obtained from the Educational Technology Branch, National Library of Medicine, 8600 Rockville Pike, Bethesda MD 20894 Telephone. (301) 496-9300

Publications

Unesco Communication Reports

Unesco publishes several series of works in the communications fields including reports and monographs on communication planning, communictaion policies in developing countries, communication and society, and communication technology and utilization. Sample titles include: *Rural Journalism in Africa, Community Communications--The Role of Community Media in Development, Rural Radio Programme Formats* and *Small Printing Houses and Modern Technology*. Contact the Documentation Centre for Culture and Communication, Unesco, 7 Place de Fontenoy, Paris 75700 France for a complete list and ordering information.

Rehabilitation News

The **CBR NEWS** newsletter, published by the Appropriate Health Resources & Technologies Action Group, (AHRTAG) is devoted to community-based rehabilitaiton issues and low-cost aids, equipment and practices for prevention of disabilities and rehabilitation of disabled people. It is free to subscribers in developing countries. Available from Appropriate Health Resources & Technologies Action Group, AHRTAG, 1 London Bridge Street, London SE1 9SG, England

(**NETTLETON** *from page 16)*

printed materials and could make updates and revisions easier and less expensive

➤ *Poor management* Administrative tasks in large scale vocational schools--student records and other management data--can be made more efficient using small computers.

Technology in the Informal Sector

Communications technology has to be used with ingenuity to be effective for applied skills learning in the informal sector Although it is often used to extend learning to remote learners, these applications generally occur with substantial face to face contact provided by groups, teachers or by on-the-job experiences The CESPAC program in Peru (page one) and the CITA program in Honduras (page 11) use media to supplement--not substitute for--a solid base of instruction provided by face-to-face contact between farmers and extension agents Mass media communications are more likely to take on a primary teaching role when the training message is a simple one Generalized social marketing campaigns conveyed via mass media attempt to influence a wide segment of the population to change its behavior rather than to teach a series of practical skills as in India's 1987 maternal and child health campaign (page four)

What are the advantages of communications technology for informal training? In the case of mass media campaigns by print, radio or television, the obvious advantage is the ability to reach a large audience at a relatively low cost However, this advantage is counter-balanced by the limited kinds of training that can be offered by these means and the fact that learners are forced into a passive role with no opportunities for feedback or participation in the learning process Where media are chosen to supplement face-to-face contact, there will usually be hefty add on costs for the program. This drawback may be offset by several advantages--improved learning comprehension, learner participation and greater student motivation Another advantage of media such as videotapes and radio programs is that they don't shut illiterates out of the learning process A sound basic education in writing, reading, arithmetic and logical deductive thinking is an essential part of improving the effectiveness of informal training programs In a loose sense, therefore, basic general education may be considered an important component of informal training but consideration of how technologies could contribute to this end goes beyond the topic of this discussion.

What Experience Do We Have?

Not much research has been done on the applications of technology in modern sector job training in developing countries Communications technology has played a relatively limited role in most training systems to date especially when compared to its flourishing use in distance education programs for general academic learning (see DCR No. 63) The limited evidence must be bolstered with research from developed countries. This could at least provide initial evidence of emerging trends and pitfalls and could be useful when considering the needs of developing countries. A secondary level pre-employment vocational training program, the SENAI individualized learning system in Brazil, has shown that careful integration of selected teaching technologies with a flexible enrollment policy can greatly increase educational productivity and efficiency for large schools of over 2,000 students Further research shows that the model can be successfully transferred to other sites--in this case, one in Brazil and three in other Latin American countries

For on-the-job learning in the private sector, Project ACCESSO, run by the state-owned corporation Petrobras in Brazil, has shown that a small-scale, print-based, modular learning curriculum can teach needed skills at a distance to employees in remote sites. However, unit costs were relatively high due to the small scale of the project In the USA, the National Technological University offers televised lectures by engineering professors from 24 major universities--leading to a masters degree--which serves engineers who are unable to leave their jobs to study NTU also links nearly 50 companies with academic communities via satellite. Continued expansion of the system and the satisfaction of its customers point to a successful program

Post-secondary job training is being offered at a distance in England by the Open College The OC gives older, working and unemployed adults a second chance to upgrade their skills or learn new ones, particularly in the areas of management and accounting Currently, it serves about 115,000 individual students, as well as 400 corporate clients, who purchase customized training materials In-service teacher training at a distance offered at one quarter of the cost of regular training in Tanzania in the mid-1970s trained 77% of the 45,534 unqualified teachers who enrolled in the three-year program. The course used printed material, group learning, radio broadcasts and a final short six-week residential course In Chile in 1980, 32,562 working teachers enrolled in a ten-week print- and television-based course designed to teach formative evaluation techniques. Fifty-nine percent passed the final test A second, follow-up course was offered the following year

Informal sector training has also made successful use of technologies. As described in this issue, agricultural extension and rural development projects have made use of video in Peru and of radio in Honduras, while in two health training campaigns, improved visual aids were used in India and interactive radio instruction achieved good results in schools in Bolivia.

What Are the Constraints?

- *Software and Courseware* Instructional hardware has an insatiable appetite for courseware and programs which may be difficult or impossible to fill entirely from the resources in one country Instructional design requires careful attention in order to take advantage of the opportunities technology offers. Learning materials must be relevant and effective When courseware is bought off the shelf, adaptability, relevance, cost and language need to be considered as well as whether the material is sufficiently up-to-date
- *Cost* While the use of mass media can reduce costs for general mass information campaigns, in the context of specific skills training, the purchase of technologies can represent a significant capital expenditure. Further costs will be incurred in buying or creating courseware, maintenance and eventual replacement when equipment wears out Foreign exchange and technology import restrictions also present problems.
- *Effective Implementation* Buying equipment is only the first step Instructors must be willing to learn to use it well, institutions must be able to adapt their schedules and operations so that flexibility is an objective, and employers must be convinced of learning effectiveness. In the informal sector, learners must be convinced to participate and secure sources of funding other than foreign aid must be obtained to keep projects from dying on the vine Technology must cease to be seen as part of the problem and instead be recognized as a important part of the solution. ■

Greta Nettleton is an independent development communications consultant from Palisades, New York

Communications Technology for Training: Can it Really Make a Difference?

by Greta Nettleton

As the end of the millenium approaches, a surge of technological development is transforming the global economy. Providing traditional academic education is only part of the problem facing development planners. Training to build job skills and know-how is as important to economic growth as general schooling. More and more, training systems are under pressure to adapt to new conditions in order to stay up-to-date even as they struggle with other problems such as high costs, low-quality learning and scarcity of funds. But if technology is part of the problem, can it also be part of the solution? What role can communications technology realistically play in providing training in the developing world in the coming decades?

The Training Context

The diversity of training needs in developing countries is tremendous, ranging from agricultural extension and public health in rural areas to technical and management skills for large enterprises. It is important to emphasize the difference in context for this influx of technological change between training for the informal sector and training for the modern sector.

(a) *Informal sector training* seeks to reach learners in poor, rural areas. These students may lack basic literacy and numeracy skills. Training applications relying on high technologies such as computer-assisted learning or telecommunications are difficult to use and probably irrelevant in this context. At the same time, these learners cannot afford to be cut off from the possible benefits of technological progress.

(b) On the other hand, *modern sector training* for jobs in the industrialized part of the economy--banks, airlines, etc.--must teach specific skills to workers who will perform specific tasks in a technically-oriented, competitive environment. Links to firms and enterprises and to global technological trends are therefore quite strong for these students no matter what country they live in.

How Do Technologies Train?

While communications technologies automatically bring to mind learning at a distance, they also can be adapted for use in a structured, face-to-face context. Determining which technology best serves specific kinds of skills is harder to generalize because technologies are nearly always used in combinations and each situation must be tailored to the specific needs of the training task. However, certain capabilities and limitations are obvious.

- Print is ineffective in teaching motor skills but it is very good at providing a permanent learning reference, conveying abstract or theoretical concepts and presenting a series of facts which must be memorized.
- Audiocassette tapes are effective in presenting lecture material, music and language skills, and can be rewound and heard again at the discretion of the student.
- Videocassettes are effective for demonstrating visual procedures and illustrating hard-to-see processes in addition to having all of audiotape's capabilities.
- Telecommunication links allow direct two way feedback as well as other potential advantages (see page three), but their quality depends on the skills of the teacher using the equipment.
- Computers can provide constant drills and feedback, can be a source of reference and can give motivation and pacing. They also teach system control and problem solving effectively.
- Radio and television broadcasts have limited teaching effectiveness because material cannot be heard a second time. Scheduling can also be a problem. Nor can feedback be given to the student except when designed into the program--as with interactive radio.

Training for Jobs in the Modern Sector

Many modern sector workers in most countries gain skills without ever setting foot inside a formal vocational school. So training must be understood to include not only government-run trade schools but also other sources, particularly on-the-job training and apprenticeships. Learning technologies offer a number of advantages to training including flexibility, improved learning quality, substitution for scarce instructors and transfer of technology know-how. In general, newer technologies such as computers and modularized, self-paced learning programs are more easily implemented by large companies for in-service training than by government-run programs. Private firms can better afford the high costs of equipment and courseware and are not tied to institutional regulations, schedules, pay scales, etc.

As a general rule, efforts to offer vocational training at a distance have been limited since most courses require equipment and tools for practical training and must teach complicated, physical processes that are hard to convey except by direct experience in instructor-led training. In spite of this, some things can be taught at a distance such as management skills and accounting. Correspondence courses in these areas are fairly common. In-service teacher training is another area where distance learning has proved successful. The following is a brief listing of just some of the ways technology can be used to solve common problems in the formal training process:

➤ *Poor quality.* A firm or trade school can use technology to improve the quality of teaching of both new and traditional skills. For example, printed learning modules or videotapes could supplement instruction given by underqualified teachers for a complex task.

