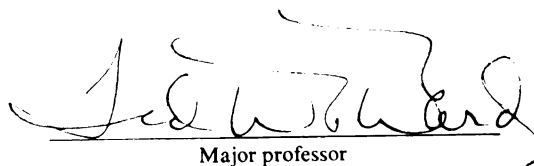This is to certify that the

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James Edwin Fritz

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_____
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OUT-OF-SCHOOL TRAINING
FOR PRACTICAL SKILLS IN RURAL PARAGUAY:
AN EVALUATIVE STUDY

By

James Edwin Fritz

A DISSERTATION

Submitted to
Michigan State University
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ABSTRACT

OUT-OF-SCHOOL TRAINING
FOR PRACTICAL SKILLS IN RURAL PARAGUAY:
AN EVALUATIVE STUDY

By

James Edwin Fritz

From 1976 to 1978, the Government of Paraguay and the U. S.

Agency for International Development implemented a project to estab-

lish the capability of Paraguay's National Apprenticeship Service to

train rural illiterate and semi-literate adults who had limited access

to skills training.

A team of foreign advisors, coordinators, instructors, artists,

and administrative support personnel developed an instructional system

consisting of five tasks:

1. identification of training preferences and other vari-

    ables affecting the instructional process,

2. development of training objectives,

3. determination and development of training stategies,

4. development of a plan for the implementation of train-

    ing, and

5. evaluation of the instructional process and results.

Twenty-five different training programs that followed the instruc-

tional system were created and conducted during five training cam-

paigns in a representative rural district. The content of the

training programs reflected knowledge and skills in home management, basic agriculture, poultry and livestock management, and management and improvement of the small farm.

The activities of each training campaign included (a) writing Instructional Plans, (b) instructors training campesinos in 10 days, (c) instructors training campesinos to be paraprofessionals in five days, (d) paraprofessionals training campesinos in 10 days, (e) revision of the training programs, and (f) on-the-job training of the project team.

The purposes of the research were to evaluate the effectiveness of the instructional system to train semi-literate adults and to evaluate the instructors' ability to use the instructional system effectively.

The evaluation methods were examination of documents, reading tests, interviews, planned observations, pretests and posttests of knowledge acquisition, retention tests, and validity tests of the instructional materials.

Data consisted of written documentation and oral recall of the results of the descriptive procedures and scores generated by the quasi-experimental procedures.

The descriptive procedures identified the receiving population (842 campesinos) as semi-literate adults who had limited access to training opportunities. The campesinos acquired the intended practical skills, and the instructors acquired the intended training skills and knowledge.

James Edwin Fritz

The quasi-experimental procedures indicated that the campesinos acquired the intended knowledge.

To my mother and father for their constant love
and support, an advanced education at home, the encour-
agement to be all that I choose to be and the wisdom
to be tolerant of all that I'm not, an understanding of
and commitment to social justice, and their genes.

Dr. Max Williams, Jon Gant, and Bud Holz, my supervisors in Paraguay, were responsive to project needs. Max's support of me as the Project Coordinator and as a friend is greatly appreciated.

Dr. Ted Ward, the chairperson of my doctoral committee, provided me with essential support as I tackled one obstacle after another. He offered guidance in academic scholarship while individualizing that concept, making it compatible with my situation. To him I owe a more thorough understanding of the inquiry process and my fortified desire to contribute to the development of human resources. I extend a very special thank you to Ted.

Dr. Marv Grandstaff helped me understand the complex and pervasive qualities of schooling. Lessons learned from Marv regarding the interaction among society's educational, political, and economic institutions provoked my commitment to participate as an educationist who is sensitive to the ultimate consequences of the human development process.

Dr. Bill Hinds welcomed me back into the fold and helped me adjust to a different MSU. He has consistently supported and contributed to my professional interests. Bill taught me to use counseling skills to improve my role as an educationist.

During long discussions, Dr. Ben Bohnhorst helped me clarify my ideas. His polished intellectual skills evoked within me a desire to go one step beyond the obvious. Ben was interested in me as a colleague and challenged me to make some sense out of the seemingly disparate aspects of the knowledge I had acquired during my doctoral program.

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CHAPTER I

THE EDUCATIONAL DEVELOPMENT PROBLEM

In 1972 at least 70% of all rural Paraguayan adults, 15 years old

and above were semi-literate (Paraguay, Dirección General de Estadís-

tica, 1972). They used inappropriate health and agricultural prac-

tices which perpetuated a low standard of living (Clary, 1974). Exist-

ing educational programs were not designed to provide agricultural or

health related skills to persons unable to read and write (USAID,

"Noncapital Project" [Revised], 1975).

Therefore, the Government of Paraguay (GOP) resolved to intro-

duce an educational process, nonformal education, that might have a

positive impact on that group's health and economic situation by pro-

viding needed information and skills.

In 1974, when that decision was made, a "Paraguayanized" version

of appropriate nonformal education did not exist. What the identify-

ing characteristics of that process should be were unknown in the con-

text of rural Paraguay. People prepared to employ that process and

evaluate its effectiveness were not available. A systematic program

to determine whether or not the new educational process did what it

intended to do was also needed.

Based on the wide-spread problem of unsuccessful efforts to

identify an existing solution that might be expanded, the Government

of Paraguay and the Agency for International Development (AID)

decided to collaborate in the development and implementation of a

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pilot project whose primary purpose would be "To establish the capability of the National Apprenticeship Service (SNPP) to conduct successful training programs oriented to rural illiterate and semi-literate adults who presently have limited access to training opportunities" (USAID, "Project Paper," 1976, p. 1).

Project Description

The approved project called for local and foreign advisors to train a team of SNPP employees to develop and successfully implement an instructional system that was effective in training rural illiterate and semi-literate adults in a representative rural area. The team was to consist of coordinators, instructors, graphic artists, a printer, a photographer, and administrative support personnel. The training skills of these technicians were to be developed through on-the-job training over a two-year period.

An important characteristic of the project was that it was meant to be experimental. The advisors and team members were to have the opportunity to evaluate and revise the instructional system and corresponding instructional materials through formative evaluation procedures.

Major outputs expected upon completion of the project were (a) a staff at SNPP trained to prepare, implement, and evaluate nonformal education activities relevant to the needs of the target populations; (b) training programs in six content areas; (c) validated nonformal education methods and materials; and (d) a study of budget and institutional arrangements which SNPP must make to extend the project's validated concepts and activities to other areas in Paraguay.

Purposes of the Research

Using the project and its training programs as a vehicle for con-

ducting the research, two research purposes were established.

1. TO EVALUATE THE EFFECTIVENESS OF AN INSTRUCTIONAL SYSTEM
   TO TRAIN SEMI-LITERATE ADULTS WHO HAD LIMITED ACCESS TO
   TRAINING OPPORTUNITIES, and

2. TO EVALUATE THE INSTRUCTORS' ABILITY TO USE EFFECTIVELY
   THE INSTRUCTIONAL SYSTEM TO CREATE AND IMPLEMENT TRAIN-
   ING PROGRAMS.

Problem Background

Details contributing to the problem and the government's acknowl-

edgement of the problem are reported below.

The Problem Viewed from Five Perspectives

The following geographic, demographic, political, economic, and

educational facts contributed to the problem and influenced the attempt

to resolve it.

Geographic background. Located near the geographical center of

South America, the Republic of Paraguay shares borders with Brazil,

Argentina, and Bolivia. The climate (temperate/sub-tropical; long,

hot summers; short, mild winters) and topography (gently rolling

hills, vast areas of plains, lowland swamps near its three large

rivers) are similar to Florida's. Vegetation ranges from dense

tropical forest covering the majority of the uncultivated land in

Paraguay's eastern region to thorn-shrubs and pasture grasses common

in the desert-like western region. Paraguay's land mass of 157,000

square miles approximates the size of California. Sixty percent of

that land comprises the arid western half, the Paraguayan Chaco, which
is populated by only four percent of the population. The fertile and
lush eastern half is home for the remaining 96% of Paraguay's popula-
tion (Weil et al., 1972). The capital city, Asunción, is located on
the eastern banks of the Paraguay River which also serves as a divid-
ing line between western and eastern Paraguay.

Demographic background. Approximately 400,000 of an estimated
2,400,000 total inhabitants live in the Department (province) of
Asuncion. 2,000,000 Paraguayans live in the 16 remaining departments.
Each department is divided into several districts (counties) whose
governments are seated in the most populated communities. The dis-
tricts are divided into compañias, geographical/political units with
officially recognized boundaries. Even though they belong to the same
compañia, member farms may be 20 kilometers apart, or more (Paraguay,
Dirección General de Estadística, 1972).

In the last decade, immigration to the capital city has not
markedly increased. In 1962 the urban population (including large
towns in the interior) was 35.8% of the total. In 1972 it was 37.4%
of Paraguay's total population (Adler, 1975).

The settlement pattern of rural Paraguay radiates eastward from
Asunción. The most densely populated region, the four departments
surrounding Asunción, comprise the central region and house 40.6% of
Paraguay's total rural inhabitants. Economically and socially, this
is Paraguay's most important region and is often called the "mini-
fundia (small farm) zone," the foundation of the Paraguayan economy
(Adler, 1975).

Political background. Political factors have inhibited Paraguay's economic and social development. Independence from Spain in 1811 was followed by 26 years of cultural and economic isolation imposed by the first president, José Gaspar Rodríguez de Francia. Foreigners were forbidden to enter Paraguay, life for the resident Spanish aristocracy was made intolerable as they were pressured to leave or marry mestizos or indigenous mates, and the Roman Catholic church was stripped of all official political power. The succeeding heads of government, Carlos Antonio López (1844-1862) and his son Francisco Solano López (1862-1870), also discouraged the perpetuation of a Spanish artistocracy, slowly opened Paraguay's borders to foreign influence, and continued a campaign to homogenize the population by promoting mating between people of Spanish descent and the indigenous population (Weil et al., 1972).

Francisco Solano López led the Paraguayans into war in 1865 against the combined forces of Argentina, Brazil, and Uruguay. This conflict, the War of the Triple Alliance, resulted in the death of approximately half of Paraguay's population. It also emptied Paraguay's treasury (Weil et al., 1972).

In 1870 Paraguay was defeated, political cliques emerged, and a political heritage evolved characterized by instability and turmoil.

The Chaco War against Bolivia started in 1932 and lasted three years. According to historian Kubert Kerring, "a truce of exhaustion" was signed in 1935. Paraguay acquired 20,000 square miles of territory, a patriotically strengthened population, economic depression, and a tradition of military intervention in government (Weil et al., 1972).

Thirty-seven chiefs of state governed Paraguay between 1870 and 1954.

General Alfredo Stroessner established his presidency in 1954. Twenty-seven years of almost absolute control by Stroessner and the political party he represents (the Colorado Party) permitted extensive political indoctrination campaigns directed at rural Paraguayans. These campaigns promote the president and his party as responsible for today's peace, progress, and tranquility.

Among the consequences for which that indoctrination may be responsible are overwhelming support by the rural poor of the present government, political inactivity, acceptance by that group that peace and tranquility are to be valued above other political concepts, and acquiescence by that group to demands or even suggestions of persons in positions of authority.

Economic background. In the economic domain, there exists an agrarian tradition based on small scale subsistence agriculture, minimal exposure to advanced technology which has restricted the land area cultivated by one family to two or three hectares, and transportation and communication problems that necessitated developing economic activities near Asunción (Adler, 1975; USAID, "Development Assistance," n.d.).

The small farm (up to 20 hectares) predominates. In eastern Paraguay 87.4% of all farm units have less than 21 hectares. Ninety percent of all farms in the central region, the most densely populated region, have less than 21 hectares. Crops cultivated on these small

farms include monioc, corn, cotton, sugarcane, tobacco, rice, and peanuts. Most of the crop production is consumed or traded for other needed commodities. Also important is the production of dairy cattle, beef cattle, lumber, tanin extract, and hearts of palm. In livestock the farmer typically sells less than one-half of his or her output (USAID, "Capital Assistance," n.d.).

A one-worker family received an annual per capita income of less than $180.00 (Adler, 1975). Output per farmer is about two-thirds of the Latin American average. A farmer with five hectares or less uses less than half of his or her available family labor on his or her own farm. It is estimated that the amount of land that could be used for crops is approximately 10 times larger than the area presently under cultivation. "Programs designed to increase the efficiency of farm labor appear to be more needed than programs to create new jobs" (USAID, "Development Assistance," n.d., p. 55).

The perspectives for Paraguayan industrialization are limited to an extremely small domestic market and to the processing of exported goods linked to her agricultural sector. Paraguay's general economic development is dependent upon the development of her agriculture (USAID, "Development Assistance," n.d.).

Labor statistics reveal that the content that might be most valued by the rural labor force would deal with agriculture, livestock production, forestry, and hunting. In 1972, 83% of the semi-literate rural labor force was involved in that kind of activity (Paraguay, Dirección General de Estadística, 1972). Forty-four percent of Paraguayans who were capable of executing a productive function or occupation were not doing so in 1972. The estimated yearly rate of growth

of the "not economically active population" was 3.38% between 1962 and
1972, making it the fastest growing group about which statistics were
gathered. The participation level of the total population in economic
activity had been decreasing steadily since 1950 (Paraguay, Dirección
General de Recursos, 1976).

Data generated by the education sector partially explain the rea-
sons for the human development situation in Paraguay while emphasizing
the need for change.

Educational background. Compulsory schooling continues through
age 14. The 1972 census counted 760,470 rural men and women at least
15 years old. 643,628 said that the range of years of schooling they
had completed was zero through five years, qualifying them for the
Ministry of Education's label of semi-literate" (Braun, "Informe
Técnico Número 10," 1977). 23.5% of these men and women had never
completed one year of elementary school, 21.9% completed three years,
and 9.3% said they had completed five years of elementary school.
Taking into account the fact that rural Paraguayans have few oppor-
tunities to use their literacy and numeracy skills, these statistics
indicate that a large percentage of that semi-literate population
may, in fact, be illiterate. Any training program aimed at that audi-
ence could not depend on its literacy and numeracy skills to facili-
tate training. An economist observed "the educational system tends
to perpetuate functional illiteracy in rural areas, which greatly
complicates the spread of better farming technology . . ." (Adler,
1975, p. 23). A major weakness which contributes to the perpetuation
of the existing situation is the fact that there are insufficient

numbers of technical personnel qualified to train semi-literate adults
(USAID, "Development Assistance," n.d.).

Government Acknowledgement of the Problem and Proposed Solutions

The GOP and AID had studied the living situations of Paraguay's
campesinos. Information from those studies is presented below.

National Planning Office. Rodríguez (n.d.) confirmed that gover-
ment officials were aware of the human resource development problem
in Paraguay. He revealed the orientation of Paraguay's national
development plans for 1971-1975.

> To improve extension and agricultural teaching
> services to prepare the human resources to
> absorb modern techniques aimed at increasing
> yields (p. 6);
>
> To increase and improve the degree to which
> disposable natural resources are taken advan-
> tage of (p. 6); and
>
> To study and progressively perfect programs
> in order to adjust the orientation of educa-
> tional policy to the needs of training and
> rational utilization of human resources (p. 11).

Ministry of Education and Worship. Information presented by
Leida M. deAcuña (n.d.) about the Ministry of Education's educational
development plan for 1969-1980 provided more evidence of official
recognition of Paraguay's human resource development dilemma and the
need to change. Outlined in the paper is a commitment by the Ministry
to include skills-training opportunities in the curriculum of rural
elementary and secondary schools. It was envisaged that a major
expenditure would be made to establish a "rural school," an elemen-
tary school that would emphasize the teaching of agricultural skills

appropriate for the conditions of each rural community. Additionally, it was proposed to continue, through the public secondary school, more advanced, vocationally-oriented training during the first and second three year periods of that schooling experience. The importance of introducing appropriate agricultural techniques and changing the kind of agriculture in which the small farmer was engaged was recognized.

However, the mechanisms for change had not been established when the research began in 1975. With the exception of sporadic attempts to teach gardening techniques, the curriculum in the elementary schools of the rural sector remained traditional. That is, the most apparent efforts were to teach literacy, numeracy, and socialization skills. The proposed "rural school" did not exist, and there was no agricultural/industrial advanced training in the secondary schools.

Ministry of Justice and Labor. Within the governmental frame-work, the institution responsible for identifying problems and disseminating recommendations regarding current and projected human resource needs was the Ministry of Justice and Labor's Directorate of Human Resources.

Employment figures confirmed that a rural population and agricultural activity predominated in Paraguay's socioeconomic reality. In its role as labor forecaster and policy maker, the Ministry of Justice and Labor concluded that "national training programs should introduce qualitative changes in the content of their curricula to ensure that graduates are equipped to generate their own employment opportunities . . . " (Paraguay, Dirección General de Recursos, 1977, p. 30). It also recognized that an objective must be to introduce

educational technology that would provide basic knowledge to working-aged, rural populations in an effort to professionalize the agricultural occupations while providing training in other rural occupations that support the national social and economic development strategy (Paraguay, Dirección General de Recursos, 1977).

Nonformal education inventory. Apart from information extracted from the above-mentioned studies and national planning documents, one final piece of evidence confirmed that an educational development problem did exist in Paraguay and that the proposed solution might be successful. The researcher reviewed the results of a national inventory of "any organized, systematic, educational activity carried out outside the framework of the formal system to provide selected types of learning to particular subgroups in the population, adults as well as children" (Coombs & Ahmed in "Inventory and Assessment of Nonformal Education in Paraguay," 1976, p. 3). Using that definition of nonformal education as the primary criterion for selection, 30 organizations or programs were selected to be examined.

The nonformal education programs described as providing semi-literate and illiterate adults living in rural areas with domestic and agricultural skills fell into two categories, "improvement of personal living conditions" and "agricultural production." However, examination of the content of the educational experiences revelaed that the skills and knowledge perceived as necessary by the sponsoring institution were not, in most cases, technologically appropriate for the majority of rural Paraguayans. That examination also indicated that the teaching process would not render the intended audience "trained."

In fact, there was no evidence that any systematic evaluation existed
of any of the teaching/learning experiences with regard to the degree
of skill or knowledge acquisition.

However, the Paraguayan technicians were using nontraditional in-
structional methods, albiet ineffectively, that had contributed to
successful training experiences directed to a similar population in
other countries (e.g., flip charts, pamphlets, lecture/discussions,
puppets, equivalent practice, and short courses) ("Inventory and
Assessment," 1976). Another document stated that there had been an
increase in campesino memberships in production credit and technical
assistance cooperatives and that the farmers did desire economic im-
provement (USAID, "Project Paper," 1976).

This information provided the researcher with evidence that the
rural, poor Paraguayan was motivated to change his or her farming habits
and might be receptive to training opportunities.

Problem summary. It was evident upon studying official docu-
ments written by the Ministry of Education and Worship, the Ministry
of Justice and Labor, the National Planning Office, and the Agency for
International Development (AID) that a very large segment of the rural
population was illiterate or semi-literate, economically inactive,
poor, and beyond school age. Those same organizations indicated that
a change in the content and process of existing programs must occur or
a new process be created if the above problems were to be resolved.

Examination of the nonformal education sector was equally as
unproductive in identifying existing programs (in Paraguay) that
might be adopted on a larger scale to train rural farmers. However,

the same analysis produced evidence that the rural farmers were motivated to change the conditions of their lives and that teacher/technicians existed who might be receptive to changing the pedagogical processes they employed.

The instructional system developed to contribute to the solution of the above problems is described in the following section. It is this system that was the object of the research.

<div align="center">

Programa de Adiestramiento
Extra-Escolar (PAE) Instructional System
</div>

The instructional system consisted of five tasks: (a) identification of training preferences and other variables affecting the instructional process, (b) development of training objectives, (c) determination and development of training strategies, (d) development of a plan for the implementation of training, and (e) evaluation of the instructional process and results. This system evolved after a basic conceptual framework that included assessment, developing objectives, strategy identification, and evaluation was described to the Paraguayan technicians that made up the team. Advisors also introduced detailed explanations of other instructional variables that might affect the training process in Paraguay. All concepts were presented and "Paraguayanized" during lecture/discussion sessions.

The final system of five tasks was established by consensus among members of the team. It was a guideline to be used in writing all Instructional Plans and in implementing all training programs. The details of the system were continually improved by the team over the one and one-half year during which it was repeated, evaluated, and revised in five training campaigns comprised of 25 different training

programs. Details varied depending on the requirements of each
training program. All information related to the task was written on
a form, the "Instructional Plan," that listed the five tasks:
assessment, objectives, strategies, implementation, and evaluation.
The actual content of training was written in detail on accompanying
forms, "Enabling Behaviors," during Task Two   (Appendix A presents
a completed Instructional Plan). Descriptions of the primary activi-
ties of PAE's instructional system follow.

Description of Task One of the
Instructional System: Identification
of Training Preferences and Other
Variables Affecting the Instructional
Process (Assessment)

   The following procedures were routinely performed during each
training campaign.

   Data collected during a household survey (see pages 56-57) of a
representative sample of the entire receiving population were reviewed
before each training campaign. Training preferences, living condi-
tions, and life-style characteristics were determined. Follow-up
meetings in the specific compañia confirmed the survey's results and
provided additional information. When training preferences were un-
clear, photographs were used to assist the campesinos specify their
preferences.

   A publicity and information gathering campaign was carried out in
eight days. The team used radio spots, posters attached to trees,
flyers, comic books, a loud speaker on the project vehicle, newspaper
announcements, meetings with the receiving population, a letter of
introduction signed by the Minister of Justice and Labor, meetings

with local political authorities, and personal visits to every house-hold in the community to accomplish this procedure.

Selection of the content of training was accomplished by apply-ing six conditions the content had to satisfy. Those conditions are described in a discussion of the rationale for including Task One.

Rationale. The reason for assessing training preferences was based on the belief that people learn and use skills and knowledge they perceive as needed more efficiently than skills and knowledge identified for them. Community meetings and photographs were used to clarify information generated by the survey and stimulate the receiv-ing population to identify specific skills they wanted to learn as opposed to more general needs (e.g., "more money" or "better health"). General questions in each content area (e.g., "What tools do you have?" "Do you have running water?" "What crops do you grow?" "What time of the day can you attend training?") provided data needed to make decisions that might affect instruction and the development of each training program.

Even though the most important condition used to determine the content of training was that it be preferred by the receiving popula-tion, five other conditions had to be met before the content of train-ing was finally determined. To increase the possibility that the skill and knowledge would be retained by the campesinos, skills were chosen that could be immediately used. Therefore, the content of training had to coincide with the agricultural calendar. In order that a successful training program might also contribute to the achievement of national development objectives, content of training had to have

the potential of contributing to the health or economic situation of the receiving population. The PAE's team could not effectively conduct a training program for which it was not equipped; therefore, the technical/logistical capability of the team was a condition that had to be met. The fifth condition attempted to improve the chances that the content of training (the skill) would be adopted by the campesinos: the skill had to be matched to the campesinos' economic capacity. The final condition was established to increase the possibility that the training topic indicated by the above criteria was the most appropriate topic to be selected: the chosen content had to coincide with PAE's instructors' professional experiences and/or advice of other experts.

The publicity/information campaign was conducted to motivate the receiving population to register for training, solicit its active participation, and confirm survey results. It explained the purposes of each training program, what the campesinos could expect from the program, and what the program expected from them. The campaign identified the dates of all planned activities. It also intended to ameliorate the campesinos' distrust of outsiders.

Finally, it was planned that observations made during the publicity/information campaign would provide more data about the appropriateness of the selected content as well as identify the human and environmental elements existing in specific communities that might affect the training/learning process.

Description of Task Two of the
Instructional System: Development
of Training Objectives (Objectives)

The second task required translating data gathered in Task One
into one general terminal behavior (the skill) and necessary enabling
behaviors corresponding to the performance of the skill and essential
knowledge. Behavioral objectives were then formulated that included
the conditions under which the campesinos would be evaluated, the skill
and knowledge expressed in behavioral terms, and evaluation criteria
including frequency of the behavior and the degree of perfection of
the campesinos' performance of all behaviors.

Training messages, instructional activities, tools, scheduling,
and observations (i.e., "The participants will move from the locale to
the field.") were then written that corresponded to each enabling
behavior.

This task was completed by the instructors and approved by the
Instructional System Coordinator.

Rationale. Studies and documentation of existing training experi-
ences revealed that evaluation of training effectiveness had not been
attempted in Paraguay and that the details of training messages were
not written. The team needed to develop a method to answer the ques-
tion, "Is the receiving population trained to perform the skill that
the training intends to transmit?" Educational experiences in the
United States indicated that an effective means of measuring the out-
comes of a training process is to compare the outcome of training to
objectives written in behavioral terms and established before the
initiation of training.

Correctly expressed behavioral objectives were meant to be the key to evaluation.

Writing the details of the content of training had been shown to be an important activity in other skills-training programs.

The justification for elaborating extensive support-activities/materials lists evolved from the team's belief that successful training occurs when _all_ variables of instruction interact as planned. The team's past experience had documented that other training had failed because "reinforcement materials weren't ready on time," "tools were not in place," or "the vehicle was being used by someone else," to mention a few.

Description of Task Three of the
Instructional System: Determination
and Development of Training
Strategies (Strategies)

As soon as the specific content for training had been determined and the corresponding behavioral objectives written, the instructors selected up to six instructional strategies. The isntructors and the artists jointly planned the format and content of all visual materials that the artists subsequently created. All strategies were validated by field-testing, review by content specialists, planned observations by the coordinators and advisors, and/or requesting feedback from the receiving population. The training strategy alternatives included four-to-eight page pamphlets (four color, two color, or black and white), one-page flyers, the training site (e.g., in each household/farm, in one participant's farm where all trainees would meet, in the local schools, in the compañia or town, at the soccer field), flip charts (four to eight pages), posters, simulation games, demonstrations

by the instructors and paraprofessionals, equivalent practice by the receiving population (in small groups or individually with all necessary tools and expendable materials provided), analogous practice by the receiving population (e.g., describing to the other members of the training group which expendable materials should be purchased instead of actually purchasing the materials), charlas (i.e., short lectures and group discussions), photographs (alone or in sequenced series), and "directed" questions (i.e., asking the receiving population specific questions corresponding to the training objectives and requesting them to answer orally).

Rationale. A review of past experiences with training processes in other Third World countries as well as Paraguay indicated that the above listed strategies contributed to the acquisition of skills and knowledge by similar receiving populations. This was confirmed by the instructors' prior experiences and trial runs during the project.

A joint planning session was established because the artists weren't familiar with graphic details of rural life and the instructors were not skilled artists. The strategies were designed to reflect the specific messages of training.

To ensure that the messages the instructors intended to transmit to the campesinos via the training strategies were the messages that were transmitted, all strategies were validated.

Description of Task Four of the Instructional System: Development of a Plan for the Implementation of Training (Implementation)

The instructors designated all activities required to implement training. This was shared with the entire team to ensure logistical coordination. With the exception of "tools and expendable materials" as well as the "training schedule" which varied depending on training requirements of each content area, the standard plan for implementing training adhered to the following sequence of events.

Eight days were devoted to gathering data about the community, explaining the purposes of the program, and motivating the members of the receiving population to register for training.

Training the receiving population by the PAE's instructors occurred during the next 10 days.

Three to six selected participants of that training session were trained during the succeeding five days to be paraprofessionals.

The paraprofessionals trained a group of peers during the last 10 days of the training program. Certificates of attendance were distributed immediately following the termination of training.

Rationale. The sponsoring agencies required short-term training. The receiving population had indicated a preference for short-term training. The experience of advisors, coordinators, and instructors confirmed that the living patterns of the campesinos would permit only a few hours each day involved in activities not directly contributing to their subsistence. An analysis of potential skills to be trained indicated that, in fact, there was a possibility that specific skills

that the receiving population preferred could be trained in 10 days. Another reason supporting the short duration of the implementation of training was that the team believed that the more quickly the campe-sinos could be trained successfully, the more likely it would be that they would be motivated to demand more training.

Volunteer paraprofessionals were used to increase the impact of the program and decrease its cost.

Description of Task Five of the Instructional System: Evaluation of the Instructional Process and Results (Evaluation)

During every training campaign, the instructors' training behaviors were evaluated by the team's coordinators and advisors. The evaluation consisted of systematic observations. These observations were shared with the instructor immediately following the training program. Feedback regarding the instructor's behavior was less routinely solicited from the receiving population. Additional feedback from the team's other instructors about the performance of instructor behaviors was also provided.

The training skills of the paraprofessionals were evaluated by the instructors and coordinators using planned observations during the paraprofessionals' five-day training experience. The paraprofessionals' acquisition of knowledge was evaluated using pretests–posttests administered by the instructors.

The degree to which the campesinos acquired the intended skills was evaluated during each training campaign. This was accomplished when the instructor, using specific criteria expressed in behavioral objectives, observed the campesinos perform the skills alone.

In addition to using behavioral objectives, the degree to which the campesinos acquired the intended knowledge was evaluated using criterion-referenced pretests and posttests administered by the instructors before and after training. Evaluation of acquisition of skills and knowledge was based on the behavioral objectives described in Task Two.

Original visual instructional materials (e.g., pamphlets and flip charts) were evaluated through systematic observations of the campesinos' responses to the materials during the training programs. Additionally, to clarify those observations, the artists routinely met with the campesinos who had successfully completed training to solicit specific impressions about all graphics and language used in the reinforcement materials.

The visual materials were validated by asking the originating instructor, one of the artists, and the Instructional System Coordinator to judge whether or not the graphics and language that the instructors planned to use correctly depicted the intended messages. A standardized field test of the visual materials conducted in a community similar to the receiving population was another routine validation process. During the field test, the campesinos were asked to describe to the evaluator the message transmitted by the graphics and language of each visual. That feedback was used to revise the visual materials before the training campaign began.

The implementation plan was objectively and subjectively evaluated. Some variables (e.g., number of pamphlets, scheduling of training, amount of chicken feed provided during practice sessions)

were observed and a yes/no response could be established by comparing it with the implementation plan. Subjective judgments resulted from the combined observations of the instructors and the coordinators. These evaluations were made regarding the amount of time spent preparing and motivating the community and the amount of time spent during each of the three training segments (i.e., [a] _campesinos_ trained by instructors, [b] paraprofessionals trained by instructors, and [c] _campesinos_ trained by paraprofessionals).

Another activity that provided objective evidence confirming that the initial training experience had been conducted successfully was the administration of retention tests given two and four months after training was completed. That test reflected the _campesinos'_ retention of knowledge only.

Rationale. Evaluation was included in the training process to improve the process and to provide a structured approach to collect evidence to make judgments about the effectiveness of training.

Formative evaluation techniques (e.g., planned observations of the instructors; "trial runs"; field testing; review of Instructional Plans by the coordinators; feedback sessions with artists, instructors, and _campesinos_) provided a continual flow of information that was used to revise and improve the instructional variables.

Summative evaluation techniques (e.g., planned observations of the _campesinos_, pretests, posttests, and retention tests) were used to provide the team with information regarding the effectiveness of each training program to train the receiving population.

The following section briefly describes the activities involved in training PAE's instructors to use the instructional system.

Description of the Training
of PAE's Instructors

Time constraints and quantified objectives imposed by the project as approved by the sponsoring agencies made blocks of time allocated exclusively to training activities a luxury. However, the researcher knew of these constraints before the implementation stage of the project began. Therefore, the following training plan was established.

The first eight weeks of training (beginning in September, 1976) were devoted to the presentation of the theoretical foundations of various instructional concepts. These concepts were explained by the researcher and contracted specialists during lecture/discussion sessions. The concepts included assessment, behavioral objectives, evaluation, participation, the role of instructional variables working as a unit, validation, design of training strategies and materials, negative and positive feedback, appropriate technology, nonformal education, cost effectiveness, and paraprofessional trainers.

This period was followed by four weeks of equivalent practice during which the instructors used the concepts they determined as most appropriate. They created an instructional system, selected skills and knowledge they perceived as appropriate, and developed training programs and corresponding instructional materials. The programs were implemented during a trial run.

Subsequently, all aspects of the instructional system were revised, based on information gathered during the trial run.

The instructors also field tested visual instructional materials on a similar population before the trial run. Knowledge gained from the field test was incorporated in creating the materials that were

used. After the trial run, feedback from the <u>campesinos</u> was used to revise the instructional materials.

Subsequent training, conducted and supervised by advisors over the remaining 21 months, was "on-the-job training." The instructors practiced using the instructional system to create and implement 25 different training programs directed to <u>campesinos</u>. Training of the instructors also occurred when requested or when perceived by the advisors as needed. This happened every day, in the field, and responding to immediate needs resulting from each day's experience.

Even though long-term training experiences were not envisaged as a priority by the sponsoring agencies, the project did allow approximately two weeks to develop the training programs and one week to revise them upon completion of the training campaign. A part of that time was used to retrain PAE's instructors.

Rationale for Training
PAE's Instructors

An informal assessment of the entry skills and knowledge of the instructors indicated that none of them could use any of the instructional concepts the researcher and advisors believed to be necessary to create, implement, and evaluate an effective instructional system, even though all instructors had been exposed to similar concepts before. Observing the instructors' performance during early field tests as well as hearing them discuss the concepts confirmed that training was necessary.

