

INNOTECH JOURNAL (Vol. IX No. 2 / July-December 1985)
Information Processing and Dissemination

Editorial Notes

Man has access to the wealth of information produced, recorded, processed, repackaged and disseminated around the globe.

Facts and figures emanate from man's multifarious activity, creativity, analytical thinking, thus man himself can effectively and efficiently manage the voluminous data he handles. Improving access to communication and information sharing, in the final analysis, aims for the widespread use of information. Understanding the user's needs is important in order that the services offered by information specialists and offices will be of wide application.

The theme of this issue is "Information Processing and Dissemination". The problems and solutions encountered by individuals in the operation of information systems are described.

Mr. H. Arthur Vespry, in his article "Information Today", discusses how specialized information centers and analysis centers in developing countries can help in promoting effective and efficient information management.

Information's role in development cannot be overemphasized. Both developed and developing countries produce information in more or less the same process. One major obstacle to development is the lack of efficient and effective information management.

Mr. Vespry's futuristic note advises us to give attention to improving consolidation and dissemination of information. "The next decade will be the communications decade, and what you communicate is information. If the developing countries are to progress they must also have a cadre of skilled information scientists to serve the information needs of their researchers and decision-makers."

In Mr. Vespry's second article entitled "Specialized Information Centers" he states that to define an information center is difficult because the concept has been changing.

It must be stressed that in determining the services to be offered services not readily available elsewhere will be given priority.

It is important that a specialized information center must have a narrow subject scope and define the activities it will include; at the same time it must clearly define those that will not be included. By narrowing its scope, a specialized information center decreases or eliminates overlapping of subject scope with other centers. This way it can provide a more comprehensive, in-depth service.

In "Scientific Information Networking in the Southeast Asian Region" Mrs. Josephine Sison shares the Agricultural Information Bank for Asia's more than a decade experience as a regional information network. In Southeast Asia AIBA is the coordinator and catalyst for

agricultural activities in the region.

Looking back to long years of operation, AIBA can claim a measure of success. It was able to make operational the concept of a regional agricultural information network and a meaningful cooperation of its participating countries in its various projects and activities.

As regards problems and challenges, the two current problems she focuses on are whether AIBA is providing relevant and effective services to its users and a related one, how the network can provide its services on a self-sustaining basis.

The Latin American Educational Documentation Network (Red Latinoamericana de Documentacion en Educacion, REDUC) is a cooperative network for the dissemination of educational information in the Latin American Region, using as its basis abstract bulletins. REDUC's centers gather copies of important documents produced on education in each Latin American country through a cooperative system involving 20 public and private educational research and development centers in the Region.

The REDUC system has established linkages with other international information systems. Interest in it has been maintained at a high level as evidenced by new centers constantly making requests to join the network. Its contribution to Latin America's development is significant, it helps provide solutions to the region's educational/ problems which "being based on fuller and more reliable information are accordingly more effective."

Mr. Laurie Howell presents the case of a Curriculum Information Service that failed in "Educational Information Systems: Australian Experiences" The author explains that many reasons contributed to its failure but these few stand out: implementation demanded resources beyond the Center's capacity and few state partners were ready to commit the resources of money and people that might have made the project viable; it attempted to canvas almost every conceivable informational need and made little if, any attempt to establish selection criteria and input categories; it tried to provide a curriculum information system and a curriculum materials clearinghouse and was not able to provide either.

He mentions a number of questions and issues which they did not adequately address or decide upon before embarking on setting up and operating the system. The disappointment over the first attempt to set up a cooperative information system for curriculum and research material stimulated and strengthened a number of related initiatives which were successful and now serve a variety of needs. Among these are the Australian Directory of Educational Research and Researchers, Australian Education Index, Australian Thesaurus of Education Descriptors, Bibliography of Education Theses in Australia, National TAFE Clearinghouse, Australian Information Network, Australian Schools Catalogue Information Service and the Australian Curriculum Information Network.

The extent to which materials in a population information center has been put to use, not necessarily the number of books acquired is the real measure of the effectiveness of such a center. This is discussed by Miss Carmelita Villanueva in the Executive Summary of "Guide to Strategies for Repackaging and Dissemination of Population Information. "

The Executive Summary specifically centers on the types of information services that are meant for large group of audiences or user communities. Emphasis is given to making information and materials available to users.