➤ *Low efficiency.* Technology is a key element in individualized instruction. It increases efficiency and flexibility of scheduling for large training institutions as well as for smaller programs. For example, students can use a programmed sequence of print modules, audiocassettes and even videotapes to study at their own pace. This also frees instructors to offer extra help to those who need it.

➤ *High costs.* Through distance learning programs, technologies can save training costs for large firms training employees working in remote locations or for firms wishing to train employees who cannot be spared from their jobs. Any media can be used, ranging from printed materials to satellite broadcasts.

➤ *Outdated courseware.* Technology can be used for curriculum development; for instance, desk-top publishing can help institutions reduce the production costs of

(Continued on page 15)

Development Communication Report

Clearinghouse on Development Communication

dcr

No. 67

Information Technology: Challenges for Development

by Heather Hudson

We are currently witnessing the proliferation of new telecommunication technologies–cellular radio, very small aperture terminals (VSATs), optical fiber and the wireless loop, to name just a few. At the same time, these technologies, which are mainly concerned with the transmission of information, are now converging with technologies used for the storage, processing or reproduction of information. These include computers, video-cassette recorders (VCRs), printers, copiers, and others. The combination has resulted in many new services that may be particularly appropriate for developing regions.

Computers and Telecommunications

Computers are currently being used throughout the developing world. Following is a sample of current and potential computer applications for development goals.

Data Broadcasting. VSATs, or "micro earth stations" which can cheaply transmit and receive data at low rates, now make it possible for wire service information to be disseminated to virtually any location, including rural areas lacking telecommunications infrastructure. They may be powered by photovoltaic or portable generators. Reuters uses this technology to send wire service copy to Latin America. In Hong Kong, the World Broadcast Service sends wire service copy to Intelsat's Indian Ocean satellite, which covers 80 percent of the world's population. The first customer for the service is China's Xinhua News Agency.

Electronic Transactions. Computers combined with telecommunications enable organizations to conduct business and management from any location. Banks may transfer funds internationally and airlines may book reservations from ticket offices, airports, and travel agencies. Brokers and traders may buy and sell coffee, soybeans, copper, petroleum and other commodities electronically.

Remote Access to Databases. Computer terminals or microcomputers with modems linked to the telecommunications network can provide access to data bases anywhere in the world. For example, agricultural researchers may gain access to the Food and Agricultural Organization's data bases in Rome. Health researchers may search the data base of the U.S. National Library of Medicine outside Washington, DC. Others may search domestic data bases, such as those for agriculture and energy in India and for development project management in Malaysia.

Desktop Publishing. The capability of microcomputers to create graphics now make it possible to produce newsletters and other printed materials without typesetting. This is particularly valuable in countries where newspapers, texts, and development materials in local languages may be scarce and costly to produce. Development agencies can now produce their own materials in-house. Store-front desktop publishers may also spring up. This approach enables many small users to share the desktop publishing software and equipment.

Facsimile. Facsimile, which enables print, graphics, or handwritten messages to be transmitted over a telephone line, is being used by development professionals in the field to send reports. Posters and newsletters can be faxed to rural communities, or to regional centers for distribution to schools, clinics, government offices, etc.

(Continued on p. 2)

Computers Print Newspapers in Thai

In Thailand, desktop publishing is soon to become a standard for small community newspapers.

With the new Macintosh microcomputer and laser printer obtained through financing from UNESCO's International Program for the Development of Communication, the Press Development Institute of Thailand is planning to specialize in assisting community newspapers in the use of desktop publishing in the Thai language. Several Thai fonts have already been created and tested on Macintosh by local experts and are simple to use, even in combination with Latin characters.

The Institute has already translated several journalism reports and manuals into Thai and prepared them for reproduction using the Macintosh SE. The Press Development Institute, in cooperation with UNESCO, also intends to link up with other press institutes in the region.

– Carlos A. Arnaldo

In this issue ...

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Development Communication Report

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Clearinghouse on Development Communication
1815 North Fort Myer Drive, Suite 600
Arlington, VA 22209 USA
Telephone: (703) 527-5546
Fax: (703) 527-4661
Telex: 710-833-0320 IIRINC VA

Michael Laflin, Director
Kathleen Selvaggio, Editor
Andre Roussel, Information Specialist

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Credits

Carlos A. Arnaldo, author of the news items which appear on pages 1, 3 and 4, is a field project officer with the Division of Communication Development, UNESCO in Paris. The photograph on page 3 also appears courtesy Carlos Arnaldo.

The graphs on page 9 are reprinted with the permission of The Futures Group and Population Reference Bureau.

(HUDSON, *from p. 1*)

Development Benefits

Telecommunications can be critical to the development process. By providing information links between urban and rural areas and among rural residents, telecommunications can overcome distance barriers which hamper rural development. The ability to communicate instantaneously can increase efficiency of production or services, the effectiveness of development efforts, and equitable distribution of benefits throughout society. These benefits are quite tangible–and measurable. Studies in Costa Rica have documented the contributions of the rural telephone network to the national economy. An evaluation of the Peru Rural Satellite Project found significant benefits of the audio conferencing and rural telephony services.

The financial sector also benefits from modern telecommunications. I recently participated in a study comparing the ability of telex vs. SWIFT electronic funds transfer network to generate foreign exchange in Brazil. We found that a bank that had to make a payment by a certain deadline could be sure that the funds would arrive within twelve hours using SWIFT, but might need up to 36 hours using telex. Thus the bank could safely hold onto its funds for an extra 24 hours, generating extra interest. Banks could then estimate their interest earnings or savings on debt payments to calculate the number of transactions needed to cover the costs of using the SWIFT network. Similar studies might be conducted for other sectors generating foreign exchange, for example, in commodities trade, where timely information in determining where and when to sell to get the best prices is critical.

It is also possible to measure the value of telecommunications for education and social services. For example, if a student can study at the work place instead of traveling to campus, or in his or her home community instead of relocating to the city, the savings in travel time, lodging and time away from work can be calculated. Similarly, training health workers on the job saves time away from work that could result in understaffing and poorer quality of care. Telecommunications for consultation with medical experts can save the cost of moving a patient to the city and improve the quality of care available in rural areas.

The Challenge for Planners

Yet developments in technology have leapt ahead of changes in policy, presenting new challenges. One challenge is the need to integrate planning for the entire communications sector, including telecommunications, broadcasting, and new information technologies (e.g., computers, VCRs, etc.). For example, it is important to integrate telecommunications and broadcast planning so that residents in isolated areas receive both telephone and radio/television services. Otherwise, they may end up like residents in the Arctic, who complained that they could watch hospital soap operas on TV, but could not call a doctor in an emergency. Surveys show that there are approximately four times as many televisions as telephones in Caribbean countries, three times in Central American countries, and two times in South American countries. Is this the intention of communication policy makers?

The ability to communicate instantaneously brings tangible – and measurable – benefits.

Similarly, coordination is required to develop policies on new video technologies. Some broadcasters attempt to ban imports of VCRs or pre-recorded tapes. A more constructive and effective approach might be to levy a tax on VCRs and tapes, with the proceeds used to support national broadcasting production, or to improve indigenously produced programming, and step up marketing efforts.

Integrated Planning

In order for these new technologies to serve development goals, communication planning must be integrated with national development planning. If a country intends to open up new areas for settlement or resource development, telecommunications facilities will be required. If it intends to diversify existing industries and services, it will need to ensure that adequate infrastructure is in place. It may also need to upgrade the skills of its work force, perhaps using instructional technologies.

Lack of coordination between the communication and other sectors results in wasted resources and lost opportunities. Some countries have been unable to attract new industries because they lack the neces-

sary telecommunications infrastructure Others allow policies to conflict For example, in a country that has established an Open University, the broadcasting authority charges such a high fee for studio and satellite time that the Open University cannot use available time on the network to reach its students.

Coordinated planning requires an active government policy to ensure that telecommunications plans and services are designed to meet national goals. This policy should include:

- regular dialogue between telecommunications and broadcasting administrators and national planners;
- allocations of resources for the extension and improvement of communication facilities, and for training personnel in the use of these facilities; and
- consciousness-raising about the benefits of improved telecommunications.

Meeting the challenges posed by new technologies will help to maximize the benefits of this vital strategic resource for national and regional development. ■

Heather Hudson is the Director of the Telecommunications Management and Policy Program at the McClaren College of Business, University of San Francisco.

Cabopresse: An Electronic News Agency for Cape Verde

Cabopresse is bracing to launch its news agency network among the nine islands of Cape Verde. Nine journalists have been undergoing training and the agency is purchasing nine electronic mailboxes to connect all islands to the main office in the capital city of Praia and with each other.

The electronic mailbox, already tested successfully between the national newspaper *Voz di Povo* and the national radio, will enable journalists to send their dispatches directly to Cabopresse, which in turn can share other dispatches with their journalists on the nine islands.

At a later stage, the whole news service can be transmitted to subscribers, including those abroad, by using this system.

– Carlos A. Arnaldo

The Information Technologies You Are Using: Results of a DCR Survey

by Desiree deGraeve and Raj Kunungo

Last summer *Development Communication Report* asked readers in developing countries to give us some idea of how they are using information technologies in their work. We sent out a questionnaire and two hundred seventy readers responded within the deadline. This sample is biased in several ways. readers who responded to the questionnaire are more likely to be using technologies than the readers who did not respond. Second, communicators belong to a universe that is more likely to use information technology than the general population Third, we received many more responses from Asia and Africa than we did from Latin America So this survey does not measure the "worldwide state of information technology," but it does reveal some interesting comparisons between technologies.