The project, as originally designed, intended to devote approximately eight months to train the instructors and other team members. However, once final approval was received, that time had been reduced

to three months. It was necessary to establish training experiences that would be compatible with the approved project's objectives and chronology. Repeated and supervised equivalent practice (creating, implementing, evaluating, and revising different training programs) was known to be a successful method for transmitting skills in a relatively short period of time. It would also permit fulfillment of other objectives of the project (e.g., 25 validated training packages).

In some instances the preferred model for training a project team might be the one described above, one three-month period during which concepts are presented and used in a trial run followed by systematic inservice and on-the-job training. However, it is important to establish that this time constraint necessitated a "trade off"; that is, sufficient time to adequately present the theoretical aspects of the various instructional concepts and the opportunity to evaluate the degree to which those concepts were understood by PAE's instructors.

The concepts listed above were emphasized because of the documented contribution the operationalization of the concepts had made in solving similar problems in similar situations.

The Importance of the Research

The project took place in a rural district that officials believed was representative of rural Paraguay. It was hoped that the instructional system and training programs created during the project would also be appropriate for other locations. The researcher believed that the probability was high that if an instructional system were

successful in the project area it could be successful, with few adaptations, to all rural areas in eastern Paraguay due to regional similarities in climate, topography, demography, socioeconomic conditions, and educational background.

Emphasizing the importance of the research is the fact that the problem of a large, economically inactive population that is semi-literate, lives in the rural sector, and wants to learn appropriate agricultural skills exists in the majority of Latin American countries and many other Third World countries. Since the instructional system was characterized by its responsiveness to the receiving population's training preferences, optional instructional strategies, and a built-in evaluation/revision component, the possibility existed that the same system could be adopted for use in other countries where there were adult farmers who are semi-literate, poor, and need/want training.

At the time of the research (1975), there had not been published a description of any training model that could be replicated in this project. There did exist, however, recognition of a worldwide problem similar to the one described above (LaBelle, 1976). There also existed a body of knowledge and some empirical evidence that indicated that pedagogical theory and instructional methods had been demonstrated to be effective in training situations. The researcher believed that there was sufficient background in the field to support the reasonableness of organizing those concepts into an instructional system and employing that system to create skills-training programs.

Definition of Terms

The purpose of this glossary is to facilitate the reader's under-
standing of this research report. The words in Spanish have no Eng-
lish synonyms. The remaining words are listed because of the unique-
ness of their meanings as used in the project or because of their
contribution to a clearer understanding of the research. The list is
organized alphabetically.

Adult--A person who was 15 years old or older at the time the
research was conducted.

Behavioral objective--A written statement describing the behav-
ior of the receiving population expected after training. The state-
ment includes the conditions under which evalution will take place
(context and tools), the terminal behavior expressed in observable
terms, and the criteria to be used to evaluate the performance of the
behavior (frequency of the behavior and degree of perfection of the
performance of the behavior).

Campesino--A poor person who resides in the rural sector, usually
a farmer.

Compañia--A sparsely populated rural settlement that has offi-
cially recognized boundaries and consists of at least 50 farms.

Department--A geographic area designated by the government as a
political/administrative unit. An English equivalent is "province"
or "state." There are 17 departments in Paraguay.

District--A political/administrative unit that has government-
ally assigned geographic boundaries, many of which comprise a depart-
ment.

Formative evaluation--The process of systematically collecting information about the instructional process to improve training.

Illiterate--Describes a person who has no formal schooling or who may have initiated first grade but did not complete it.

Literate--Describes a person who has successfully completed the entire elementary school cycle.

Nonformal education--Any intentional learning activity generated and experienced outside the planned activities of the formal school system that does not prepare the participants to continue to the university or other programs of higher education requiring formerly-received credentials.

PAE--Spanish acronym for "Programa de Adiestramiento Extra-Escolar" ("Out-of-School Training Program"), the program established by the project.

Paraprofessionals--Campesinos who were trained in the first segment of PAE's training program and were selected and trained by PAE's instructors to use PAE's training programs to train other campesinos.

Participation--an interpersonal process that involves all human elements of training (receiving population, PAE's team, local authorities, advisors, and GOP authorities) in making the decisions that affect the development and implementation of PAE's instructional system and validated training packages.

Semi-literate--Describes a person who started and did not complete elementary school.

Summative evaluation--A process of measuring the outcomes of a training experience to make judgments about training effectiveness.

Training--The process of intentionally teaching a specific skill and related knowledge in such a way that the receiving population will be able to perform the skill without assistance.

Training campaign--All activities involved in the development and implementation of all training programs for each content area in one compañía.

Training program--All activities and materials pertaining to the implementation of training in one content area.

Training strategies--Instructional techniques, methods, or aids used by PAE's instructors and paraprofessionals to reinforce training messages.

Validation--A procedure that confirms that each component of PAE's instructional system does what it is intended to do.

Variables of instruction--The human, environmental, and training elements that are manipulated by the trainer in an attempt to produce predictable outcomes.

Overview

Circumstances describing the problem and supporting the reasonableness of conducting the research have been presented. Chapter I also presented the purposes of the study, PAE's instructional system, a description of the training provided PAE's instructors, and a statement about the worldwide scope of the problem which underlies the importance of its solution.

In Chapter II a detailed description of how the project was initiated and how it was ultimately implemented is presented. Precise information describing the environment in which the project unfolded,

the process of training the project team, and the sponsoring institution are also reported.

Literature that had a bearing on the development of the research or that has a bearing on its relevance today is discussed in Chapter III.

Chapter IV is devoted to reviewing how and why the specific research procedures incorporated in this project were used. It details the plan for gathering the data.

What the criteria were as well as how the criteria were established, including examples, are reported in Chapter V.

Research procedures generated information that permitted the researcher to answer the questions, "Is the instructional system effective?" "Are the instructors trained?" Chapter VI presents the results of applying those evaluative procedures which also serve as evidence that supports the conclusions and recommendations described in Chapter VII.

CHAPTER II

THE CONTEXT OF THE PROJECT

Beginning with a discussion of how the approved project evolved, this chapter presents details of the human and environmental elements of the settings in which the project unfolded and a description of those project activities that contributed to the fulfillment of the purposes of the research.

Project Development

In the early 1970s, the Agency for International Development (AID) began to direct its assistance to poor people in rural areas. Simultaneously, a knowledge base supporting the creation of appropriate educational experiences directed to that population was being written. One term used to refer to those educational experiences is "nonformal education."

One of the institutions upon which AID depended to develop that knowledge base was Michigan State University (MSU). MSU also provided on-site consulting to AID's offices overseas. The conceptualization of the rural, nonformal education project in Paraguay was partially initiated by MSU consultants visiting AID/Paraguay and potential counterpart agencies in the fall of 1973 and summer and fall of 1974.

AID/Paraguay first submitted, for AID/Washington's approval, a project proposal that focused on nonformal education in January, 1975. The purpose of that proposal was

> . . . to test the effectiveness of educational materi-
> als and various approaches (demonstrations vs.
> lectures, teachers as instructors vs. successful
> farmers) which offer practical low cost training to
> the rural Paraguayan population which is largely illi-
> terate and in many communities non-Spanish speaking
> (USAID, "Noncapital Project," 1975, p. 2).

Washington officials decided that, as presented, the project would not

be approved. Consequently, the project proposal was revised.

The new document listed two purposes:

> 1. . . . to develop the capability of GOP, through
>   the National Apprenticeship Institution (SNPP) to
>   produce low-cost teaching methodology and instruc-
>   tional materials suitable for training of the
>   out-of-school rural Paraguayan population; and
>
> 2. . . . the establishment of an experimental out-of-
>   school training program which will be effective
>   in reaching the rural population in the District
>   of Ita (USAID, "Noncapital Project" [Revised],
>   1975, pp. 2-3).

The purposes and accompanying detailed description of the project's

implementation plan were tentatively approved with the condition that

implementation of the project could not begin until the following pre-

paration activities were successfully completed: (a) selection and

training of a project team, (b) inventory and analysis of the ongoing

nonformal education activities and techniques in Paraguay, (c) survey

of the target population applying assessment instrument developed by

the project, and (d) planning and development of an experimental

design for the implementation phase of the project (USAID, "Noncapital

Project" [Revised], 1975).

AID/Paraguay received this conditional approval in June, 1975.

The researcher was contracted in September, 1975, to coordinate all

project activities. A consulting firm was contracted to provide

technical assistance. A work plan was established that would assist

in accomplishing most of the conditions of approval. However, the counterpart agency (SNPP) would not recruit or assign employees to the permanent project team until the preparation activities were completed and implementaiton of the project could begin. Thus, long-term training in nonformal education as envisaged in the revised project proposal did not occur.

Between October, 1975, and May, 1976, the nonformal education inventories, socioeconomic survey of the District, and training of interviewers were completed. A university that had developed and implemented an experimental design in a Third World country provided a preliminary experimental design. Documents that described the outcome of these preparation activities were reviewed in Washington, D. C., in May, 1976.

Officials at AID/Washington decided that the benefits generated by a carefully implemented, experimental design did not justify its expense. The nonformal education inventories, socioeconomic survey of Itá District, and other supporting documents were approved. They sufficiently described the educational problem and justified an attempt to solve it.

The researcher and other AID officials were directed to elaborate a project that would use formative evaluation techniques to create validated training programs directed to illiterate and semi-literate adults. After approximately four weeks, a third revision of the project proposal was approved. Its purpose was ". . . to establish the capability of the National Apprenticeship Service (SNPP) to conduct successful training programs oriented to rural illiterate and

semi-literate adults who presently have limited access to training
opportunities (USAID, "Project Paper," 1976, p. 1).

Training programs were to be developed in six content areas:
home management, environmental sanitation, basic agriculture, small
scale livestock and poultry production, crafts, and management and
improvement of the small farm (USAID, "Project Paper," 1976).

Conditions that would exist at the end of the project to indi-
cate whether or not the project's purpose had been achieved included
(a) a nonformal training unit established and functioning at SNPP to
carry out training programs for the target population, (b) a minimum
of eight staff members assigned to the SNPP nonformal training unit,
(c) a budgetary commitment for NFE activities, (d) a nonformal train-
ing unit capable of training 80 representatives of GOP ministries and
other agencies one year following the end of the pilot project, and
(e) a SNPP materials production staff capable of producing validated
instructional materials for 24 training programs per year (USAID,
Project Design," 1976).

Administrative arrangements were completed in July and August
and implementation of the Rural Nonformal Education Project commenced
in September, 1976.

Descriptions of Contexts in Which
the Project Was Implemented

Itá District was selected as the district in which the pro-
ject would be conducted because GOP and AID officials believed that
successful project results could be transferred to other rural areas of
which Itá District is typical (USAID, "Project Papers," 1976). Spe-
cific details taken from a socioeconomic survey, official documents,

an inventory of nonformal education, and personal observations de-
scribe that population and its experience with out-of-school training.

Physical Descriptions of Itá District, the Compañias, and Small Farms

Itá is the name of the largest town and governmental head of Itá
District. Approximately 7,000 persons live in the town of Itá and
approximately 18,000 persons live in 3,286 farm units in the district's
16 compañias (Paraguay, Dirección General de Estadística, 1972). The
town of Itá is located on a paved road 24 miles southeast of Asunción.
It is surrounded by approximately 40 square miles of gently rolling
savanna which comprises Itá District. The savanna is interrupted by
areas dense with native coco palms and lush vegetation ("A Profile of
Itá," 1975).

A compañia is a sparsely populated rural settlement that has of-
ficially recognized boundaries and consists of at least 50 farms
(Clary, 1976). Most compañias of Ita District begin at the town's
limits and radiate out. Following dirt roads leading out of town, the
settlement pattern is analagous to a large wooden wagon wheel: the
hub of the wheel (the town) and its spokes (the roads leading away
from the town along which the compañias are formed)("A Profile of Ita,"
1975). Most farms belonging to a particular compañia are located on
or near these dirt roads which may extend four miles beyond the town's
limits, or more. There are also smaller roads branching away from the
main artery along which other, usually poorer, farms are located. The
roads leading to the compañias are usually not maintained and fre-
quently become impassable when it rains.

The most common means of private transportation are walking, horses, horses and carts, oxen and carts, bicycles, and motorcycles. Public transportation is limited to a few old buses that traverse the most populated compañias sporadically. A more common form of public transportation is the acopiador's (middleman who buys from campesinos and sells to town merchants) truck.

Seven compañias support an elementary school consisting of the first three grades. Nine compañias have an elementary school with all six grades ("A Profile of Itá," 1975). The schools range from one-room, adobe-walled, straw-roofed buildings to three-room, brick, tile-roofed buildings. Secondary schools do not exist in the compañias.

There is no formal political organization even though a "compañia official" is appointed by the central government to supervise limited public activities, such as the repair of roads (Clary, 1976).

Every compañia has a community soccer field and active competition among several soccer teams ("A Profile of Itá," 1975). The soccer field may have an open-air brick floor where community dances, meetings, and other social functions are held.

A few compañias have an oratorio, a very small building that serves as a location for Catholic mass offered periodically by the priest from Itá.

There are no markets but products used daily including kerosene, rice, flour, pasta, coffee, and sugar are purchased at one of several almacenes (private houses with space allocated to the storage and sale of popular items) located in each compañia.

A typical small farm (up to 20 hectares) located in the compañias of Itá District consists of a two-room, whitewashed house made of

brick or adobe, a straw roof, a dirt floor, glassless windows, and doorless doorways ("A Profile of Ita," 1975). If a kitchen exists it frequently resembles a wooden lean-to attached to an outside wall of the house. A fire burns all day, heating a large cooking pot.

A rudimentary latrine is located behind the house. A rudimentary well is located in front of the house. Light sources include the sun, moon, flashlights, and kerosene lamps.

Approximately six persons live on each farm (five members of the nuclear family plus one live-in relative). Clothes are Western-styled, simple, clean, and usually homemade ("A Profile of Itá," 1975).

Chickens, pigs, and dairy cattle freely roam the small farms. Their production is used for trade, gift giving, or consumption.

It is common for small farmers to own their land and to consume most of the mandioca, corn, beans, and sweet potatoes they cultivate. If the crops are sold, they are usually sold at the town market in Itá ("Resultado de la Encuesta," n.d.).

In general, the land immediately surrounding most houses is swept bare of any vegetation with the exception of scattered mango trees that provide shade and colorful plants for decoration. A family garden is close to the house with cultivated plots farther away.

Socioeconomic Description of Itá District: Survey Results

One of the preparation activities completed before the project's implementation began was a survey of the receiving population. The purpose of the survey was to accurately describe the living situation of persons living in Itá District. Data were collected by trained interviewers who administered a validated questionnaire.

Eighty-two families residing in six (of a total of 16) compañias were selected randomly. Five compañias were selected to reflect the diversity of the characteristics of Itá District, such as economic activity, terrain, soil quality, access to water, proximity to a paved road, and proximity to the town of Itá. The sixth compañia was included by local authorities.

The respondent was the head of the household, but the entire family unit provided information to most items.

The following select statements about the personal data, decision-making and work habits, ideology, economy, education, and needs of campesinos living in Itá District are taken from "Resultado de la Encuesta Socioeconomica Realizada en la Ciudad de Itá con Tabulaciones y Porcentaje" (n.d.). These data influenced decisions made in the development of the instructional system and the implementation of training.

Personal data. Forty-five of the 82 primary respondents were women. Fifty-three of the respondents were at least 15 years old but not older than 50 years old. Thirteen of the respondents said they had more than 10 children. From five to eight persons lived on 41 of the farm units. Nineteen of the farms housed more than nine persons.

Decision making and work habits. Forty-two respondents indicated that the important decisions are made jointly by the husband and wife. Twelve respondents said that important decisions are made by husbands alone, compared to 10 for women alone. Forty-two respondents believed that the local governmental authorities made most of the important

decisions affecting the compañia. There was little evidence of experi-
ence in participatory activities. Fifty-one of the heads of the house-
hold work alone or with their sons.

Ideology. Forty-four of the respondents disagreed, at least in
part, with the statement, "The future of your own life is very dark."
Thirteen respondents completely agreed with that statement. A sig-
nificant majority, 69 respondents, agreed that, "Life in the campo is
better than life in the city." Sixty-five of the heads of households
believed that a young person can better himself or herself as a farmer.
Seventy-two of the persons sampled completely agreed with the state-
ment, "Nowadays, some special or vocational training is necessary to
better oneself." Most people, 60 respondents, agreed that that which
is new is worth more than that which is traditional.

Economy. Thirty-three of the respondents worked as farmers.
Twenty-seven respondents worked as seamstresses or housewives. Fifty-
seven respondents owned their land. Thirty-seven respondents con-
sumed all they produced. If farm products were sold, they were most
often sold in the town of Itá (24.1% of the time).

Education. Nine of the persons interviewed passed all six primary
school grades, 23 passed the first three, and 11 never went to school.
The most frequently given reason (30 of the responses) for leaving
or never starting school was "no money to pay school expenses." 15.9%
of the time the reason was, "I had to work."
Sixty-seven of the heads of household stated that if a short
course were offered in the compañias, they would attend.

When asked to choose from a list of human qualities necessary in training a local leader, "educated" received the second most frequent response.

Needs (open-ended questions). When asked, "If you had the chance to make a change in your life, what would you change and why?" 32 of the 82 respondents indicated that they would change their jobs or how they make a livelihood because the way they presently worked was physically too demanding.

Responding to the question, "With respect to agriculture, what is your principal problem and what information or technique would you like to obtain?" 37 respondents answered that insects and pests or "tired" land were the principal problems and that information was needed about insecticides and fertilizers. Twenty-four respondents didn't know, had no answer, or stated that there was no problem.

The question, "With respect to your health and the health of your family, which is your principal problem and what information would you like to obtain?" provoked 43 respondents to request more information about general health care and how to cure (diseases) caused by parasites.

Description of Itá's Experience
with Nonformal Education:
Inventory Results

Another activity completed in preparation for the project's implementation identified and described all ongoing nonformal education activities in Itá District.

This inventory was conducted using the interview schedule that had been used during the national nonformal education inventory (see Appendix B).

Interviewers were trained to identify the nonformal education activities and to conduct interviews that would elicit needed descriptive information.

All nonformal education activities in Itá District were included in the inventory. They were identified by studying existing documents, making observations in the field, and soliciting information from members of the community. Head administrators of each nonformal education activity were interviewed. When possible, the activities were observed by the interviewers.

The results, as reported in the "Inventory of On-going NFE Activities in Itá" (Fritz, 1976) follow.

Health Center. Since 1937, the Health Center, located in the town of Itá, had been conducting nonformal education activities. In 1976 approximately 25 persons were exposed to these activities each day.

The stated objectives of the activities were to create an awareness in the people to improve their physical health, to awaken an interest in improving their living environment, and to influence pregnant women to deliver their babies in the Health Center.

Using hand-drawn pictures as instructional aids, the Health Center personnel attempted to achieve the objectives by giving daily charlas (short talks) to whomever had come to the Health Center seeking medical

attention. The intended audience were rural families that had few

economic resources.

Examples of topics presented during the charlas included "Wearing

Shoes to Combat Parasites," "Nutrition," and "Hemorrhage Prevention."

There was no evaluation component, but Health Center personnel

had observed that persons attending the charlas were cleaner, wore

shoes more often, and improved the appearances of their homes.

Colorado Party of Itá. Paraguay's governing political party spon-

sored three nonformal education activities.

Sewing academy. The sewing academy began in 1975. An esti-

mated 45 participants were registered in 1976.

The objective of the program was to train youth to work as seam-

stresses and tailors.

Magazine models, patterns, and blackboards were the instructional

materials used to present the theory of sewing and to permit the prac-

tice of specific skills. All activities took place at the party head-

quarters in the town of Itá.

The intended audience were youth from low income families that had

completed at least third grade.

The course lasted three years after which participants were

evaluated and certified by the Ministry of Education and Worship.

Civic and political education course. The party also spon-

sored the Civic and Political Education course of Itá which, since

its beginning in 1975, had been offered to approximately 7,000 parti-

cipants.

Stated objectives were to prepare party members in their civic duties, to train party members to supervise voting stations, and to instruct party members to participate in Colorado Party surveys and campaigns.

Instructional tools include a blackboard, posters, radio announcements, _charlas_, lectures, and political theater.

The intended audience consisted of Paraguayan citizens who had low incomes. There was no evaluation of the instructional process.

Youth training. Another nonformal activity of the Colorado Party of Itá started in 1973 to provide social and cultural training to youths who were affiliated with the Colorado Party. In 1976 there were 150 participants.

The methods used to train the youths who lived in the town of Itá were political debates and conferences held at the party headquarters.

Evaluation of training was not conducted.

Private sewing academies. There were four private sewing academies that trained an estimated 68 students each year to be tailors or seamstresses.

All used the "Casatti System" of teaching sewing, a system approved by the Ministry of Education and Worship.

These academies were located in the town of Itá and directed their instruction to low and middle income youth.

A tuition was charged which caused a high desertion rate as participants were unable to keep up with monthly tuition installments.

One person who was interviewed indicated that 50% of her students abandoned the trade due to excessive start-up costs.

Persons completing the training were formally evaluated and certified by the Minsitry of Education and Worship.

Private vocational activities. Training opportunities were also provided by two private facilities. Both charged tuition.

The objectives were to train participants to be hairdressers, nurses aides, cooks, electricians, or home economists.

The theory/practice teaching method was employed by instructional tools including blackboards, posters, mirrors, fashion magazines, sewing machines, and electronic models.

With the exception of the haridresser's training, all programs required that elementary school be completed by participants.

The intended audience was the youth of Itá's compañias.

Information about evaluation was not available.

Twenty-one elementary schools in Itá District. In 1976 approximately 1,300 parents of elementary school children attended orientation meetings in the school of the town or compañia. The Ministry of Education and Worship funded the meetings, first held in 1963.

The objectives of this nonformal education activity were to assist the parents in understanding the schools' projects and to describe the alternatives parents have for improving the physical and sanitary environment of their homes.

In all instances, charlas and group discussions were the methods used during periodic meetings offered by teachers and specialists (e.g., Health Center Director).

Participants were parents of school children representing a socioeconomic cross section of Itá District.

One school director indicated there had been a marked improvement in the sanitary conditions of the homes she visited since the meetings began. She attributed this improvement to the meetings.

Soccer schools. In 1976 two private soccer clubs located in Itá had 270 participants.

The objectives of the clubs were to improve the physical state of youth through physical education and to prepare youth to play soccer.

The theory/practice method predominated with all equipment provided by the clubs.

Participants, 7-14 years old from all areas of Itá District, provided their own uniforms.

Information about evaluation was unavailable.

Summary. To be admitted to most nonformal education programs in Itá required some schooling. Seven programs attempted to train participants to perform vocational skills. Agricultural skills were not trained. One of the programs, nurses aide training, provided health related skills. The participants of most programs were young adults. Some programs charged tuition.

An examination of nonformal education in Itá indicated that, in 1976, nonformal education activities that intended to transmit agricultural or health related skills to semi-literate adults who were poor and lived in the compañias of Itá District did not exist. The project's receiving population had never experienced that kind of training.

Implementation of the Pilot Project:
September, 1976-September, 1978

The development, approval, and preparation for implementation of this project began in 1973 and terminated in August, 1976. Activities for the approved pilot project and the research began in September, 1976.

The approved general purpose of the pilot project was "to establish the capability of the National Apprenticeship Service (SNPP) to conduct successful training programs oriented to rural illiterate and semi-literate adults who presently have limited access to training opportunities" (USAID, "Project Paper," 1976, p. 1).

The purposes of the research were (a) evaluate the effectiveness of an instructional system to train semi-literate adults who had limted access to training opportunities and (b) to evaluate the instructors' ability to use effectively the instructional system to create and implement training programs.

The purposes of the research coincided with the general purpose of the approved project. However, there were specific conditions expected at the end of the project that were not expected to be products of the research. Therefore, this report does not describe all project-related activities that took place between September, 1976, and September, 1978.

The following discussion describes the principal aspects of the project that contributed to the fulfillment of the purposes of the project and the research.

Implementing Institution: SNPP

The Servicio Nacional de Promoción Profesional (SNPP) is Paraguay's equivalent of a national apprenticeship service. It is financed by a special payroll tax rather than Congressional appropriations. SNPP is semi-autonomous, but is directed by the Ministry of Justice and Labor and is repsonsive to its recommendations regarding types of training offered and the selection of receiving populations (USAID, "Project Paper," 1976).

In 1971 SNPP was established to provide free training in semi-skilled and skilled trades to literate adults who passed a battery of admissions tests. The majority of SNPP's trainees were young adults. Courses in welding, automechnaics, electronics, brick laying, carpentry, and leather working were located in SNPP's headquarters in Asunción and could be completed in approximately nine months. Training in agricultural skills (e.g., "Swine and Milk Producton," "Farm Machinery Operation and Maintenance," and "Wheat Cultivation") took place in rural areas.

In 1974 SNPP trained 1,950 men and women in 90 courses in the industrial, service, and agricultural sectors (USAID, "Noncapital Project " 1975).

The project, Programa de Adiestramiento Extra-Escolar (PAE), was assigned two large rooms at SNPP to house the coordinators, instructors, artists, and administrative-support personnel. PAE had access to SNPP's existing materials reproduction center. A storeroom was converted into PAE's photography laboratory. All equipment and materials, including two four-wheel drive vehicles, were provided by AID and/or SNPP.

A private home in the town of Itá was rented to serve as an office and storeroom for PAE during implementation of the training campaigns.

Identification and Selection
of PAE's Team

The number of local technicians needed to implement the project and corresponding job descriptions were established by SNPP's directors and the Project Coordinator (the researcher).

The Director of SNPP assigned three of SNPP's technicians to fill the positions of PAE's General Coordinator, Instructional System Coordinator, and Materials Production Coordinator.

The General Coordinator had completed secondary school, was formally trained, and had worked as an agronomist for many years. Subsequently, SNPP trained him to be an SNPP instructor and supervisor in agriculture.

The Instructional System Coordinator had completed secondary school, attended three years at the university majoring in pedagogy, and was trained by SNPP to be an instructor in agriculture.

The Materials Production Coordinator, in charge of the existing materials reproduction center at SNPP, had completed secondary school, received on-the-job training in materials reproduction and printing techniques at SNPP from equipment representatives, and was enrolled at the university.

Two SNPP employees were transferred from other departments to serve as PAE instructors in the areas of management and improvement of the small farm and poultry and livestock management. The former had completed secondary school and was enrolled at the university. He had limited experience as an instructor. The latter had completed secondary

school and had been trained as a livestock technician which he'd practiced in the field many years before coming to SNPP where he was trained as an SNPP instructor before being transferred to PAE.

To fill the positions of Crafts Instructor, Environmental Sanitation Instructor, Home Management Instructor, and Photographer, announcements of the positions were published in two newspapers with national circulation. A person qualified to teach crafts was not identified. The team decided to eliminate environmental sanitation as a content area because the Ministry of Health sponsored a program that provided that training.

Several applicants were interviewed for the position of Home Management Instructor. A Peace Corps trainer who worked with semi-literate, rural women assisted PAE's coordinators in identifying necessary training skills. PAE's coordinators selected a woman who had completed secondary school, had been trained in extension in the USA, and was trained by the Agriculture and Livestock Extension Service (SEAG) as an extension agent.

Qualified photographers also responded to the ads. They were interviewed by the coordinators and samples of their photographs were examined. PAE's coordinators selected a person who was contracted by the project. He had completed secondary school and received on-the-job training working as a free lance sports photographer.

The instructor for basic agriculture was recruited by SNPP. He had completed secondary school, was a trained agronomist, and was serving as an extension agent for SEAG at the time he was contracted by the project.

Candidates for the art department were identified through personal contacts and responses to an announcement in Paraguay's most widely circulated newspaper. All submitted samples of their work, were given a graphics test administered by a materials production specialist, and were interviewed. The coordinators contracted three of the candidates using recommendations made by the specialist. All had completed secondary school and received on-the-job training at advertising agencies or local newspapers. A fourth member of the art department with the same background was later assigned to PAE by SNPP's director.

A printer who had completed secondary school and received on-the-job training to operate offset and mimeograph machines was individually recruited and contracted to work with the PAE team.

The coordinators, instructors, and artists were supported by an administrative secretary, a typist, a half-time accountant, and two part-time drivers. All had completed secondary school and had received on-the-job training at SNPP. An office assistant was in the process of completing secondary school. These administrative-support personnel were transferred to PAE from other departments of SNPP.

PAE's core team consisted of the above-described 19 persons.

In February, 1978, three apprentice instructors were recruited and assigned to PAE as instructors in basic agriculture, management and improvement of the small farm, and home management. The apprentice instructor in basic agriculture had completed secondary school, had worked many years in agricultural programs, and was trained by SEAG as an agricultural extension agent. The apprentice instructor in home management had completed secondary school, was trained by SEAG as an agricultural extension agent, and had completed

SNPP's course for instructors. The apprentice instructor in management and improvement of the small farm had received the equivalent of a Bachelor of Science degree in agronomy.

Upon completion of the project in Spetember, 1978, the PAE team consisted of 22 trained personnel.

Training PAE's Team

In September, 1976, implementation of the pilot project began and with it the training of PAE's team. Training continued through September, 1978. Planned training experiences can be grouped into two categories: (a) training by foreign advisors and (b) equivalent practice (on-the-job training). A description of each follows.

Training by foreign advisors. Five educationists were employed by AID to train the project team. Most training was directed to the coordinators, instructors, and artists.

Project Coordinator. The Project Coordinator, a Ph.D. candidate in curriculum and instruction at Michigan State University who had worked as a Peace Corps volunteer in Paraguay for three years, assisted in the development of all training activities.

He provided specific training experiences in project administration, budget development and cost control, interpersonal communication, organizing an instructional system, methods of evaluation, behavioral objective development, training preference identification, validation methods, nonformal education, and participation.

Most of that training occurred during the five training campaigns when he, other adivsors, PAE's coordinators, or other team members observed that training was needed.

Training usually took place during brief meetings with an immediate opportunity to practice that which was trained. Some concepts (e.g., behavioral objectives and communication skills) were presented during short (two to three day) meetings using specific group exercises to assist in training related skills.

Instructional technologist. Training that focused on the variables of instruction (human, environmental, and training) working as a unit, and testing instructional materials was provided from September through early December, 1976, by a person with a Ph.D. in instructional technology who had worked developing educational programs in South America, the Carribbean, and Africa.

A theoretical foundation of those educational concepts was established early during lecture/discussion sessions. Participation of the group was elicited as the "Paraguayanization" of the concepts evolved.

The entire team practiced using those concepts in a trial run for which they determined topics for each of the four content areas, created four training programs that incorporated most of the variables of instruction, and implemented the programs in the field. Based on information gathered during the trial run, the training programs were revised.

Testing instructional materials before they were used was emphasized when the team, under the supervision of the advisor, compared

campesinos' interpretations of printed materials that used graphics alone and those that accompanied the graphics with a short written message. Information gleaned from that experience was used to establish a standardized materials test later in the project.

Instructional strategy and team building technician.

A Ph.D. candidate specialized in nonformal education who was Ecuadorian and had directed a five-year nonformal education project funded by AID and the Government of Ecuador trained the team to use games as an instructional strategy. He described related theory and provided games used in Ecuador with which the team practiced.

During his consultancy (10 days in October, 1976), he also led small group exercises designed to improve the team's decision making skills.

Evaluation specialist.

An Argentine technician, a Ph.D. in higher education and administration, had specialized in communications, conducted research in Colombia, consulted for the World Bank in Mexico, and worked in agricultural extension programs in Argentina.

He provided training in evaluation methods (e.g., pretests, posttests, and retention tests); design and evaluation of instructional materials; skilled-leader identification; participation; and all skills related to the development, use, tabulation (both by hand and computer assisted), and interpretation of PAE's First Household Survey.

Most of this training took place during the training campaigns immediately before and after a day's activities. He responded to requests by team members for additional training or provided it when he or other team members observed the need.

He worked with the team from February, 1977, through early August, 1978.

Instructional materials specialist. The fifth technician, holding a Ph.D. in education, brought materials development experience to PAE.

For 10 days in April, 1977, he trained the artists and instructors how to develop alternative instructional aids (e.g., simulation games and slide/tape programs).

Presentations of theory and discussions based on past experience working with similar receiving populations in Bolivia and Ecuador were accompanied by opportunities for the team to develop and use alternative aids they developed during this training.

Specific training provided by each foreign advisor was reinforced by repeated practices of that which was trained during six training campaigns. A description of that process follows.

The six training campaigns: equivalent practice. Training campaigns were established to provide PAE's team with the opportunity to practice using the educational concepts and to create, validate, and evaluate skills-training programs. Training was mostly directed to PAE's instructors.

From April, 1977, through December, 1977, the team and advisors experimented with four training campaign formats that organized the time used to perform all instructional activities and the requirements of those activities differently.

The first training campaign was unlike the succeeding three in that it did not include PAE's instructors training _campesinos_ to be paraprofessionals.

The second, third, and fourth training campaigns incorporated the same general activities but varied the time allotted to accomplish those tasks (e.g., 20 days to develop the training programs instead of 15 days).

The fifth and sixth training campaigns followed the format detailed below.

The project was intended to be experimental, incorporating new information as it was generated to improve the basic instructional system and corresponding instructional activities. As the project progressed from the first through the sixth training campaigns, fewer changes were made. The training campaign format established as the permanent format consisted of three phases.