The key to repackaging is a "good knowledge of the intended users, of transformation of information into readable, understandable and usable materials to respond to different situations and problems facing the users."

INNOTECH Publications Officer Ligaya S. Argente's index of Participants' Proposals in the Six-Month Course (1st-9th) and the Three-Month Course (12th-39th) presents the decade long output of more than a thousand educators from Southeast Asian countries to identify educational problems in their countries and find solutions for them. Mrs. Argente has prepared various author/ title indexes for the Center.

INFORMATION TODAY

H. Arthur Vespry

What is information? There are many definitions available, and they each stress a different aspect of the subject. For example, information has been described as

- a. a selection from a set of available messages which reduces uncertainty
- b. the meaning that a human assigns to data by means of the human conventions used in their representation
- c. the structure of any text which is capable of changing the image structure of a recipient (text may be defined as a collection of signs purposefully structured by a sender with the intention of changing the image structure of the recipient)
- d. data of value in decision-making

These four definitions resemble the four blind men describing an elephant, having come to it from different points, and, like the blind men, each one conveys some truth. In the first information is treated as a property of something else, e.g., a message, a document, a signal. The second is intended to streamline data processing and computer terminology, and stresses human interpretation and the importance of the critical role played by representational conventions, rules and linguistics. The third definition stresses changes, and was proposed for use in information science. The fourth definition, the simplest in form, links information to value (moral, aesthetic, ethical, economic, societal, etc.) and to human decisions. In this sense, information has no inherent value. Value is added only when it is used.

In most developing countries, information is produced in more or less the same manner as it is produced in the developed countries. It is not, however, managed, stored or exploited and this is one of the major obstacles to development. It has frequently been said that "information services must provide the right information in the right place at the right time and in the right form for the user." In order to attain this goal more effective and efficient information management is required and this is what developing countries often desperately need.

One method of satisfying this need has been the development of specialized information centers and analysis centers in the developing countries. These centers deal with subject areas of priority to the country or region in which the center is located. Some centers are located in developed countries but nevertheless deal with developing country problems. (See tables 1 and 2)

It should be noted that the information centers in developed countries were set up because there were already centers of excellence in research and or training in the subject field. This is of extreme importance and must always be kept in mind when deciding on the site for an information center. More will be said about this in the article on "Specialized Information Centers" (pp. 10-15).

It has often been said that we are in the middle of an information explosion But is that really the problem? Indeed there has been an exponential growth of information (new facts, data) as the number of scientists, researchers, and technicians has grown with the growth in populations and the expansion of educational facilities. But this is an inevitable growth with mankind's development. Our concern is not so much with the shock of growth of data, but rather with the tidal wave of documents which record the new information and also re-record and re-re-record the same information in different ways. This is the concern of information analysis and consolidation. Needless to say we are all guilty of adding to the flow of documents whether or not we have anything new to say

To give you a rough idea of the height of this tidal wave, AGRIS alone is recording over 50,000 agricultural documents annually. If we were to add to this the documents that are input into the other major databases the total figure would border on the astronomical.

Each one of you must know the problems faced by information gatherers and disseminators in your country. The following are some problems that are common to many a developing country information center.

- a. Lack of funding
- b. Indifference of governments
- c. Lack of interest on the part of researchers
- d. Low estimate of the information workers' capabilities
- e. Poorly trained staff
- f. Difficulties/delays in obtaining material
- g. Lack of foreign exchange
- h. Language barriers - information not available in local language(s)
- i. Hoarding of information instead of sharing

j. Bureaucratic regulations which discourage lending, interlibrary loans, and weeding of collections.

We hope that from the lectures and discussions during this training course, some solutions to some of these problems may emerge. You may also have unique or individual problems which we would be pleased to discuss with you either privately or as case studies for group analysis, and you may have worked out solutions which you could share with the group (NO HOARDING!). Let us therefore return to these problems later and let us now consider some of the consequences if the problems are left unsolved .

Information systems may be described as types of communication systems which select, organize, store and disseminate public knowledge for the purpose of communication of that knowledge to users. The purpose of such systems is to recover and communicate relevant public knowledge to users, where relevance is the measure of the effectiveness of a contact between a source and a destination in a communication process. Some examples of information systems are:

- a. Libraries
- b. Information analysis centers
- c. Market information systems
- d. Airline reservation systems.