We defined information technology in broad terms, as "method(s) to assist in the collection, exchange, management and dissemination of information." The survey covered older technologies such as mail, telephone, cable, photocopier, local messengers and two-way radio, as well as newer technologies such as computers, electronic mail, CD-ROM (Compact Disk/Read-Only Memory, a low-cost medium for storage and retrieval of bibliographic information), videotape, videodisc and packet radio (which uses radio waves to transmit data between computers over medium distances)

Getting Through Is Still the Problem

Ninety seven percent of our respondents routinely use the telephone to carry out their daily work However, connection is far from instantaneous Only 30 percent could make a long distance phone call in less than five minutes Twenty-three percent reported that it takes from six to 30 minutes for a long distance call to go through. Fifteen percent said it takes from 31 to 60 minutes More than a quarter of the total, 26 percent, reported that it still takes over two hours to place a long distance call Respondents also rely on traditional communications systems For example:

- 84 percent still use local messengers regularly;
- 59 percent use an international delivery service at least once a week, and
- 33 percent use two-way radio.

The Fax Phenomenon

Given the difficulty of using the telephone, the number of respondents who use facsimile (fax) machines on a regular basis was surprising. 49 percent in Asia and Africa and 60 percent in Latin America. A slightly higher number of respondents still use telex machines. Lack of power, or interruptions in power, were not regarded as important constraints to use, nor was the perceived complexity of the technology, the problem lay in the high initial cost and the lack of infrastructure – presumably the lack of telephone lines or the delay in getting through. Fax appears to be catching on almost as fast in developing countries as in industrialized countries.

Benefits of Computers

Sixty-eight percent of respondents are using single user (personal, as opposed to networked) computers to help manage and administer development activities, and a surprisingly high 22 percent use computers linked through a network. Computer use has not spread widely to electronic mail (only 8 percent), but, when asked about the benefits of technology, the largest proportion (50 percent) of those who used computers indicated that *exchanging* information was the main benefit of information technology. Only about a third thought that computers provided important benefits in *organizing information efficiently, storing information efficiently,* or allowing *access to current information.* And little more than a quarter of respondents who used computers thought that computers offered advantages in reducing costs

Contrary to expectations, the major barriers to using computers were not power problems or getting machines repaired The cost of purchase was the major barrier to 40 percent of the respondents, followed by a lack of infrastructure (34 percent).

However, when respondents mentioned "infrastructure," they raised such issues as a narrow choice of available software, few computer trade magazines and limited networks.

Other Information Storage

For information storage and retrieval, CD-ROM is used by only 4 percent of respondents while 27 percent rely on microfiche (although much more heavily in Asia than in Africa). Only 3 percent are presently using video disc technology in their work, all were from Asia Indeed, video use was much more prevalent in Asia (about 75 percent) than in Africa (less than half).

What's Most Important

Which information technologies were rated the "most important"? The telephone was first (39 percent), followed by regular mail (17 percent) and single-user computers (14 percent).

■

Desiree deGraeve, former editor of the Development Communication Report, *is a Research Associate at Creative Associates International, Inc. in Washington, DC. Originally from India, Raj Kunungo is a PhD candidate in operations research at the George Washington University in Washington, DC.*

News – By Yak or Electronics?

In the river-cut valleys and stately mountains of the Himalayas, one reasonably asks: how do you get information from one village to the next? Shortwave radio reaches almost the entire country, but newspapers are limited to road travel by truck or yak.

With financial support from UNESCO and Danida, Bhutan Broadcasting Service is starting an elec ic newspool with the national newspape., *Kuensel*. The combined news team will prepare their reports and phone the data to the central desks using the Mallard electronic mailbox and microcomputers.

After review by the chief editors, the radio editor will clip items for the three newscasts (in English, Dzongkha and Nepali languages) and the newspaper editor will send his dispatches by electronic mail to the layout editor, who will covert them into columns and lay them out on the page with photos and sketches. The laser-printed copy will be prepared for photoplates and printed on offset in all three languages.

The electronic newspool was conceived for this project to make the best use of the few journalists, to exploit the electronic means available and to ensure news from the most remote locations. The news teams started last June with a seminar conducted by the executive director of the Nepal Press Institute.

– Carlos A. Arnaldo

A Bhutanese journalist prepares the Nepali edition of Kuensal

Africa: Struggling to Catch Up

Is Africa being left behind in the fast-changing world of information technology? The Board on Science and Technology for International Development (BOSTID) of the U.S.-based National Research Council concludes "not entirely, but ...."

In April 1989, a BOSTID team of African and North American researchers reviewed existing information capabilities in Africa. To their surprise, they discovered that microcomputers are currently being used in innovative ways, as the following examples illustrate:

- The Senegalese Institute for Agricultural Research uses desktop publishing to compile data on rain, soil, and agricultural conditions from regional research stations every 10 days. With three microcomputers and a laser printer, the institute produces easy-to-read pie charts and bar graphs for government officials.
- University libraries and research institutes in Senegal, Zimbabwe, and Malawi are using CD-ROM for database searching.
- The African Regional Center of Technology has created a computer-based network of food technology institutions in Cameroon, Morocco, Nigeria, Senegal and Kenya.

Despite these promising signs, the team pointed out that the widespread adoption of information technology in Africa faces some daunting problems. One is the shortage of foreign exchange for importing computers and related equipment. Where computers exist, supplies are expensive and difficult to find and incompatibility between systems hampers linkages. Africa also suffers from a lack of personnel trained in information science, a low level of technological awareness and declining investment in communication infrastructure.

Given these constraints, the BOSTID team suggests that CD-ROM holds particular promise because of its ability to store large amounts of data in a low-cost, durable form and because it bypasses the telecommunications system. African scientists and information specialists, for their part, expressed interest in donor-assisted pilot projects to experiment with the use of desktop publishing, CD-ROM, electronic mail and computer conferencing.

The team challenged the widely held view that information technology is a luxury that Africa can't afford On the contrary, they argued, African countries can't afford to pass up the opportunities it presents Their economic development depends heavily on the efficient communication of information such as prices and potential markets, early warnings for disasters and technical advice for farmers.

The report, titled *Science and Technology Information Services and Systems in Africa*, is available from BOSTID, National Research Council, 2101 Constitution Avenue NW, Washington, DC 20418, USA. Telephone: (202) 334-2633. Fax: (202) 334-2660. Telex: 353001 BOSTID WSH.

Alternex: A Computer-Based Network by and for NGOs

by Enzo Puliatti

The ability to transmit data electronically, allowing people around the globe to send messages or documents from one computer to another, presents tremendous opportunities for collaboration between individuals and groups with common interests. Developed largely to meet the needs of large corporations, electronic mail and computer conferencing have proved to be equally important for international cooperation, science, education and government.

A growing number of developing countries have already installed national data communication systems and electronic mail systems. Yet, even with these cababilities, a common problem is high cost of international computer-based communication–up to twenty times the cost in industrialized countries. There are two main reasons for this expense: most electronic mail systems are based in the United States or Europe, requiring an expensive international data communications connection; and royalty fees and hardware used for electronic mail drive up the price of this service. These high costs generally mean that such services are unaffordable to most academic and private users, and to non-profit organizations. But now non-governmental organizations (NGOs) in Brazil have discovered a low-cost way to enjoy the benefits of computer networking.

The Brazilian Experiment

In Rio de Janeiro, a research group known as IBASE (the Portuguese acronym for Brazilian Institute of Social and Economic Analysis), which carries out socio-economic analysis in collaboration with labor unions, church groups, slum dwellers associations and other community groups, has been one of the first Brazilian NGOs to use microcomputers for research and data communications. In fact, IBASE has stimulated many other NGOs throughout Latin America to use these tools.

Since the mid-1980s, IBASE has been able to communicate via computer with several Latin American and European NGOs through a commercial service known as Geonet. But this system required all communications to be routed through London, at considerable expense, even when IBASE wished to contact colleagues in Santiago or Lima. So since 1987, IBASE has been experimenting with electronic mail systems that would permit cheaper information-sharing with partner organizations and academic institutions and that it could operate and maintain itself.

It soon made contact with the Institute for Global Communications (IGC), a U.S.-based NGO devoted to the application of low-cost and small-scale computer technology. IGC has developed a microcomputer-based system to operate a complete electronic mail, computer conferencing, and on-line data base service, without the need to subscribe to commercial services. The system has been successfully implemented to link up approximately 5,000 activists and NGOs in more than 70 countries through its two main computer networks PeaceNet, which is devoted to peace and disarmament issues, and EcoNet, which is devoted to environmental concerns.

The collaboration between IBASE and IGC resulted in the proposal to install a similar system, which would be automatically linked to IGC's international computer network. The project, known as Alternex, received financial support from the United Nations Development Program and from a private Italian donor agency.

In July 1989, only a few months after approval of the project, Alternex was fully operating 24 hours a day. Today, more than 130 individual and group users in Brazil and abroad participate in the network, and this number is increasing daily. Users pay a monthly fee, the equivalent of about US $7.50, which includes one hour of on-line connection. On-line connection runs approximately $5 per hour, cheaper than nearly all other electronic mail services. Any computer equipment, from small personal computers costing as little as $300 in the international market to the terminal of a large mainframe system, can be used when connecting with Alternex. The connection can be made through standard telephone lines, by using a modem in conjunction with the computer terminal or by using a special line for data communications.

Most Alternex users rely on electronic mail and computer conferences as a way to

What is ...

... Electronic Mail?

Electronic mail, often referred to as "E-mail," is a simple way of communicating person-to-person via computer. A message, letter, or memo from one person is typed into a computer, sent to another via telephone, and stored until the receiver asks to receive it. In this way, electronic mail is like a very fast version of surface mail, with the computer acting as a post office. At the same time, it is cheaper than sending messages by telex or facsimile.

An electronic mail system provides each user with an electronic "mail-box," which he can look into using any personal computer, and a device called a "modem," which is connected to a telephone line. The user can thus retrieve message at any time he chooses.

The sender need not know where the receiver is currently located. The sender merely refers the message to the user code "address," which the receiver uses to retrieve the message through any computer terminal. Domestic and international data communication carriers are responsible for the transfer of information without any need of a physical end-to-end connection between sender and receiver.

... Computer Conferencing?