Phase one. The first phase of the training campaign lasted 23 days. The following activities were routinely accomplished.

1. _Identification of training content_. One of the conditions the content of each training program had to satisfy was that it be desired by the receiving population. The team wrote questions for PAE's First Household Survey questionnaire that would generate information about the _campesinos_' living situation (e.g., "Which of the following tools do you have?" "How many hours a day could you attend a training course?" and "What problems are you having in increasing your production?") and training preferences (e.g., "What do you want to learn in agriculture?" "In basic agriculture what technical knowledge

or practices do you need most urgently?" and "If I were an agronomist, what would you like me to teach you?") specific to the four content areas.

The team tested the questionnaire on a similar population and used the results to improve it.

They assigned numbers to each farm unit in the six preselected compañías in which the training programs would be conducted. These numbers were written on pieces of paper which were placed in a hat. The numbered pieces of paper representing approximately 15% of the total number of farm units in each compañía were pulled from the hat. These farms were located on a map of the compañía. This process was followed to select the sample for each compañía in the survey.

The team administered the questionnaire to 196 residents of the six compañías, tabulated the results by hand, and interpreted the results. Once the training desired by the campesinos was identified, it was used in conjunction with five other conditions (i.e., that the content coincide with the agricultural calendar, that it be within the team's technical capability, that it contribute to the campesino's health or economic situation, that it coincide with PAE instructors' professional experience and/or advice of the experts, and that it be within the economic possibility of the receiving population) to select the skills and related knowledge about which a program would be developed.

2. Determination of visual instructional materials.

PAE's instructors identified the visual instructional materials they believed would best contribute to the fulfillment of their training

objectives. Once approved by the coordinators, the instructors determined the content of the visual which was detailed on an Audio/Visual Aid Plan (see Appendix C).

      3. **Determination and request of all instructional tools and equipment**. Early in the planning, the instructors specified in writing all expendable and non-expendable materials that were needed to implement each training program. Approved by the coordinators, the process of purchasing or otherwise acquiring those materials began.

      4. **Preparation of the Instructional Plan**. The instructors wrote an Instructional Plan (see Appendix A) consisting of the detailed description of the five basic tasks of PAE's instructional system: assessment, objectives, strategies, implementation, and evaluation. The plan was approved by the coordinators.

      5. **Creation of rough draft of visual instructional materials**. One artist was assigned to each of the four content areas. Instructors provided the text and a brief description of the graphics to the artist on a standard Audio/Visual Aid Plan (see Appendix C). Artists consulted with each instructor to clarify the intended visual messages described in the Audio/Visual Aid Plan. If more specificity were needed, the artist requested the project's photographer to provide black and white photographs of the object which the artist then used as a model. Rough drafts of the pamphlets were approved by the coordinators.

    These sketches were field tested by the artists and instructors on a similar population.

The field test consisted of photocopies being made of the original sketches and text of each pamphlet. The team (usually the artists and instructors) asked arbitrarily selected campesinos living in compañías similar to those of Itá District to state the message they saw on each page of the pamphlets. Their observations were written on each page.

The artists used the observations to make corrections on the final proofs of the pamphlets before they were printed on an offset machine.

The flip charts followed the same visual sequence as the pamphlets. They, too, were corrected before being reproduced using a silk screen process.

6. Publicity campaign. The last activity conducted during Phase One was the publicity and information gathering campaign during which the team members met individually and in groups with the receiving population to explain PAE's purposes and method, to describe what the campesinos could expect from PAE and what PAE expected from the campesinos, to clarify training preferences, and to motivate the campesinos to participate in training.

Posters, flyers, a loud speaker perched on the project's vehicle, home visits, and a comic book describing PAE were also used to accomplish this task. It was during this activity that interested campesinos signed up to participate in the second phase of PAE's training campaign.

Phase two. The second phase of the training campaign lasted 26 days. The four activities of the second phase of the training campaign comprise the operationalization of a PAE training program.

1. Instructors' training campesinos. The first 10 days were devoted to training approximately 15 campesinos in each of the four content areas by PAE's four instructors (10 days maximum; sometimes the skill was trained in fewer days). A pretest was administered, training was conducted, and a posttest was administered after the training activities terminated.

During the training process, PAE's instructors identified at least three campesinos who were respected by their peers, demonstrated literacy skills, correctly performed the skill being trained and acquired the related knowledge, and manifested a desire to be trained to be a paraprofessional.

2. Training paraprofessionals. The succeeding five days of Phase Two were used to train selected campesinos to be paraprofessionals.

They were trained to perform all administrative/documentation tasks, to administer the pretests and posttests, to use the instructional strategies, and to conduct all activities outlined in the original Instructional Plan.

The paraprofessionals-to-be were evaluated using a standard pretest and posttest (see Appendix D) as well as observations made by the instructors and coordinators.

3. Paraprofessionals training campesinos. Immediately
following the training of campesinos to be paraprofessionals, the para-
professionals spent a maximum of 10 days training up to 10 campesinos
each to perform the same skills and acquire the same knowledge which
the paraprofessionals themselves had learned in the first 10-day
period.

Their implementation of training was closely supervised by PAE's
instructors and coordinators.

Pretests, posttests, and observations made by the paraprofes-
sionals were used to evaluate this segment of PAE's training program.

4. Closing ceremonies. The 26th day of Phase Two was
devoted to presentation of Certificates of Attendance to campesinos
who had successfully completed training. Honorable Mention Certifi-
cates were awarded to the paraprofessionals. Ceremonies were fol-
lowed by local entertainment and a party.

Phase three. In six days the activities of Phase Three were
completed.

1. Maintaining equipment. All training materials and
equipment were gathered, inventoried, repaired, and stored by PAE's
office in Itá.

2. Generating feedback. Meetings were held with "gradu-
ates" to document their opinions regarding any aspect of the training
program. Again, PAE's artists reviewed each page of the visual ma-
terials with the participants and instructors whose suggestions were
documented. Feedback from the coordinators was written on an

Instructor Feedback Sheet and shared with each instructor (see Appendix E).

3. <u>Revising training programs</u>. During Phase Three, all observations (recorded or not) made during any portion of training by the advisors, any member of the team, and/or <u>campesinos</u> were reviewed. Corresponding changes were made in the training programs.

4. <u>Report writing</u>. A general evaluation of training was written by each instructor and filed with the training materials and Instructional Plan for each of the training programs (see Appendix F).

Equivalent practice was the most frequently used training method to which PAE's team was exposed. Practices started in April, 1977, and terminated in September, 1978. The vehicle for equivalent-practice-training of PAE's team was a training campaign comprised of three phases. During each training campaign, PAE's instructors, assisted by artists and administrative-support personnel, created and implemented four to six different training programs using PAE's instructional system.

Summary

Between August, 1973, and September, 1976, the Nonformal Education Project, funded by the Agency for International Development and the Paraguayan Ministry of Justice and Labor was established. The general purpose of the project was to train Paraguayan technicians how to train semi-literate and illiterate <u>campesino</u> adults.

Project activities took place in offices of the Servico Nacional de Promoción Profesional (SNPP) in Asunción, in the project's office in the town of Itá and in the <u>campesino</u> settlements surrounding Itá.

Implementation of the pilot project began in September, 1976, and terminated in September, 1978. During this period, the project team was trained by foreign advisors during lecture/discussion sessions and repeated practices of the instructional system during training campaigns.

CHAPTER III

RELATED LITERATURE

The purpose of the literature review was to identify and learn from the instructional processes already employed in other Third World countries to solve problems similar to those experienced in Paraguay. It also served to underline recognized educational principles and training practices that supported the reasonableness of developing an instructional system in a certain way.

Seven skills-training programs in the Third World are described, and instructional design and technology literature is discussed below.

Skills-Training Programs

The following descriptions supply information about the programs' receiving populations, objectives, content, and training methods.

Botswana Brigades, Botswana

One highly visible program in Botswana that provided skills training to elementary school leavers was called the Botswana Brigades. The term "brigade" was used to emphasize its production/employment orientation (van Rensburg, 1978). Academic subjects were taught, but the primary objective of training was to promote rural development by teaching skills for gainful employment (Botswana, n.d.). The minimum age of most participants was 16; the maximum age was 25 (Wetherell, 1979).

Specific skills taught such as thatching, intensive horticulture, carpentry, and farming depended on the demand for the goods or services produced by those skills in the 12 communities in which brigade centers were located (van Rensburg, 1978; van Rensburg, 1976; Botswana, n.d.).

The training process of the skills-training portion of the brigades has been labeled "vocational training" (Botswana, 1981), "on-the-job training," "learning by doing," and an adaptation of the traditional "apprenticeship system" (van Rensburg, 1978).

Patrick van Rensburg (1978) reported that at one of the brigade centers, four different levels of training were offered in some skills. The first level or "bridging course" was offered to elementary school leavers between 12 and 16 years old. Training included a less rigorous production function than other levels. It was geared to the abilities of the participants. Academic subjects and theoretical lessons related to the skills were emphasized. The program lasted three years. The second level or "brigade course" was offered to persons who were at least 17 years old. Training through production activities occupied four days a week. Academic subjects and theory were provided one day each week. This program lasted three years. The third level or "advanced brigade course" was offered to those who had completed the "brigade" training and wanted to upgrade their skills. The training may have taken three years and was characterized by its stronger theoretical and academic component. The fourth level or "sandwich course" was offered to older adults, some of whom had not completed primary education. Training was short term (one to three months) and consisted of the training of one specific skill

while providing adequate opportunities for practicing the skill in a production situation.

In all programs the skills training took place on the job site, for example, a factory, a farm, a building site, or a print shop. The managers and supervisors were also instructors and teachers. "Skills are thus built up sequentially involving the three elements of demonstration, non-productive exercises, and then thorough and continuous performance production" (pp. 29-30). Evaluations were made by performing on official trade tests, by determining whether brigade graduates competed favorably with people trained elsewhere, or by determining whether products of the brigades' production units were marketable.

Vocational Improvement Centres, Nigeria

In Nigeria, practitioners of low levels skills who had minimal schooling did not have access to trade schools. Trade skills were often obtained through the traditional apprenticeship system. That training process did not provide the apprentice with the theoretical foundation of the trade which was necessary to be certified by the government (Rimlinger & Stremlau, 1972).

Vocational Improvement Centres were established by the government in existing schools, workshops, and training centers to upgrade the skills of self-employed artisans (Gilpin & Grabe in Ahmed & Coombs, 1975). Most trainees were 16 to 40 years old (Rimlinger & Stremlau, 1972) and were members of farm families that lived near the center. They were required to have worked in the trade for which their skills were to be upgraded, for two years (Coombs & Ahmed, 1974). That

training may have occurred in small enterprises in the indigenous sector, government service, or private industry. Literacy was not required (Rimlinger & Stremlau, 1972).

Criteria used for selecting which skills were taught in the Vocational Improvement Centres follow: (a) that there be a demand for it in the community and (b) that instructors be available to teach the skill. Trades included auto-repair, carpentry, masonry, plumbing, leatherworks, and signwriting. English and trade-related mathematics were also taught (Rimlinger & Stremlau, 1972).

Training courses were announced by word of mouth and official publicity campaigns within the community. Local instructors were recruited who were familiar with the community's problems and needs. They were also able to translate training messages into the indigenous language when necessary (Rimlinger & Stremlau, 1972).

Even though training was not intended to develop vocational skills among the unemployed, the skills upgrading that occurred was accomplished using traditional vocational training methods. Each course used a syllabus outlining essential training messages based on that which was required to pass the Ministry of Labour Trade Tests. Courses were offered four or five days each week, after work, for 10 months and a total of 400 hours of instruction. Approximately 300 hours of that time were devoted to skills training (Coombs & Ahmed, 1974). The borrowed facilities were adapted to the requirements of training (i.e., work benches and blackboards installed), and equipment (e.g., training tools) was provided each trainer. Trainees were grouped according to years of schooling (i.e., no formal schooling,

some primary schooling, and primary school completed) (Rimlinger &
Stremlau, 1972).

Rimlinger and Stremlau (1972) described the Vocational Improve-
ment Centres as successful and attributed that success to the follow-
ing facts. The training problem and its relationship to other aspects
of technical training were defined. The training content was tailored
to local needs. The training schedule was geared to the lives of the
trainees. The local instructors knew the area and local language. The
training was of short duration (part-time over 10 months) and offered
visible pay-offs (certificates and prizes to best students). There
were low operating costs. And the government's demands were flexible.

Another report indicated that most of the trainees were not the
self-employed artisans for whom the program was intended (Gilpin &
Grabe in Ahmed & Coombs, 1975).

Servicio Nacional de Formación
de Mano de Obra (FOMO), Bolivia

The Bolivians to whom training was directed were adult workers in
small and medium sized enterprises who had not completed school and
were underemployed or unemployed. Trainees worked in agriculture,
mining, industry, and the service sectors. Between 1973 and 1975
approximately 1800 participants were trained (Bolivia, Servicio Na-
cional, 1976).

FOMO intended to certify human resources, to regulate the supply
and demand of the labor market, to elevate the productivity of enter-
prises by certifying human resources, to provide adult workers with
educational opportunities and vocational training, and to reduce the

levels of structural unemployment and underemployment in the country (Bolivia, Servicio Nacional, 1976).

The economic sectors from which trainees were recruited were mining, agriculture, industry, and service. In 1977 one of FOMO's regional centers offered training in watering techniques, fruit and vegetable gardening, conservation of crops and foods, fertilizers, and nutrition (Bolivia, Servicio Nacional, 1977).

In general FOMO provided practical training for specific jobs. Theory was minimized to information essential to skill acquisition, but technical knowledge about the skills was presented. Training was scheduled during the trainees' free time.

Training took place in FOMO's permanent centers, facilities belonging to other institutions, and FOMO's own mobile units. FOMO produced its own instructional materials including programmed texts and audio-visual aids corresponding to its programmed instruction units. The training process followed the International Labor Office's (ILO) vocational training model which consisted of the following operations:

1. A study of the desired terminal behavior

2. Determination of required knowledge and skills

3. The selection of appropriate methods of instruction

4. Training of student

5. Change of behavior and acquisition of knowledge and terminal skills of trainees

6. Certification of students (validation of results of training)

7. Feedback from the results of training about the instructional method

In 1976 the Ministry of Work and Labor Development recommended that FOMO provide trainees literacy and numeracy upgrading to make their entry level uniform, a basic training program be offered (presumably to improve skills needed to better perform life-supporting tasks), a modular training system be adopted to teach skills and related technical knowledge by steps within a more broadly defined occupational level, and a system be established to certify skill acquisition at various levels of expertise (Bolivia, Servicio Nacional, 1976).

Village Polytechnic, Kenya

Kenya's primary schools graduated thousands of youths from rural areas who didn't have access to secondary school and haven't found jobs. The National Christian Council of Kenya (NCCK), the government of Kenya, and management committees in local communities attempted to resolve the dilemmas of rural youth who were unemployed by providing skills training in training centers called "Village Polytechnics." The purpose of the Village Polytechnics was to train primary school graduates in rural areas for work in their own communities. The emphasis was on skill acquisition that was to be used locally. The Village Polytechnics did not prepare trainees for entry into another employment or educational institution (Wanjala, 1976).

The content of training varied and depended on the opportunities and needs of each rural area. The local committees conducted surveys of income generating activities in the area to assist in making decisions about the skills that were to be taught (Wanjala, 1976). Additional information affecting that decision was provided by the

trainees during on-the-job training. Some observers saw the original agricultural orientation of training giving way to non-agricultural skills (Kipkorir in Ahmed & Coombs, 1975). More recent documents indicated that there was still an emphasis on agricultural skills (Wanjala, 1976).

Examples of the content of training courses follow: cooking, handicrafts, childcare, carpentry, masonry, leatherwork, animal husbandry, and horticulture ("Village Polytechnics--Kenya," n.d.). A "work programme" was written for each content area. It included the ideas and skills to be taught, the training methods, and the materials needed for instruction (Kenya, Department of Social Services, _Handbook_, 1972).

The method of training was similar to an apprenticeship scheme (Wanjala, 1976). To achieve clearly stated terminal objectives, a three-step instructional process was followed. (a) The rationale and importance of learning each skill was explained. (b) The instructor demonstrated how to perform the skill. (c) The trainees practiced performing the skill. Training messages were displayed using pictures, diagrams, models, and blackboard drawings. These visuals were drawn with ink and paint made from the natural dyes and stains in flowers, roots, soil, stone, and the bark of trees (Kenya, Department of Social Services, _Handbook_, 1972). Simulation games were also used as self instruction exercises (Kenya, Department of Social Services, "What Happens," n.d.). Oral training messages at the Village Polytechnics were presented in the vernacular and Swahili. The language of formal schools was English (Kipkorir in Ahmed & Coombs, 1975). Technology that was appropriate in the villages was developed and used

for the training of each skill. Even though the training could last as long as was necessary to master the skills (Kipkorir in Ahmed & Coombs, 1975), most courses lasted approximately two years ("Village Polytechnics-Kenya," n.d.).

An evaluative study conducted by the Norwegian Agency for International Development recommended more emphasis on agricultural training, greater involvement of trainers and instructors in program management, increased community involvement, better administrative support, and the establishment of evaluation criteria ("Village Polytechnics-Kenya," n.d.).

Promoción Profesional Popular-Rural (PPP-R), Colombia

In Ahmed and Coombs (1975), Stephan Brumberg reported that Colombia's National Apprenticeship Service (SENA) provided a variety of vocational training programs designed to meet the training needs of different groups of people. Programs served clients ranging from unskilled adolescents to professional trainers. One of the programs was called Promoción Profesional Popular-Rural (PPP-R).

There were two primary objectives of the program:

1. To provide underemployed and unemployed persons with the skills required for improving their productive capacity, whatever their educational level; and

2. To train semi-skilled workers in order to facilitate access to employment and consequently their integration into the process of production and construction (Brumberg in Ahmed & Coombs, 1975, p. 409).

The receiving population lived in rural areas and consisted of men and women, adults and adolescents, and literates and illiterates.

SENA's intention was to plan the content of training based on a thorough analysis of data about the contexts in which training would take place and on rural manpower needs. In practice, the number of trainees and the content of courses were established at the national level without the benefit of field based research data. Each region in which PPP-R operated was assigned a quota of persons to be trained each year to perform predetermined skills. PPP-R's supervisors in each region distributed the courses within a region based on his or her perception of each community's training needs. Those needs were identified based on information collected during interviews of local leaders, parish priests, and local representatives of development agencies. Individual instructors were expected to alter course content to the specific needs of the community. Most courses transferred knowledge and skills in crop production, livestock, poultry, rabbits, bees, tractor operation and maintenance, agricultural machinery, repairs, rural mechanics, rural construction, cooperatives, rural administration, handicrafts, first aid and practical nursing, breadmaking, or human relations.

One theory underlying SENA's instructional process was that a person who has previous experience in a specific occupational skill will improve his or her skills and productivity when provided a relatively short training course to upgrade those skills. This theory was operationalized by using mobile training units to take skills training to rural communities. A "mobile training unit" consisted of just one instructor or an instructor, a vehicle equipped for instructional activities, and a prefabricated classroom-living unit combined. During training, the focus was on transmitting practical information.

There was minimal classroom work. Instructors demonstrated the skills and trainees practiced the skills until they duplicated the instructor's demonstration. Instruction followed detailed course descriptions developed by SENA's headquarters. To increase the possibility that the skills would be practiced after the course and adopted by the campesino, tools and equipment available to the trainees were used by the instructors during demonstrations.

Scheduling of courses depended on the time of year and hours of the day most convenient to the campesinos. The average course lasted a total of 63 hours and was offered two to six hours every day. Courses have become shorter with subject matter also being divided into smaller units. For example, one course whose topic was "chicken raising" was divided into three separate units: "hatching," "rearing," and "laying." It was believed that each unit had value, independently of the others, to justify offering it separately.

While appraising PPP-R, Brumberg recommended that training go beyond technical knowledge of farm production and include principles of farm business management, how to use available technical services, how to obtain credit, how to obtain physical inputs, and how to market products successfully. Printed material that relies heavily on illustration should be used, and a measure of training effectiveness (the educational results) should be established.

The Farmer Scholar Program,
the Philippines

R. W. Roskelley (n.d.) stated that the training objective of the Farmer Scholar Program, an experimental program, was to develop an economical, practical, and replicable system for transferring

simplified agricultural technology. The training was directed to small-scale farmers from Cavite Province who had little formal education. These men and women were selected by village committees to be "Farmer Scholars." The Farmer Scholars were full-time farmers who permanently lived in the villages from which they were chosen. They were literate in Tagalog, an indigenous dialect, and understood English. They were perceived by peers as honest and industrious, made major family decisions, desired short-term training, and already produced agricultural products for which they would receive specialized training. These participants demonstrated the skills learned during training and were willing to share those skills with others. After training, the Farmer Scholars selected and trained "Demonstration Farmers" from their villages.

Program planners checked out their own ideas regarding the content of training with sources from the villages. Decisions regarding what would be trained were made combining these two inputs. In agriculture, training was provided in the cultivation of rice, vegetables, fruits, or feed grains as well as the raising of swine, cattle, or poultry. The general goal was to increase production.

The Farmer Scholar attended a 30 hour/4 day training session away from his or her farm. The content of training was organized in lesson plans that listed behavioral objectives, training materials, ideas regarding how to motivate people, teaching methods to be used, and the scheduling and sequence of topics to be presented. Instruction followed these plans and used a step-by-step technique accompanied by visual aids. The Farmer Scholars practiced the skills under supervision. The teaching materials were brief, in the language of

the learner, and related to his or her daily experience. They were

presented in the form of sequential, easy-to-follow instructions.

Upon returning to their farms, the visual aids and corresponding

handouts were subsequently used by the Farmer Scholars to train the

Demonstration Farmers. The Demonstration Farmers then selected and

trained "Extension Farmers" in their village.

When the training of 343 Farmer Scholars, 1,224 Demonstration

Farmers, and 1,843 Extension Farmers was completed, an evaluation was

conducted. Results showed that the incomes of participating farmers

substantially increased over their pretraining level.

Servicio Nacional de Aprendizagem Industrial (SENAI), Brazil

da Silva and Tolle (n.d.) described the operation of Brazil's

National Apprenticeship Service for Industry (SENAI).

SENAI sought to provide vocational education to 14-18 year old

apprentices employed by industry; assistance to industry-sponsored

training programs; training, retraining, and specialization programs

for adult workers; grants-in-aid for further education; and coopera-

tion in technological research aimed at industrial development.

The receiving population consisted of men and women workers, at

least 14 years old, who had completed four years of elementary school.

By 1972 in the State of Sao Paulo, SENAI had trained 409,606 workers.

Most were adult workers above 18 years of age. A smaller percentage

of workers were 14-18 year old apprentices.

The content of training depended on Brazil's manpower needs which

was determined by conducting surveys and interviews of sample popula-

tions within the industrial sector. Those needs were translated into

specific jobs which were analyzed to determine what a worker does, how he or she does it, and the skills involved in doing it. Examples of the vocations taught include welder, electrician, repairman, radio service repairman, bricklayer, carpenter, and typesetter.

The development of SENAI's instruction generally followed a standard plan. Once the above jobs were identified, they were broken down into increasingly less complex job behaviors: "tasks," "operations," and, finally, "skills." Then, the general information (e.g., math and language) and technical information required to perform the job were written. This was followed by the elaboration of an instructional unit for each task.

All of the above was incorporated into a course plan (instructional plan) which consisted of specific objectives expressed in observable terms and stating evaluation criteria, the trainee selection criteria, teaching methods to be used (e.g., debate, AV presentation, group discussions, demonstrations, practice of the skill in the shop), the instructional units, the course schedule, and the evaluation process. Equipment needed to perform each task was also listed.

SENAI offered seven different training programs, ranging from two to four years in length, that were planned according to the above description.

Routine evaluations of the trainees and instructors took place during and after the performance of each task.

Instructional Design and Technology

Educational principles that have guided classroom teaching as well as the development of training programs in formal settings were

potentially relevant in the out-of-school contexts in which skills training was to take place in Paraguay.

In 1919, Charles Allen outlined the process of instruction for training skills as follows:

1. preparation (i.e., identifying the skills and knowledge the trainee already possesses that are also related to what is to be taught, forming a foundation upon which to build new skills);

2. presentation (i.e., providing the trainee with new skills and knowledge);

3. application (i.e., determining through observation whether and to what extent the trainee has acquired the skill trained, followed by reinstruction if needed); and

4. testing (i.e., final evaluation during which the trainee must successfully perform the skill without assistance from the instructor).

Labeled as the first attempt to make the foundation of modern educational technology available to the vocational educator, the work of Robert Mager and Kenneth Beach, Jr. (1967) described the steps in preparing vocational instruction courses. Fifteen instructional steps were organized into three phases in the process of developing a vocational course.

During the "Preparation Phase," (a) the job was described; (b) the specific tasks involved in performing the job were detailed; (c) the receiving population was described; (d) trainee selection criteria were established; (e) specific course objectives were developed, based on tasks of the job and considering administrative constraints; and

(f) the entering skills test and the final evaluation instrument were written.

During the second phase, the course's "Development Phase," (a) instructional units were written describing what each trainee would be able to do at the end of each unit, (b) instructional units were sequenced and scheduled to provide trainees opportunities to re-peatedly practice all of the job's skills, (c) content associated with each task was identified, (d) instructional procedures and materials were listed, (e) a lesson plan was written, and (f) a course tryout was conducted.

The third phase of the development of the course was called the "Improvement Phase." During this phase (a) the trainee's performance was compared to course objectives, (b) course objectives were re-evaluated vis-a-vis job requirements, and (c) the course was evaluated and revised during a trial run.

The authors stated, "Regardless of the intent of instruction, the procedure for developing the course is basically the same" (p. 6).

In discussing the systems approach to adult learning, Robert Gagné (1968) identified the instructional goal as the starting point of the design of an instructional system.

To accomplish that goal, broad functions the system must perform should be identified. Those functions are broken down into more specialized activities which together form a sub-system. The sugges-tion was made that four sub-systems should be developed: the adminis-tration sub-system, the instruction sub-system, the guidance sub-system (student orientation), and the evaluation sub-system. Together

they comprise a system for adult learning. The interrelatedness of the sub-system was also emphasized. "A system is organized, after all, by planning and bringing about some sort of compatibility, or 'match' between the output of one component and the input of the next in a sequence of operations" (p. 1).

An approach to teaching (in the classroom) described a four-step process to achieve desired change in a learner's behavior (Henderson et al., 1972).

The first step was called "assessment." It involved systematically collecting information about a student's learning needs and all factors affecting the instructional process. These data were used to identify the possible causes and consequences of past and future behavior and to make decisions about the knowledge and skills to be taught. Input from the learners was routinely solicited, and a dialogue between teacher and learner was established.

The second step, "goal setting," was the process of specifying the learning objectives of the instructional process. Those objectives stated the specific behavioral outcomes, the set of conditions under which the learner's behavior would be evaluated, and a criterion measure. The specification of each objective was negotiated by the teacher and the learner.

"Strategies" was the label assigned the third step. It entailed the preparation of a plan for the selection, development, and implementation of instructional techniques designed to produce the desired behavioral changes. It also included the notion that planned

techniques should be changed if deemed necessary during the ongoing instruction itself.

The fourth step "evaluation" consisted of systematically gathering information to make judgments about the effectiveness of the three steps already described. The activities of "evaluation" included designing, preparing, and implementing evaluation instruments and procedures.

Irwin Goldstein (1974) contended that one of the important characteristics of "training" that makes it different from "education" is the greater specificity of the objectives of the instructional process. When the desired goal of training is the relatively uniform training behavior of trainees, then uniform and behaviorally specific training objectives must be established. He called the systematic development of training programs "instructional technology." He wrote:

> The systems approach to instruction emphasizes the
> specification of objectives (through the assessment
> of instructional needs), precisely controlled learn-
> ing experiences to achieve these objectives, criteria
> for performance, and evaluative information (p. 17).

Feedback generated during the instructional process was perceived as necessary to continually improve it. Pretests and posttests were said to be measures of the effectiveness of the instructional process.

Ted Ward et al. (1974) indicated that it was appropriate to use an instructional system when there is significant interrelatedness among the human, environmental, and curricular variables of instruction. The authors stated:

> Non-formal education exists in order to make it pos-
> sible for people to be changed in certain specific
> ways, adding or improving given skills or competen-
> cies . . . non-formal education constitutes a much
> more appropriate framework in which to make use of
> a systems approach to planning (p. 70).

To assist the non-formal educator in developing his or her own instructional learning system, the authors graphically presented 10 tasks that should be highlighted in an instructional system. Figure 1 presents the tasks and depicts the necessary interactive nature of these tasks (e.g., characteristics of the receiving population in-fluenced the design of the instructional tasks). It also emphasizes another important characteristic of a systems approach, its self-correcting nature (i.e., evaluation results are used to correct or improve earlier tasks).

The objective of skills-training programs is to transmit skills and related knowledge to learners. Generally, there is no intention to compare the achievement of different trainees. However, a minimum performance level indicating the degree of skill acquisition was advised by Ward et al. (1974). James H. Block referred to that per-formance level as "mastery." In 1971 he said:

> To completely operationally define mastery, there-
> fore, it is necessary to establish an absolute per-
> formance standard against which the sufficiency of
> each pupil's learning can be judged and graded.
> This standard should indicate the specific propor-
> tion of skills tested a student must exhibit before
> he can be judged to have mastered the subject (p.
> 68).

Block also stated:

> Theoretically . . . by breaking a complex behavior
> down into a chain of component behaviors and evaluat-
> ing student mastery of each link in the chain, it
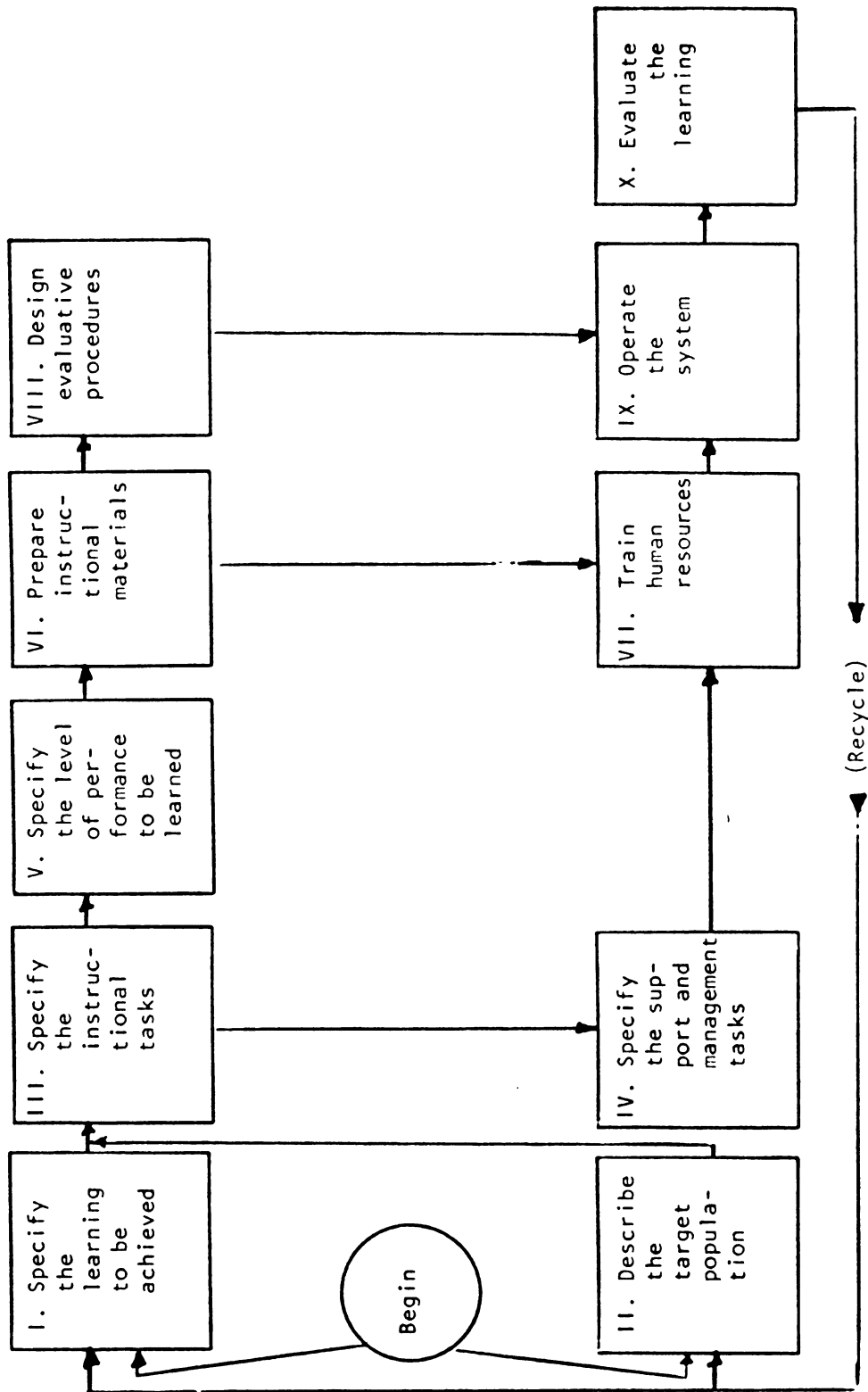
Figure 1. A systems model for planning non-formal education.