All information systems have the following minimum objective: to provide for the information needs of a specified user group (government, scientists, researchers, etc.) in relation to their problems by means of information acquisition and utilization within a designated subject scope. The required information may or may not be in published form, and even if published, may or may not be accessible.

The two areas of most rapid growth and development in technology in the developed countries tend to be INFORMATION and COMMUNICATION. Although science and technology have had an accelerating growth-curve in the last 50 years, nowhere has this curve been steeper than in information and communication. Not only have the changes been extremely rapid, but in some cases completely new disciplines have appeared, e.g. Biotechnology, Remote sensing, Computer aided design and manufacture, robotics. In the developing countries growth in efficient utilization of information and effective communication is still retarded. While the practice of the use of information is widespread in developed countries, it is only slowly becoming recognized in the developing countries.

If you do not have a good telephone system you cannot gain easy access to the information that is so easily accessible by computer. If your government and decision makers are cut off from current information they are at a disadvantage in making social and economic decisions for the country. I need not dwell on this since each of you know only too well how lack of information and poor communications hinder your own work. One time, while in New York I sought information about laser printers. I searched the ISI files and was able to have an article delivered within one hour by telefacsimile. How many countries in the region could offer this service?

The technology is here and available, the machinery can be purchased and there are no secrets in its use. Nevertheless, governments spend millions on new aircraft but cannot find money to support improved communications. The next decade will be the communications decade, and what you communicate is information. If the developing countries are to progress they must have access to the necessary information. They must also have a cadre of skilled information scientists to serve the information needs of their researchers and decision makers.

SPECIALIZED INFORMATION CENTERS

H. Arthur Vespry

DEFINITION AND FUNCTIONS

The definition of an information center is difficult because the concept has been changing. There exists a trend to unify library patent, translation, report writing, archival, abstracting, literature research, editorial communications and publications activities within a single facility. The centralization of all, some, or only two or three of these activities has at times been called an information center. As shown in the matrix (table 1), some information centers offer additional services such as providing replies to queries, retrospective searches, and selective dissemination of information.

Information centers may be defined by their functions,

Collection of information

Organization of information

Packaging of information

Dissemination of information

The matrix in table 1 lists a variety of functions, products and services which are characteristic of different types of information service centers. You may wish to use it to characterize your present services, or to support your argument that additional services are necessary. Two caveats: firstly, labels for information centers are not important; what is important is that its services match its user's needs; secondly, services "generally provided" by a certain type of institution may or may not be important to your users. You do not have to offer them "because every one else does"; what you have to discover is if there are unfilled needs among your clients to which you should be responding.

INFORMATION ANALYSIS CENTERS

Information analysis is inherent behavior. In primitive tribes the medicine man provided information analysis, the monasteries provided it during the Dark Ages. The information analysis center is an organization which exists for the primary purpose of preparing authoritative, timely, and specialized reports of the evaluative and analytic, monographic or

state-of-the-art types. It is an organization staffed in part with scientists and engineers and, to provide a basis for its primary function, it conducts a selective data and information acquisition and processing program. Although it is still rare to find scientists and engineers in the information field in the developing countries, it is becoming a rather common phenomenon in the developing world.

Two general approaches toward organizing information services have emerged - discipline-oriented and mission-oriented information systems. Discipline-oriented systems are wholesalers of information. Mission-oriented systems are retailers of information. The scope of coverage of the mission-oriented system is usually deeper and at the same time narrower than the discipline-oriented system, and its coverage often crosses traditional disciplinary boundaries.

To save the users' time and to give her/him as comprehensive as possible literature searches, the IAC often turns to automation, making intensive use of computer based document and information retrieval system.

The services mentioned this morning are most heavily used by special libraries and information centers.

The production of secondary and in some cases primary publications is one of the major concerns of the IAC. The secondary publications usually index and abstract material in a restricted field, often in depth, and by consolidating material from other more general sources. Primary publications may take the form of state-of-the-art and/or critical reviews or scholarly journals referenced by recognized experts.