Computer conferencing is a variation of electronic mail which enables multiple users who are geographically dispersed to carry out a dialogue, day after day for as long as necessary. By typing into and reading from their personal computers, participants avoid the time and expense of travel and the logistical problems of scheduling face-to-face meetings. Participants can take part in conference discussions at a time convenient to them. The role of the computer is to categorize the contributions and forward them to all participants.

Participants' dialogues can be searched, retrieved, edited and stored permanently with any word processing program. The conference can also act as a "shared office cabinet," where a participant can retrieve a previous dialogue, even if he joins the conference late. A conference system can also be used to write a joint report or paper.

One conference can support many "seminars," each about a different topic. Thousands of systems are in operation today, some large but many quite small and even operated by amateurs.

– E.P.

coordinate regional activities with their counterparts, reaching even the most remote areas of the country. For example, local environmental organizations that mobilize their own resources use the system to make inquiries of IBASE's computerized directory of environmental development donors and the projects they finance, or they may conduct the search themselves. Groups active in the Foreign Debt Campaign, which mobilizes support for alternative solutions to Brazil's debt crisis, use electronic mail to coordinate joint activities. In still other cases, NGOs use the system to communicate easily with donor agencies throughout the world or as the cheapest and most appropriate channel to distribute their news clippings or press releases. Several NGOs are also acting as "community E-mail agencies," providing electronic communication services to small local groups permitting interaction with their counterparts around the world. And, through IBASE's international connection, Alternex users can now link up with the 4,500 users of the PeaceNet and EcoNet systems, as well as to commercial services.

How the System Works

The system designed by IGC combines low-cost, standardized computer equipment based on the new generation of IBM-compatible machines with software it has developed in collaboration with Community Data Processing, another NGO. The tremendous increase in the power of microprocessors in personal computers today made it possible to design such sophisticated software. As a result, the new system has all the capabilities of mainframe computer-messaging systems now in use throughout the United States, Europe and Japan, but the hardware costs only about $15,000–about one-tenth the cost of a mainframe system–and the software is free to NGOs which collaborate with IGC. Unlike the centralized systems used by the large commercial telecommunications services, this microcomputer-based system distributes the message to whatever service can deliver it quickly and cheaply. One microcomputer-based system can served a limited geographical region, but each regional system can interconnect with any other regional system. A primary advantage

Elsewhere in Latin America

The Alternex project in Brazil is only one among many examples of computer networking among research and development organizations Latin America. But in contrast to Alternex, most rely on US- and European-based electronic mail services for inter-country connections. Following is a sample of other activities in the region:

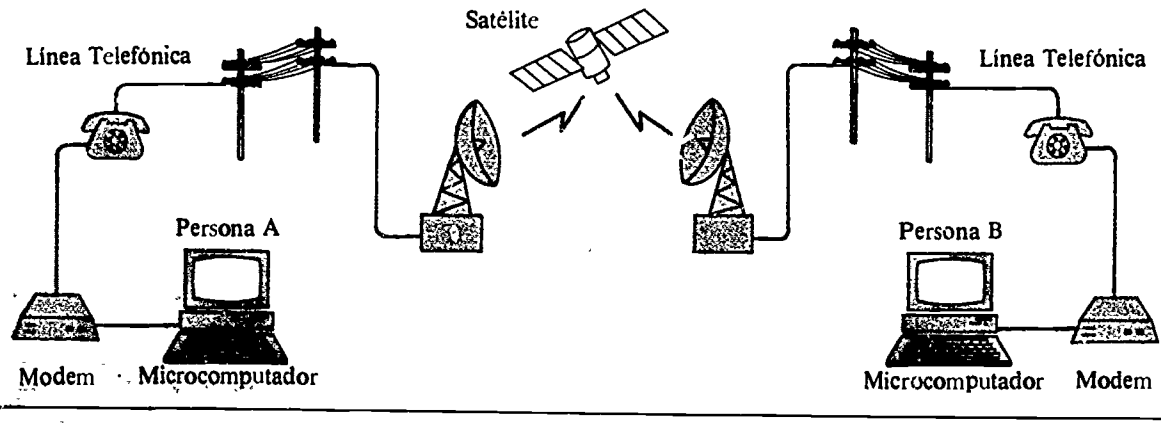
◆ Eight Latin American research institutions involved in the United Nations University Biotechnology Research Project on Brucella, a bacterial disease which afflicts animals, are using microcomputers and an electronic mail system to communicate among themselves and with cooperating institutions outside the region. A recent evaluation indicated that users exchanged about 16 messages and submitted three entries discussing their findings to the ongoing computer conference each month.

◆ Since 1985, the Instituto Latinamericano de Estudios Transnacionales (ILET) in Santiago, Chile, has played a leading role in experimenting with electronic mail and computer conferencing and in encouraging other non-governmental organizations in the region to follow suit. In the process, it identified the technical, legal, and economic conditions necessary to permit computer networking. It has also produced a well-illustrated booklet in Spanish, *How to Design Communication Networks*, based on its experience in establishing computer links with NGO research centers in Argentina, Brazil, Peru, and Mexico for joint research projects. A follow-up effort will test and evaluate software packages used within the Latin American Trade Information Network. In addition, ILET coordinates Latin American participation in Interdoc, a global computer network of non-governmental researchers active around labor and economic concerns, and document its networking experience in Interdoc's bimonthly bulletin, *Contact-0*, published in both English and Spanish.

◆ ILET's sister institute by the same name in Mexico City has also carried out an experimental effort linking four Mexican universities via electronic mail. University researchers compiling databases on subjects such as medicine, literature, desert plants, and communications are using the system to eliminate duplication of effort and to share methodologies. As part of the project, ILET has published a directory of databases produced by Mexican institutions.

Still, the full potential of such systems have yet to be exploited. A study by Soledad Robinson of ILET-Mexico showed that a generally low level of computer literacy and the lack of awareness of available information sources hindered use of existing computer-based information systems. Stronger efforts are needed to increase awareness about the capabilities of information systems and to provide training in operations.

– Andre Roussel



A diagram introducing the concept of linking up by computer, from ILET's Cómo Diseñar Redes de Comunicación *(How to Design Communication Networks).*

to this arrangement is that it avoids the previously high cost of international communications connection. The concept behind the Alternex system is that the user never needs to make an international connection, no matter where he is Users make a local call, but still address their electronic mail internationally. The local messaging system collects the international mail, bundles and compresses it, then sends it to the appropriate foreign messaging system for distribution using a special high-speed connection This means that the service is far less costly, and therefore affordable for groups with limited resources.

A second advantage is that regional systems can be tailored to serve the specific interests and needs of its users Different language capabilities, different information resources, different command menus are all possible Presently, the Alternex system menus are available in English, Spanish and Portuguese, while a facility that will allow users to switch from one language to another has just been implemented.

Finally, although most commercial electronic mail services will not link up users across different networks other than their own, the present system allows different systems to exchange messages, including various commercial services and the hundreds of academic computer networks, as well as fax and telex And, with advances in telecommunications that allows the transmission of data practically error-free, even using poor quality telephone lines, remote areas in the some of the least developing countries now enjoy the possibility of communication via computer.

Prospects and Problems

The experience of Alternex in Brazil, and a similarly successful experiment with another non-governmental research center in Nicaragua, represent the first experiences of computer-based communication networks established and operated by NGOs in developing countries. The initial reaction from Alternex users in Latin America has been tremendous excitement for the potential for linking NGOs, journalists, educators, and researchers throughout the region and the world. As a result, the UNDP is providing resources to extend access to this technology to other Latin American countries.

The first task is to demonstrate the technology to local institutions and to continue

(Continued on p 15)

Textbooks from the Electronic Desktop in Honduras

by Alfonso de Guzmán II

When the third-grade Honduran public school children receive their social studies book this year, they will not know that they hold in their hands probably the first textbook in Latin America designed with a personal computer. Their teachers, for their part, will not know that the guides accompanying the new textbooks were composed not at a far-off printing press, as is usually done, but right there in Tegucigalpa, at the writers' offices in the Ministry of Education.

It is not really important that they know how the books are produced. What *is* important is that they get the quality books they need for effective teaching and learning, in good time. Reconciling these often conflicting demands for quality and timeliness is the promise of desktop publishing now being tried at the USAID/Honduras Primary Education Efficiency Project.

In desktop or electronic publishing, a single person (right from his or her own "desktop") designs the book, sets type, draws or copies illustrations and photos, and assembles all of these elements into complete, final pages. The pages are later photographed at the printing press, and the resulting film is used to make the plates needed for printing

Using a program to drive a personal computer and a high-quality computer printer, the operator performs all of the publishing tasks mentioned above, sometimes in only one sitting This is a quantum leap forward from conventional print production, in which each task is separate, requiring several persons with distinct skills and working with assorted tools and equipment, usually in different places and at different times

From Word Processing to Desktop Publishing

In Honduras, this new technology is being tried out of necessity. When the project began three years ago, the textbook writers were content to sketch entire pages of illustration-heavy first-grade textbooks, artists redrew the writers' sketches to production quality, and editors sent out for typesetting the few lines of text there were. But that approach could not work for the text-heavy teachers' guides or for the more complex textual content of the higher grade textbooks.

Resorting to word processing on personal computers, the project trained its secretaries to type entire manuscripts–which editors revised or rewrote, and which writers then revised or rewrote all over again–and to keep all files electronically in diskettes. This saved much time in retyping, but the final manuscript still had to be retyped on the high-quality typesetting machines.

In time it was discovered that some printers had typesetting machines that could "read" the project's diskettes and set type directly. That eliminated altogether retyping the same material by the printer–and the attendant errors and delays All second-grade textbooks and teachers' editions, and three of the four third-grade textbooks were produced that way.

Training is a long process, little helped by the fact that user's manuals are in English, which may not be the language of the trainee.