> would be possible for any student to master even
> the most complex of skills (p. 4).

The following also characterize mastery learning: instruction of a subject is organized into well-defined learning units, each learning unit incorporates specifically designed instructional materials, mastery of each learning unit is required before students proceed to the next unit, student performance is evaluated or diagnosed at the end of each learning unit, additional instruction is provided of those concepts not mastered, and each learning unit must be mastered before proceeding to the next unit (Block, 1971).

The concept of "learning correctives" (supplementary instructional procedures) is important to the successful utilization of the mastery learning approach. Examples of "learning correctives" potentially useful in a functional skills-training program in the Third World follow: students teaching students in small groups, individual tutoring, and alternative learning materials (e.g., games, audio-visual methods, reteaching, and alternative textbooks) (Block, 1971).

Finally, two other concepts employed in mastery learning models that had the potential for contributing to a skills training system in the Third World are formative and summative evaluation. According to Peter W. Airasian (Block, 1971), formative evaluation provides information throughout the instructional process to identify learning problems and solve those problems before instruction ends. Summative evaluation occurs at the end of the total course and is meant to assess the degree to which course objectives have been achieved.

Summary

Characteristics existed that were common to most of the Third World programs.

The primary objective of the program was to train its receiving population to perform specific skills that would improve its standard of living or generate income. Technical information was transmitted that was related to the successful performance of the skill. In some cases literacy and numeracy skills were taught.

The receiving populations were generally semi-literate. That is, most trainees had started primary school at one point in their lives but had not completed it. It can be assumed that they retained few numeracy and literacy skills. In those cases in which all six grades were completed, subsequent educational opportunities were not available to reinforce the learning that had occurred. The ages of the trainees ranged from 14 years old to the elderly, with most qualifying for the label "adult workers." Excepting Brazil's SENAI, which provided training for industry, the programs trained persons living in rural areas.

The content of training was determined by assessing trainees' personal needs (i.e., improving life-supporting skills) or the training needs of the community (i.e., the nation's manpower needs). Many different skills were trained. They were as dissimilar as bee keeping and auto mechanics.

Training was conducted in settings similar to those in which the skills would eventually be performed and utilized equipment to which the trainees had access. Instructors taught in the language of the trainee. Training was scheduled for the convenience of the trainee

and lasted from four days to four years, depending on the skill's complexity. Usually training followed a detailed plan that defined each skill, as well as the training process. Instructors demonstrated the skill to trainees who repeated it until mastery was achieved.

Instructional technicians in more developed countries also contributed to the planning of a training process to transmit skills.

Even though some training systems may employ more steps, invariably, the authors suggested that the training process should include at least four functions: (a) training needs and all factors affecting the instructional process should be identified, (b) skill-specific behavioral objectives should be written, (c) instructional methods and materials should be listed, and (d) an evaluation plan of the training process and the trainees' performance should be established.

Another important characteristic of a training system is the interrelatedness of its parts. That is, information generated by one step is used to make decisions about other steps in the system.

CHAPTER IV

GUIDELINES AND PROCEDURES
FOR THE RESEARCH

The basic purposes of the research were to evaluate (a) the
effectiveness of the instructional system and (b) the abilities of
four Paraguayan instructors to use that system to train semi-literate
campesinos. Both purposes required selecting a research method that
permitted making evaluations, appraisals of value (Suchman, 1967),
about the consequences of specific training processes. Another re-
quirement of the research method was imposed by the contexts in which
the research was conducted. The method had to be malleable enough to
permit its adaptation to an action/field setting (as opposed to a
laboratory), while approximating standards of objectivity as closely
as possible.

The evaluation research method satisfied those two requirements.
Edward Suchman (1967), defines it as "the specific use of the scien-
tific method for the purpose of making an evaluation" (p. 31).
Francis Hoole (1978) acknowledged the appropriateness of this method
in the unpredictable context of a development setting. Hoole said
it "emphasizes flexibility in obtaining knowledge and urges the re-
searcher to use the scientific method and to examine cause and effect
statements about the impact of social action programs" (p. 19).

That a research method was known and seemed appropriate to
achieve the purposes of this study did not ameliorate the limitations

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that the vehicle for conducting the research, the project, generated. Limitations included a fixed budget, an established time period in which to achieve specific end-of-project goals, and the fact that the research had to fit into the approved activities of the project. These limitations affected the degree to which strict guidelines for following standard research procedures could be followed. Objectivity and preciseness were not always present; for example, a few of the planned observations were made using informally agreed upon criteria. In addition, that which was observed was not always recorded. In some cases, the researcher depended on his recall of the events (which he coordinated) to reconstruct the results. His bimonthly reports and the technical reports written by another advisor assisted in the recall process. Whether or not the results were recorded is stated in the description of each procedure.

Notwithstanding the compromises in design that were made, the researcher believed that the method chosen to conduct the research was the best method, under the circumstances, to assist in making defensible judgments about the effectiveness of the instructional system and the training of the instructors.

Two categories of research procedures were used: descriptive and modified quasi-experimental.

The role of the descriptive procedures was to produce information about the environmental conditions and human behaviors that contributed to the fulfillment of the purposes of the research. Descriptive procedures also permitted decisions to be made about the ongoing process of improving the instructional system and the activities employed to train Programa de Adiestramiento Extra-Escolar

(PAE) instructors. They were the techniques of formative evaluation including surveys, interviews, planned observations, field tests, and examination of documents.

The role of the modified quasi-experimental procedures was to produce information about the relationship between PAE's instructional system and the campesinos' performance of specific skills and acquisition of knowledge. This was done in an attempt to determine if that system had an effect on training those skills. It was intended to assist the researcher in determining the outcomes of the instructional system and to make a judgment about its effectiveness, the process of summative evaluation.

Details regarding the application of the descriptive and modified quasi-experimental procedures to fulfill the purposes of this study, as well as an explanation of why they were used in a particular way, are presented following a brief description of the project's educational experiences which provided the contexts in which the procedures were applied.

Research Contexts

Two educational experiences, established to contribute to the training of PAE's instructors, provided the researcher with the opportunity to apply the descriptive and modified quasi-experimental research procedures. They were intended to yield information regarding the instructors' training abilities and the effectiveness of the instructional system.

Training Campaigns

The project conducted six training campaigns, the first of which
did not provide for the training of paraprofessionals or the training
of campesinos by paraprofessionals.

Data for the study were collected during the five training cam-
paigns that included (a) PAE's instructors training campesinos, (b)
PAE's instructors training paraprofessionals, and (c) paraprofessionals
training campesinos. The first campaign during which data were col-
lected for this study was actually the second training campaign of the
project.

The final format of the training campaigns comprised three
phases which took place over a 55 day period. The last two training
campaigns followed this format. The first three training campaigns
included the completion of the same basic activtities but allocated
time differently. The same five-task instructional system was common
to all five training campaigns.

The first phase of the final training campaign format lasted 23
days during which the content of each training program was identified,
the visual instructional materials were determined, training equipment
was determined and purchased, the Instructional Plan was written, the
visual materials were created and validated, and the publicity cam-
paigns were completed. During this phase, observations were made
about the instructors' abilities to create training programs.

The second phase lasted 26 days during which the campesinos were
trained by PAE's instructors, selected campesinos were trained to be
paraprofessionals, campesinos were trained by the paraprofessionals,
and closing ceremonies were held. During this phase, observations

were made about the instructors' abilities to implement training pro-
grams.

The third phase lasted six days during which all training materi-
als were collected and stored, feedback was solicited and documented,
and the skills-training programs were revised using the evaluative
data collected.

Skills-Training Programs

The modified quasi-experimental research procedures were applied
during the individual training programs which took place during the
second phase of each training campaign. Data were collected regarding
the campesinos' acquisition of skills and knowledge.

The permanent format of a PAE training program was followed. The
format alloted a maximum of 10 days for PAE's instructors to train
campesinos, five days for PAE's instructors to train selected
campesinos to be paraprofessionals, 10 days for paraprofessionals to
train campesinos, and one day for closing ceremonies.

A synopsis of the facts relevant to the training of the instruc-
tors, paraprofessionals, and campesinos is provided in Table 1.

Research Procedures: Purpose One

Purpose One incorporated two questions: Was the receiving popu-
lation adult, semi-literate, and with limited access to training
opportunities? Was the instructional system effective?

Table 1
Training Data for Instructors,
Paraprofessionals, and Campesinos

Training Data	Instructors	Paraprofessionals	Campesinos
Trainer	Advisors	Instructors	Instructors and parapro-fessionals
Content	Instructional system	Instructional plan	Functional skills
Duration	Two years	Ten-day training program, five-day paraprofes-sional training	Ten-day training program
Educational level	High school plus voca-tional training	Advanced, semi-literate	Semi-literate

Source: Bi-monthly reports.

Procedures to Identify Socioeconomic
Conditions and Educational Levels
of Receiving Population

Presented below is a description of the four procedures as they were used in the field, a statement of why they were used, and a description of any instruments used to apply the procedure.

1. Examination of documents. The documents were read before and during the implementation of the project. Information describing the socioeconomic conditions and educational levels of the receiving population was identified.

Published documents were used if they appeared to present accurate information about the socioeconomic conditions and the educational background of persons living in the Itá District.

Three of the documents were developed during the preparation stage of the project (10/75 - 9/76) before the training campaigns began. Interviews were used to collect representative information.

The researcher consulted with the authors of the remaining documents about the data collection process. He was satisfied that the data collected were reasonably reflective of the socioeconomic and educational conditions of campesinos living in Itá District.

2. Reading test. During the third training campaign, campesinos who successfully completed training conducted by PAE's instructors were the subjects of a reading test (see Appendix G). During the test, which was orally administered by PAE's instructors and administrative personnel, the campesinos were asked identifying questions including name, age, number of children, house number, and name of PAE training program in which they participated.

An attempt to assess their reading abilities was made by providing each campesino with a piece of paper on which two sentences containing 36 words, approximately 1½ inches high, were printed in cursive script. The message had been copied from a document to which the campesino had not had access. The vocabulary dealt with agricultural matters but incorporated both one-syllable and multi-syllable words.

The interviewer was instructed to hand the paper to the campesino and ask, "Please, would you read this paragraph or piece?" The interviewer then wrote down the number of words that were not read or were read incorrectly. He or she was also instructed to rate the campesino according to one of three criteria: (a) "doesn't read," (b) "stammers," and (c) "reads correctly." This was followed by asking for

information related to schooling and reading habits including the number of years the person had gone to elementary school, the type of material he or she usually read, and the frequency with which the person read it.

Until the reading test, the literacy skills of the receiving population were estimated by comparing educational data about Itá District recorded in the documents mentioned above to the official definition of "semi-literate." "A semi-illiterate (semi-literate) is he who has not completed primary school" (Braun, "Informe Técnico Número 10," 1977, p. 2).

According to PAE's instructors, the content specialists, the content of training preferred by the campesinos of Itá District required minimal math skills. Therefore, an assessment of reading ability alone was attempted.

The test also attempted to confirm that the reading requirements of the instructional materials matched the ability of the receiving population.

The question on age was intended to confirm that PAE's participants were adults.

A validated reading test whose purpose was to determine the reading ability of Paraguayan campesinos could not be found at the time of the research. Therefore, an instrument had to be created. The project's advisors and coordinators consulted with specialists in the Ministry of Education and Worship regarding an appropriate strategy. Consensus was reached that a short paragraph about a topic relevant to the lives of the campesinos could provide data that would contribute,

in conjunction with grade level, to confirming that the receiving population was semi-literate.

The instrument consisted of 16 items, one of which was the selected two-sentence paragraph. The instrument was constructed in the form of a survey. The questions about educational experiences and reading habits were placed after the reading test to minimize the _campesino_'s fears that something besides his or her reading ability was being evaluated (e.g., had the _campesino_ learned that which was intended by the government in elementary school?). It was also recognized that placing those questions after the reading ability item could, depending on how well the _campesino_ perceived his or her reading performance, influence his or her responses. However, the primary purpose of the test was to assess reading ability; therefore, it was believed to be more important to protect against other influences on that variable than those related to educational experience and reading habits.

The interviewers were trained to administer the instrument without inadvertently assisting the _campesino_ through verbal or nonverbal cues.

Criteria were established and results recorded during this procedure. They are presented in Chapters V and VI, respectively.

3. _Registration (interview)_. During the first day of the training program, PAE instructors and paraprofessionals recorded all participants' personal information. They asked questions listed on a standardized form (see Appendix H) which identified each participant's first and last name, age, sex, house number, _compañía_ in which each participant resided, occupation, content area, training topic, date,

PAE instructor, _compañía_ in which the training program took place, and general observations.

The purposes of the registration process were (a) to confirm that the receiving population was adult and lived in the rural sector and (b) to identify the location of the participants' homes for future use (i.e., in order to locate PAE "graduates" for follow-up studies and retention tests). Interviews had been previously used by PAE to collect such information successfully (e.g., PAE's first household survey).

The instrument was a one page mimeographed sheet listing the 12 pieces of information required of each participant. The information was written on the form by PAE's instructor or paraprofessional. The form was not standardized until the fourth training campaign. A similar registration process existed for the preceding training campaign, differing only in degree of formality of the form on which the information was collected. An example of the recorded data collected during the registration interview is presented in Chapter VI. Related criteria are presented in Chapter V.

4. _Planned observations_. Observations were informal (no schedules, printed forms, or check lists) and intentional (systematically planned and carried out). Observations were made by all members of PAE's team who participated in the publicity campaign preceding the initiation of each training campaign. Observers looked for unobtrusive measures which might confirm the socioeconomic and educational status of potential participants. They did this as they distributed materials describing PAE, held meetings to clarify training

preferences, described the purposes of PAE, and described what PAE expected from the participants.

These observations were intended to provide more evidence that the receiving population of each training program could be characterized as semi-literate and with limited access to training opportunities.

No instruments were used because there was consensus among the coordinators, instructors, and advisors that the receiving population might become "over-surveyed" which could negatively affect their desire to participate in training or actively participate in providing the feedback requested of them to improve the instructional system (e.g., visual materials, instructor behaviors, and time commitments).

The criteria for "semi-literate" and "limited access to training" are reported in Chapter V. Observations were not recorded. Results are presented in Chapter VI.

Procedures to Measure Effectiveness
of PAE's Instructional System

This section describes the four procedures used to collect information about the effectiveness of the instructional system to train semi-literate adults who lived in rural areas and had limited access to other training opportunities. Reasons intended to support the use of these procedures in a particular way and a description of the instruments used are also provided.

1. Pretest-posttest of skill and knowledge acquisition of participants of 25 different training programs conducted by PAE's

instructors. This modified quasi-experimental procedure consisted of the following components: a pretest administered to a nonrandomized "experimental" group before exposure to training, application of a skills-training program which was created and implemented using the instructional system (the treatment), a posttest administered after the group was exposed to the training program, and a posttest of a nonrandomized "control" group of campesinos from the same campaña. These campesinos had been selected to receive the same training program administered by paraprofessional instructors later in the training campaign. A diagram of the modified quasi-experimental procedured follows (Figure 2).

$$01 \ X \ 02$$
$$\text{---------}$$
$$03$$

Figure 2. Quasi-experimental design of training
conducted by PAE instructors.

In the diagram, 01 symbolizes the pretest of the first campesino group to receive training, the "experimental group"; X symbolizes the training program, the "treatment"; 02 symbolizes the posttest of the experimental group; --------- symbolizes nonrandomization; and 03 symbolizes the posttest of the group that served as the "control" group. The location of the symbols in the diagram reflects the sequence of the events they represent.

This procedure was used in five training campaigns during which a total of 25 different skills-training programs were implemented according to the basic guidelines of PAE's five-task instructional system. The five tasks did not change throughout the research period.

An assessment of training preferences and living conditions was always conducted. Behavioral objectives (terminal and enabling) were always written. Instructional strategies were always determined and developed. A delivery or implementation plan was always established. All components of each training program were always evaluated. However, using formative evaluation, specific variables of instruction of individual training programs were evaluated and revised after each training program. For example, as campesinos' feedback was gathered indicating that the word used to describe an enabling behavior was not the word commonly used by the campesinos, it was changed in the Instructional Plan.

A pretest (see Appendix A) was developed by the PAE instructor who administered it to campesinos on the first day of the training program in each of the four content areas. Five to 10 questions were asked. The number of questions varied, depending on the requirements of the content area. Each item listed the correct responses as well as a "doesn't know" alternative. The instructor administered the pretest orally and marked the campesinos' responses on the pretest form. Some questions attempted to measure general knowledge related to the importance, effect, or safe use of the skill (e.g., "What are the advantages of fumigating your house?"). Other questions were designed to measure performance-related knowledge (e.g., "How do you use a rustic leveling device?"). Results of the pretests were scored for each campesino on a pretest-posttest form. Identifying data including participants' names, house numbers, general content area, and training program topics were also recorded.

The "treatment" was the skills-training program itself which followed the five tasks of the instructional system. It was administered by PAE's instructors. Training lasted a maximum of 10 days.

The posttests consisted of two parts. The first part was a repeat of the pretest administered by the same instructor the last day of the training program. The second part required the participants to perform each enabling behavior without the assistance of the instructor sometime after the training had been conducted. That may have occurred immediately after the segment of the training program devoted to training a specific enabling behavior or upon completion of the entire training program.

The intended receiving population of a particular training program were adult, semi-literate residents of one of the five preselected compañias. Subjects included all adult men and women who registered for training. Those who registered first were assigned to be trained by PAE's instructors. The remaining registrants were assigned to be trained by PAE's paraprofessionals. Campesinos were selected from the first group and trained by the instructors to be paraprofessional in order to train all campesinos who registered for training in each of the four content areas.

The campesinos assigned to be trained by the paraprofessionals approximated a "no-treatment" or "control" group for this modified quasi-experiment. The same posttest administered to the "experimental" group was administered to this "control" group by the paraprofessionals at least six days following the posttest of the "experimental" group. This latter posttest of the "control" group also served as its pretest before receiving the "treatment" administered by

the paraprofessional instructors, a procedure described in the next section.

The tabulations of results were completed by hand and verified by the advisor or Instructional System Coordinator.

A modified quasi-experimental procedure was used to assess the effectiveness of the instructional system. Logistical constraints (e.g., limited time to achieve project goals), political factors (e.g., a fear of jeopardizing the reputation of the Servicio Nacional de Promación Profesional), and strong personal/moral objections manifested by the majority of PAE's team prevented the random selection and assignment of campesinos to "treatment" and conventional "control" groups. Nevertheless, it was believed that this modified quasi-experimental procedure was strong enough to minimize the significance of rival explanations. If the knowledge and behaviors of "treatment" groups consistently changed in the desired direction over a 17 month period during 25 replications of the same system, the argument that it was an effective system would be improved.

Because of the easy access to official information (e.g., whereabouts of other government programs that might "compete" with PAE's impact) and knowledge of all past and present events occurring in each of the five compañias, it was believed that other explanations (e.g., history and maturation) that might compete with the impact of PAE's system in explaining the observed changes could be weakened.

Literature describing quasi-experimental designs contributed to the reasonableness of using the above described procedure (Weiss, 1972; Hoole, 1978).

The standard format of the pretest-posttest instrument evolved during the research. During the fifth training campaign, the instruments consisted of the following components. Regardless of the skill being trained, the instruments for all training programs could have a maximum of 10 items in addition to asking for personal data. The items were written to determine knowledge acquisition. The pretest and posttest were administered using the same form. The instructors and paraprofessionals administered the tests orally. Criteria regarding the level of correctness of the responses were established for each item.

Examples of criteria used in the pretests-posttests are presented in Chapter V. All results were recorded. The results of one training program are presented in Chapter VI.

2. Pretest-posttest of skill and knowledge acquisition of participants of 85 training programs conducted by paraprofessionals. Another procedure similar to the one just described consisted of the implementation of the same training program by up to nine campesinos in one content area. These campesinos had "graduated" from the initial training program and were trained to be paraprofessionals by the instructors. The number of paraprofessionals was determined by the demand for a particular training program in each compañía.

Figure 3 presents a diagram of the modified quasi-experimental procedure.

01   X   02

Figure 3. Quasi-experimental design of training conducted by paraprofessionals.

O1 symbolizes the pretest, X symbolizes the training program or "treatment," and O2 symbolizes the posttest.

The participants were not randomly selected or randomly assigned to different groups to be trained by the two-nine paraprofessionals in each content area. An approximation of a control group was not attempted during this procedure.

The paraprofessionals had mastered the skills of the training program during the segment of training conducted by PAE's instructors. In addition, they were trained to complete an "outline" (see Appendix I) which followed the original Instructional Plan and listed the topics or enabling behaviors to be trained each day and corresponding expendable and nonexpendable materials (e.g., corn and shovels); to complete the registration forms; to administer the pretest and posttest; and to use the flip charts, simulation games, pamphlets, and demonstrations as instructional strategies. The paraprofessionals were regularly supervised by PAE's instructors and/or coordinators. The instructors or coordinators did not intervene unless (a) training was being conducted by the paraprofessional incorrectly or (b) the paraprofessionals requested the intervention. The pretests, treatments, and posttests were administered to all participants by the paraprofessionals. PAE's instructors tabulated the scores on both tests.

This procedure was applied 85 times in similar receiving populations during the five training campaigns.

The training programs, which followed the same five-task instructional system, were replicated by trainers with no professional background (i.e., the paraprofessionals). It was believed that if the

results on the pretests and posttests were similar to those produced

when the same training programs were conducted by PAE's instructors,

the measured change would be an indicator of the effectiveness of the

PAE's instructional system.

The same instruments described in the presentation of the pre-

vious procedure were used in this procedure.

Examples of the criteria used in the pretests-posttests are pre-

sented in Chapter V.   An example of the effects on campesinos in one

compañia are presented in Chapter VI.

3.   Retention tests.   Short-term and long-term retention tests

were administered to graduates of PAE's training programs on two oc-

casions.

The short-term retention tests were administered to graduates of

the training programs of the first training campaign between six and

nine weeks after the last posttest had been administered.   The reten-

tion tests were administered at the same time.   The six or nine week

difference depended on whether the participant had attended the train-

ing program conducted by a PAE instructor, in which case the reten-

tion test data was collected at least nine weeks after the posttest,

or whether the participant had attended the same training program

conducted by a paraprofessional, in which case the retention test

data were collected at least six weeks after the posttest data had

been gathered.

The sample was established by selecting each second name from the

lists of participants (excluding participants who had been trained to

be paraprofessionals) for all five training programs (i.e., four con-

tent areas: one training program in three areas, two training programs in one area) yielding a sample of 64 campesinos or approximately 50% of the total population that had participated in the first training campaign (Braun, "Informe Técnico Número 6," 1977).
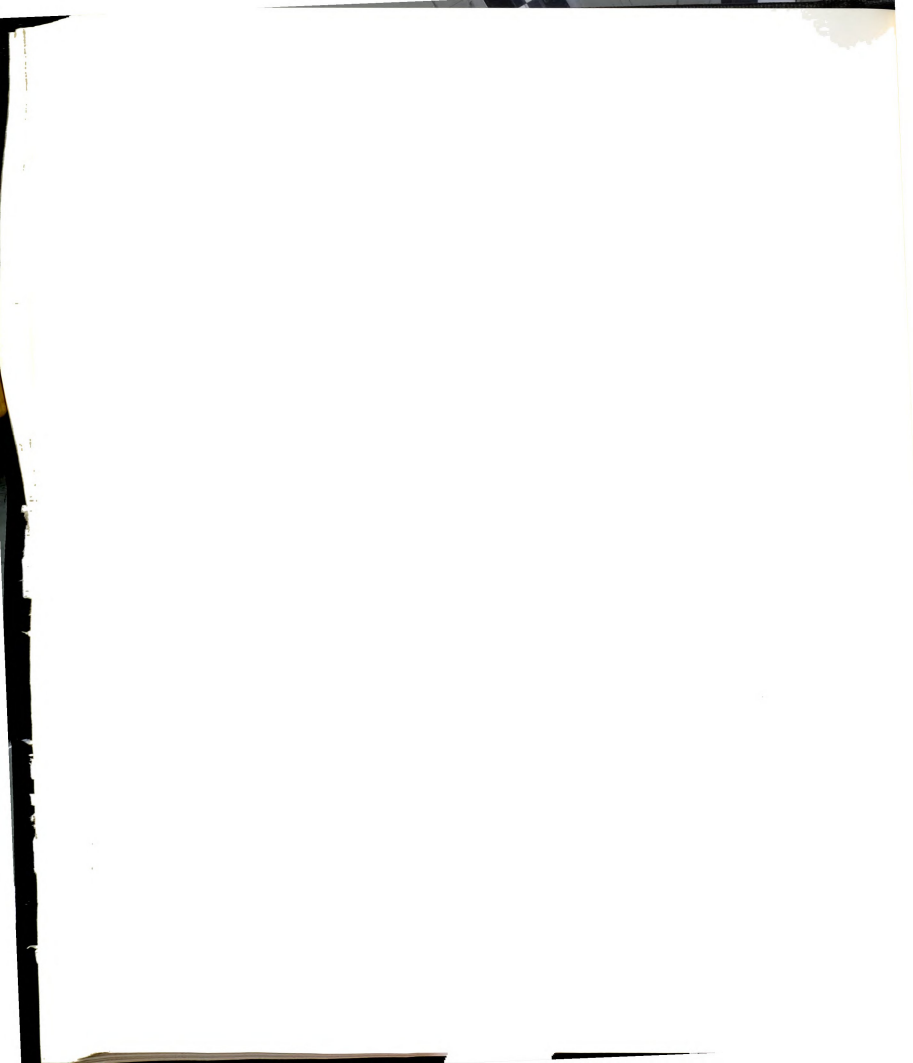
The interviewers were PAE instructors and administrative/support personnel who had been trained to use the instrument. The interviewers were provided a map on which the selected participants' houses were located. They were instructed to interview only the person whose name had been selected. Replacements were not permitted (Braun, "Informe Técnico Número 6," 1977).

The instrument used for the short-term retention test consisted of questions selected by PAE's instructors from those originally included in the pretest-posttest. These questions were intended to reflect knowledge perceived by the instructor as "most essential."

The long-term retention tests were administered to graduates of four of the five training programs conducted during the third training campaign approximately four months after the last posttest. They were administered by interviewers who were contracted and trained to administer the retention tests (Braun, "Informe Técnico Número 14," 1978).

The sample was selected in the same manner described for the short-term retention test, attempting to test 50% of the graduates of four training programs (i.e., three content areas, one training program in two areas, two training programs in one area). As before, replacements for selected campesino-graduates were not permitted.

The instrument used for the retention test was "similar to that of the pretest-posttest" (Braun, "Informe Técnico Número 14," 1978,

p. 1). Examination of the questions asked during the retention test and the pretest-posttest of one of the training programs ("Elaboración de Plan de Trabajo") indicated that there was a difference in word choice.

The purpose for administering long- and short-term retention tests was to collect information to indicate how long skill-related knowledge, transmitted during the training program, was retained. The assumption was that the longer information transmitted during training was retained by ex-participants, the greater the impact of PAE's instructional system.

Every second person listed as a graduate participant comprised the samples in order to approximate representativeness. Interviewers were contracted and trained to administer the long term test (Braun, "Informe Técnico Número 14," 1978) because the entire PAE team and other SNPP personnel were not available.

Criteria were the same as those established for the pretests-posttests. All results were recorded. An example of the results of one short-term retention test is presented in Chapter VI.

4. Validity testing. "Validity refers to the degree to which any measure or procedure succeeds in doing what it purports to do" (Suchman, 1967, p. 120). The research routinely attempted to assess the validity of the content of each Instructional Plan (e.g., if the skill to be trained was "fumigation," did the Instructional Plan provide information and behaviors contributing to the acquisition of that skill or some other skill? Did the evaluations measure "fumigation" skills and knowledge?), all pamphlets (e.g., did the text and

graphics of each pamphlet generate the same message for the campesino

as it did for the instructor and artist who jointly created it?),

training preference questions on PAE's first household survey (e.g.,

did the questions ask training preference questions or questions re-

lated to some other preference?), and simulation games (e.g., did the

graphics on the cards of the "memory" game represent the words to which

they were supposed to be matched [the message] during the execution of

the game?).

The content of the Instructional Plan for each training program

was examined by at least two and up to three different persons: the

originating instructor, the Instructional System Coordinator, and

occasionally a third content specialist. First the PAE instructor

wrote the plan following PAE's five-task instructional system and

determined whether or not the content would obviously lead to the

acquisition of the identified skill, a test of validity (Suchman,

1967). This Instructional Plan was reviewed by PAE's Instructional

System Coordinator, an approximation of a consensual validity test

(Suchman, 1967). Occasionally, the Instructional System Coordinator

was unfamiliar with the content in which case a third content spe-

cialist (usually another Servicio Nacional de Promoción Profesional

instructor) reviewed the Instructional Plan. A record of the valida-

tors' responses was not documented. The validated Instructional Plans

are the recorded results of this procedure. A validated Instructional

Plan is presented as Appendix A.

The pamphlets were exposed to the approximation of a consensual

validity test by the originating instructor, one of the artists, and

the Instructional System Coordinator who jointly reviewed the rough

draft of the pamphlet, making changes until consensus was reached that the text and graphics reflected the intended messages.

In addition, all pamphlets were field tested. Upon completion of the above procedure, a compañía was identified whose residents and corresponding living conditions resembled those of the Itá District. A small sample of campesinos was arbitrarily selected. Photocopies of the pamphlets were given to each campesino who was asked to interpret the graphic message and corresponding text on each page. The interpretations were written on the pamphlet itself and later on a standard form (see Appendix J) which the artists used to make corrections (Braun, "Informe Técnico Número 13," 1978). Flip charts were copies, on a larger scale, of the pamphlets. Therefore, it was believed that validating the pamphlets would be a validation of the flip charts.

Examples of the criteria and results are presented in Chapters V and VI, respectively. The responses of the artists and coordinators were not documented during the measure's validation.

Validation of the training-preference questions of the PAE's First Household Survey was attempted through discussions among the instructors, the coordinators, and the researcher until agreement was reached that each question asked the question it was intended to ask. Also, a rough draft of the questionnaire was field-tested and indicated revisions were incorporated. The degree to which the instrument asked for training preferences was assessed by asking what were believed to be three training-preference questions in each content area. The discussions during which the questions were validated were not recorded. Examples of the three training-preference questions for each content area are presented in Chapter VI.

Finally, face validity of the simulation games was evaluated
through examination of the games by the originating instructor. Con-
sensual validity of the games was approximated when the Instructional
System Coordinator and the advisors agreed that the games' texts and
graphics were valid. Examples of the cards used in one of the simu-
lation games, "La Memoria," are presented in Chapter VI. The analyses
of the originating instructor, the Instructional System Coordinator,
and the advisors were not documented.

The above variables of instruction were exposed to the validation
process because the purpose of the research was to make an effective-
ineffective statement about the five-task instructional system which
incorporated these variables. The researcher perceived them as essen-
tial activities within the larger system. If those variables did not
do what they were intended to do, it was assumed that, even if the be-
haviors of the campesinos changed following their participation in a
PAE training program, they might be performing a skill PAE's instruc-
tors did not intend to transmit. Validation checks of the Instruc-
tional Plan, training strategies (pamphlets, flip charts, and simula-
tions), and training-preference questions were made to increase the
possibility that what each training program purported to train was
reflected by selected instructional variables.

It was also recognized that the educational levels and socio-
economic backgrounds of the PAE instructors and artists responsible for
the creation of the materials were vastly different than those of the
receiving population. It was considered highly probable that percep-
tual differences would exist between the two groups. This was thought
to be especially true in the interpretation of the graphics of the

instructional materials (e.g., would the graphic representation of
rain drops falling be perceived by the campesinos as rain drops, tear
drops, stones, etc.?). The validation process intended to decrease
those perceptual differences.

Research Procedures: Purpose Two

Purpose Two consisted of one research question: were the PAE in-
structors trained to use the instructional system to create and imple-
ment the training programs effectively?

Procedures to Assess Whether or Not the PAE Instructors Were Trained to Use the Five-Task Instructional System to Create and Implement Training Programs Effectively

A description of the research procedures used in the field, a
discussion of why they were used, and a description of any instruments
used to operationalize the procedure are presented below.

Planned observations of instructors' behaviors and written work
by advisors and coordinators during training campaign. The instruc-
tors' written work was regularly examined by at least two of the fol-
lowing persons: the General Coordinator, the Instructional System
Coordinator, and/or advisors. (The researcher was one of the advi-
sors.) They examined the skill-specific Instructional Plans written
by each PAE instructor. The observations were made during and after
the development of each Instructional Plan, the primary activity of
the first phase of each of the five training campaigns. Additional
observations were made during the third phase of the training campaign
when all data (i.e., test results and feedback) had been collected and

the Instructional Plan was subjected to corresponding revisions. It
was necessary, at times, to complete the revisions of the Instruc-
tional Plans outside the time margin allotted for each training cam-
paign in order to begin developing new training programs on schedule.
Nevertheless, at least two of the observers read each of the 25 In-
structional Plans during the period of their development or during
their final revision.