An IAC must also perform an analytic function. This involves evaluation of information, which requires scientific intellectual effort to select, analyze and correlate information. The result can be the production of new information. Sometimes the center may use its translation facilities to make accessible material of importance in languages with which the users are unfamiliar, or it may prepare specially written abstracts of research for use by extension workers. The center should be on the lookout for gaps in information so that research may be initiated to fill them.

SUBJECT SCOPE

It is necessary to have a careful definition of the subject scope. The narrower the scope, the more chance for a comprehensive, in depth service. Because we are often dealing with institutions in developing countries which may be governmental, one must consider what will best serve national needs, and the parent institution needs. In the private and commercial enterprises priorities may be somewhat different.

It is often better to have a number of centers with narrow scope, linked together in networks, rather than a few centers with broad, overlapping scopes, e.g.:

science information center	Too broad
botany	Too broad

agriculture	Too broad
root crops	Better
cassava (tapioca)	Best if important locally
CIAT	
grain legumes	Best if important locally
ICRISAT	
rice IRRI	
wheat CIMMYT	Best if important locally
technology	Too broad
energy	Probably too broad
renewable energy	Better, but which are important locally
geothermal energy	Best if important locally

Not only must an information analysis center (IAC) define the subjects it will include, it must also clearly define those that will not be included. Its subject scope is not truly defined until the second half is completed.

Many IAC's begin as documentation centers but as they develop and their scope becomes more focused the need to know the exact limits becomes more crucial.

LOCATION OF INFORMATION ANALYSIS CENTERS

Information centers should be linked to research, training, extension centers. For the IAC, this link is absolutely essential. Reasons for placing an IAC within a laboratory setting include:

No one person is a complete expert.

Successful feedback from evaluation of research and vice versa provides symbiotic and synergistic benefits to each activity.

Time sharing of competent individuals and specialists for information-related tasks is made possible at reduced investment and increased efficiency.

IAC staff members are better received by their peer groups, especially in obtaining unpublished information.

Products of IAC's are better received by the user community if that community knows and respects the produced of the products.

Closer links with "gatekeepers" are possible to the benefit of both .

Identification of user groups and maintenance of communications among them is easier.

An IAC within a laboratory gives the host institution many advantages accruing from the advanced knowledge evolved. Many private companies nurture IAC activities and zealously guard as proprietary the information products developed. Because IACs are used as instruments to help direct the development of new products, new technological processes, patents and new research and development efforts, IAC activities are a valuable aid in keeping their companies competitive. This (value of IAC in maintaining competitive position) is not the same in government and international institutions, even though the role of the IAC may be just as important.

INFORMATION SYSTEM DESIGN CONSIDERATIONS

Every organization has its unique character which must be understood before meaningful and workable plans can be made. A first step for the system designer is to obtain or develop background knowledge or a "biography" of the organization and its activities, as well as a "feel" for any political, personal or other ramifications. The principal data source is discussion with the organization's officials and operating personnel. Some questions which ought to be asked are:

What is the mission of the organization, group, or activity?

What are its goals?

What do the people in it do?

What information do they use or need in order to do their work?

Where do they obtain this information?

Is the information timely, complete, valid, readily available? At what costs?

Is there interest within the user community and other potential user groups in having the information services/center? What is the extent of this interest?

How general is this interest?

How would the proposed information services/ center contribute to the objectives and goals of the organization?

Is the system under consideration needed?

What must be the goals, mission, and scope of the system?

On a short-term basis? On a long-term basis?

What attitudes, conventions, approaches, constraints, and individual characteristics does the organization have which might influence the

policies and operation of the information services/center?

What constraint factors are there from the viewpoint of management, costs, state-of-the-art of the field(s) of coverage, facilities and equipment, personnel, and duplication or overlap with other services within the organization and outside it?

The first requirement in setting up a system is to determine the specific needs the service will fulfill. Available services will find the users. Usage does not ensure that the mission and objectives of the system are being fulfilled. The merit of a system is determined if its delineated audience uses the system with satisfactory results for the purpose(s) intended by its design.

SERVICES

The fundamental parameter of the system is services. At one extreme is the limited, library type activity staffed by documentalists; this offers little more than reference sources on call. At the other end of the spectrum is the information analysis center staffed by a high-level technical group offering a wide range of sophisticated services routinely and on call. The system designer has to decide what is optimum. Entering into his considerations are factors such as:

Community goals
Community technical sophistication and homogeneity
Community size
Resources of the "parent" organization
Priority of services to be offered: services readily available elsewhere should not be duplicated. It is more important to provide ser-
vices now lacking. Duplication is costly.