However, although word processing freed everyone from the drudgery of retyping, effectively giving writers and editors total control over their written material, it could not show them the final pages "the way they would look in print." That was still the exclusive domain of art directors or graphic designers trained to produce such things Enter desktop or electronic publishing

Using a desktop publishing program on a personal computer, a writer or editor can call up his electronic file on-screen and fit it to any design or page format of his choosing He can select the type size and style and other typographical features available at his fingertips Using an electronic scanner, he can even copy pictures to go with the text Almost instantly, book pages are typeset and laid out on the computer screen before the operator's very eyes, "the way they would look in print."

Any change in size or style of type, length of line, number of lines on the page, or size and placement of illustrations is quickly made on-screen so that the writer immediately sees the effects of his creation–not only in aesthetic terms (did the text become heavy and difficult to read?) but also in practical terms (did the change add more pages to the book?). Once satisfied with the appearance of pages reviewed on-screen, the writer "sends" the electronic file from the computer to the printer which uses lasers to "burn" the image on the page, and the final pages are printed, ready for the graphic arts camera of the printing press

As a result, what used to take weeks of waiting for the typesetter to show galley proofs now takes only days.

Some Very Real Problems

Even at this introductory stage in Honduras, desktop publishing has presented some tough challenges in the areas of staff recruitment and training, and equipment and materials support in a developing country environment.

First, finding qualified or even potentially qualified "desktop publishers" is difficult because the technology combines at least four occupations into one: book designer, typesetter, editor, and sometimes even writer and illustrator. In a developing country, it is difficult enough to find good writers, or editors separately, let alone individuals capable in two or more areas of production.

Second, the textbook as a mass education medium involves in its development many individuals representing diverse talents put to collaborative use teachers, writers, planners, evaluators, trainers, artists, managers Desktop publishing, like good writing, is a lonely, personal art and does not lend itself easily to such collaboration, relying as it does on the integrative skills of a single person.

Third, computers and computer programs are not yet very easy to use. Persons familiar with computers are still hard to find and difficult to keep And training is a long process, little helped by the fact that user's manuals and most other documentation are in the language of the computer, English, which may not be the language of the trainee.

Fourth, local support is scarce As a new technology, desktop publishing does not yet have a stable enough market base in Honduras or in many other countries to ensure that goods and services can be reliably stocked. Simply put, there might not be technicians to repair the new equipment or even give it routine maintenance, and the supplies specific to the computer or the printer or the scanner (paper, toner, diskettes, cleaners) may not be available at the local computer store The realization that one is so distant from Miami or Houston or Los Angeles is made more frustrating when one discovers upon opening the equipment box that a specially designed power cable is "not included" or that the part number of the interface card, which *is* included, does not correspond with the one for that particular model of hi-tech wonder.

In spite of these difficulties, the Honduran project now prefers the hands-on production and on-site control of the critical creative process over the older ways of doing things Overall, the advantages make the investment in equipment worthwhile ■

Alfonso de Guzmán II is a textbook production consultant for this project. He previously served as a consultant to the Guatemala Basic Education Project of the World Bank and, prior to that, to textbook and elementary education sector projects in his native Philippines

What Does It Cost?

The minimum hardware and software and start-up materials for one work station are as follows: personal computer with 1 megabyte of memory, 30 megabytes of storage in a fixed or "hard" drive, one other drive for reading diskette files, one monitor (screen), and one pointing device ("mouse"), $3,500; printer for manuscript drafts, $600, laser typesetter for final pages, $30,000; electronic scanner for copying illustrations and integrating them with typeset pages, $3,000; filter to protect equipment against electric surges and drops, $500; word processing software, $300; desktop publishing software, $500; various materials (diskettes, toner, paper, etc.), $600. Thus the total requirement, $39,000.

A conservative output of 1,000 finished pages per year over three years (the actual number of textbook and teachers guide pages produced by the Honduran project to date) would yield a per-page unit cost of $13, roughly what it would cost to send a page out (and wait!) for traditional phototypesetting.

– *A.G.*

Getting the Population Message to Policymakers

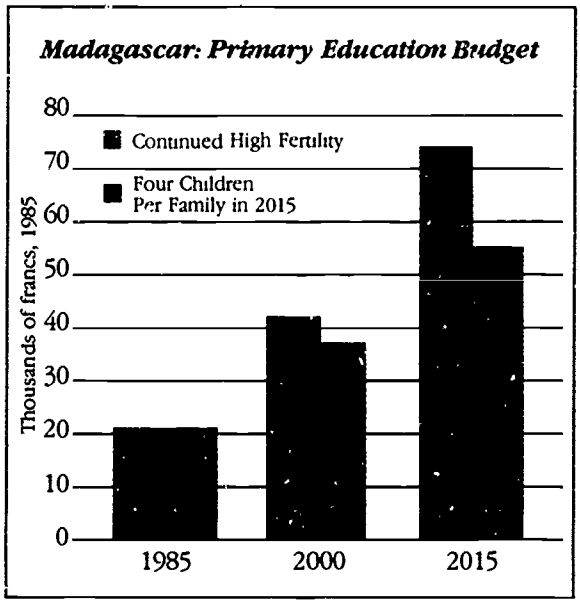
With 100 million people and an annual population growth of 3 4 percent in 1984, Nigeria was on its way toward becoming the world's third largest nation by the year 2035. Family planning efforts had met with resistance from religiously conservative leaders, and so policymakers were reluctant to make it a development priority.

But when high-ranking government officials viewed a computerized presentation graphically depicting what the population growth meant in terms of future demand for food, jobs, and health and education services, and how it was likely to affect economic growth, they became alarmed. Soon afterward, they adopted a national strategy to bring population growth in line with economic and social goals and established family planning services in all national health facilities.

The above case is one of the more dramatic examples of the success of a computerized presentation known as RAPID in changing the attitudes of national policymakers toward population growth. RAPID, which stands for Resources for the Awareness of Population's Impacts on Development, was created under a USAID-funded project by the same name by The Futures Group, a consulting firm based in Washington, DC. Now in its third project cycle, RAPID is designed to communicate sophisticated technical information about the relationship between population and development to policymakers and opinion leaders – in less than half an hour.

Using mathematical modeling techniques, RAPID calculates the social and economic impact of population growth in such concrete terms as the requirement for teachers and schools, clinics and health care providers, jobs, housing, food, water supply and land use. By creating awareness among policymakers about these effects, RAPID also aims to gain support for family planning programs at the highest levels of government.

The RAPID modeling software requires an IBM-compatible microcomputer with capability to generate color graphics. The screen displays eye-catching graphs and



The three graphs on this page are reproduced from a RAPID presentation made to Malagasy government officials in 1987. Presently, an average Malagasy family has 6 4 children.

bar charts, with visual features such as intermixed text and graphics and images that move, or fade in and out. For even more powerful impact, the graphics are presented by a skilled communicator, sometimes former ambassadors or others with status equal to their high-profile audience. Since RAPID's creation in 1978, presentations have been made in more than 50 countries, to senior-level policymakers in nearly 30 of them

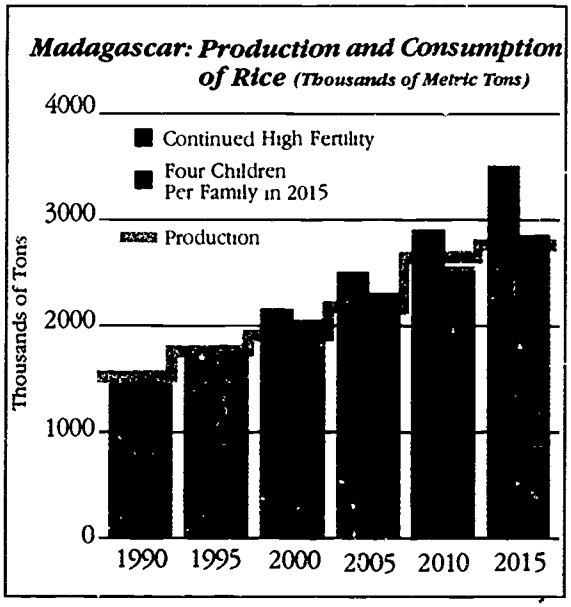
The RAPID approach is effective for several reasons. For one thing, by analyzing the relationship in quantitative terms, it depoliticizes the sensitive issue of population. Rather than pass judgment on population policies or prevailing attitudes toward family planning, the message to policymakers is simply, "If you maintain present rates of population growth, here is what the effect on development will be."

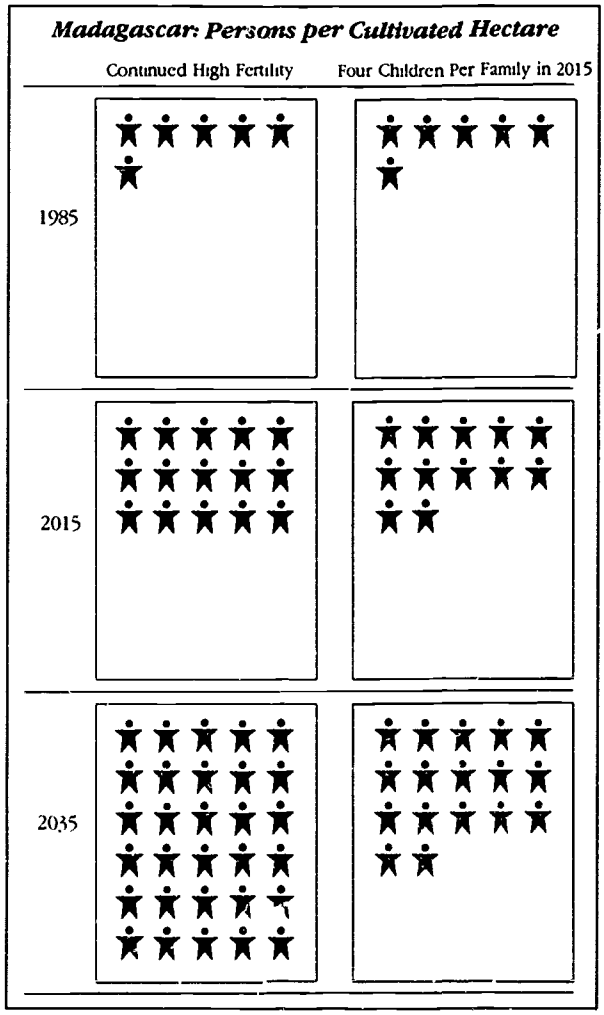
The use of computers brings other advantages over traditional presentations that use slideshows or overhead projections For example, the RAPID presentation is interactive Once the mathematical computations have been recorded, it takes only about 20 seconds for the model to calculate and display new projections according to different scenarios. Thus, the varying impact on development of high, medium, or low population growth rates–or any point in between–can easily be demonstrated, if requested by viewers. In addition, the approach eliminates arguments over data. If officials disagree with the original data used for the projections, the figures can be changed on the spot and new projections will be displayed. As Steven Hawkins of The Futures Group notes, "If someone has their own pet number, we will use it and it often only reinforces our point."