The coordinators met each week to discuss all project activities.
If a problem were consistently being observed in the Instructional
Plans, specific training would be planned (directed at the instruc-
tors) to attempt to correct the problem. For example, after the third
training campaign, it was observed that the language used to describe
enabling behviors was not always observable and that the criteria of
the behavioral objective did not always include the "degree of per-
fection" the _campesino_ would have to demonstrate when performing the
behavior during evaluation. Consequently, in the coordinators' meet-
ing it was decided to take two or three days to provide specific
training to the instructors to improve their writing of behavioral
objectives. Corrections or improvements were shared immediately with
the originating instructor, the Instructional Plans were returned to
the instructor, and corresponding changes were made.

The observers made their judgments about the written Instruc-
tional Plan and corresponding materials based on criteria previously
established. Those criteria are presented in Chapter V. However, the
observations made by individual observers were not officially re-
corded. The researcher's recall presented in Chapter VI is supported
by an example of an approved Instructional Plan (see Appendix A).

The instructors' <u>behaviors</u> were observed by at least two observers during the first segment (i.e., ten days PAE instructors training <u>campesinos</u>) of phase two of the first two training campaigns. The Instructional Plans served as the evaluation instruments.

During the third training campaign, a standard form (see Appendix E) was developed that required a coordinator or advisor to provide the instructor with feedback corresponding to the following categories: "teaching style"; "use of visuals"; "use of equipment and materials"; "group management"; "fulfillment of objectives and methods of the Instructional Plan"; "adherence to planned schedule"; "home practices"; "handling of paraprofessionals"; "initiative"; "integration with <u>campesinos</u>, other instructors, PAE's coordinators, and community"; "interpersonal communication"; "handling of the evaluation"; and "observations." Behaviors presented in the "enabling behaviors" section of the Instructional Plan served as the criteria for the category "fulfillment of objectives and methods of the Instructional Plan" (see Appendix A). Criteria used to evaluate the isntructors' performance in the other categories were not officially established but informally agreed upon by the instructors, coordinators, and advisors. Sample criteria are presented in Chapter V. The observer knew how the category had been conceptualized but was free to write his or her comments about any observed behavior relevant to a given category on the standardized form.

The instructor and observer discussed the observations immediately following the training program and signed the feedback sheet. This was done to increase the possibility that the instructor would perceive the evaluation as a constructive process attempting to

minimize the perception that the observation could be a threat to his or her employment.

The observers' notes about the behavior were recorded on the standardized form. The results were not tabulated. They were discussed on a regular basis during the weekly coordinators' meeting and informally on the job.

The criteria and results are presented in Chapters V and VI, respectively.

The planned observations of the instructors' training behaviors were conducted as described above because it was the closest approximation of an accepted research procedure (participant observations) that the chronology of the pilot project would permit.

The main focus of the project's approved chronology was to provide the opportunity to train the PAE team to conduct successful training programs. The approved method of training the instructors was to provide them with as many opportunities to practice developing and conducting training programs as possible. Also, resources and time were committed by the approved project to perfecting the content (instructional plans, pamphlets, photographs, etc.) of the training programs to a greater extent than measuring the training abilities of the instructors. It was assumed (for purposes of the pilot project) that by repeatedly improving the content of the training programs, the instructors' training skills and related knowledge would improve also.

Consequently, the research procedures which were not contemplated in the project's design and approval had to be adapted to the contexts in which the research would occur. Ideally, the same kind of strict

adherence to the standards of the PAE instructional system with its emphasis on preciseness and objectivity would have been followed by the observers who were evaluating the training of the instructors. However, in a situation where time and financial constraints existed, the decision was made to ensure repeated practices of the instructors using the instructional system to create and implement training programs. This was done at the expense of permitting the coordinators and advisors to more objectively and systematically collect data about the instructors' training behaviors and knowledge (e.g., videotapes, content analysis of tape recordings of training programs, standardized rating sheets completed by independent observers, and a quasi-experimental design).

The following chapter describes the criteria used to make judgments about the effectiveness of the instructional system and the training abilities of PAE's instructors.

CHAPTER V

DEVELOPMENT AND STATEMENT
OF EVALUATIVE CRITERIA

Documents describing the approved project presented a hierarchy
of three intentions. The goal was "to improve the standard of living
of the rural inhabitants of Paraguay" (USAID, "Project Design,"
1976, p. 1). The measures of goal achievement were (a) an increase
in durable goods owned by the receiving population, (b) an increase
in the receiving population's per capita income, (c) an increase of
the agricultural production of the receiving population, and (d) a
decrease in unemployment of the receiving population.

The project's sub-goal was "to provide the information and
bring about the changes in attitudes and practices of the rural popu-
lation which will contribute to improvement in their standard of
living" (p. 1). The measures of sub-goal achievement were the receiv-
ing population's improved skills in home management, environmental
sanitation, basic agriculture, small scale livestock production,
crafts, and small farm improvement and management.

The purpose of the project was

. . . to establish the capability of the National
Apprenticeship Service (SNPP) to conduct successful
training programs oriented to rural illiterate and
semi-literate adults who presently have limited
access to training opportunities (p. 2).

The conditions that were to exist at the end of the project that would
indicate the project's purpose had been achieved were (a) a nonformal

training unit established and functioning at SNPP, (b) a minimum of eight staff members assigned to the SNPP nonformal training unit, (c) a nonformal training unit capable of training 80 GOP trainers one year following the end of the project, (d) validated instructional materials for 24 training programs per year produced by SNPP's materials production staff, and (e) a budgetary commitment (by SNPP) for nonformal education activities.

The research addressed itself to the project's stated purpose and accompanying indicators of achievement. Implicit in both were the assumptions that an effective instructional process and instructors trained to effectively use that process would also exist at the end of the project. Therefore, two purposes of the research were established: (a) to evaluate the effectiveness of the instructional system to train semi-literate adults who had limited access to training opportunities and (b) to evaluate the instructors' ability to effectively use that system to create and implement training programs. To perform these two broad evaluations, in an attempt to fulfill the purposes of the research, data about the nature of those campesinos who actually participated in PAE's training programs, the validity of the training programs that followed the five-task instructional system, the campesinos' acquisition of knowledge and skills before and after training, and the instructors' acquisition of training skills were collected and compared to evaluative criteria. These criteria, their development, and the type of data collected for each are specified below.

Purpose One of the Research

Purpose One was to evaluate the effectiveness of an instructional system to train semi-literate adults who had limited access to training opportunities. To make this assessment, five general criteria and corresponding criterion statements were developed.

Criterion 1: Adult Participation

Attendance in public school was compulsory in Paraguay until age 14. In the compañias most persons 15 years old and above were not participating in any kind of planned educational experience. PAE's team members discussed personal observations and professional experience which indicated that, at least vocationally, residents of the compañias, 15 years old and above, performed the duties of adults even though Paraguayan law did not recognize their "adult" status.

These adults were selected as the subjects of the research because approximately 45% of that group (primarily women) in all of rural Paraguay was not in school and was economically inactive (Paraguay, Dirección General de Estadística, 1972). Another reason was 78% of that group which was economically active (including subsistence farmers) worked in small scale agriculture or with livestock (Paraguay, Dirección General de Estadística, 1972; USAID, "Capital Assistance," n.d.), the project's intended receiving population. The accompanying assumptions were that training that 15-year-old-and-above group would permit it to improve its agricultural practices, become economically active, and, consequently, improve the standard of living of its members.

The criterion statement follows:

Are the participants of PAE's training programs at least 15 years old?

The age of the participants of PAE's training programs was confirmed by examining documents, administering a reading test, and conducting registration interviews described on pages 92 - 96 of Chapter IV.

Criterion 2: Participation by Semi-literate Persons

Evidence did not exist that permitted categorizing the campesinos of Itá District according to their literacy and numeracy skills. Therefore, to identify the receiving population for which the proposed training was intended, the decision was made by the coordinators and advisors to select definitions of "semi-literate" and "illiterate" acceptable to Paraguayan educators. Definitions adopted for the project were established by the Literacy Department of the Ministry of Education and Worship. According to that organization, a person who is semi-literate is one who has not completed elementary school. A person who is illiterate is one who never attended school (Braun, "Informe Técnico Número 10," 1977).

The research was designed to make a judgment about an instructional system aimed at semi-literate adults. Even though the project was aimed at an illiterate and semi-literate population, the researcher's previous experience in Paraguay suggested that the largest group that would actively seek the kind of training proposed by the project would be composed of semi-literate people. During three years (1968-71) working with Paraguayan campesinos, it was observed that most of the campesinos who regularly participated in self-help activities (as they had in programs in which the researcher was involved) already possessed some numeracy and literacy skills.

However, those skills were not sufficient to satisfy minimal admission requirements to existing government or private training programs. This observation justified the evaluation of the instructional system vis-a-vis the performance of what might be the largest segment of the total rural population to register for training, semi-literate adults.

The criterion statements follow:

1. Have the participants of PAE's training programs started but not completed elementary school?

2. Do the participants of PAE's training programs correctly read all, some, or none of the words on a reading test?

Descriptions of the would-be literacy level of PAE's trainees were collected using a reading test, examining documents, and planned observations of unobtrusive indicators of past educational experiences (e.g., attendance certificates on the walls of campesinos' homes).

Criterion 3: Participation by Persons
Who Had Limited Access to Training
Opportunities

The term "limited" was used instead of "no" because it was known that training-like experiences were being conducted in communities to which the campesinos of Itá District had access, technically speaking. However, an underlying assumption was that financial constraints (e.g., no bus fare) and life-supporting responsibilities would make participation in those training experiences by Itá District's campesinos impractical.

In addition to satisfying the project's goal of serving a population that was disadvantaged with regards to accessibility to training experiences, this criterion also improved the possibility that the receiving population was not already "contaminated" by previous

exposure to similar skills training. It minimized the strength of

rival explanations regarding the effectiveness of the instructional

system.

The criterion statements follow:

1. Are there any skills-training programs being
    offered to semi-literate adults in Itá District?

2. Are there any indicators of past
    training programs offered to semi-literate
    adults in Itá District?

Descriptive data about this criterion were collected by conduct-

ing an inventory of all nonformal education activities in Itá District.

Planned observations provided additional evidence of past training

opportunities.

Criterion 4: Validation of the
Instructional Plan, Pamphlets,
Training Preference Questions,
and Simulation Games

Validity tests were conducted to determine whether or not the

subject matter of the training programs communicated that which was

intended. Valid subject matter would strengthen the argument that

training outcomes were attributable to the system used to present and

organize that subject matter. Four components of each training pro-

gram were validated.

The content of each of the five tasks of the Instructional Plans

for each training program were validated. For illustrative purposes,

the subject matter of the second task (formulation of training objec-

tives) of one of the Instructional Plans is provided. An example

comes from the Instructional Plan entitled "Terrace Building."

Twenty-five different Instructional Plans were validated. The criterion statement for validating the training objectives follows:

> Do the objectives reflect the knowledge and behaviors
> required to build terraces? (Similarly, all other
> skills had comparable statements.)

The Instructional Plans were written on standardized forms by PAE's instructors (the content specialists) who used the above criterion to evaluate the content of each task. An additional evaluation was provided by the Instructional System Coordinator before each training campaign began.

All pamphlets to be used in the training programs were validated. The example is the cover page of one of the pamphlets. The criterion statement follows:

> Do these words and graphics represent a campesino
> thinking about planting his crops in plots?

First, pamphlets for each training program were reviewed by the instructor, artist, and coordinator until agreement was reached that the rough draft of the pamphlet accurately represented the intended message. The pamphlets were then field tested on a similar receiving population. During the field test, the interviewer wrote the campesinos' comments on the rough draft of each pamphlet. Finally, the corrected pamphlets were used in the training programs after which more feedback was solicited from the campesinos and incorporated in the final revision of each pamphlet.

The criterion statement for validating the training preference questions follows:

> Do the three questions of each questionnaire
> asked to identify the campesinos' training
> preference in each of the four content areas,
> in fact, ask the campesinos for responses
> indicating training preferences?

During discussions among the researcher, instructors, and coordinators, the questions were initially validated. Then the questionnaire was field tested on a similar population to determine if the campesinos responded with training preferences when asked what were believed to be training-preference questions. The responses were written on the questionnaire. This procedure was conducted once.

An example of a criterion statement for validating the simulation game follows:

> Do the graphics and vocabulary drawn on the cards represent the messages they are intended to represent?

This testing was completed during informal discussions as each new game was being developed. Revisions were made until the originating instructor, Instructional System Coordinator, and advisors agreed that the intended message was represented by the graphics and vocabulary.

Criterion 5: Demonstration of Skill and Knowledge Acquisition by Campesinos

Behavioral objectives were used as the criterion statements to measure skill acquisition. Each behavioral objective consisted of three components: a statement of the conditions (setting, tools available, time, etc.) under which evaluation would take place; a statement, written in observable terms, of the behavior to be performed; and a statement describing the degree of perfection and the frequency with which the behavior was to be performed. These criterion statements became part of the Instructional Plans for the four content areas. One example of a criterion statement corresponding to skill acquisition for each of the content areas follows:

1. <u>Home management</u>. "Given a sprayer, all the participants will correctly operate it, one time."

2. <u>Basic agriculture</u>. "Having the leveling equipment, all the participants will position the equipment correctly, four times."

3. <u>Poultry and livestock management</u>. "Having all the instruments, the participants will correctly boil them 15 minutes, one time."

4. <u>Management and improvement of the small farm</u>. "Given a notebook and pencil, all the particicipants will make their own forms according to the model presented by the instructor, one time."

Behavioral objectives were used as criterion statements because the behavioral objective is a recognized method for assessing the outcome of an instructional system whose purpose is to train functional skills. Data were gathered by observing the <u>campesinos</u>' performing the skills during the training programs.

Data were gathered using pretests and posttests to evaluate knowledge acquisition.

The following criterion statement corresponds to all tests of knowledge acquisition for all content areas:

The participants will respond to all of the questions on the pretest-posttest according to the criteria established by the instructor for each question (e.g., "The participant will have to know three [of the four] answers.").

These data were collected during 25 different training programs conducted by PAE's instructors, 85 training programs conducted by <u>campesinos</u> trained to be paraprofessionals, and two retention tests of knowledge acquisition.

Purpose Two of the Research

Purpose Two was to evaluate the instructors' ability to use effectively the Instructional System to create and implement training programs. To make this assessment, two general criteria and corresponding criterion statements were developed.

Criterion 1: Instructors Trained to Create Training Programs

Written Instructional Plans that followed the five-task instructional system provided evidence of the instructors' ability to create training programs that effectively employed the system and its educational concepts.

Throughout the two years during which the project was implemented, the instructional system was exposed to formative evaluation. Specific activities involved in completing each task changed as the instructional system evolved. The changes included writing behavioral objectives for each enabling behavior, establishing "degree of perfection" in addition to "frequency" as a performance criterion, specifying the exact quantity of tools and visual aids needed for training, and listing all evaluation activities in addition to the pretests and posttests. However, the five fundamental tasks of the system remained the same throughout the research. The instructors' ability to use the system was assessed according to the most updated version of the instructional system. The version of that system that existed at the conclusion of the research is detailed on pages 13-23 in Chapter I. The criterion statement follows:

> Does each Instructional Plan follow the guidelines
> of PAE's five-task instructional system?

Written Instructional Plans completed by every PAE instructor for each training program were gathered as evidence. Up to two pages of the Instructional Plan (the first one or two pages) were used to write a description of an assessment of the existing situation and training preferences of the receiving population, the general training objective, a list of instructional strategies to be used, a description of the implementation plan, and a statement of which evaluation procedures would be used. Additional pages of the Instructional Plan (up to 10 pages) detailed a behavioral objective for each enabling behavior followed by its instructional messages and related steps to performing the behavior, instructional strategies, visual aids to be used in instruction, list of tools and equipment needed during instruction, estimate of the time required to complete the instruction, date of instruction, and miscellaneous observations that would assist in the training process (e.g., make sure campesinos practice on healthy animals).

The completed Instructional Plans, written by the instructors, were examined by at least two reviewers (coordinators and advisors) during their development and during their final revision. Using the established guidelines of the instructional system and corresponding activities, judgments were made about each instructor's ability to create skill-specific training programs. This evaluation was made of five Instructional Plans prepared by the Home Management Instructor, seven Instructional Plans prepared by the Basic Agriculture Instructor, four Instructional Plans prepared by the Management and Improvement of the Small Farm Instructor, and nine Instructional Plans prepared by the Poultry and Livestock Management Instructor.

Criterion 2: Instructors Trained
to Implement Training Programs

Observing the instructors practice that which they were being

trained to do provided evidence with which a judgment could be made

about the instructors' implementation of the training programs. It

was assumed that if the instructor performed the activities and proce-

dures of the Instructional Plan previously approved by the Instruc-

tional System Coordinator, he or she would effectively implement the

training program. The criterion statement follows:

> Does each instructor perform the instructional
> tasks detailed on his or her Instructional Plan?

During the first and second training campaigns, the content of

the Instructional Plans served as the instrument the coordinators and

advisors used to evaluate the instructors' implementation of their

training programs.

Sometimes, observations made by the observers describing the

instructor's actual performance of an intended activity included in the

Instructional Plan were written on the plan and shared with the in-

structor immediately following the observation. In other instances

those observations were not written on the plan but consisted of the

observer's informally sharing his or her recollection of the instruc-

tional incident during individual meetings following training. If the

frequency of observations of ineffective (i.e., that which did not

follow the Instructional Plan) implementation was high, the incident

was shared with the entire team of instructors and the instructors

received additional training.

Beginning in the third training campaign, a form entitled "In-

structor Feedback Sheet" (see Appendix E) was developed by the

instructors, coordinators, and advisors to accompany the Instructional

Plans in an effort to be more specific when evaluating the instruc-

tors' implementation of the training programs. The form outlined 13

categories of instructor behaviors.

During meetings of the team, the definition and broad standards

of performance for 12 categories were informally established. How-

ever, these standards were not intended to limit the observer, rather

to guide him or her to write evaluative comments (positive and nega-

tive) about observed behaviors corresponding to each of the instructor-

behavior categories. The criterion statement follows:

> Does each instructor demonstrate the instructor
> behavior according to the standards of perfor-
> mance informally established for each category?

The criterion statement for the thirteenth category, "Fulfillment

of objectives and methods of the Instructional Plan," follows:

> Does each instructor perform the instructional
> activities written in the "Enabling Behaviors"
> section of the Instructional Plan?

The observer's comments were shared with each instructor, and,

once the instructor and observer agreed that the feedback was valid,

the form was signed by both. Examples of appropriate instructor be-

haviors for each category presented below.

Teaching style. Use information in short lectures essential to

the performance of the skill or related knowledge acquisition; ask

campesinos if they understand the lecture; in preparation for the

practice session, demonstrate the skill precisely as it is to be re-

peated by the campesino; provide sufficient time for campesinos to

practice the skill.

Use of visuals. Distribute one visual to each campesino; turn pages of the flip charts after campesinos have indicated they are ready; use quantity of simulation games to permit all campesinos equal opportunity to play the game; position instructional photographs so they are easily seen by all campesinos.

Use of equipment and materials. Provide five buckets for each group of 15 campesinos; deliver equipment to training site before training begins.

Group management. When using "directed questions," ask the campesinos if they heard the questions; ask campesinos to state their reasons for learning to prepare nutritious cattle feed; ask campesinos to criticize flip charts.

Fulfillment of instructional plan. Provide instruction corresponding to all enabling behaviors; use instructional strategies according to approved method.

Schedule. Initiate and terminate training during allotted time or change established schedule to conform to new conditions.

Home practices. Request every campesino to practice each skill alone; request campesinos who have mastered the skill to assist others; report changes in location of home practices to instructional coordinator before training begins.

Paraprofessionals. Select campesinos to be paraprofessionals according to established selection criteria: train campesinos to be

paraprofessionals using standardized training format; ask paraprofessionals to assist in retrieving equipment used in training.

Initiative. When campesinos are reluctant to register for training, visit them to discuss the reasons.

Integration. Interact at a personal and professional level with the campesinos, other instructors, coordinators, and members of the community.

Interpersonal communication. Indicate active listening by clarifying the campesinos' questions.

Handling of the evaluation. Use same vocabulary each time posttest interview is conducted.

Observations. (Included in this category was any instructor behavior that did not fit one of the above categories but was perceived by the observer as contributing to or detracting from the instructional process.)

Evidence about the instructors' implementation of the training programs was collected using the Instructional Plan and/or the Instructional Feedback Sheet during each complete training program directed to campesinos.

The next chapter presents samples of the evidence collected to make judgments, using the above criteria, about PAE's instructional system and the training of PAE's instructors.

CHAPTER VI

EVIDENCES OF THE EFFECTS

Research procedures described in Chapter IV were used to collect
evidence that was needed to evaluate the effectiveness of the instruc-
tional system as well as the instructors' training ability. Those
data are reported in this chapter.

Evidences Regarding Purpose One

The first purpose of the research was to evaluate the effective-
ness of the instructional system to train semi-literate adults who had
limited access to training opportunities. The criteria established to
make that judgment are followed here by the results of the inquiries
themselves.

Criterion 1: Adult Participation

"Adult" referred to persons who were at least 15 years old at the
time the research was conducted.

Information about the adult status of the receiving population
was collected by examining documents, administering a reading test,
and conducting registration interviews.

Before the research began, as one of the project's prepara-
tion activities, statistics reporting the ages of persons living in
Itá District showed a sizeable adult population in Itá's compañias.
This information was originally collected during the 1972 population

and housing census. In 1972 approximately 14,000 persons (approximately 55%) lived in Itá District (including the urban center) who were at least 15 years old. For all of Paraguay, approximately 52% of the persons who were 15 years old or above lived in the compañias (Paraguay, Dirección General de Estadística, 1972). Census statistics were not available that identified persons who were 15 years old and above and lived in the compañias of Itá District.

A reading test was administered to 59 of the 66 campesinos who participated in the third training campaign. The primary objective of the test was to determine the reading ability of the campesinos who participated in PAE's training programs. The questionnaire also requested the respondent to state his or her age. All of the participants were at least 15 years old (see Table 2).

Table 2
Age of Participants of Reading Test

Age in Years	Percent
15 - 18	33%
19 - 29	26%
30 - 39	16%
40 - 49	9%
50 - 59	10%
(The remaining 6% were not accounted for in the report.)	

Source: Braun, "Informe Técnico Número 10."

A standardized form (see Appendix H) was developed to collect personal data about each campesino participant before each training

program began. Included in the data was the participant's age. A completed registration form of one course offered to paraprofessionals is presented as an example in Appendix K. The youngest participant was 18 years old. The oldest was 50 years old (see Table 3). Similar results were recorded for all training programs.

Table 3
Age of Participants of One Paraprofessional Training Program

Name	Age
Justo C. Colman	32
Plutarco Lopez	24
Bonifacio Colman	38
Teodora Benegas	18
Wilfredo Arzamendia	18
E. Ramírez	24
Cesar Paredes	50

Source: "Registro de Participantes de Auxiliares."

Criterion 2: Participation
by Semi-literate Persons

"Semi-literate" referred to persons who had started but had not completed elementary school. On a reading test, it referred to persons who did not read all the words correctly but did read at least one word correctly.

Data describing the would-be literacy level of the trainees were written on the reading tests and collected during a socioeconomic survey of Itá District. Additional information was identified

informally by making planned observations of unobtrusive indicators of past training experiences.

A reading test administered to trainees in one compañia documented that 65% of the sample was semi-literate (see Table 4).

Table 4
Reading Level of Participants

Literacy Level	%
Illiterate (doesn't read)	11
Semi-literate (reads at least one word correctly)	65
Literate (reads all words correctly)	16

Source: Braun, "Informe Técnico Número 10."

Personal information collected on that same reading test indicated that 49% of the trainees had started but had not completed primary school (see Table 5).

Table 5
School Attendance of Participants

School Attendance	%
Illiterate (no schooling)	1
Semi-literate (started but didn't complete elementary school)	49
Literate (completed elementary school)	47

Source: Braun, "Informe Técnico Número 10."

The report of a socioeconomic survey of six compañías in Itá District indicated that approximately 72% of the heads of households were semi-literate ("Resultado de la Encuesta," n.d.).

With the exception of the few primary school diplomas that were seen, observations made during the publicity campaign preceding the training programs confirmed that the receiving population was semi-literate.

Criterion 3: Participation of Persons Who Had Limited Access to Training Opportunities

"Limited access to training opportunities" meant that before or during the research there were no skills-training experiences offered to the receiving population.

Data were collected by examining documents and during planned observations.

Early in the research, an inventory of all nonformal education activities in Itá District identified six skills-training programs. They were all sewing academies (located in the village of Itá) that trained participants to be tailors and seamstresses. One of the academies also taught hairdressing skills. Another taught trainees to be electricians, cooks, and nurses aides. In all cases trainees were older youths and adults from the compañías and the village of Itá. In 1976 approximately 450 persons enrolled for training. However, due to the high costs of training over a long period of time (nine months to three years in the case of the sewing academies), desertion was high. Exact numbers of "graduates" and the locations of their homes were not available. There were indicators that many of the participants were

from the neighborhoods located on the outskirts of Itá. Transportation difficulties hampered attempts by compañia residents to attend training. All academies were at least two years old. One had been in existence for 16 years (Fritz, 1976).

Observations made in the compañias during the eight-day publicity campaign did not uncover indicators that the receiving population had been exposed to skills-training programs in the recent past. Undocumented rumors suggested that an agent from the Agricultural and Live-Stock Extension Service had visited one of the campaiñas, Las Piedras. Some campesinos remembered being visited by representatives of the Banco de Fomento (Growth Bank) who provided an unspecified orientation in agriculture.

Criterion 4: Validation of the Instructional Plan, Pamphlets, Training-preference Questions, and Simulation Games

Instructional Plans. The content of each of the five tasks of the 25 Instructional Plans was validated. For illustrative purposes, the content of the second task (formulation of training objectives) of one of the Instructional Plans entitled "Terrace Building" (Aponte, 1978) is reported below.

Validation of the training objectives referred to whether or not the training objectives reflected the knowledge and behaviors required to build terraces. The Basic Agriculture Instructor (a content specialist) who wrote the Instructional Plan and the Instructional System Coordinator made those judgments. Sample training objectives are presented in Figure 4.

Terminal Behavior Objective:

    During the training session, 100% of the participants will correctly build terraces, using rustic equipment, three times.

Enabling Behaviors Ojbectives:

1. Given a short lecture about the advantages of terraces, all participants will correctly state three answers (advantages).

2. Given a short lecture about disadvantages, all participants will correctly state three answers (disadvantages).

3. Having land (given a field to work on), all participants will correctly locate the highest place, one time.

4. Having the leveling equipment, all participants will correctly locate the highest place, one time.

5. Having the equipment in place, all participants will activate the leveling device until the half way point (correct position) is reached, four times.

6. Having the equipment leveled, all participants, with a helper, will place the marker 25 meters from the leveling device, four times.

7. Having the marker in place, all participants will correctly observe the placement of the marker using the viewing device, two times.

8. Having the leveling equipment, all participants will (confirm the correct position), two times.

9. Having a stake, the participants will place it (where it is level), four times.

10. Having the leveling equipment, all participants will correctly repeat the previous operations, four times.

11. During practice, all participants will (confirm that five stakes are positioned correctly).

12. Having the stakes in line, the participants will correct the broken lines, one time.

13. Having a plow and oxen, the participants will make a contour (terrace) by plowing three furrows on each side (of the line), three times.

Figure 4. Examples of enabling and terminal training objectives.
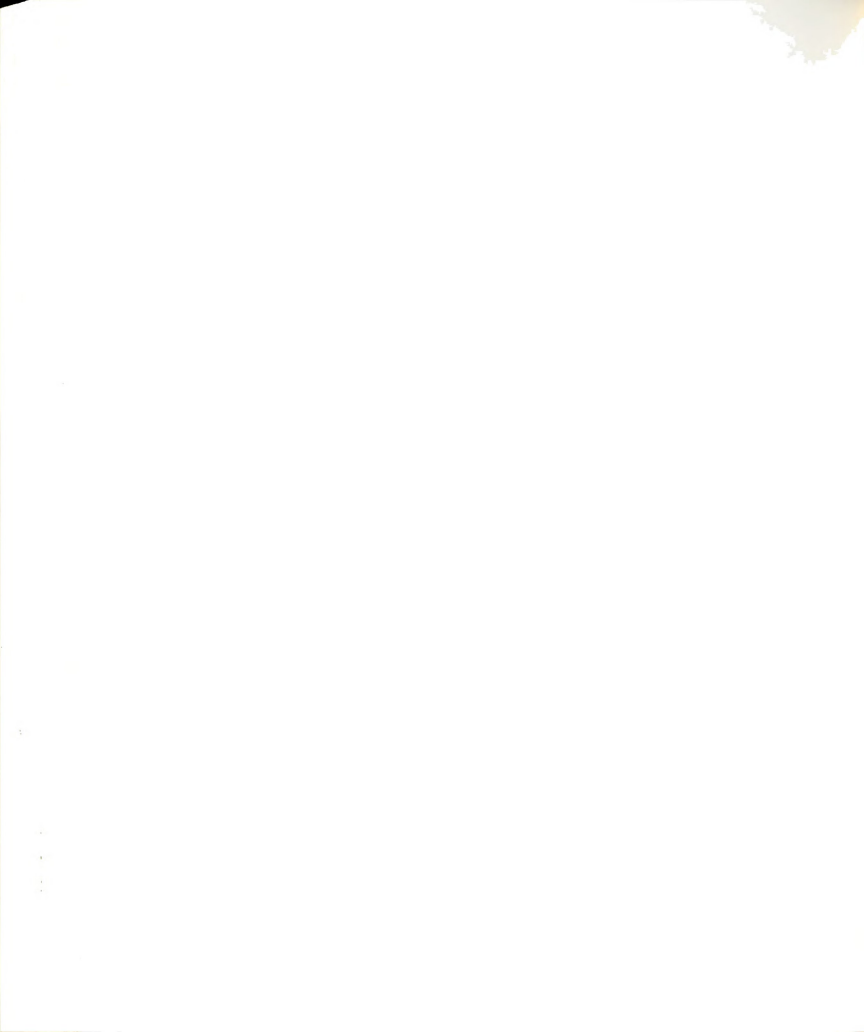
As exemplified above, terminal and enabling training objectives were written on the Instructional Plans for each of the 25 different training programs. In all cases the originating instructor and Instructional System Coordinator agreed that the training objectives reflected the knowledge and behaviors required to perform the terminal behavior.

The originating instructor and the Instructional System Coordinator also validated the content of the four remaining tasks for all 25 training programs.

A complete, validated Instructional Plan is presented as Appendix A.

Pamphlets. All pages of the rough drafts of the pamphlets were first validated by the originating instructor, the artist, and the Instructional System Coordinator. The example, Figure 5, is the cover page of one of the pamphlets. For the sample illustrated here, the criterion was, "Do these words and graphics represent a campesino thinking about planting his crops in plots?" Similar criterion statements were established for each page of all pamphlets.

Then, the pamphlet was field tested in a compañía similar to those in which PAE's participants lived. Campesinos indicated that "the drawing on the cover seems to suggest that the campesino has a toothache" (Braun, "Informe Técnico Número 13," 1978, p. 2).

Once revisions were made, consensus was reached by the originating instructor, the artist, and the Instructional System Coordinator that the cover page was valid. Figures 5 and 6 present the unvalidated and validated versions of that cover page.

Figure 5. Cover page of unvalidated pamphlet for the "Planning Crops by Plots" training program.

Figure 6. Cover page of validated pamphlet for the "Planning Crops by Plots" training program.
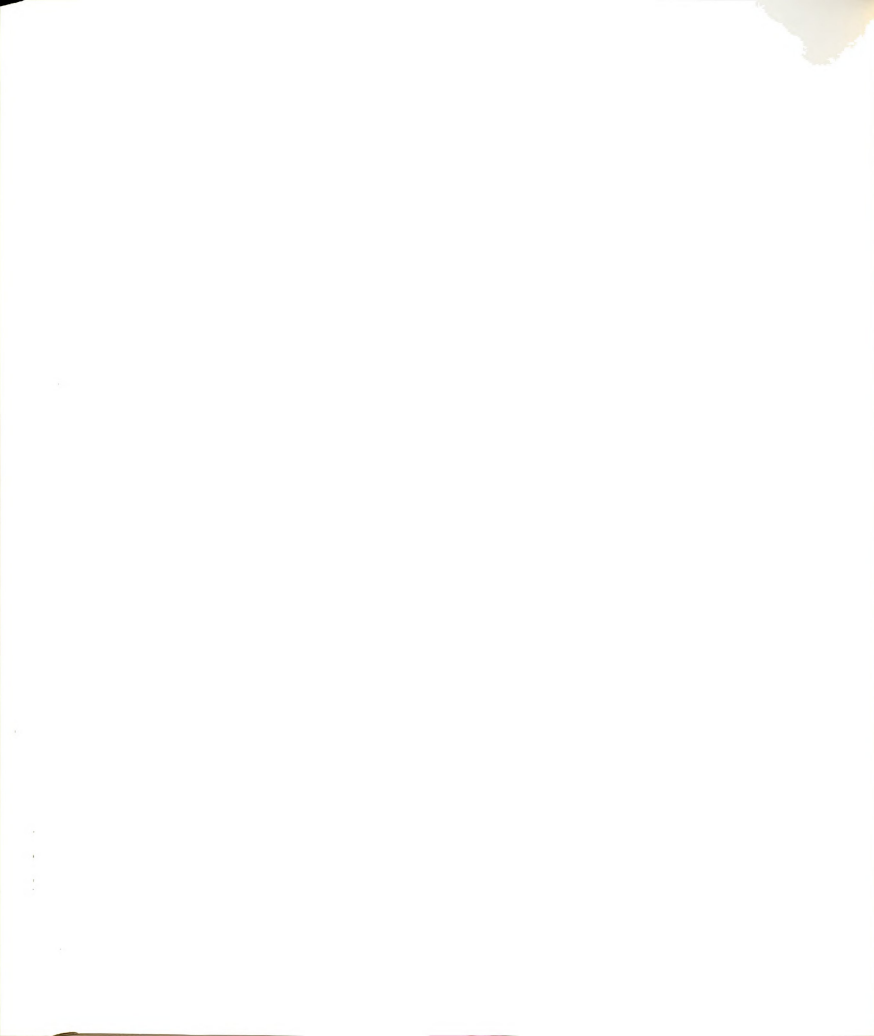
Other observations, as reported by Braun, made by the campesinos about other pages in the pamphlet included, "In the first picture the farmer is confused for (looks like) a soldier" (p. 2). "The drawing showing the organization of a crop is not understood" (p. 2). "In the third picture, instead of putting (writing) 'obtains greater economic and health benefits,'" the campesinos participating in the field test suggested that it be replaced with "he has extra money and enjoys better health" (p. 2). "Picture 7 is confusing and not understood" (p. 2). All of the observations were incorporated in the revision of the pamphlet.