An information system exists to perform services. The services it performs are, of course, related directly to user needs. Services may be grouped into four general categories:

Documentation,
Dissemination,
Inquiry, and
Special Activities.

It is advisable to try out individual services on a small sample group of users to determine interest and to test procedures before a decision is made to implement them. Not-all services, however, lend themselves to trial, especially when start-up costs are high. Pre-existing services must be integrated into the system or utilized as an adjunct, e.g., there is no need to start a reference collection if one is already available. Factors to consider in instituting services are:

Start up costs,
Operational costs,

Influence of number of users on operational costs,
Reimbursable and non-reimbursable services, Importance of service to goals of the users and mission of the system.
Ease in terms of available resources - personnel, facilities, equipment, materials, and operation,
Length of start up time,
Training required.

It is advisable to plan and schedule activities in detail using a flow chart technique to display the sequence and interrelationship of tasks. Consider such questions as:

What is to be done? (nature and scope of task)
When is it to be done? (time schedule)
How is it to be done? (methods, techniques, and procedures)
Why do it? (benefits and requirements)
What tools are necessary? (equipment and materials)
Who is to do it? (manpower plan)
Where is it to be done? (facilities planned)

Steps the designer should take in the design of the services now include:

Establish a plan and schedule
Select a conceptual approach
Lay out a flow chart and block diagram
Check and discuss the diagram with users and management
Refine the diagram
Establish and select personnel, material, and equipment requirements
Prepare detailed procedures of operation
Establish means for integration into pre-existing system
Simulate dry-run test procedures
Develop implementation plan
Establish cost requirements
Establish checks and feedback mechanisms
Establish human factor requirements for operational personnel and users
Train operational personnel
Implement the service (turning paper designs into operating service).
Start-up and verification of steps or phases of the service.
Pilot program
Revision of design
Operate the service (day to day activity)
System refinement and redesign based on reassessment, progress, and changes in mission and goals.

ADMINISTRATIVE CONSIDERATIONS

Where an information services/center is placed organizationally varies in practice:

at the headquarters level as an autonomous department of activity;
as part of the department it mainly serves;
as part of the administration or service department.

It should be free to interact with its users and to present opportunities for them to participate in the systems planning, development, growth, and assessment.

Frequently, the systems planner/designer has no say as to the placement of the information services/center. Some factors in the organizational placement of the system particularly influential in its operational success are:

the existence of a sympathetic managerial attitude in the acceptance and full use of the center;
the degree to which this sympathetic frame of mind is affected if the center is affiliated with the research department rather than coming directly under the administration;
the importance of sponsorship by an information-conscious, high-level officer;
the organizational perils involved in subordination of the center to a department other than the one it serves;
the necessity of achieving the highest possible bureaucratic sanctuary within the organization.

The Advisory Committee can and should help the system bridge the two masters it serves - management and users. The Advisory Committee, as its name indicates, ideally offers policy counsel and guidance, but its advisory powers should not interfere with the administration and operation of the system.

SCIENTIFIC INFORMATION NETWORKING IN THE SOUTHEAST ASIAN REGION

Josephine C. Sison

INTRODUCTION

If one is often asked to speak on one's organization, as I am, one is apt to repeat oneself. I find myself in this situation again today, so I ask the indulgence of those in the audience who already know about the AIBA (which stands for the Agricultural Information Bank for Asia) to bear with me.

From my discussion with the organizers of this seminar, the AIBA was invited to share with you its more than a decade experience as a regional information network. I therefore propose to develop the topic assigned to me by first giving you some background on the project, after which I would like to discuss the AIBA system configuration and the aspects that make up such configuration. I would like, finally, to delve on the problems and challenges that the

regional network faces as it enters its second decade of existence.

BACKGROUND

The AIBA reached its tenth year of existence in August 1984. A project of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), it was established in 1974 in response to the growing need in the region for more effective information services in agriculture.