Finally, by working closely with government officials to gather and analyze data in preparation for high-level presentation, RAPID creates an institutional awareness about population growth among middle-level bureaucrats. Following a series of presentations in a country, host government officials are left with both the hardware and software so that they can run their own projections after the RAPID team leaves.

RAPID's success has led The Futures Group to develop nearly a dozen spin-off modeling programs. One examined the relationship between fuelwood demand and forest stocks for policymakers in Sahelian countries, while another focused on the relationship between women's economi participation and development for officials in Yemen

However, one drawback is that a RAPID presentation is costly. Taking into account data collection activities, technical assistance in demographic-economic modeling, and the cost of hiring high-profile presenters, a single presentation costs a minimum of $50,000. This is about five times the cost of presentations using standardized graphics packages now coming out on the market. However, lacking RAPID's interactive capabilities, these generate only static graphs. But project managers insist that the cost is small in comparison with the savings to be gained from a more effective population policy. ■





What's New, What's Coming

Courses

Distance Teaching

A four-month course on "Distance Teaching in Developing Countries" will take place April 9-July 27, 1990 at the Institute of Education of the University of London. Trained teachers from developing countries with relevant experience and with a strong command of English are encouraged to attend. The course will stress "hands-on" learning to plan, write and produce printed, video and radio programs for distance education. To apply, contact: Department of International and Comparative Education, University of London Institute of Education 20 Bedford Way, London WC1H 0AL, England. Telephone 01 636-1500.

Communications for Development

The Asia-Pacific Development Training and Communications Planning Program of the United Nations Development Program will offer a series of short courses from May through November 1990 in the Philippines. The short courses, which each run three to four weeks, will cover production techniques for audiovisuals used in instruction and in extension, communications campaign planning, training methods, and other topics. Contact: Training Coordinator, DTCP/UNDP, 5th floor, Bonifacio Bldg., University of Life Campus, Meralco Avenue, Pasig, Metro Manila, Philippines. Telephone: 673-6401. Telex: 29018 DTCP PH.

Media Production

Ian McDonald & Associates will present a course on media production as part of a larger program of courses on rural development. The course will be held in England between early July and September 1990. For more details, contact the firm at 12 Church Road, Hove, East Sussex, BN3 2FL, UK. Telephone (0273) 821778. Telex 94-082-479 MCDON G.

Request to our Readers

If you follow up on a notice or resource that is listed in these pages, say that you heard about it through the *Development Communication Report*!

Communications for Development

Cornell University's tenth annual course on "Communication Planning and Strategy" will be held July 11-August 7, 1990. The course is aimed at officials and project leaders in health, agriculture, nutrition, family planning and related sectors. Contact: Cornell University, Department of Communication, 640 Stewart Avenue, Ithaca, New York 14850, USA. Telephone (607) 255-6500. Fax (607) 255-0788. Telex 671-3054.

Workshops

Agricultural Journalism

Agricultural reporters and editors in Africa can strengthen their publication skills through a workshop presented by the Technical Center for Agricultural and Rural Cooperation. Last year, the two dozen agricultural reporters and editors from six West African countries who attended the workshop reviewed all phases of the publication process, including writing, editing, design and production, promotion and distribution. Participants are also introduced to desktop publishing techniques. Similar courses will be held in Francophone Africa in the future. For more information, contact the Technical Center for Agricultural and Rural Cooperation, Postbus 380, 67000 AJ Wageningen, The Netherlands. Telephone. (31) 8380-20484.

Health Communication

Communicators and managers in the fields of health and family planning are invited to participate in an intensive three-week workshop, "Advances in Family Health Communication," June 4-22, 1990, in Baltimore, Maryland. Presented by the Johns Hopkins University Center for Communication Programs, this second annual workshop will introduce participants to innovative approaches to message design, evaluation, social marketing, cost recovery, and the creative use of entertainment for social change. Those interested in attending are encouraged to contact Population Communications Services soon at 527 St. Paul Place, Baltimore, Maryland 21202 USA. Telephone: (301) 659-6300. Fax. (301) 659-6266. Telex: 240-430 JHUPCS UR.

Communications for Development

The United Nations University and the Asian Mass Communication Research Center will hold their sixth International Forum on "The Problem of Balance in International Communication," March 8-9, 1990 in Singapore. Contact: Hoso Bunka Foundation, Kyodo Bldg., 41-1 Udagawa-cho, Shibuya-ku, Tokyo, Japan. Telephone (813) 464-3131. Fax. (813) 770-7239.

Training Resources

Agricultural Extension

The International Fertilizer Development Center in Togo has pilot-tested a new approach to improving agricultural extension officers' communication skills. The approach involved extension workers and farmers in the development of illustrated crop production guides, flipcharts, posters, and other support materials, in order to ensure that they are adequately adapted to local needs. The Center has held training sessions for agricultural extension officers in Ghana and, in late January 1990, the center held another training program in Nigeria. Contact: Michael Connelly, IFDC-Africa, PO Box 4483, Lome, Togo. Telephone: 217-971. Telex: 217-817.

Family Planning

The Family Planning Association of Kenya, in collaboration with the Association for Voluntary Surgical Contraception, has released two training films which were produced entirely in clinics and hopitals in Kenya. One, a 21-minute film directed at doctors and surgical nurses, demonstrates correct procedures for conducting voluntary female sterilization. The other, a 23-minute film targeted at African family planning counsellors, discusses the need for counselling and reviews methods and approaches for successful counselling. Both films are available in English and French language versions in 16-mm and video. Contact: Association for Voluntary Surgical Contraception, 122 East 42nd Street, New York, NY 10168, USA. Telephone: (212) 351-2507. Fax: (212) 599-0959. Telex: 425604.

Child Health

Teaching Aids at Low Cost (TALC), affiliated with the London-based Institute of Child Health, distributes hundreds of thousands low-cost books, slides, and other instructional materials to developing countries each year. Child survival, primary health care, nutrition, and safe motherhood are some of the topics addressed. For a list of materials available, contact: TALC, PO Box 49, St Albans AL1 4AX, UK. Telephone (0727) 53 869. Fax: (0727) 46-852. Telex: 266020 CORALP.

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Linking West African Countries through Solar Power

The ability to make use of faxes, telexes, electronic mail and bulletin boards, and other new information technologies depends first and foremost on a reliable telecommunications infrastructure. But many of the least developed countries lack its most basic elements. a broad, interlacing network of all-weather roads, rural telephone networks, and postal facilities. It is said that the city of Tokyo has more telephones than the entire continent of Africa.

Even if low-income countries manage to build roads, telephone lines and post offices, they may lack the financial and technical capacity to operate and maintain them. But West African countries may now have found a low-cost, energy-efficient solution to this problem.

Before Pan African Telecommunications Network (PANAFTEL) was founded in 1974, most rural areas in West Africa did not enjoy telephone services and long-distance calls between neighboring countries had to be routed through London or Paris. In 1982, PANAFTEL put into operation a microwave communication system directly linking Senegal, Mali, Burkina Faso, Niger, and Benin. When it was designed in the late 1970s, the natural choice to power the isolated stations were turbo-electric generators. But, because of frequent power outages, the system operated over the full 3,000-kilometer diameter only 60 or 70 percent of the time. The root of the problem lay in the generators: they were not always able to handle the high power requirements; they required frequent and relatively sophisticated maintenance; the supply of fuel was problematic; and fuel prices were higher than had been estimated.

In late 1985, photovoltaic panels were installed at several dozen stations at a cost of approximately US $120,000 per site, making this one of the first cases where an existing microwave system has been converted to solar power, rather than originally designed for this energy source. By 1989, system availability had improved to 96 percent, due in part to other improvements such as monitoring systems and more effective training programs. Operating costs have been reduced substantially because there are no fuel charges. Maintenance has largely consisted of routine battery inspections and cleaning the desert dust off the panels. Maintenance of solar panels, controllers and batteries is carried out by electronics technicians alone, whereas separate technicians for the generators and the electronic systems were formerly required. Maintenance costs should therefore be lower.

The capital cost for conversion to solar at each site is about four times the annual cost of fuel. However, since each unit should last for more than ten years, the cost saving should be considerable. What is harder to quantify in economic terms is greater confidence in the system that higher efficiency will generate among users, and what new applications they may be encouraged to try. With any luck, electronic mail, faxes, and other new information technologies will soon be making a difference in communications in West Africa.

– Mike Laflin

RESOURCES ...

... *for learning more about information technologies*

Training Programs and Technical Assistance

➤ Volunteers in Technical Assistance (VITA) offers technical support services in uses of information technology to developing countries For example, last year a VITA volunteer helped the Philippine Department of Health set up a packet-radio communication system between its Manila headquarters and remote regional offices In addition, VITA has established an electronic bulletin board and mail service, VITANet, to communicate with its volunteers in the US and abroad, and will train participants in the use of the system.