The instructors, artists, Instructional System Coordinator, and neighboring campesinos validated each page of the 25 different pamphlets corresponding to all 25 training programs.

A validated pamphlet is presented as Appendix L.

Training-preference questions. Each question that was written to identify the campesinos' training preferences was validated. The intention of validating each question was to ensure that it asked a question that would yield an answer indicating the respondent's training preferences in each of the four content areas.

First, the questions were validated as soon as the researcher, instructors, and coordinators agreed that the questions asked for training preferences. Then the questionnaire was field-tested on a similar population to determine if the responses to the training-preferences questions were, in fact, training preferences. In both cases, the 12 questions (three in each of the four content areas) were considered valid (see Table 6).
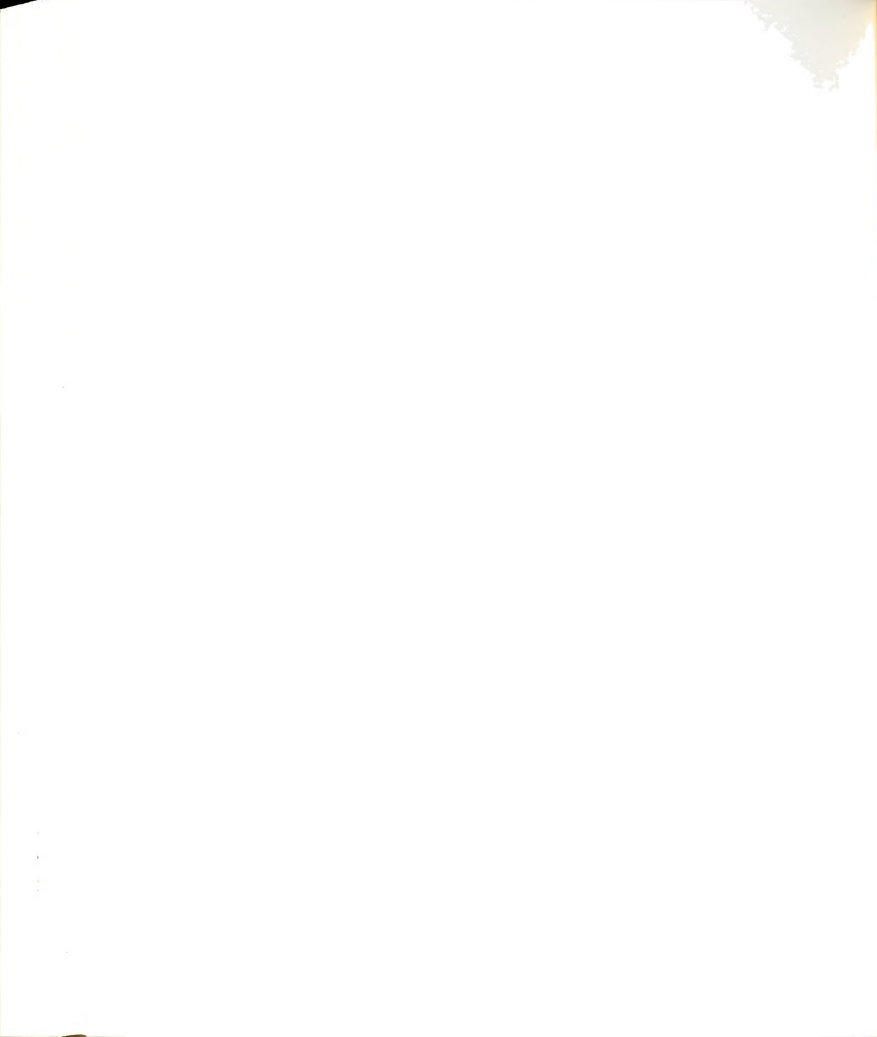
Table 6
Questions from PAE's First Household Survey

Question Number	
	Basic Agriculture
16	"What do you want to learn in agriculture?"
25	"In basic agriculture, what technical knowledge or practices do you need most urgently?"
28	"If I were an agronomist, what would you like me to teach you?"
	Poultry and Livestock Management
30	"With regards to the production of livestock and poultry, what do you want to learn?
33	"If I were a technician in livestock and poultry, what would you like me to teach you?"
37:	"In livestock and poultry, what technical knowledge or practice do you need most urgently?"
	Home Management
42	"What do you want to learn in the area of home management?"
50	"If I were a specialist in home management, what would you like me to teach you?"
58	"What technical knowledge or practice od you need most urgently?"
	Management and Improvement of the Small Farm
65	"What do you want to learn about the administrative management of this farm?"
72	"If I were a farm administrator, what would you like me to teach you?"
74	"In the area of administrative management of the farm, what technical knowledge or practice do you need most urgently?"

Source: "Primera Encuesta Domiciliaria del PAE."

Answers received during the administration of the questionnaire in one of the compañías implied training preferences (see Table 7).

Table 7
Percentages of Responses by Topic in Basic Agriculture

Questions	Soils	Sani-tation	Planting Techniques
What do you want to learn in agriculture?	42%	27%	8%
In basic agriculture, what technical knowledge or practice do you need most urgently?	26%	22%	19%
If I were an agronomist, what would you like me to teach you?	29%	8%	21%

Source: Braun, "Informe Técnico Número 1."

The advisor in charge translated the exact answers into a general information topic. The numbers in the boxes represent the percentage of responses per topic.

Simulation games. All simulation games were validated when the originating instructor, Instructional System Coordinator, and advisor agreed that the graphics and vocabulary drawn on the cards (or whatever "prop" the different games required) represented the intended message. Copies of cards used in the game "La Memoria" are presented in Figures 7, 8, and 9. All simulation games passed the validation tests.
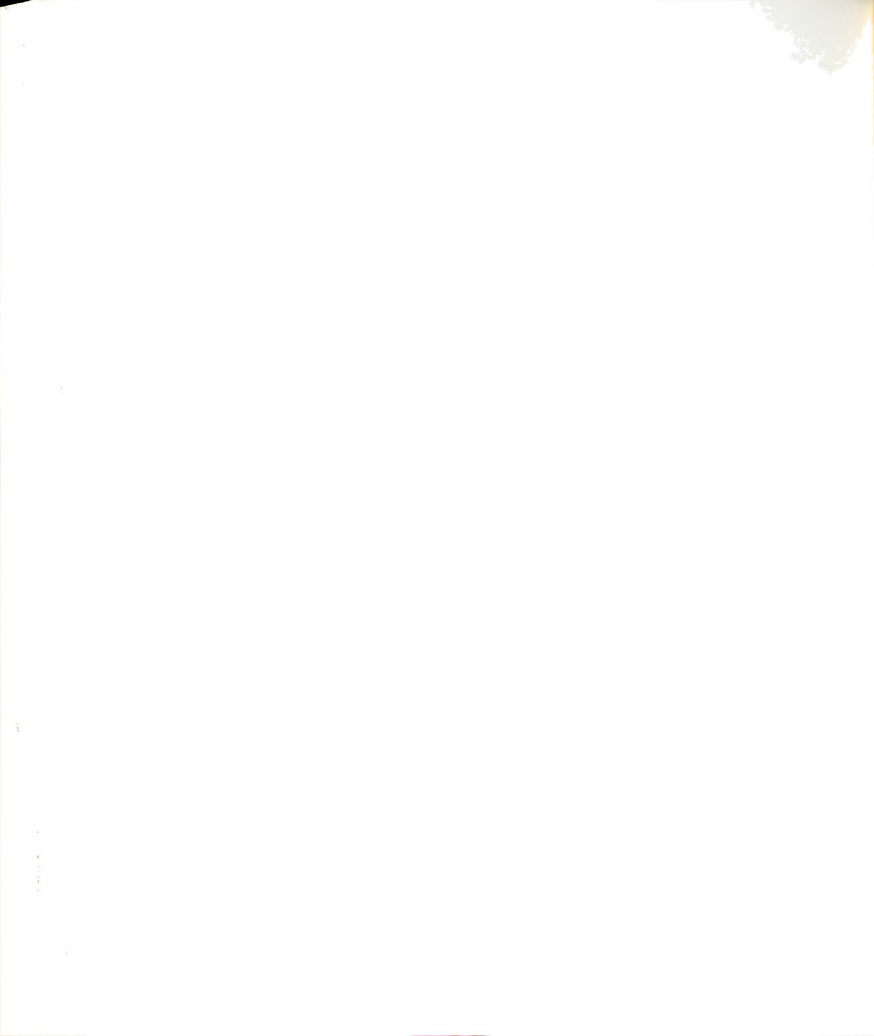
(Equipment and materials.)
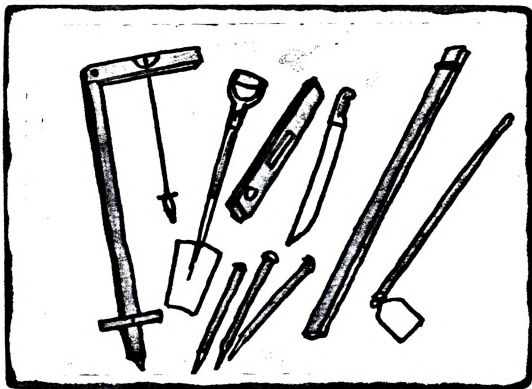
Figure 7.   Two matched cards from simulation game "La Memoria."
            (Actual cards were colored by hand with magic markers.)

Colocar el
equipo
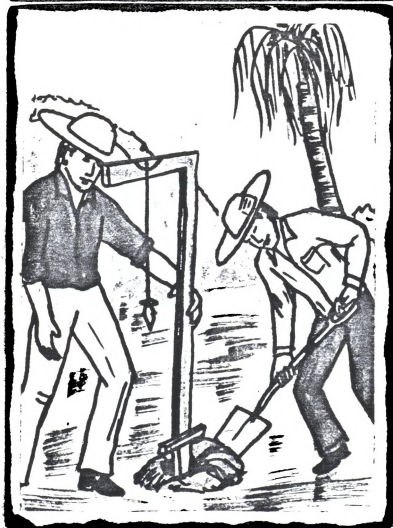
(Placing the
equipment.)

Figure 8. Two
matched cards
from simulation
game "La Mem-
oria." (Actual
cards were
colored by hand
with magic
markers.)

colocación de estacas.

(Placement
of Stakes)

Figure 9. Two
matched cards
from simulation
game "La Mem-
oria." (Actual
cards were
colored by hand
with magic
markers.)
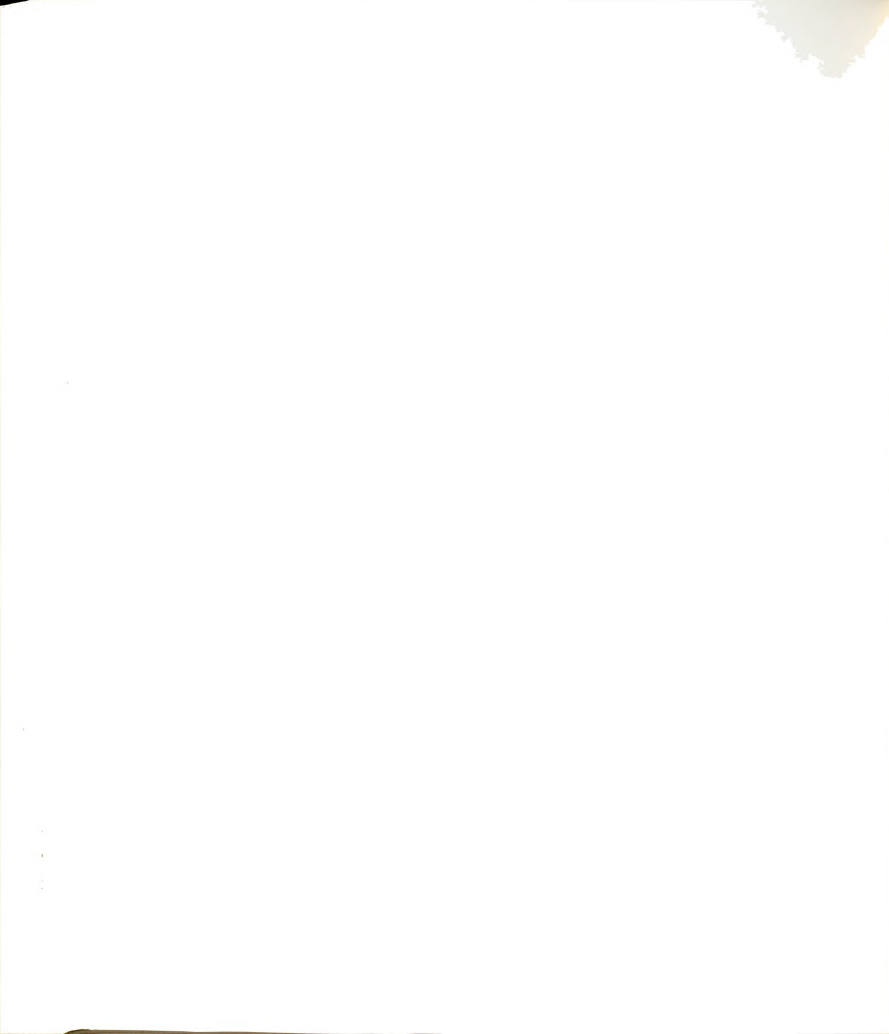
Criterion 5: Demonstration of
Skill and Knowledge Acquisition
by Campesinos

The criteria used to judge skill acquisition were expressed in behavioral objectives corresponding to each terminal and enabling behavior. Knowledge acquisition was evaluated using criteria for each question established by the instructor.

Programa de Adiestramiento Extra-Escolar (PAE) instructors. Participants reported the knowledge and skills with which they were entering a training program on pretests. A posttest measurement was made of the same group immediately after the training program. The same measurement of a "control" group was made approximately six days after the "treatment" group had been given the posttest. The results of the pretests and posttests for the treatment group and the control group for one of the training programs in the campaña of Peguajho indicated that there was substantial knowledge gain by 13 participants in the treatment group (see Table 8). The participants of this program were trained by PAE's instructor.

During the training programs, participants performed the terminal or enabling behaviors (skills) in accordance with criteria established in corresponding behavioral objectives.

These kinds of measurements were made for 25 different training programs conducted by PAE instructors in five campañias. During the research, 325 participants were trained by PAE instructors and "passed" the posttest and demonstrations of skill acquisition (see Table 9).

Paraprofessionals. Pretest-posttest results of the program taught by the paraprofessionals in the same campaña documented that knowledge

gain occurred (see Table 10). Paraprofessionals also observed the participants perform each skill according to the criteria of its corresponding behavioral objective. These kinds of measurements were made for 85 training programs conducted by paraprofessionals in five compañías. During the research, 517 participants were trained by paraprofessionals and "passed" the posttest and demonstrations of skill acquisition (see Table 9).

Table 8
Average Scores for Each Question of Pretest,
Posttest, and Control Groups for "Soil Conservation"
Training Program Taught by PAE Instructor

Question Number/ Maximum Score	Pretest (N)		Posttest (N)		Control (N)	
1/4	.6	(14)	3.5	(13)	0.0	(9)
2/3	.6	(14)	.5	(13)	0.0	(9)
3/3	0.0	(14)	2.6	(13)	0.0	(9)
4/3	0.0	(14)	2.7	(13)	0.0	(9)
5/3	0.0	(14)	2.5	(13)	0.0	(9)
6/3	1.9	(14)	2.9	(13)	1.7	(9)
7/3	0.0	(14)	2.4	(13)	0.2	(9)
Score Maximum: 22	3.1		19.6		1.9	

Source: Braun, "Informe Técnico Número 5."

Retention tests. The results of responses to a test of knowledge acquisition indicated that retention was over 50% (see Table 11). The retention test was administered to a sample drawn from the original training group in Peguajho. The test took place approximately two months after the posttests were administered. A second retention test

Table 9

Total Number of Campesinos Trained by PAE Instructors and Paraprofessionals

Trainee/Trainer Content Area	PEGUAJHO			ARRUA-I			ITA POTRERO			LAS PIEDRAS			CAAGUAZU			TOTAL FOR EACH CONTENT AREA		
	C/I[a]	P/I[b]	C/P[c]	C/I	P/I	C/P	C/I	P/I	C/P	C/I	P/I	C/P	C/I	P/I	C/P	C/I	P/I	C/P
Home Management	16	3	28	18	8	35	19	7	41	19	9	72	18	6	39	90	33	215
Basic Agriculture	13	2	9	13	2	9	15	2	5	15	2	15	15	2	15	71	10	53
Management and Improvement of the Small Farm	10	0	0	13	2	9	14	2	8	13	1	16	13	3	17	63	8	50
Poultry and Live-stock Management	30	6	33	16	7	34	18	8	55	18	7	35	19	6	42	101	34	199
TOTALS:	69	11	70	60	19	87	66	19	109	65	19	138	65	17	113	325	85	517
																		842

Compañías

[a]"C/I" indicates number of campesinos, including those selected to be paraprofessionals, trained by PAE instructors

[b]"P/I" indicates number of campesinos trained by PAE instructors to be paraprofessionals

[c]"C/P" indicates number of campesinos trained by paraprofessionals

Source: Certificates of Attendance List.

Table 10
Average Scores for Each Question of Pretest and
Posttest for "Soil Conservation" Training Program
Taught by Paraprofessionals

Question Number/ Maximum Score	Pretest	(N)	Posttest	(N)
1/4	0.0	(9)	3.4	(9)
2/3	0.0	(9)	3.0	(9)
3/3	0.0	(9)	2.8	(9)
4/3	0.0	(9)	3.0	(9)
5/3	0.0	(9)	2.8	(9)
6/3	1.7	(9)	2.7	(9)
7/3	0.2	(9)	2.7	(9)
Score Maximum: 22	1.9		20.4	

Source: Braun, "Informe Técnico Número 5."

Table 11
Average Scores for Each Question[a] of Pretest,
Posttest, and Two Month Retention Test
for "Soil Conservation" Training Program[b]

Question Number/ Maximum Score	Pretest	(N)	Posttest	(N)	Two Month Retention Test	(N)
1/4	0.3	(23)	3.5	(22)	2.2	(9)
2/3	0.3	(23)	3.0	(22)	1.7	(9)
Score Maximum: 7	0.6		6.5		3.9	

[a]Only questions reflecting knowledge acquisition were asked.

[b]The sample was selected by identifying every second person from the list of all participants.

Source: Braun, "Informe Técnico Número 6."

was administered to another group in another companía four months after the end of training which generated similar results.

Evidences Regarding Purpose Two

The second purpose of the research was to evaluate the instructors' ability to use effectively the instructional system to create and implement training programs. The criteria established to make that judgment are followed by the results of the inquiries themselves.

Criterion 1: Instructors Trained to Create Training Programs

"Trained to create" referred to the instructors' ability to follow the guidelines of PAE's standardized five-task instructional system (see pages 13-23, Chapter I) when writing skill-specific training programs.

That ability was demonstrated in each of the written Instructional Plans. The Instructional Plans were evaluated by at least two persons, coordinator and/or advisors, before each training campaign. They were revised if necessary. A final evaluation was made after the training campaign, once the training programs were revised. An example of an approved Instructional Plan is presented as Appendix A.

Two reviewers (i.e., coordinators and/or advisors) approved 25 different Instructional Plans (see Table 12) corresponding to the 25 training programs. That is, the 25 Instructional Plans followed the guidelines of PAE's five-task instructional system. The five primary tasks that were always completed included (a) identification of training needs, (b) development of objectives, (c) determination and development of training strategies, (d) development of an

Table 12
Titles of Validated Instructional Plans
in Each Content Area and Compañia

Compañia	Home Management	Basic Agriculture	Management and Improvement of the Small Farm	Poultry and Livestock Management
Peguajho	"Home Fumigation Against Household Pests"	"Soil Conservation: Terrace Building"	"Control of Production Costs"	"Poultry Vaccination" "Pig Vaccinnation"
AARUA-I	"Domestic Industry: Preparation of Breads, Cakes, Half Moons, and Biscuits"	"Preparation of Manure" "Incorporation of Organic Material"	"Control of Production Costs"	"Internal Elimination of Parasites in Cattle: Oral Method" "External Elimination of Parasites in Cattle"
ITA POTRERO	"Preparation of Economical and Nutritious Meals"	"Control of Early Cotton Pests" "Control of Cutting Ants"	"Elaboration of a Work Plan"	"Elimination of Internal and External Parasites in Poultry" "Elimination of Internal and External Parasites in Pigs"
LAS PIEDRAS	"Construction of a Rustic Oven"	"Soil Disinfection for (Gardens)"	"Organization of Crops by Plots"	"Easy and Inexpensive Rations for Cattle"
CAAGUAZU	"Construction of Rustic (Food) Storage Cabinets"	"Use of Chemical Fertilizer"	"Planning the Domestic Garden"	"Ration for Pigs" "Ration for Poultry"
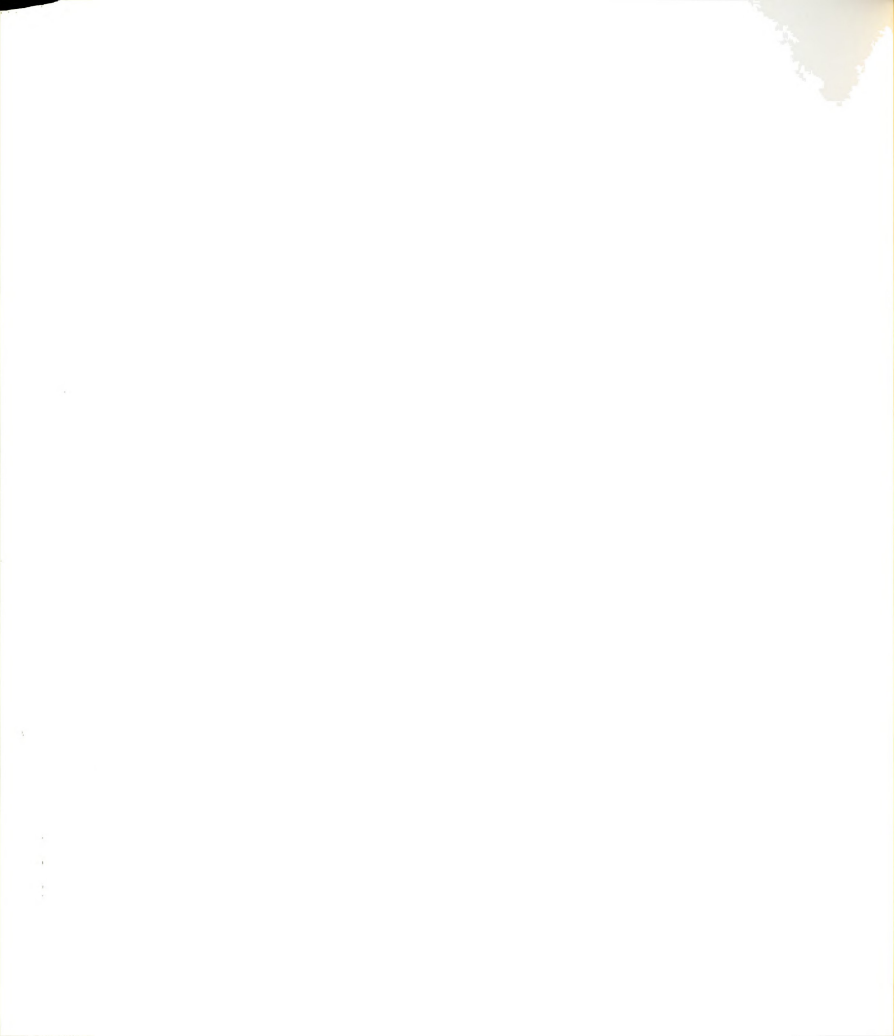
Implementation Plan, and (f) evaluation. Details of a completed task varied depending on the requirements of the training program and each instructor's decisions regarding that which was necessary to be written on the Instructional Plan.

Criterion 2: Instructors Trained to Implement Training Programs

During the first and second training campaigns, each instructor was evaluated as "trained to implement training programs" if the co-ordinators and/or advisors observed him or her performing that which had been written (and approved) in the detailed Instructional Plans (see Appendix A).

Usually there was only one advisor and one coordinator available to observe four instructors implement training programs that were being conducted simultaneously in different locations. There were not enough advisors and coordinators to observe the training of each enabling behavior. However, most of the instructional activities per-formed by each instructor to train an enabling behavior were observed and evaluated during the first and second training campaigns.

The result was that the observers agreed that the instructors' performances coincided with that which was written on the Instruc-tional Plans of each training program.

During the third, fourth, and fifth training campaigns, the same observers used the Instructional Plans and a standardized form, "In-structor Feedback Sheet" (see Appendix F), to make judgments about the instructors' behaviors.

The observers agreed that all instructors satisfactorily demon-strated the instructor behaviors according to the guidelines of the

Instructional Plans and the criteria of 13 categories of the Instructor Feedback Sheet. The degree of perfection with which they made these demonstrations was never assessed.

Conclusions

To answer the quesiton "Is the instructional system effective in training semi-literate adults who had limited access to training opportunities?" data about five criteria were collected. The criteria were (a) adult participation; (b) participation by semi-literate persons; (c) participation by persons who had limited access to training opportunities; (d) validation of the Instructional Plan, pamphlets, training preference questions, and simulation games; and (e) demonstration of skill and knowledge acquisition by _campesinos_. As reported above, the results of specific research procedures all indicated that the instructional system _was_ effective in training semi-literate adults who had limited access to training opportunities.

To answer the question "Can the instructors effectively use the Instructional System to create and implement training programs?" data about two criteria were collected. The criteria were (a) instructors trained to _create_ training programs and (b) instructors trained to _implement_ training programs. Information presented above supports the conclusion that the instructors were trained to create and implement training programs using the instructional system.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

The study attempted to evaluate a potential solution to one of the problems experienced by adults who lived in rural areas (campesinos) of a Third World country. Campesinos employed inappropriate health and agriculture practices which perpetuated a low standard of living. It was believed that the solution to that problem could be partially achieved by creating and implementing an instructional system that was effective in transmitting skills and knowledge the campesinos needed to improve the conditions of their lives.

The research was conducted in the rural settlements (compañias) surrounding a village in Paraguay, a South American country that shares borders with Brazil, Argentina, and Bolivia. The purposes of the research follow:

1. To evaluate the effectiveness of an instructional system to train semi-literate adults who had limited access to training opportunities, and

2. To evaluate the instructor's ability to use effectively the instructional system to create and implement training programs.

Data were collected during five training campaigns that employed the five-task instructional system. Research procedures included examination of documents, conducting a reading test, interviewing participants, planned observations, administering pretests and

posttests during 25 training programs conducted by professional instructors and 85 training programs conducted by paraprofessionals, two retention tests, and validity tests of significant components of the instructional system. Samples of the results were presented as evidences of the effects of the research.

A brief summary of Chapters I through VI follows.

Summary of the Research Report

Chapter I provided a description of geographic, demographic, political, economic, and educational factors that contributed to the basic problem of an under-skilled rural population whose standard of living was low. A discussion of the problem's significance as recognized by Paraguayan governmental agencies included changes that were proposed to solve it.

A description of the five-task instructional system that was designed to contribute to the problems' solution was accompanied by the rationale supporting each task of the system. The on-the-job training to which the project team was exposed as they learned how to use the instructional system was described. The two purposes of the research and importance of the research were also reported. The chapter concluded with a definition of terms and an overview of the dissertation.

Chapter II presented a narrative account of the development of the pilot project that served as the vehicle for conducting the research, detailed descriptions of the contexts in which the research took place, and the results of an inventory of nonformal education activities in the location where the research was conducted. The
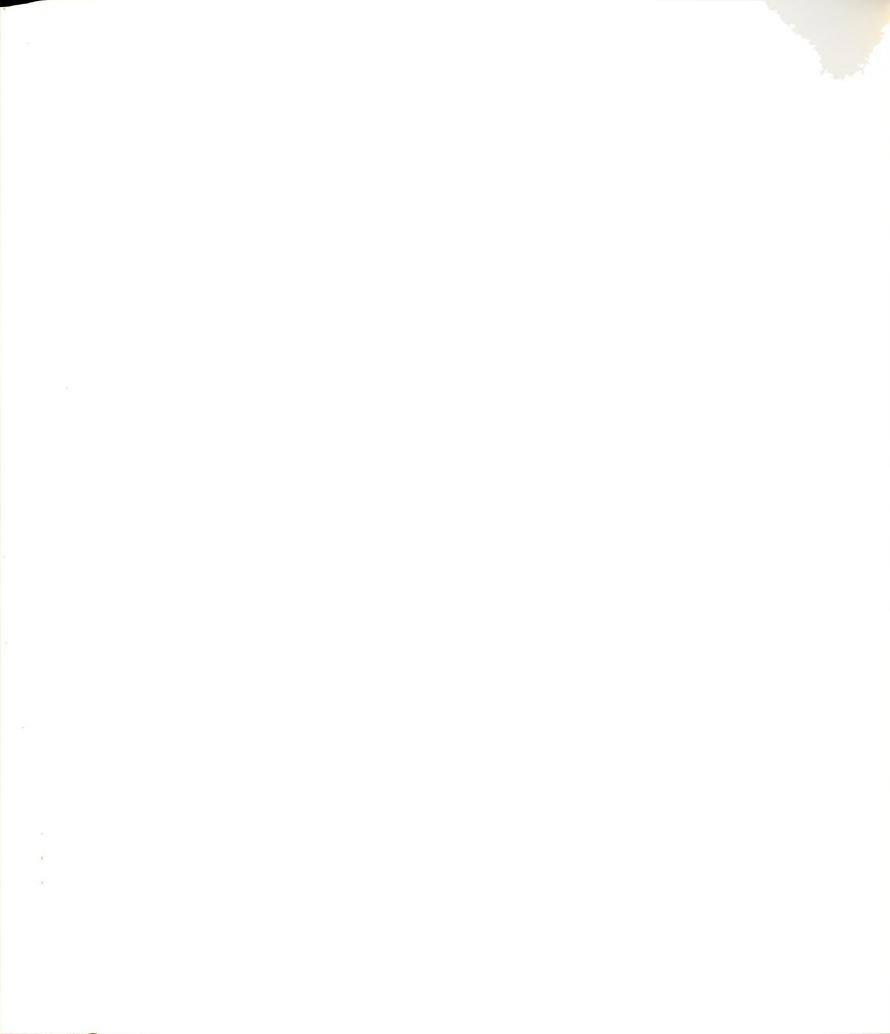
chapter concluded with a detailed explanation of the implementation of the pilot project between September, 1976, and September, 1978.

Literature that was related to the purposes of the research identified characteristics of skills-training programs in seven Third World countries. It also outlined various instructional processes, most of which followed the principal of a systems approach to instruction. That was the content of Chapter III.

In the fourth chapter, the research methodology, evaluation research, was described as were the specific research procedures employed to collect data. The two contexts (training programs and training campaigns) in which the research was conducted were also reported.

The seven criteria and criterion statements established to make judgments about the effectiveness of the instructional system and the instructors' training ability were specified in Chapter V.

In the sixth chapter, samples of the results of the inquiries made that corresponded to each criterion and the purposes of the research were furnished.

Conclusions and Recommendations

Information derived from the specific procedures applied during the research and observations made during the project's development established a basis for making decisions regarding certain aspects of a functional skills-training process directed to rural adults whose literacy and numeracy skills are limited.

That which appears to be supported by data collected during the research is followed by the researcher's recommendations of what

should be. Areas in which additional research is required are also suggested.

Conclusion One: A systems approach to skills training is an effective means of transmitting functional skills and related knowledge to adult campesinos in Paraguay.

Four professional instructors used a five-task instructional system to train 325 Paraguayan campesinos. Eighty-five campesino-paraprofessionals used the same system to train 517 of their peers. Successful training was documented on 842 (325 + 517) pretests and posttests that measured knowledge acquisition (see Table 9 on page 148). Campesinos performed each enabling behavior and terminal behavior without assistance to the instructors' satisfaction. Other explanations, of equal strength, did not rival the explanation that the campesinos' change in behavior was attributed to the training to which they were exposed.