As an agricultural information network, the AIBA is the designated regional coordinating center for two of the Food and Agriculture Organization's (FAO) information services, namely the International Information System for the Agricultural Sciences and Technology or AGRIS and the Current Agricultural Research Information System or CARIS.

Initially composed of nine countries, namely Indonesia, Malaysia, the Philippines, Singapore, Thailand, Bangladesh, Korea, Sri Lanka and Hongkong, it has since reduced its membership to the five SEAMEO countries of Indonesia, Malaysia, the Philippines, Singapore and Thailand. In each of these countries, there are government-designated AGRIS and CARIS centers which are responsible for the bibliographic control of their current agricultural literature and research projects. These are regularly sent to AIBA where they are processed, and, in the case of AGRIS, eventually forwarded to the AGRIS Input Unit in Vienna, Austria where they are merged with other current agricultural literature from all over the world. Figure 1 shows a graphical representation of the organizational structure of the AIBA network, which was conceived along the lines of a directed, or star, network configuration .

Today, the AIBA is the major agricultural scientific information service in the Southeast Asian region specializing in the collection, collation and dissemination of information to scientists, researchers, field workers and other users. It has the following objectives.

1. To serve the information needs of Asian countries in the field of agriculture and allied disciplines.
2. To promote new and improved techniques for handling and disseminating agricultural information.
3. To serve as the regional coordinating center in Southeast Asia for the FAO's worldwide projects, AGRIS and CARIS.

During the past decade, the project underwent three phases, namely: Phase I, the developmental phase from 1973 to 1975, which saw the implementation of the project in the region; Phase II, from 1975 to 1979, which may be characterized as the growth years, saw the initiation of the provision of basic information services to users; and Phase III, from 1979 to 1984, which saw the computerization of the project's activities and the provision of additional information services. The fourth phase, which we started this year, hopes to see us moving on to new ventures.

Like other information services in the developing countries, the AIBA started out in 1974 largely on a manual basis. That is to say that our services, most notably our bibliographic services, were produced manually. The AGRIS input sheets were prepared and typed onto OCR (Optical Character Recognition) sheets at the regional center at SEARCA (and eventually at the National Centers themselves) before being sent on to the AGRIS Processing Unit in Vienna, Austria for inclusion in the worldwide bibliography on agriculture called AGRINDEX. The first two issues of the regional agricultural bibliography, AGRIASIA, were produced manually, with considerable time and effort invested by the AIBA staff in its production.

By 1977, the AIBA gained access to a computer by sharing in the use of an IBM 370/135 mainframe of the Agricultural Resource Center (ARC) located on the campus of the University of the Philippines at Los Baños, SEARCA's host institution. This alternative, while solving some of the information processing problems of the AIBA, was not totally satisfactory, as our access was severely limited (due in part to hardware limitations and in part to user pressures on the system).

Early on, it became obvious that for the AIBA network to develop along the lines planned for it, it had to have its own computer. The project was finally able to acquire its own computer with the help of the International Development Research Center (IDRC) of Canada in October 1982.

The arrival of the computer eased our problems to a great extent, and enabled us to offer a whole new range of services that we were formerly unable to give. This is possible due to the fact that the computer allows us limitless interactive usage which was not possible with the ARC computer.

The computer system acquired by the AIBA is a Hewlett-Packard 3000 Series 40 minicomputer with the following configuration: 1 megabyte memory, 11 terminals, one 1600 bpi magnetic tape drive, one 600 lpm line printer, and 2 disc drives (one 120 megabytes and one 404 megabytes). The system operates under the Multiprogramming Executive (MPE) software.

For storage and retrieval, the AIBA uses a software called MINISIS, which was donated to it by the IDRC. MINISIS is an information management system developed by the IDRC which is designated to run only on the HP 3000 family of computers. It allows the definition and creation of data bases without resorting to any computer programming, most of the work being done in an interactive mode.

In addition, we now have an IBM microcomputer which is linked to our HP minicomputer. This enables us to process input from our national centers in the form of diskettes, thereby doing away with input sheets altogether.

Thus, our services at the present time include, aside from our bibliographic services like AGRIASIA, on line literature searching, inquiry-answering, referrals, document delivery in the form of microfiche or hard copy, and the provision of training in information handling, both

manual and mechanized.