Each year, VITA presents two training information technology courses to participants from developing countries In 1990 it will hold a one-week training course May 18-25 on low-cost digital communication, especially packet radio, tuition fee is US $1,100. On September 10-28, 1990, it will offer a course on information resources management, free of charge Both courses will be held in VITA's Arlington, Virginia, offices, although the management course can be held overseas on a case-by-case basis For more information, contact VITA, 1815 N Lynn St , Suite 200, Arlington, Virginia 22209, USA Telephone (703) 276-1800, Fax (703) 243-1865; Telex 440192 VITAUI

➤ In 1990, the US Telecommunication Training Institute will offer 45 training courses to more than 600 participants from developing countries Courses emphasize both managerial and technical skills and cover topics such as radio and television broadcasting, satellite communications and network digital communications. Of special interest to Third World participants are courses on telecommunication systems for r l development, solar-powered systems, and ham radio administration Most courses run two weeks and are held at corporate and government training facilities throughout the United States. USAID awards scholarship support for qualified applicants from less developed countries To obtain a course catalog, contact: US Telecommunications Training Institute, 1255 23rd St. NW, Washington, DC 20037, USA. Telephone (202) 833-7624 Fax (202) 467-8755 Telex: 197821 USTTI UT

➤ The Center for Telecommunications Development was created in 1985 in order to help reduce the widening gap in telecommunication facilities between the industrialized and developing world. The Center works to expand advisory services and technical support to telecommunication sectors in developing countries by organizing evaluation and study missions to identify telecommunication needs, recruiting experts and consultants to provide technical support, and mobilizing private and public investment in developing countries' telecommunication sectors. It also maintains a data base on the status of telecommunications sector in developing countries. For more information, contact the Center through the International Telecommunications Union, Place des Nations CH 1211 Geneva 20, Switzerland. Telephone. (41) 22-995-111. Fax: (41) 22-337-256. Telex: 421 000 UIT CH.

➤ Trinity College in Ireland, in collaboration with the United Nations University, has established a global computer network of institutions that conduct training and research in information technologies for developing countries. Fellowships are available for those from developing countries who want to both receive training and participate in the network. Contact. Systems Development Program, Room 3044, Arts Building, Trinity College, Dublin 2, Ireland.

➤ Data for Development is a non-governmental, non-profit association of individuals and organizations who study the role of information in economic and social development and promote international cooperation in that field. Founded in 1973, the group has developed an approach to designing government information systems that takes into account information gaps associated with underdevelopment. It holds occasional conferences on data and development and will provide expert advice to governments and international organizations. It also publishes a quarterly newsletter on information systems methodologies. Contact. Data for Development, 122 avenue de Hambourg, 13008 Marseille, France. Telephone. 917-39-018. Fax. 917-30-138. Telex: 430258 INFOSYS.

Computerized Information Services

➤ Want to find out about education and training courses on desktop publishing in developing countries? Locate research institutions in the developing world that have designed software to diagnose livestock disease? You can obtain this and other information free of charge through the United Nations Development Program's computerized Information Referral Service (INRES-South). INRES has a database of more than 50,000 entries in English, French and Spanish describing the capabilities of more than 2,000 institutions in 99 developing countries. It covers education and training courses, specialized research and laboratory facilities, and consultants and technical experts By documenting only technical services by institutions in developing countries, INRES works to promote South-South cooperation for development. Information requests can be made by telephone, telex or fax, database information can be received via airmail, pouch, or computer-modem link. Contact. INRES Computerized Inquiry Service, UNDP, 304 E. 45th Street, New York, New York 10017, USA. Telephone. (212) 906-5140. Fax: (212) 906-6429. Telex: 125980, attention INRES.

➤ In collaboration with several international health and development agencies, CD Resources/Libraries to Go, a New York based private company, has produced a series of "libraries" on CD-ROM. Each covers a topic relevant to developing countries and will provide bibliographic citations, abstracts, or entire documents, according to the search desired. They include. a 350-title collection on AIDS, a 400-title collection on primary health care; a 300-title collection on women in development, and a recent 80-title collection on women, water and sanitation Costs range from US $320 to $1,095. Designed for users in developing countries, the software program requires little previous computer training. In addition, it requires only an ordinary IBM-compatible computer, a basic printer, and an inexpensive CD-ROM player. For more information, contact. Bettina Corke, CD Resources/Libraries to Go, 1123 Broadway, Suite 902, New York, NY 10010, USA Telephone. (212) 929-8044. Fax. (212) 243-3609.

➤ POPLINE, a service of the Population Communication Services of the Johns Hopkins University, provides bibliographic citations and abstracts on population, family planning, AIDS, sexually transmitted diseases and related health issues. There are three ways to obtain information from the POPLINE data base. send a written search request, obtain a user code through the US National Library of Medicine and conduct an on-line search, with training by POPLINE staff, or obtain the CD-ROM version of the database, which is updated an-

nually POPLINE printouts and CDs are free of charge to individuals and institutions in developing countries Contact. POPLINE, the Johns Hopkins University, 527 St Paul Place, Baltimore, Maryland 21202, USA Telephone (301) 659-6300 Fax (301) 659-6266 Telex 240-430

➤ Community health workers, sanitary engineers, researchers, and policy makers can find out which institutions and individuals in 23 Eastern Mediterranean countries are working in the area of environmental health They can also obtain bibliographies on major environmental health topics, and conduct a specialized bibliographic search using a computerized data base. These are some of the services provided by CEHANET, the Center for Environmental Health Information Network In addition to promoting information exchange, CEHANET trains librarians and documentation specialists in procedures for classifying environmental health information and holds periodic consultations to guide the development of the network

CEHANET is seeking additions to its collection of documents and bibliographies concerning environmental health in the Eastern Mediterranean region Contact Dr. Najeeb Al Shorbaji, Center for Environmental Health Activities, 45 Samura Street, Um Uthanihah Quarter, PO Box 926967, Amman, Jordan Telephone 671-178 Fax 674-585. Telex 23447 WHOEM JO

➤ The Regional Information System for African Agriculture is a cooperative effort between international and US agricultural institutions to compile and disseminate information on agriculture and aquaculture in Africa Information from this project is now available for US $40 on 5-1/4" and 3-1/2" diskette for IBM-PC compatible microcomputers The full version, which costs $50, requires computer graphics capability, a CD-ROM drive, and a modem for access to the database For more information or to order, contact National Technical Information Service, Computer Products Center, 5285 Port Royal Road, Springfield, Virginia 22161, USA Telephone (703) 487-4763. Fax (703) 321-8547 Telex 89-9405

Further Reading

➤ In observance of the launching of the International Decade for Natural Disaster Reduction in 1990, the Annenberg Program of Northwestern University has published a collection of papers, *Communication When It's Needed Most How New Technology Could Help in Sudden Disasters*. More than a dozen specialists in satellite communications, mass media and emergency relief contributed to the volume. Examples and case studies concern both industrialized and developing countries. A copy of the collection is available free of charge from the Annenberg Washington Program, Willard Office Building, 1455 Pennsylvania Avenue, NW, Suite 200, Washington, DC 20004, USA. Telephone. (202) 393-7100. Fax. (202) 638-2745.

➤ The January-February 1989 of *The Courier*, a bi-monthly publication of the Africa-Caribbean-Pacific/European Community, presents an excellent look at "Informatics and Development." Written for the general reader rather than the technical specialist, the edition reviews present trends in the use of computers and information technology in developing countries, the opportunities they offer, and the constraints countries face in adopting them. Several articles describe how computers are currently being used by governmental ministries, agricultural cooperatives, and research centers throughout Africa. For a copy, contact the publication's editorial offices at 10-12 rue Guimard (2nd floor), B-1040 Brussels, Belgium. Telephone. 235-0111. Telex. COMEUkBRU 21877.

➤ *Informatics and Telematics in Health*, a 100-page book published in 1988 by the World Health Organization (WHO), explains how information technologies are currently being used to maintain medical and administrative records, assist health care workers in medical diagnosis, manage drug acquisition and distribution, conduct laboratory tests, train health care personnel, and for many other purposes. Directed at health care managers and professionals, it describes future prospects for information technologies and provides guidelines for selecting hardware and software. Available in English, French and Spanish for US $12 80 from WHO Distribution and Sales Unit, 1211 Geneva 27, Switzerland, or from local WHO distributors.

➤ The Board on Science and Technology for International Development, US National Research Council (see p. 4), has produced a series of books on how microcomputers and information technologies can stimulate and enhance the process of social and economic development in less developed countries. Focusing on microcomputer applications, the books go beyond a discussion of their traditional uses in education and administration to discuss applications in manufacturing, production and natural resources management. The books include *Microcomputers and Their Application for Developing Countries* (1986), *Microcomputer Applications in Education and Training for Developing Countries* (1987), *Cutting Edge Technologies and Microcomputer Applications for Developing Countries* (1988), and a forthcoming book on information management policies in developing countries. All are available from Westview Press, 5500 Central Avenue, Boulder, Colorado 80301, USA.

➤ *Microelectronics Monitor*, published quarterly by the United Nations Industrial Development Organization, abstracts news and stories from the business, engineering, and microelectronic trade press worldwide. Despite the lack of eye-catching graphics and the nearly microscopic type, the publication is a valuable resource for individuals and institutions in developing countries, who can subscribe free of charge. Contact: UNIDO, Development and Transfer of Technology Division, Department for Industrial Promotion, Consultations, and Technology, PO Box 300, A-1400, Vienna, Austria.

➤ The Advisory Committee for the Coordination of Information Systems (ACCIS) of the United Nations publishes a useful bimonthly newsletter covering news and developments in the information technology field. Distributed free of charge by the ACCIS Secretariat, Palais des Nations, 1211 Geneva 10, Switzerland.

➤ The *Computers in Relief and Development* newsletter provides information about software for disaster management, response, and preparedness. Some software is also available from the publisher. Contact. Computers in Relief and Development, 106 Park Road, Loughborough, Leics, LE11 2, UK.