Recommendation. An instructional system should be established for training functional skills to economically and educationally disadvantaged adults in the Third World.

The system may identify more than PAE's five tasks, depending on the needs and idiosyncrasies of the trainers, the trainees, and the training situation. However, at least five tasks should comprise the foundation of the system: (a) identification of training preferences and other variables affecting the instructional process, (b) development of training objectives, (c) determination and development of training strategies, (d) development of a plan for the implementation of training, and (e) evaluation of the instructional process and results.

PAE's training was conducted approximately two hours each day. That amount of time was determined during the assessment task. It was the amount of time <u>campesinos</u> could afford to spend away from their daily life-supporting chores. The detailed operational definitions of each task should be made consonant with the life-style and needs of the receiving population.

The instructional system, however defined by its creators, should be routinely exposed to formative evaluation procedures to improve the effectiveness of its individual components.

Finally, an instructional system may not be appropriate to achieve educational goals other than the acquisition of skills and related knowledge. For example, the inflexibility of its content and structure would not be appropriate for increasing participants' political awareness.

<u>Future research related to a systems approach to skills training</u>. Many more questions were raised as a result of the research than were answered. A list follows of suggested topics for future research.

1. Trainees' Perceptions of Themselves as Learners Before and After Training

2. Changes in the Standard of Living of the Receiving Population

3. Degree of Adoption of Skills Acquired During Training (i.e., how long do trainees continue to practice a skill that has been learned?)

4. Skills-training as an Empowering Process

5. Trainee Attitudes Toward Learning

6. The Cost Effectiveness of Skills-training Programs that Employ PAE's Instructional System

7. A Comparison of the Instructional System's Effectiveness in Training Economically and Educationally Disadvantaged Rural Adults in Different Cultures

Conclusion Two: Content specialists (PAE's instructors) whose previous preparation in the use of an instructional system is limited can be trained to use effectively an instructional system to create and implement skills-training programs.

Upon evaluation of the 25 Instructional Plans written by PAE's four instructors, it was determined that they could effectively create skills-training programs directed to semi-literate campesinos. The Instructional Plans followed PAE's instructional system. Observations of the instructors in the field confirmed their ability to implement effectively those programs. Using PAE's instructional system, the four instructors trained 325 campesinos during five separate training campaigns. They also successfully trained 85 paraprofessionals to use the instructional system to train other campesinos. Each instructor was a specialist in the skills and subject matter to be trained.

Recommendation. Persons who demonstrate a high level of knowledge and skill in a specific content area should be trained to use an instructional system to create and implement training programs in their areas of expertise.

The instructional concepts to be employed in the instructional system should be taught using a systems approach to training by specialists in instructional design and technology. The content specialists (trainers) should be involved in the development of the resulting instructional system to match that system to the learning styles, educational background, and other unique characteristics of the ultimate receiving population.
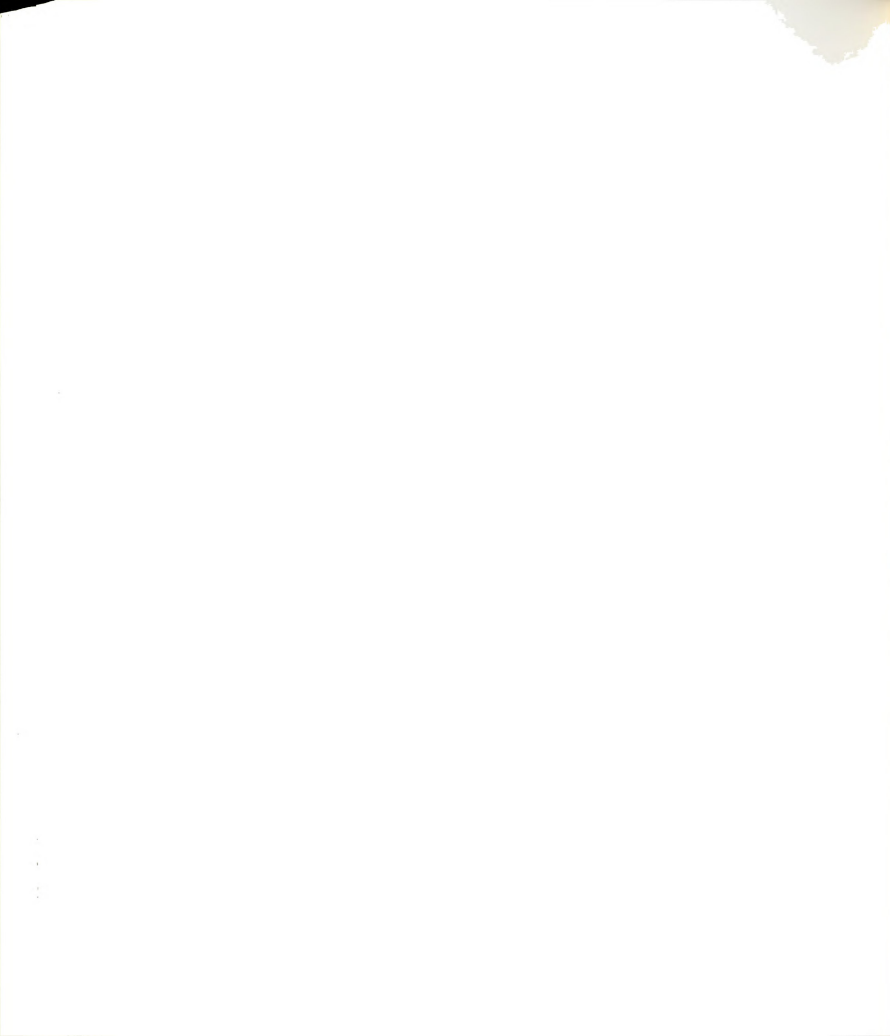
Sufficient opportunity should be provided the content specialists to permit mastery of all skills and knowledge embodied in the Instructional System (the responsibility of the instructional design and technology specialists).

Future research related to the training of content specialists. Topics for future research are listed below.

1. The Level of Complexity of the Instructional Concepts Presented to the Content Specialists

2. The Level of Mastery of the Instructional Concepts and Skills Required to Create and Implement Effectively Training Programs Based on an Instructional System

3. A Comparison of the Training Effectiveness of Content Specialists and Professional Vocational Trainers Who Are Trained to Develop and Use a Basic Instructional System

Conclusion Three: Using a validated Instructional Plan under the supervision of a PAE instructor, paraprofessionals can be trained to train their peers successfully.

During the research, 85 campesinos who successfully completed one of PAE's 25 training programs were trained to implement the Instructional Plan. Subsequently, under the supervision of PAE instructors, these paraprofessionals successfully trained 517 campesinos.

The paraprofessionals were selected by PAE's instructors because they had mastered the skills, were respected by their peers, and demonstrated more advanced numeracy and literacy skills.

Recommendation. Members of the receiving population should be trained to conduct skills-training programs directed to their neighbors. The training programs should follow a validated Instructional Plan whose foundation is an instructional system. In addition to the

training received during the training program, paraprofessionals should

be trained to use the Instructional Plan effectively.

These paraprofessionals should be popular in the community, demon-

strate mastery of the functional skills and knowledge presented in the

training program, and possess numeracy and literacy skills required to

successfully implement the training program.

Because of the inherent danger (e.g., use of insecticide) of some

training programs, it is essential that supervision always be avail-

able.

Future research related to skills training by paraprofessionals.

The research study generated four additional topics that should be

investigated.

1. The Conditions Under Which Skills-training Programs
    Should Be Conducted by Paraprofessionals

2. The Abilities of Paraprofessionals to Develop Skills-
    training Programs

3. The Consequences of Paraprofessionals' Charging Peers
    for Training

4. Paid Paraprofessional Trainers versus Volunteer Para-
    professional Trainers

Conclusion Four: Content selection criteria that considers (a) the
training preferences of the receiving population, (b) the receiving
population's life-style and living conditions, (c) environmental fac-
tors (e.g., topography and climate), and (d) the professional and
logistical capacity of the trainers are necessary to achieve success-
ful training outcomes.

Twenty-five different training programs were developed during the

research that applied the above criteria to determine the skills and

knowledge of each training program. Eight hundred forty-two campe-

sinos successfully completed training. The selection criterion
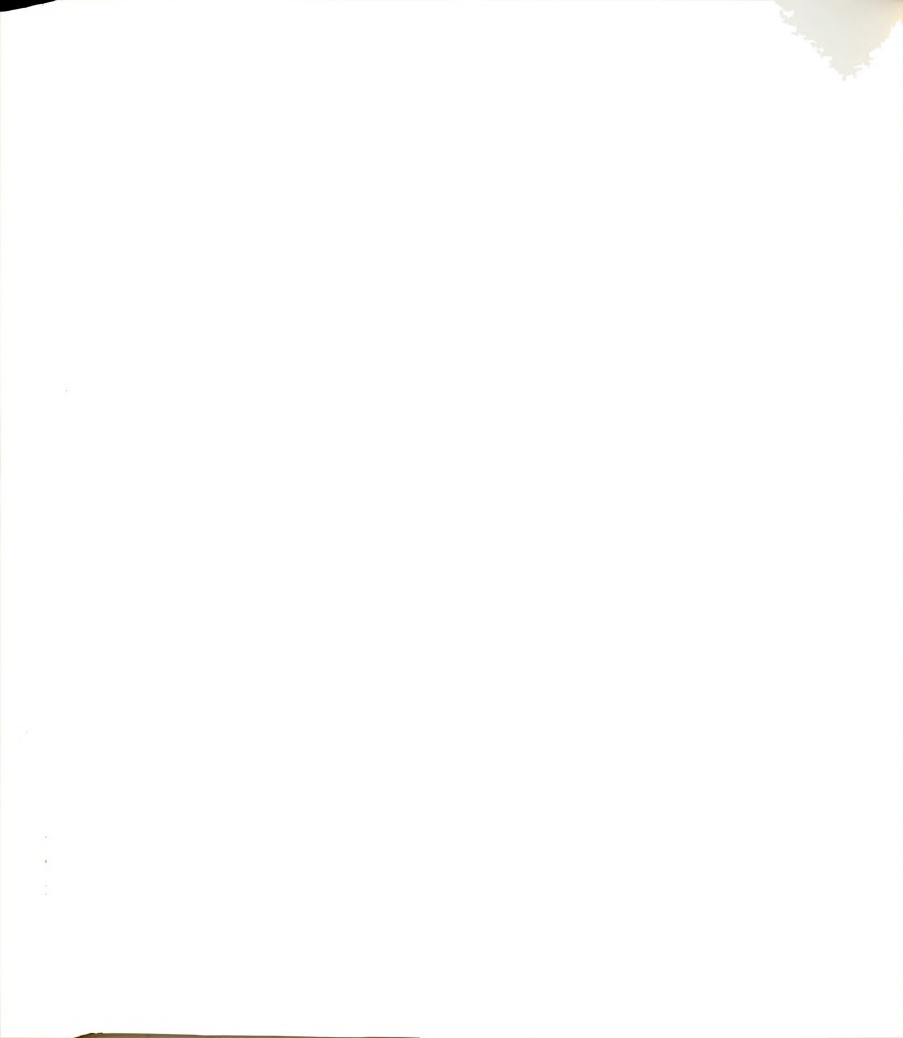
"training preferences of the receiving population" was weighted heaviest. Informal observations over the life of the project indicated that strict compliance to the above criteria in determining the content of training for a given receiving population rendered positive results. For example, in basic agriculture, <u>adoption</u> of the terminal behavior taught during the training program occurred when the skill was appropriate for the agricultural season. When PAE's administrative and logistical capacity (e.g., the printer's ability to produce the required number of pamphlets on time, the secretaries' ability to type the rough drafts of the Instructional Plans, and coordinating the use of the project vehicle to transfer training materials) were considered by all instructors before determining the content of training, the instructors were able to devote more time to instructional activities.

Training programs that reflected <u>campesinos</u>' first priority training preferences were attended by more <u>campesinos</u> than those that trained second and third priority preferences.

<u>Recommendation</u>. Criteria should be established to determine the content of training for a given receiving population. It is suggested that at least the four criteria listed above be used. The criterion statement for establishing the necessary content selection criteria might be the following:

> What human, environmental, or training variables have the potential for having an impact on training outcomes?

It is also recommended that "the training preferences of the receiving population" receive the most weight when determining program content.

Future research related to using established criteria to deter-
mine training content. The above recommendation generated the follow-
ing topics that should be the subject of additional research.

1. The Relationship Between the Training Program Outcome
   and the Receiving Population's Training Preferences

2. The Importance of the Previous Professional Experience
   of the Trainers in Determining Program Content

3. The Interaction among National Economic Goals, Train-
   ing Preferences, and the Trainees' Standard of Living

Conclusion Five: The specifying of behavioral objectives is an effec-
tive means of establishing a verifiable standard of the intended out-
comes of a skills-training program.

The criterion established to determine whether or not the train-
ees were able to perform the enabling behaviors and the terminal be-
havior of all 25 PAE skills-training programs was a behavioral objec-
tive. Behavioral objectives were written to correspond to each enabl-
ing and terminal behavior. These observable criteria provided PAE's
instructors and paraprofessionals a standard with which to judge the
performance of the trainee. In all training programs, trainees per-
formed the required behavior (skills) as established in the cor-
responding behavioral objective.

Recommendation. Behavioral objectives should be written for all
enabling and terminal behaviors taught in a skills-training program.
The objectives should specify (a) the conditions under which evaluation
will take place, (b) the terminal behavior and enabling behavior ex-
pressed in observable terms, and (c) the criteria that will be used
to evaluate the trainee's performance of the behavior.

Future research related to the use of behavioral objectives in skills-training programs. Sufficient research has been conducted regarding the use of behavioral objectives.

Conclusion Six: Validation of visual aids contributes to the achievement of intended training objectives.

All visual instructional aids were validated by the instructors, artists, and coordinators before they were presented to campesinos. There were always differences in perceptions and changes to the original art work. Another validity test, a field test, on a similar receiving population invariably generated corrections that were essential to the graphic presentation of intended training messages (see Figures 5 and 6 on pages 138 - 139).

The contribution made by the visual materials to the acquisition of skills and knowledge was not determined, but is suggested below as a future research topic. It is known that all training programs distributed validated visual instructional materials that presented the skills and knowledge pictorially or in the text. Trainees acquired the skills and knowledge intended in all training programs.

Some of the visual materials (e.g., pamphlets) were regularly given to each campesino-trainee. It was observed that trainees brought their pamphlets to the training sessions, hung the pamphlets on the walls of their homes, wrote explanatory notes next to a picture depicting a skill being demonstrated, and colored their pamphlets. It appears that the pamphlets were perceived as important by the receiving population.

Recommendations. Training programs which employ visual instructional materials should incorporate a validation process that requires the instructor, graphic artist, supervisor, and members of the receiving population to agree that intended messages are represented pictorially and in the text of those materials.

The samples used in field testing don't need to be "final products." Photocopied materials will yield needed feedback.

Upon completion of training, additional feedback about the visual aids should be solicited from graduates to confirm validity as well as to improve any aspect of the instructional materials.

Future research related to the validation and contribution of instructional materials. A list follows of topics about which research should be conducted.

1. The Perceptions of Content Specialists, Recognized Training Experts Who Are Also Content Specialists, and the Receiving Population Regarding the Validity of the Same Instructional Aids

2. The Effects of Validated and Unvalidated Instructional Aids on Training Outcomes

3. The Effects of Different Instructional Strategies (e.g., demonstrations, analogous practice, equivalent practice, and visual aids) on Training Outcomes

Conclusion Seven: Pretests, posttests, and observations of the trainees' post-training performance of skills are reliable means of evaluating training outcomes.

Pretests and posttests were administered to 325 campesinos by PAE's instructors. The same tests were administered by paraprofessionals to 517 campesinos from the same receiving population. There was no significant difference in responses of the two groups. The same was true

of the observations of skill performance made by PAE instructors and those made by the paraprofessionals.

Recommendations. Skills-training programs should employ pretests and posttests to evaluate the acquisition of knowledge of the receiving population. The evaluation should be administered by "testors" not involved with the program. Knowledge acquisition should be evaluated orally or by requesting written responses. Knowledge tested should include information about the rationale supporting the adoption of a specific skill (e.g., "Why is it important to terrace the fields?"), essential characteristics of the skills (e.g., "How many drops of vaccine should be applied?"), as well as information regarding the safe operation of the skill (e.g., "How deep should the bottle be buried once vaccination is completed?").

Skill acquisition should be evaluated by the instructors during planned observations after the training of each enabling behavior. Trainees should be provided all equipment and expendable materials needed to perform the skill correctly.

Future research related to the evaluation of training outcomes. Topics for continued research in this area of summative evaluation are listed below.

1. The Format of Tests (e.g., multiple choice, short answer, testing of analogous behavior, test length, pictorial tests versus orally-administered tests)

2. The Impact of Test Taking on Trainee Attitudes Toward Learning

3. The Incidence of Adoption of Skills Learned During Training

<u>Conclusion Eight</u>: Formative evaluation procedures contribute to the continual improvement of an instructional system and training programs following that system.

Regularly scheduled meetings of the PAE team, field testing of materials and instruments, a "trial run" of the instructional system, scheduled feedback sessions during which <u>campesinos</u> provided their impressions about any aspect of training, and planned observations of instructors' training behaviors are examples of formative evaluation procedures that were routinely practiced during the research. The result was an effective instructional system and instructors trained to use it.

<u>Recommendation</u>. Formative evaluation procedures should be routinely conducted to maintain the effectiveness of any instructional system. The kinds and numbers of procedures should be determined by the complexity of the system being evaluated.

The smallest number of procedures should be used (if the number of procedures is superfluous, the motivation of trainers and trainees may decrease as a disproportionate amount of energy and time is spent accomplishing administrative functions).

<u>Future research related to formative evaluation</u>. A list of topics follows about which additional research should be conducted.

1. A Cost Benefit Analysis of Formative Evaluation

2. The Relationship Between Formative Evaluation Procedures and Training Outcomes
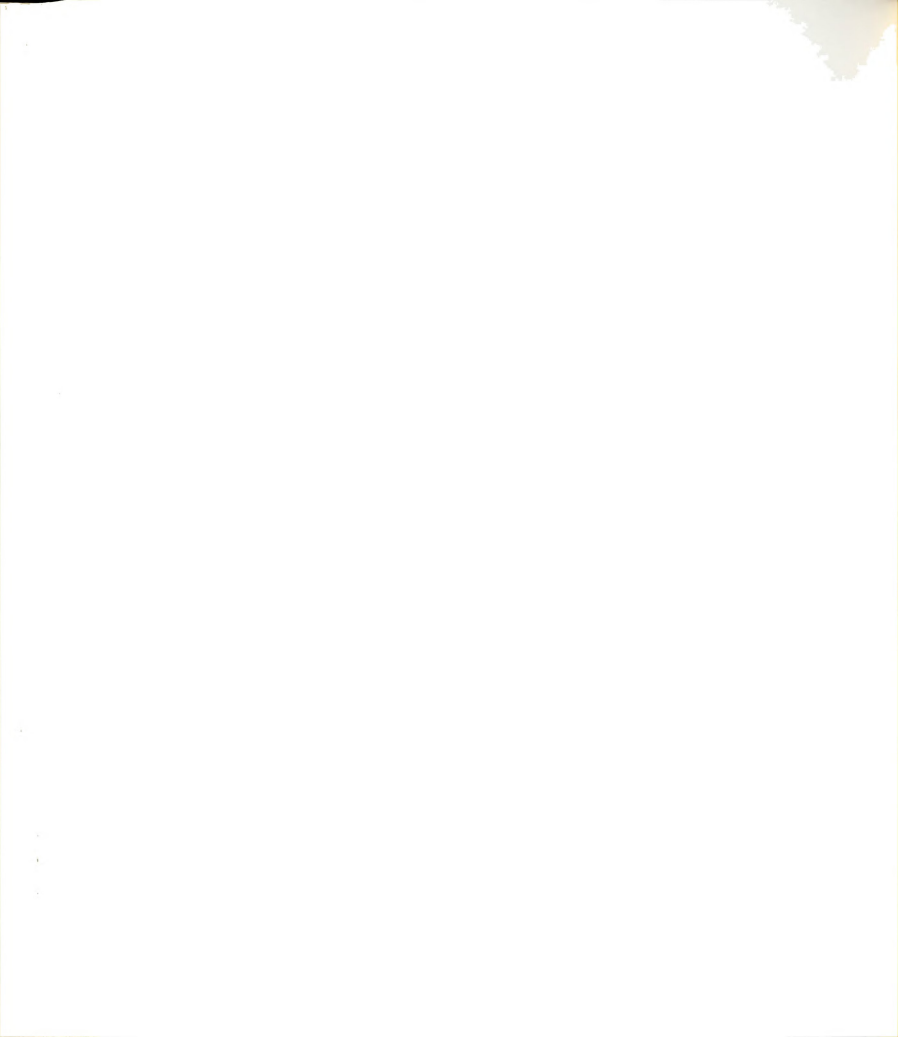
Remaining Issues

Two issues had an impact on the development and implementation of PAE's Instructional System. Data were not routinely collected about these issues to provide a more objective assessment of their significance which is discussed below.

Literacy

The researcher's previous experience in Paraguay; personal data collected on a reading ability test and the results of that test; observations in the field of approximately 1000 campesinos who, in some way, participated in PAE's training programs; and data collected for a socioeconomic survey were sources of data regarding the receiving population's literacy and numeracy skills.

Grade level achieved indicated that most campesinos were semi-literate in Itá District according to the Ministry of Education's definition of semi-literate. An operational definition of semi-literate did not exist. The four above sources indicated that writing skills were very limited, perhaps no more than the ability to sign one's name; numeracy skills were limited to those required to survive (e.g., addition and subtraction, and an understanding of weights and measures); and reading skills were functional (i.e., recognition of words associated with their life-styles and needs).

Persons who absolutely could not read, write, add, or subtract generally did not show up for training. Efforts to recruit that group were unsuccessful.

Persons belonging to the "literate" end of that continuum did attend training. In fact, many of the paraprofessionals would be labeled "literate" on most measures.

Training programs were designed for what appeared to be the majority of the receiving population who were perceived to be semi-literate or, at best, minimally functionally literate.

Knowing the general literacy and numeracy levels of the receiving population is necessary to create efficient training programs directed to specific groups. It assists in determining the level of complexity of training and the instructional strategies. For example, it seems logical that a group of trainees who have demonstrated advanced literacy and numeracy skills would be prepared to use instructional materials that depend less on graphic reinforcement. Fewer graphics reduce the cost of printing.

Similarly, a very low literacy/numeracy level would also influence the Instructional Plan. For example, more time might be dedicated to "demonstrations" and "practice."

However, observations made during the research suggest that the determination of precise levels of reading, writing, and math skills of the group in the middle of the literacy/illiteracy continuum, the "semi-literates" would not markedly improve training outcomes. In fact, that kind of sophisticated assessment would be costly and time consuming.

In all cases the five-task instructional system should be used to create and implement the skills-training. Details of each task and the Instructional Plan would change depending on whether the receiving

group was illiterate, semi-literate, or literate. That characteris-
tic should be determined.

Identifying grades completed in school is helpful as an indicator;
however, simple reading, writing, and math skills tests should be ad-
ministered to the receiving population to confirm general literacy
levels.

Routinely applied formative evaluation procedures should be con-
ducted to regularly assess that situation followed by corresponding
changes in the Instructional Plans.

Participation

Biasing the advisors' approaches to the development of a skills-
training process was a commitment to the concept of "participation."
That is, involving the receiving population (whether that be PAE's
instructors or campesinos) in the decisions that might have an impact
on their lives. It was a healthy bias, intended to improve the qual-
ity of instruction.

Major constraints imposed by the approved project were quantified
"end-of-project-status" indicators. These constraints influenced the
degree to which instructors and campesinos could freely participate in
the decision making process. For example, the project team was com-
mitted (via the approved project) to produce and validate 25 differ-
ent training programs by the end of the project. Since time was
limited, it meant specific "training preferences" could not be re-
peated even though they were the most preferred in more than one cam-
pañia.

Other basic tenets of "participation" were violated when many
decisions were made by the advisor and coordinators without consulting

other team members. Coordinators held weekly meetings during which

decisions were made which did not always reflect the input of other

team members. Many of those decisions were related to successfully

achieving project goals previously established by the sponsoring

agencies.

There were also instances in which a participatory approach

wasn't justified; in fact, it may have been dysfunctional. For

example, meetings during which the instructors (and coordinators) were

debating the worthwhileness of including two criteria ("degree of

perfection" and "frequency") in the behavioral objectives were not

meetings in which the artists should have participated. The artists

were not prepared to make a significant contribution to the decision.

They also had their own work to do. These "irrelevant" meetings were

perceived as a waste of time and contributed to their natural reluc-

tance to participate in other decisions more closely related to their

roles as graphic artists.

The above notwithstanding, active participation by the members of

the receiving populations (PAE instructors and _campesinos_) was a norm of

PAE's "modus operandi" that yielded many positive results. Two

examples follow.

The instructors and coordinators participated in all aspects of

the development of the instructional system. Advisors suggested that

an assessment of training preferences was a necessary first step in

the instructional system. The instructors and coordinators added that

another assessment activity should be meetings in the community and a

publicity campaign. The latter suggestion increased _campesinos'_

motivation to sign up for training and improved PAE's acceptance by the receiving population.

Finally, in addition to providing necessary information about their life-styles, living conditions, and training preferences, the campesinos routinely criticized any aspect of the training they had experienced. This feedback was solicited by the coordinators, instructors, or artists in meetings following training. The feedback ranged from "one of the instructors yells at us" (not in the punitive sense; he just had a very loud voice) to "those materials are too expensive."

Participation was the price the receiving populations paid to be trained. The requirement to participate was communicated to them before training began, during house visits and community meetings. That PAE was a pilot project during which an instructional system would be developed and training programs validated was also shared with the campesinos.

Suggestions Regarding Improvements in Research Procedures of Replications of This Research

Chapter IV presented the basic research methodology and corresponding research procedures employed to fulfill the primary purposes of the research. During the two years that the research was conducted, many lessons were learned about the research process in general and the application of specific research procedures in particular. A list of recommendations regarding improvements that could be made in the research follows.

1. It is not necessary to conduct 25 different training campaigns in order to collect sufficient data to make judgments about the

effectiveness of the instructional system and the training abilities of the instructors. One complete training campaign (i.e., training programs for all content areas), administered to a randomized sample of the receiving population, would yield adequate data to make judgments about the instructors' training behaviors and the system. A legitimate "control" group should also be identified. However, <u>this should only be done if subsequent training can be promised and provided to members of the receiving population not selected for the sample</u>.

2. Reading, writing, and numeracy tests should be conducted on a representative sample of the receiving population before the training begins.

3. The same instructional system should be used to train the content specialists (instructors). Time should be provided for each instructor to master the skills and knowledge presented.

4. Detailed written descriptions of the mastery level performance of the terminal and enabling behaviors should be established (for instructors and <u>campesinos</u>).

5. Pretests and posttests should be administered by persons trained to administer tests other than instructors responsible for training. These persons should be introduced to the selected sample and their purpose described before the research begins.

6. Every planned observation should be documented on standardized forms (e.g., check lists, rating sheets) by team members trained to make the observation. Unplanned observations should also be documented. A method should be established for regularly collecting and interpreting the data.

7. The degree to which the skills trained are permanently adopted by the receiving populations should be determined. This determination should be made at a time when it is logical that the skills be practiced (e.g., the adoption test for "control of cotton pests" should be performed during the cotton pest season).

Final Note

It is evident that the Instructional System is an effective means of transmitting knowledge and skills to educationally and economically disadvantaged adults in rural Paraguay. It is reasonable to think that wherever receiving populations and instructionally relevant conditions are similar, PAE's instructional system would also be effective.

It is hoped that persons trained by this system would also experience an increase in self-esteem, self confidence, and motivation leading them to seek and request continued training and/or education. (There were strong indicators that this happened to PAE's trainees. The vast majority implored the instructors to provide more and more training.)

It is also hoped that other kinds of training would be desired by the trainees (and provided by their government or private sector) that would develop their problem solving skills, literacy and numeracy skills, analytical skills, and increase their knowledge.

The possibility exists, however, that the kind of instructional system evaluated in this report may be used to perpetuate the present status of small scale, semi-literate, poor farmers in the Third World by providing a little training to appease a dissatisfied population.

PAE's Instructional System should be used in situations in which the receiving population has access to literacy training and all other public educational institutions that provide credentials.

APPENDICES

APPENDIX A

VALIDATED INSTRUCTIONAL PLAN

JORNADA DE ADIESTRAMIENTO DEL PAE CONSTRUCCION DE TERRAZAS **COMPAÑIA** POTRERO POI

FECHA DE LA JORNADA 13 - IV - 77 **INSTRUCTOR** HUMBERTO APONTE

Corregido en el mes de setiembre de 1.978.-   - 1 -

DIAGNOSTICO	OBJETIVOS	ESTRATEGIAS	IMPLEMENTACION	EVALUACION
Se eligió Construcción de terrazas por que según el resultado de la encuesta sobre necesidades de capacitación, la manifestación de la población sobre construcción de terrazas fué del 36% en Potrero Poi. Según el calendario agrícola, la época es oportuna para la práctica está al alcance de la posibilidad económica de la población receptora. Está dentro de la capacidad del equipo.	- Durante la jornada el 100% de los participantes construirán terrazas, utilizando equipos prácticos correctamente tres veces.	- Charla. - Rotafolio. - Folleto. - Demostración práctica por el Instructor. - Formación de grupos. - Práctica individual. - Objeto real.	a) Lugar: Se realizará en la casa y en la chacra de un participante. b) Duración: 3 días - 8 días de promoción de la comunidad, 10 días de adiestramiento por el Instructor. - 5 días adiestramiento de auxiliares. - 10 días adiestramiento por el auxiliar. 1 día de clausura. c) Horario: 3 horas diaria. d) Equipos: 10 equipos de nivel. 10 banderolas. 3 arados. 3 cadenas de tracción 10 machetes. 30 estacas. e) Materiales: 3 rotafolio. 30 folletos. Estos materiales y equipos están previsto para 30 participantes, dividos f) Para el adiestramiento se organizará en la siguiente forma:	- Se tomará Test de Entrada y Salida. - La evaluación se hará en el momento de la práctica en forma individual por observación y preguntas. - Retroinformación. - Test de retención.

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PLAN INSTRUCCIONAL

HOJA 1

JORNADA DE ADIESTRAMIENTO DEL PAE   C NSTRUCCI N IE ANALES/S   COMPAÑIA   I PREPARE 1

FECHA DE LA JORNADA   13 - IV - 7r   INSTRUCTOR   INGENIERO AGRONT

Corregido en el mes de setiembre de 1.976.-   - 2 -

DIAGNOSTICO	OBJETIVOS	ESTRATEGIAS	IMPLEMENTACION	EVALUACION
			3 días de reuniones grupales en el local de un participante. 7 días de práctica individual en la chacra de cada participante.	

Enabling Behavior

- 1 -

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HOJA 2

CONDUCTA PREVIA		ESTRATEGIA	AYUDAS AUDIO VISUALES	HERRAMIENTAS Y MATERIALES	TIEMPO A EMPLEAR	FECHA	OBSERVACIONES
OBJETIVO	**PASOS**						
Dado una charla sobre las ventajas de terra-zas, todos los participantes dirán 3 respuestas correctamente.	- Evita el arrastre del suelo. - Mantiene la humedad. - Aumenta la fertilidad. - Mejora la producción.	- Charla.	- Afiche. - Folleto.	- Atril. - Tablero.	30'	13/4	- Se repetirá cuantas veces sea necesario. - Se hará preguntas.
Dado una charla sobre desventajas todos los participantes, dirán correctamente 3 respuestas.	- Pérdida de la capa laborable. - Pérdida de la fertibilidad. - Disminuye la producción.	- Charla.	- Afiche. - Folleto.	- Atril. - Tablero.	30'	13/4	- Se repetirá cuantas veces sea necesario. - Se hará preguntas.
Teniendo el terreno todos los participantes ubicarán el lugar más alto correctamente una vez.	- Tendrá en cuenta. - Pendiente. - Corriente de agua.	- Charla. - Demostración. - Práctica.	- Afiche. - Folleto.	- Atril. - Tablero.	30'	13/4	- Los participantes se trasladarán del local al terreno.
Teniendo el equipo de nivel todos los participantes colocarán el equipo correctamente 4 veces.	- Removerá el suelo con la pala. - Colocará el equipo. - Afirmará pisando la tierra.	- Charla. - Demostración. - Práctica.	- Afiche. - Folleto.	- Pala. - Equipo de nivel	30'	13/4	
Teniendo el equipo colocado todos los participantes, accionarán el nivel hasta conseguir el punto medio cuatro veces.	- Accionará el parante del equipo. - Ubicará el punto medio.	- Demostración. - Práctica.		- Equipo de nivel - Pala.	30'	13/4	

CONDUCTA PREVIA		ESTRATEGIA	AYUDAS AUDIO VISUALES	HERRAMIENTAS Y MATERIALES	TIEMPO A EMPLEAR	FECHA	OBSERVACIONES
OBJETIVO	PASOS						
Teniendo el equipo nivelado todos los participantes con el ayudante ubicarán la banderola a 25 metros del equipo, 4 veces.	- Medirá 25 pasos del lugar. - Ubicará la banderola la posición vertical.	- Demostración. - Práctica.		- Equipo de nivel. - Banderola.	30'	14/4	- Se formará grupo de dos quienes se alternarán en el uso del equipo nivel y banderola.
Teniendo la banderola ubicada todos los participantes observarán con el punto de mira la ubicación de la banderola correctamente dos veces.	- El ayudante cambiará de lugar la banderola de izquierda a derecha o vice versa. - El observador indicará el lugar donde se encuentra el nivel.	- Demostración. - Práctica.		- Equipo de nivel. - Banderola.	30'	16/4	- los participantes practicarán todos los pasos.
Teniendo el equipo de nivel todos los participantes verificarán el nivel hasta comprobar la posición correcta dos veces.	- Observará el nivel si como quedó después del movimiento. - Con movimiento el participante ubicará el nivel en el punto medio. - Verificará nuevamente el punto de mira a la marca de la banderola.	- Demostración. - Práctica.		- Equipo de nivel. - Banderola.	30'	14/4	- Los participantes practicarán todos los pasos individualmente.
Teniendo la estaca los participantes colocarán la estaca en el lugar del nivel marcado cuatro veces.	- Marcará con la banderola el lugar. - Ubicará la estaca en el lugar señalado golpeando.	- Demostración. - Práctica.		- Banderola. - Estacas.	30'	14/4	- Los participantes practicarán todos los pasos individualmente.