With the acquisition of the computer, all of our bibliographic outputs are now computer-generated. These are composed of our major outputs, AGRIASIA, and lately CARIS-SEA, and of our National Agricultural Bibliography series, Asian bibliography series and our occasional special bibliographies on topics where there is perceived interest.

On line literature searching for users upon request may take the form of retrospective searching or be simply limited to current literature searching, in which case it could either be a one-shot deal or a recurring search called Selective Dissemination of Information or SDI. We use three data bases for searching: one is our in-house AGRIASIA database which is composed of literature from the Southeast Asian region, and which has now around 60,000 citations in it; another is the CARIS-SEA database composed of more than 4,000 records of on-going research in the region; and the other is the AGRIS database in Vienna, Austria, which covers the world's agricultural literature, and which reached the one millionth record entry in June last year. We access the AGRIS database via a communication satellite called TYMNET using a telecommunication facility in Manila.

We also act as a referral center for inquiries which we cannot serve or for which we cannot provide copies of documents. Users are either referred to our National Centers or to other information centers who would have copies of needed documents or who would be in a better position to handle given requests. In conjunction with this, our inquiry-answering service handles requests for information which come from all over the world. Document back-up comes in the form of either photocopies or microfiche. We have an on-going microfiche project in the regional network whose aim is to microfiche the nonconventional literature submitted by the national centers to AGRIASIA.

Finally, I should mention one last important service provided by the network, which is that of training. The AIBA regional center as well as its national centers are actively involved in providing training in various aspects of information handling. Short term training programs are regularly set up in such areas as indexing, microfiche, computerized information storage and retrieval, and other related aspects of information work.

THE AIBA SYSTEM

There are four elements of the AIBA system that I would like to draw emphasis on in this paper. These are 1) the rationale for its establishment and continued existence; 2) the network's organizational structure; 3) the mechanisms/schemes it follows for regional/international information exchange; and 4) its planning and coordination activities.

As mentioned earlier, AIBA was established to fill a need in the region for an effective information system in the service of agriculture. That it has been moderately successful in implementing its objectives may be attributed in part to the fact that it has, over the years, enjoyed substantial funding support from the IDRC. But funding alone is not sufficient to make a system work. I would like to attribute the strength of AIBA on the fact that it was established at a time when

the region was ready for such a concept, and thus was in a position to help nurture its growth. To be sure, the network has had its fair share of "growing pains," but the fact that it has endured is a good testimony of its usefulness.

It has already been indicated that the AIBA network is a directed, or star, network configuration. As structured, each member country has its own network of agencies feeding that country's national center with their current literature outputs, whether published or unpublished. The rationale behind the establishment of AIBA has always been to help develop the national agricultural information system of each member country in the network. This is because each of the member countries would be unable to develop its information system as fast on its own. Part of the plan, however, is for the network to evolve into a non-directed system once the participating countries shall have attained a stage of development when they no longer need to interact with the other members of the network through AIBA, but can do so directly. This is anticipated to start happening in the very near future.

We now come to the question of how the network operates. The AIBA follows the methodology of AGRIS and CARIS, two of the FAO's worldwide information systems.

Participating countries organize, with the help of AIBA, a national network consisting for the most part of agricultural institutions and libraries. These act as sub-centers which agree to send to the national center copies of all relevant documents on a regular basis. It must be remembered that in the region, with the exception of Malaysia, no such thing as a copyright library exists. In some cases, the national center itself has to go out and physically collect relevant documents. The enormity of this task can only be grasped if we think of the Indonesian archipelago and the travel problems therein. The national center then enters the bibliographic record of all relevant documents it receives on worksheets and submits these monthly to the regional center (AIBA). The worksheets are processed at AIBA before final submission to the AGRIS Processing Unit in Vienna, Austria.

Essentially, the AGRIS system, of which AIBA is the regional center for Southeast Asia, has the following features:

- a) Standardized, decentralized input is furnished by all the nations participating. The carrier language for bibliographical data and for indexing is English, but transliterations of title entries in the language of the inputting center (e.g., Thai) is provided for.
- b) Central processing at the AGRIS Processing Unit in Vienna produces output products such as magnetic tapes, a printed bibliography called AGRINDEX and microfiches.
- c) Centrally distributed output goes to the national inputting centers participating in the AGRIS program which serve their individual users.