➤ The Research Institute for Newspaper Development in India publishes a monthly bulletin, *RIND Survey*, that promotes tools of the trade among printers, graphic artists, and publishers in the newspaper industry. It reviews the latest technology in the industry and offers tips for improving the quality of the printed product Recent issues have reviewed new technology ranging from desktop publishing programs to the use of lasers to burn photographic images on the page. Although the majority of the articles are reprinted from American and European trade journals, the bulletin serves to transfer technological know-how to the newsprint industry in developing countries Contact. Research Institute for Newspaper Development, Madras 600 008, India.

(GARRIOTT, *from p. 16)*

ters and receivers with lap-top computers–in a similar way, building camaraderie among users.

I believe that the key to applying information technology to Third World development goals while simultaneously solving all the attendant cost, regulatory and technical problems is, first, to work with an existing sub-culture in which development information needs are clearly identified and, second, to identify enthusiastic "information entrepreneurs" within this sub-culture. If these individuals also can be made central contacts in the electronic networks, the results will be more powerful

Latin American social scientist Juan Rada once said, "The proliferation of information technology is a consequence, not a cause, of development." If he is right, then much of the present promotion of information technology as a new means toward national development is wrong-headed. Given our nouveaumanic tendencies, it is understandable why we promote information technology innovation. Given the incredible difficulties and high costs of development, it is likewise easy to see why the rhetoric of optimism serves as a defense mechanism against harsh realities

But we live in a time of enormous need when resources are scarcer than ever. We do not have the luxury of squandering those remaining resources in search of computopias. Let us take our precious information technology and press it into service for problem-solving objectives, collaborating with the individual information entrepreneur working on behalf of a development agency or advocacy group. "National Information and Communication Plans" and other imponderables like the "New World Information Order" will hardly be legislated into existence. As desirable as they might be, the only way to create such structures in a meaningful way is through grassroots, purposeful communication among people dealing with actual problems.

Finally, we need to remind ourselves that information technologies are, after all, mere extensions of our abilities (and frailties) at manipulating the data we create The use of those data depend on people, usually as individuals, and not on the technologies themselves To expect more may well overstate the relationship of technology to development and confuse "computopias" with reality. ■

Gary Garriott is Director of Informatics at Volunteers in Technical Assistance (VITA) in Arlington, Virginia. The views expressed in this article are his and not necessarily those of VITA.

(PULIATTI, *from p. 7)*

testing the technology in countries underserved by international data transmission networks Currently, IGC is working on a portable version of the system to be used in demonstrations and on-site tests in Bolivia, Ecuador and Peru. Where public data networks do not exist, these visits might include the installation of small satellite earth stations; the University of Hawaii, which coordinates the Peacesat education project, has agreed to let the Alternex project use its satellite free of charge.

IBASE is likely to become a regional center of expertise. It has already assisted one Uruguayan NGO in setting up an electronic mail and bulletin board system. It has also worked with the Brazilian Interdisciplinary AIDS Association and the Brazilian chapter of the International Interdisciplinary AIDS Foundation to set up SIDSA, a computerized database on AIDS, and to make the database accessible to those in other parts of the country via telex, public data networks, or telephone lines.

Significant problems remain, however If the system is to be widely available to small organizations in locations that are not well served by public data networks or even telephone service, several technical refinements, and in some cases, technologically appropriate and creative solutions are necessary And, until automatic translation programs become available, the lack of a common language represents a significant constraint to conducting international computer conferences Finally, there is still room to increase the system's cost-effectiveness through improved operations and methods of bulk data transfer; the Alternex project continues to experiment with these approaches ■

Enzo Puliatti is an officer of the Regional Bureau for Latin America at the United Nations Development Program in New York The views expressed in this article are his and not necessarily those of the UNDP The Institute for Global Communications can be contacted at 3228 Sacramento Street, San Francisco, California 94115 Telephone (415) 923 0900 Fax: (415) 923-1665

Women and Microcomputers

The University of Illinois is offering a course June 18-13, 1990, for those who want to improve their ability to use microcomputers and databases for research relevant to women in development Participants will learn the new UN Women's Statistics data set and gain skills in word processing and data analysis. Contact the University's Department of Agricultural Economics, 437 Mumford Hall, 1301 W. Gregory Drive, Urbana, Illinois 61801 USA. Telephone (217) 333-1977 Fax: (217) 244-0249. Telex: 206-597 INTEG URBA

Attention Viewers!

On January 19, 1990, television viewers in more than 50 countries tuned into a two-hour program featuring Mikhail Gorbachev, Carl Sagan and other notables who were gathered in Moscow for a conference on "Environment and Development for Survival." Thanks to donated satellite time from both INTELSAT and INTERSPUTNIK, the program also featured live satellite hook-ups from a Costa Rican rain forest, a simultaneous sunrise in Australia and sunset in Senegal, and shots of the earth from the *Challenger* space shuttle.

The broadcast, *Global Forum II – Moscow: World Stories from a Surviving Planet*, was the latest in a series of global telecasts designed to raise public awareness and, in several cases, to solicit funds. Among them were *Live-Aid* and *Band-Aid*, which drew worldwide attention to the 1986 Ethiopian famine, and *Our Common Future*, which also focused on the global environmental crisis. The success of such telecasts depends not only on the quality of programming but also on the willingness of national broadcasters to carry the show and on adequate publicity. As an approach to public education, it has also come under criticism partly because it is costly and partly because the mass media format cannot communicate complex subjects.

The *Development Communication Report* is curious to know viewers' reaction to the recent telecast. We invite comments on the following questions:

- Did you watch the program? If so, how did you hear about it?
- In your opinion, was the program effective? Why or why not?

Please address responses to the address or fax number listed on page 2.

Computopians and Nouveaumanics

by Gary Garriott

The introduction of information technology into development planning, particularly computer-based communications, has taken on missionary-like zeal. Self-proclaimed visionaries call for "computopias" as the healers of all ills.

Why is this? One value buried deep in the Western psyche is "nouveaumania" – a need for, indeed obsession with, technical innovation and achievement. Nouveaumania is rooted in the belief that novelty is a panacea. Nouveaumanics promote technical innovation for its own sake. They experience psychological discomfort unless they are constantly acquiring or promoting the latest gadget.

Yet, as we have discovered, much of the appropriate technology appearing during the 1960s and 1970s was little more than well-intentioned gimmickry, which had limited utility even for its advocates, much less for others. In a more advanced form, nouveaumania becomes the familiar "solution in search of a problem." Where once the image of donated tractors rusting in fields was a metaphor for development failures, now it is the computer which is never turned on – or left in its box.

Nouveaumania Revisited

All of us are afflicted with nouveaumania to a greater or lesser degree. I suspect that many utopian thinkers are really advanced nouveaumanics in disguise. Is it any wonder that they crowd the field of those advocating information technology as the latest salvation for the Third World?

Those of us who consider ourselves development professionals also bear an additional burden: the constant quest for the "Holy Grail" from which all "real" (or "sustainable," the latest acceptable modifier) development flows. The promotion of information technology is just the latest in a long string of "leading sector" approaches to solving the development dilemma.

But development is difficult work, and positive results are not always discernible. If they are, they can be erased in an instant by a natural or human-made disaster or through a sudden shift in political winds. It is no wonder that the oft-repeated promise that the information revolution will allow poor societies to "skip stages" of development holds an irresistible attraction for many people.

The sense that somehow we have been here before is inescapable. Simple solutions to complex problems were also proposed by zealous individuals in the 1950s and 1960s promoting the mass media as instruments of modernization. The modernization paradigm called for substantial investment in and use of mass media to break down traditional habits of thinking and behaving, which were seen as responsible for the Third World's backwardness. Radio stations distributed thousands of single-frequency radio receivers in attempts to create captive listening audiences.

Today, a metaphor for development failure is the computer which is never turned on – or left in its box.

Eventually, however, the modernization paradigm fell out of favor with the realization that development was more complex than had been originally thought, not easily explained or measured by variables like communication. Similarly, the "diffusion of innovations" model associated with modernization ideas, which sought widespread adoption of new technology throughout society, collapsed during the late 1970s with the criticism from social scientists that individuals with higher socio-economic status tend to adopt technology, increasing the gap between the rich and the poor.

These criticisms caused some important modifications to the modernization model by embracing other values such as equality of distribution, popular participation, local invention and re-invention of technology as people-serving tools. What emerged was the recognition that barriers to development were more structural in nature than originally perceived, and that a basic restructuring of society might be needed before technology could enhance the development process. Even research began to shift, as social scientists began to look at the nature of interpersonal networks involved in communicating innovations, rather than simply the speed at which they move through society.

But just as the perception began to change, the new information technologies, especially communication satellite technologies, exploded onto the scene. The seductive appeal of these new technologies combined with our nouveaumanic tendencies seem to have smothered the emerging analyses concerning the role of the older information technologies (radio and television) in maintaining lopsided socio-economic systems.

If social scientists were the prophets of the 1960s and 1970s, then surely today the prophets are physical scientists and engineers. The danger is that their progress in simultaneously increasing the power and lowering the cost of computerized communications – which is nothing short of miraculous – may postpone the day of reckoning when structural inequalities between the haves and have-nots must again be scrutinized.

Toward People-Centered Technology

Meanwhile, there are important reasons why the development community will need to rediscover the earlier interest in interpersonal networks.

- There is a trend toward use of trusted experts as sources of quality technical information, instead of impersonal data bases. Even when people use data bases, they often rely on intermediaries who can help them refine their information needs. This also reduces the cost of prohibitively expensive on-line data base searching from international locations.
- For the foreseeable future, multiple international electronic networks linking colleagues around common interests or problems will exist, instead of a single network or even just a few. Individuals set up tiny, non-commercial electronic networks, sometimes with lightning speed. This suggests that users prefer to deal with one another as individuals rather than as an impersonal mass audience.
- Rural communication is more amenable to person-to-person styles, as the use of amateur radio demonstrates. Early experiments indicate that rural dwellers use new communication technology, such as packet radio–linking low-cost radio transmit-

(Continued on p. 15)