CONDUCTA PREVIA		ESTRATEGIA	AYUDAS AUDIO VISUALES	HERRAMIENTAS Y MATERIALES	TIEMPO A EMPLEAR	FECHA	OBSERVACIONES
OBJETIVO	PASOS						
Teniendo los equipos de nivel todos los participantes repeti- rán las operaciones anteriores correcta- mente cuatro veces.	- Removerá el suelo en el lugar de la esta- ca. - Colocará el equipo en el lugar indica- do. - Accionará el parante del equipo. - Ubicará el punto me- dio. - Medirá del lugar del equipo 25 pasos. - Colocará la bandero- la. - Ubicará el operador la banderola. - El ayudante cambiará de un lado a otro. - El operador indicará el lugar donde se encuentra el nivel. - Observará el nivel como queda después del movimiento. - Con movimiento del parante ubicará el nivel en el punto me- dio. - Verificará el punto de mira a la bandero- la comprobando el lugar del nivel.	- Demostra- ción. - Práctica		- Equipo de nivel - Banderola. - Estacas. - Pala.	1		- A partir de este punto se formará grupo de 2 y se turnarán con el observador con el colo- cador de la banderola.

- 4 -

CONDUCTA PREVIA		ESTRATEGIA	AYUDAS AUDIO VISUALES	HERRAMIENTAS Y MATERIALES	TIEMPO A EMPLEAR	FECHA	OBSERVACIONES
OBJETIVO	PASOS						
En el transcurso de la práctica todos los participantes comprobarán la dirección de cinco estacas colocadas en el nivel señalado.	- El observador se colocará en la cabecera de la primera estaca. - Observará la alineación de las estacas.	- Demostración. - Práctica.		- Estacas.	30'	14/4	
Teniendo las estacas alineadas los participantes corregirán las líneas quebradas correctamente una vez.	- El observador quedará detrás de la 1ra. estaca. - Detectará las estacas de la línea quebrada. - El ayudante se ubicará en el lugar señalado. - Tomará la estaca y la ubicará en el lugar que indicará el observador de línea.	- Demostración. - Práctica.			15'		
Teniendo el arado y los bueyes los participantes, levantarán la curva de nivel arando tres surcos de cada lado tres veces.	- Regulará el arado hasta que consiga la máxima profundidad. - Comenzará partiendo del lado izquierdo tomando a 20 o 25 cm de la estaca. - Al comenzar del lado derecho hará la misma instrucciones hasta terminar. - Continuar con el segundo surco de la misma forma. - El tercer surco se hará en el surco del segundo.	- Demostración. - Práctica.		- Arado. - Azada. - Bueyes.	1	14/4	

- 5 -

CONDUCTA PREVIA		ESTRATEGIA	AYUDAS AUDIO VISUALES	HERRAMIENTAS Y MATERIALES	TIEMPO A IMPLEAR	FECHA	OBSERVACIONES
OBJETIVO	PASOS						
	- Las partes donde hay corriente de agua, marcada se retornará con la pala alzando una tierra o agre-- o sea trazar de mudo r... - Para darle mejor terminación se usará la azada para alzar la tierra. - Se orientará para proteger la curva de nivel con pastos, como cebrán, pacholí.						

CUADRO PARA EVALUACION DE LA PRUEBA DE ADIESTRAMIENTO DE E.A.P.

CONTROL DE APRENDIZAJE DE LA CURVA (DE TERRACEO DE TERRENO)   (Pretest-Postest)

1.- ¿Cuáles son las ventajas de la adecuación de terreno?

   E   S

  0. No sabe.
  1. Aumenta la producción.
  2. Mantiene la humedad.
  3. Evita el arrastre del suelo.
  4. Mejora el suelo.

2.- ¿Cuál es la consecuencia de la tracción?

   E   S

  0. No sabe.
  1. Disminuye la capa laterable.
  2. Pierde la fertilidad.
  3. Disminuye la producción.

3.- ¿Cómo se usa el aparato de nivel rústico?

   E   S

  0. No sabe.
  1. Coloca el equipo en posición vertical.
  2. Ubica el nivel en el punto medio.

4.- ¿Cómo se puede sacar el nivel de un terreno?

   E   S

  0. No sabe.
  1. Ubicar la parte más alta de un terreno.
  2. Colocar la primera curva en el lugar.
  3. Cada cada 25 pasos del nivel.
  4. Que la curva sea a nivel.

5.- ¿Cómo se puede levantar una terraza?

   E   S

  0. No sabe.
  1. Regula el arado a la máxima profundidad.
  2. Surcar a 20 mt. de la estaca ambo lados.
  3. Levantar la tierra con 3 surco cada la do darle mejor terminación con la azada.

P.1. Los participantes tendrán que conocer las respuestas.

P.2. Los participantes tendrán que conocer dos alternativas.

P.3. Los participantes tendrán que conocer las dos destrezas.

P.4. Los participantes tendrán que conocer las 5 destrezas.

P.5. Los participantes tendrán que conocer las tres destrezas.

OBSERVACION: Las destrezas se evaluarán por observación durante la práctica del participante.

APPENDIX B

NONFORMAL EDUCATION

INVENTORY FORM

NONFORMAL EDUCATION INVENTORY FORM

CUESTIONARIO DE ENTIDADES

DE ADIESTRAMIENTO EXTRA-ESCOLAR

1. Nombre de la Institución o Programa_____

2. Auspiciador (gobierno, organismo internacional, otros)

   _____

3. Ubicación Geográfica_____
                              Ciudad   Departamento

4. Nombre del (de la) Director(a)_____

5. Dirección de la Institución_____

6. Teléfono_____   Casilla de Correos_____

7. Cuándo inició sus labores_____
                                      Fecha

8. #Estudiantes cuando se iniciaron las labores_____

   #Estudiantes actuales_____

   Personal docente inicial_____

   Personal docente actual_____

9. Cómo y por qué el programa fue iniciado: (filosofía, metas,

   razón de iniciar)_____

10. Metas actuales del programa_____

11. Tipo de entrenamiento (pre-empleo, adiestramiento en servicio,

    no-laboral). Describir:_____

12. Descripción de la población receptors_____

13. Preparación anterior de la población receptora_____

14. Duración del entranamiento (horario, distribución semanal,

    semanas, etc.)_____

15. Técnicas de comunicación (metodología, estrategias, técnicas)____

    _____

16. Historia de la Institución/Programa_____

17. Cómo se administra el programa (estilo de trabajo)_____

18. Descripción del entrenamiento (incluye temas, tácticas, técnicas
    efectivas, técnicas no efectivas, matrícula, materiales audio-
    visuales)_____

19. Presupuesto (fecha)

    Costo del programa global_____

    Administración_____

    Costo por estudiante_____

    Capital (edificio, equipo, etc.)_____

20. Apoyo financiero (duración)

    (Gobierno, nacional, extranjero, donaciones, préstamos,

    en especie, etc.)_____

21. Evaluación del entrevistado respecto al impacto de su programa.

    (Lecciones significativas, éxitos, fracasos, experiencias

    comparativas)._____

22. ¿Cuál es la contribución o lecciones que puede aportar su

    programa para el desarrollo del país? (Positiva y negativa,

    recursos humanos, papel en el desarrollo.)

    _____

                              Fecha:_____

                              Lugar:_____

                              Firma:_____

Nota: ¿Tiene Ud. algunos documentos o ejemplos de su trabajo?

APPENDIX C

AUDIO/VISUAL AID PLAN
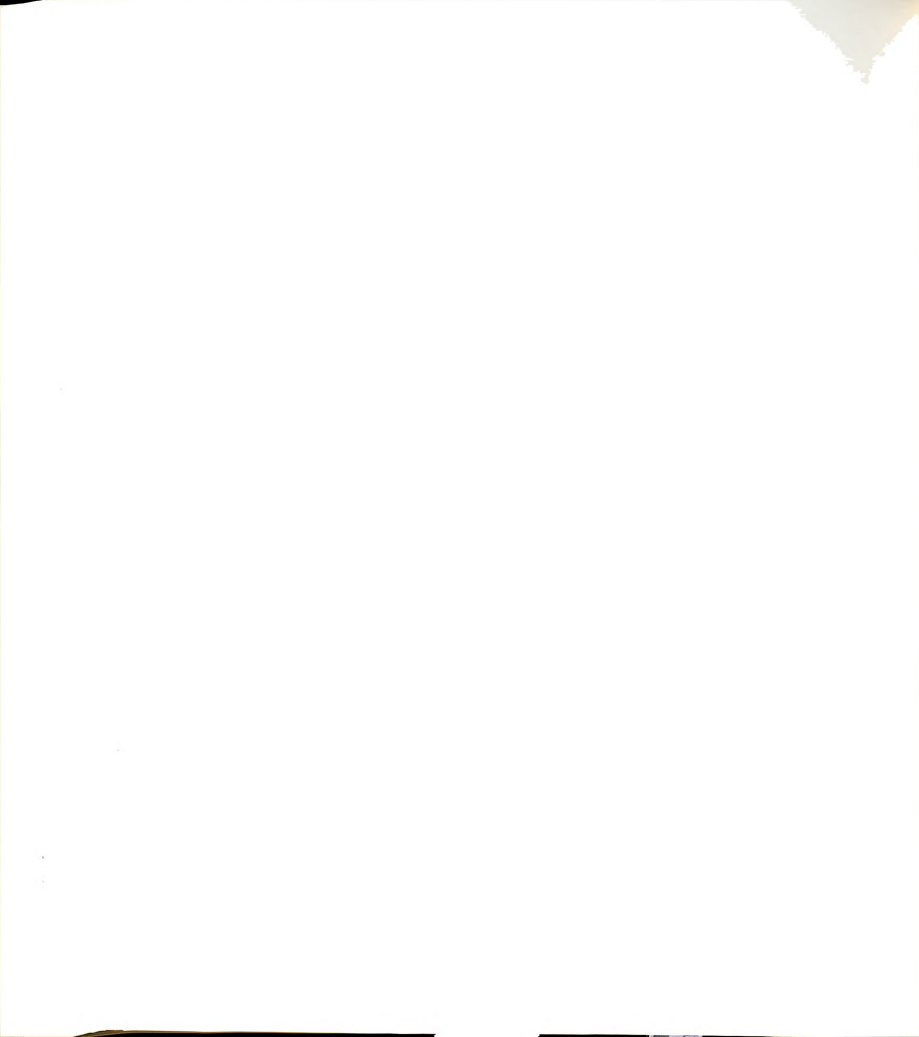
AUDIO/VISUAL AID PLAN

PLAN DE MEDIOS AUDIOVISUALES

MATERIAL: _____ AREA: _____

NOMBRE DEL INSTRUCTOR: _____ FECHA: _____

PAGINA - LAMINA CUADRO	TEXTO	DESCRIPCION DEL DIBUJO

APPENDIX D

PRETEST - POSTTEST FOR

TRAINING OF PARAPROFESSIONALS

PRETEST - POSTTEST FOR TRAINING OF PARAPROFESSIONALS

NOMBRE DEL PARTICIPANTE: ....   FECHA: ....

COMPAÑIA: ....   N° DE VIVIENDA:...........

TEST DE: ....

_____

El participante demostrará el uso de las siguientes estrategias y formularios:

1.-   ROTAFOLIO

    0. -------------- No sabe.
    1. -------------- Regular.
    2. -------------- Bien.

CRITERIO

No sabe: Manifiesta que no conoce el uso.
Regular: Se limita a leer el contenido de cada lámina del rotafolio.
Bien: 1) Hace su charla.
     2) Muestra la lámina.
     3) Hace preguntas.

2.-   JUEGO 1

    0. -------------- No sabe.
    1. -------------- Regular.
    2. -------------- Bien.

CRITERIO

No sabe: Manifiesta que no conoce el uso.
Regular: Hace jugar a todos y deja que el juego se vuelva competitivo y no hace
    cumplir reglamento.
Bien: - Hace jugar a todos.
    - Explica el reglamento.
    - Hace cumplir el reglamento del juego.

3.-   FOLLETO:

    0. -------------- No sabe.
    1. -------------- Regular.
    2. -------------- Bien.

CRITERIO

No sabe: Manifiesta que no conoce su uso.
Regular: - Entrega el folleto a cada participante antes de iniciar la demostración.
    - No explica su contenido.
    - No solicita el uso diario del mismo por parte de sus participantes.
Bien: - Entrega el folleto a cada participante.
    - Explica su contenido.
    - Solicita el uso diario del folleto por parte de sus participantes.

4.-   DEMOSTRACION:

    0. -------------- No sabe.
    1. -------------- Regular.
    2. -------------- Bien.

CRITERIO

No sabe: Manifiesta que no conoce el uso de la demostración.
Regular: - Muestra la destreza.
    - La falta de herramientas o/y materiales.
    - No usa folletos.
    - No hace practicar al participante la destreza demostrada.
Bien: - Muestra la destreza.
    - Tiene materiales y herramientas suficientes.
    - Usa folleto.
    - Hace repetir lo demostrado a los participantes.

5.-   USO DE FORMULARIOS.(PLAN GUIA, REGISTRO Y TEST DE ENTRADA Y SALIDA DEL PARTICIPANTE)

0. -------------- No sabe.
1. -------------- Regular.
2. -------------- Bien.

CRITERIOS

No sabe: El participante manifiesta que no conoce su uso de los tres formularios.

Regular: Llena dos formularios con los datos requeridos.

Bien: Llena los tres formularios con los datos requeridos.

APPENDIX E

INSTRUCTOR FEEDBACK SHEET

INSTRUCTOR FEEDBACK SHEET

HOJA DE RETROINFORMACION DEL INSTRUCTOR

AREA:.... . ... TOPICO:................. ... ...INSTRUCTOR:... ... ...,..

CONTENIDO:.... ....FECHA:. .. .. JORNADA Nº :........ ...

OBSERVADOR:............ .. ..

1.- FORMA DE ENSEÑAR

    a) Charla:

    b) Práctica:

2.- **MANEJO DE VISUALES**

    a) Folleto:

    b) Rotafolio:

    c) Simulaciones:

    d) Fotografías:

3.- MANEJO DE EQUIPO Y MATERIALES

4.- MANEJO DE GRUPO

    a) Técnica de Preguntas:

    b) Participación:

-2-

5.- CUMPLIMIENTO DEL PAQUETE INSTRUCCIONAL

     a) Objetivos:

     b) Métodos:

6.- HORARIO

7.- PRACTICAS DOMICILIARIAS

     a) Participación:

     b) Itinerario:

8.- AUXILIARES

     a) Selección:

     b) Entrenamiento:

     c) Utilización:

9.- INICIATIVA

10.- INTEGRACION

     a) Instructor - Participante:

b) Instructor - Instructor:

c) Instructor - Coordinador:

d) Instructor - Comunidad:

11.- COMUNICACION INTERPERSONAL

12.- MANEJO DE LA EVALUACION

13.- OBSERVACIONES

....
Firma del Instructor   Firma del Coordinador

APPENDIX F

INSTRUCTOR TRAINING PROGRAM REPORT

INSTRUCTOR TRAINING PROGRAM REPORT

INFORME DE JORNADA

1. Jornada Número:___ ___ Fecha:___ ___ Localidad:

2. Fecha de inciación_____ Fecha de terminación_____ _____

3. Horario de la Jornada: De_____ Hasta_____

4. Area:_____ 5. Tema:_____

6. Objetivo General:

    a) _____

    b) Comentarios sobre si se lograron:_____

       _____

       _____

       _____

       _____

    c) Recomendaciones próxima jornada:_____

       _____

       _____

       _____

       _____

7. Participantes:

    a) Inscriptos:

    b) Comenzaron el curso:

    c) Recibieron certificado:

8. Organización de la instrucción: (Como se hizo y que fue el resultado)

    a) Motivación: _____

       _____

       _____

       _____

       _____

    b) Inscripción:_____

       _____

       _____

       _____

       _____

c) Desarrollo:_____

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_____

d) Clausura:_____

_____

_____

_____

_____

9. Equipos y materiales utilizados:

a) Tipos y cantidad:_____

_____

_____

_____

b) Comentarios:_____

_____

_____

_____

_____

10. Ayudas audiovisuales utilizadas:

    a) Tipos y cantidad:_____

    _____

    _____

    b) Comentarios:_____

    _____

    _____

11. Apoyo logístico:

    a) Coordinación:_____

    _____

    _____

    _____

    b) Entrega de material:_____

    _____

    _____

    _____

    _____

    c) Transporte:_____

    _____

    _____

    _____

12. Sistema de evaluación:

    a) De las necesidades:_____

    _____

    _____

    _____

    b) De impacto de la jornada:_____

    _____

    _____

    _____

-4-

c) Auxiliar:_____

_____

_____

_____

_____

d) Material instruccional:_____

_____

_____

_____

_____

13. Costo detallado de la jornada:

    a) Personal:

    b) Viáticos

    c) Materiales y equipos

    d) Otros

14. Comentarios sobre el paquete instruccional seguido.

_____

_____

_____

_____

_____

15. Comentarios generales:

_____

_____

_____

_____

_____

16. Adjuntos:

    a) Tests:_____

    b) Mapas:_____

    c) Otros:_____

NOTA: Todos los puntos trabados deben tener en la medida de lo posible sugerencias para futuras jornadas.

Si necesita más espacio para algunos de los puntos, escriba en hoja aparte y adjúntela.

APPENDIX G

READING ABILITY TEST

READING ABILITY TEST

1. ENTREVISTA N° / / / /

2. NOMBRE DEL ENTREVISTADO_____ ____ _____

3. NUMERO DE VIVIENDA / / / /

4. COMPAÑIA_____ _____ 5. DISTRITO_____

6. FECHA ENTREVISTA / / / /

7. NOMBRE DEL ENTREVISTADOR_____ _____

8. USTED PARTICIPO EN ALGUN CURSO DEL PAE ?   CUAL ?.

    0_____ No participó

    1_____ Si participó (ESPECIFIQUE EL CURSO:_____)

9. POR FAVOR, PODRIA LEER ESTE PARRAFO O PEDAZO ?.

    (PARA ESTA PREGUNTA USTED DEBE ENTREGARLE LA HOJA QUE CONTIENE
    LA LECTURA Y PEDIRLE AL ENTREVISTADO QUE LA LEA, Y ANOTAR EL
    NUMERO DE PALABRAS QUE NO LEE O LEE INCORRECTAMENTE).

    Frase: "LOS TECNICOS DEL PAIS HAN INCORPORADO MUCHOS ADELANTOS

           TECNOLOGICOS EN HOMENAJE A UN BUEN TRABAJO Y PARA QUE

           LOS AGRICULTORES APROVECHEN AL MAXIMO TODO CUANTO SE LE

           ENSEÑE. EL PROPOSITO ES AUMENTAR EL RENDIMIENTO DEL CUL-

           TIVO."

9 a. Forma de lectura

    0_____ No lee

    1_____ Balbucea

    2_____ Lee correctamente

9 b. (CUENTE EL NUMERO DE ERRORES COMETIDOS POR EL ENTREVISTADO AL LEER)

    Cantidad total de palabras del texto: 30

    Cantidad de palabras que no lee o mal leidas:_____

                    Resta:_____

9 c. Marque la categoría respectiva.

    9_____ No lee

    1_____ Entre 0 y 8 palabras correctas

    2_____ Entre 9 y 17

    3_____ Entre 18 y 26

    4_____ Entre 27 y 35

    5_____ Lee todas correctamente

-2-

10. ___ ___ ___ ¿CUANTOS AÑOS HA ___ USTED A LA ESCUELA PRIMARIA?.

0 _____ Ninguno

1 _____ (ESPECIFIQUE LA CANTIDAD: _____)

11. ¿QUE MATERIAL LEE USTED POR LO GENERAL (DIARIOS, REVISTAS, LIBROS, ETC.) CON QUE FRECUENCIA LEE ESTE MATERIAL?.

Material de lectura	Frecuencia (una vez por semana, mes, año, etc.

12. ¿CUANTOS AÑOS TIENE USTED?.

ESPECIFIQUE: _____

13. ¿CUANTOS HIJOS TIENE USTED?

ESPECIFIQUE: _____

Los técnicos del país han incorporado muchos adelantos tecnológicos en homenaje a un buen trabajo y para que los agricultores aprovechen al máximo todo cuanto se les enseñe. El propósito es aumentar el rendimiento del cultivo

APPENDIX H

REGISTRATION FORM

REGISTRATION FORM

REGISTRO DE PARTICIPANTES

AREA:........,...CONTENIDO:........,......FECHA:......,...COMPAÑÍA:........,...INSTRUCTOR:.........

NOMBRE Y APELLIDO	EDAD	SEXO	Nº DE VIVIENDA	COMPAÑÍA	OCUPACION	OBSERVACIONES

APPENDIX I

OUTLINE OF INSTRUCTIONAL

PLAN FOR PARAPROFESSIONALS

OUTLINE OF INSTRUCTIONAL PLAN FOR PARAPROFESSIONALS

GUIA PARA EL AUXILIAR

COMPAÑIA:. . . . .

AUXILIAR:. . . . .

FECHA DE JORNADA:. . .

CONTENIDO:. . . .

FECHA Y DIA	TEMAS	MATERIALES Y EQUIPOS

APPENDIX J

FORM FOR THE ANALYSIS

OF INSTRUCTIONAL MATERIALS

FORM FOR THE ANALYSIS OF INSTRUCTIONAL MATERIALS

ANALISIS DE MATERIALES INSTRUCCIONALES

MATERIAL _____ AREA _____

NOMBRE INSTRUCTOR _____ CONTENIDO _____

PERSONAS CONSULTADAS _____ FECHA _____

Cuadros,láminas o paginas	COMENTARIOS

APPENDIX K

COMPLETED REGISTRATION FORM

FOR TRAINING PARAPROFESSIONALS

COMPLETED REGISTRATION FORM FOR TRAINING PARAPROFESSIONALS

REGISTRO DE PARTICIPANTES _[illegible]_

AREA: _[illegible]_ ... CONTENIDO: _[illegible]_ ... FECHA: _[illegible]_ ... COMPAÑIA: _[illegible]_ ... INSTRUCTOR: _[illegible]_

NOMBRE Y APELLIDO	EDAD	SEXO	Nº DE VIVIENDA	COMPAÑIA	OCUPACION	OBSERVACIONES
[illegible]	32	M	_[illegible]_	_[illegible]_	_[illegible]_	_[illegible]_
[illegible]	24	M	_[illegible]_	_[illegible]_	_[illegible]_	_[illegible]_
[illegible]	35	_[illegible]_	_[illegible]_	_[illegible]_	_[illegible]_	_[illegible]_ Medio
[illegible]	15	F	_[illegible]_	_[illegible]_	_[illegible]_	_[illegible]_
[illegible]	18	M	_[illegible]_	_[illegible]_	_[illegible]_	_[illegible]_
[illegible] Ramírez	24	M	s/n	_[illegible]_	_[illegible]_	_[illegible]_
[illegible] García	50	M	32	_[illegible]_	_[illegible]_	_[illegible]_

APPENDIX L

VALIDATED PAMPHLET

ventajas

1 mayor aprovechamiento de su terreno.

saca mayor producción.

le sobra más dinero y goza de buena salud.

se prepara para la mala época.

desventajas.

mala utilización de su terreno.

saca poca producción

2

llega época de mucha escacés.

6 aspectos de una buena organización

3 se prepara a tiempo
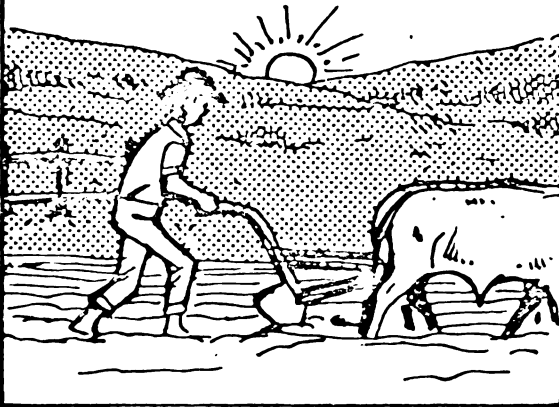
evita gastos eccesivos en limpiezas y cuidados.

prepara mejor el suelo
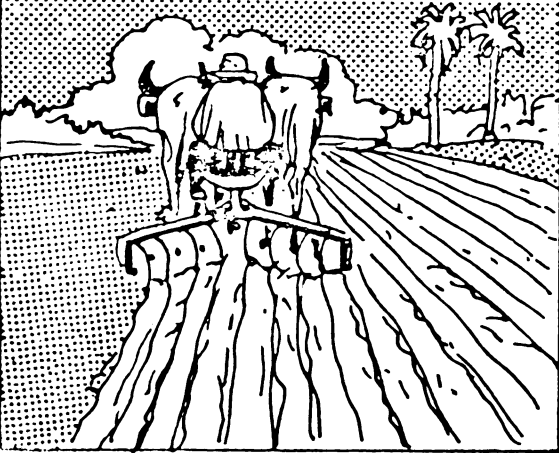
los cultivos crecen mejor.

aprovecha la epoca buéna del mercado.

consigue mejores precios.

§ elegir el terreno adecuado para cada cultivo.
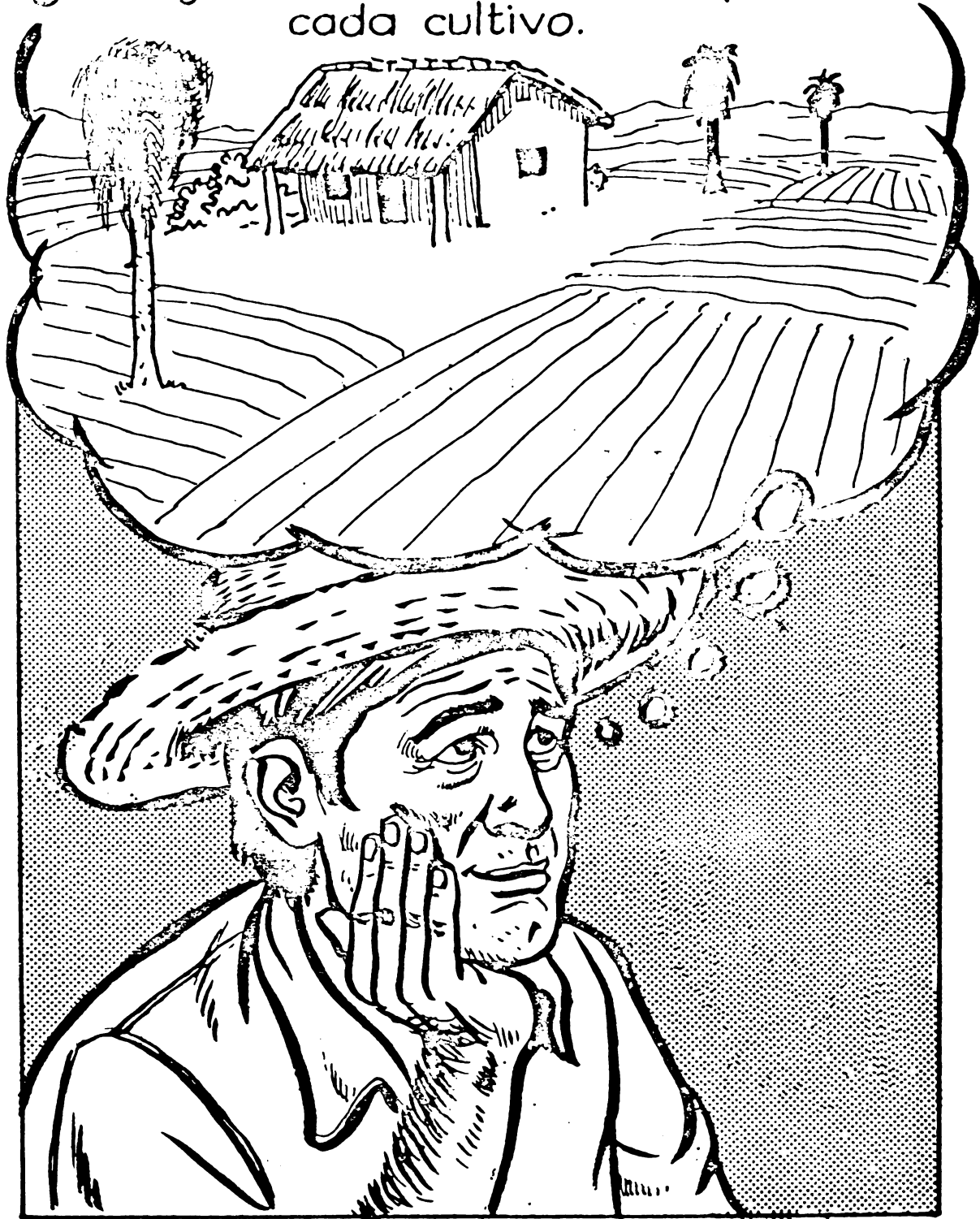
la familia con su cultivo organizado.

7

planilla de organización de cultivo.

Cultivo	Preparación de suelo	Siembra	Cosecha

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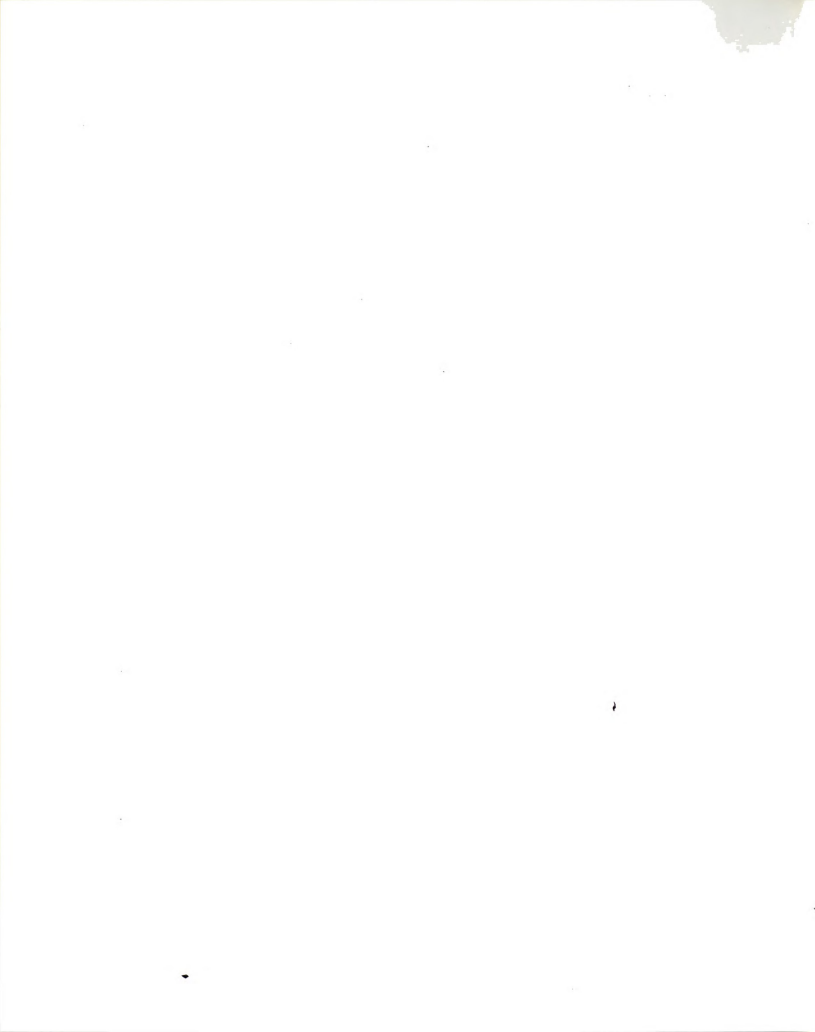Wanjala, E. A. The Village Polytechnic Movement in Kenya. Nairobi: The National Christian Council of Kenya, 1976.

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