The aspect in which AIBA has met with problems during its early years has been in the area of its planning and coordination activities. In the beginning, AIBA has tended to act on its own without proper consultations with its participating member countries. This cocoon-like attitude on the part of AIBA was greatly deplored by the member countries, leading to untold difficul-

ties in the attainment of the network's goals.

This situation was remedied in 1978, when the AIBA Consultative Committee was formed. The Committee is a policy-making body composed of the heads of the various national inputting centers in the AIBA network who decide on the directions and activities of the network for a given year. This body meets once a year with the AIBA project manager and selected senior staff at previously designated places around the region. These meetings are spirited affairs, where discussions are frank and tempers often run high, but we do come away from such meetings with a healthy respect for what each side (i.e., the regional center vis-a-vis the national centers) is doing and why. This is one way in which internal evaluation of the performance of the network can be had.

There are other aspects to consider in talking about information networks, like cost-benefit analysis (meeting objectives at the least possible cost) and the role of information processing equipment like computers in networking, but I have excluded them from the scope of the present paper, as they would entail lengthy discussions that would not be entirely suited to this audience.

PROBLEMS AND CHALLENGES

After ten years of existence, the AIBA can claim some measure of success in that it not only was able to establish and make operational the concept of an agricultural information network in the region, it was also able to gain the cooperation of its participating countries in its various projects and activities.

There are two current problems of the regional network that I would now like to focus on: one has to do with whether the AIBA is indeed providing relevant and effective services to its users; the other, which is related to the first, has to do with how the network can maintain its services on a self-sustaining basis.

The question of relevance and effectiveness of an information service is a complex one because the dictum that we should be able to provide the right information to the right person at the right time and in the right form is no easy task. To give a concrete example, it would be easy enough to make a computerized search of our database for a list of relevant documents in answer to a request, or even perhaps provide copies of such documents, but what if they happen to be written in languages that the user cannot understand? To get around the language problem, an information service must at least provide abstracts of such documents in a lingua franca like English; the alternative, providing translations of the documents themselves, is a very expensive alternative.

Another aspect of this same problem is the desirability of making the service available to as wide a clientele as possible. This would be possible if our database could be accessed by remote users, say, from the Visayas and Mindanao, or even overseas. However, the present state of development of telecommunication facilities in the region precludes this situation from becoming a reality in the very near future. The technology is available, but the funding support to

provide microwave linkage, for instance, between Manila and our databases in Los Baños is unfortunately not presently available.

Even the idea of making the network work is another dimension of the problem. The necessity for a regional network such as the AIBA is based on the existence of different degrees of expertise and development of documentation services in the region. One benefit from such a system is collaborative effort and self-help. The regional center helps its member nations raise their level of expertise: "learning while doing and doing while learning". It also helps foster a feeling of regional identity against the background of common agricultural problems.

In October of this year, there will be an evaluation study of the AIBA network by a team of IDRC consultants. The results of the study will show the extent of relevance and effectiveness of the network at this point in time.

The second problem has to do with how the network can become self-sustaining, especially now that funding support by external agencies has finally come to an end. The answer clearly is that we have to charge for our information services, which we have started doing recently.

Last year, we stopped the free distribution of AGRIASIA to our National Centers, and asked that the recipients of free subscriptions in the past (130 libraries and information centers) take out subscriptions at big discounts. The response to date has been very disappointing. I had the occasion, in a recent local seminar, to ask colleagues why they could not take out subscriptions to AGRIASIA for their university libraries. The feedback was the same from the three or four people I talked to: they would very much like to take out subscriptions, but budgetary constraints prevent them from doing so.

Which brings me to my next point: that perhaps, information services, such as those offered by the AIBA, should be one aspect of the research cycle that should to some extent, always be financially supported, either by parent institutions or outside funding agencies. In the case of funding agencies, perhaps they could be persuaded to see the advantages of taking out subscriptions for deserving libraries and information centers in the developing countries who are unable to acquire such current awareness tools on their own. The advantages of providing access to information to as wide a clientele as possible has important implications in hastening development in this Third World region.

PLANS FOR THE FUTURE

The AIBA network has indeed come a long way from its modest beginnings in 1974. But what of the future? The regional network sees itself in much the same role that it has played from the start: that of coordinator and catalyst for agricultural information activities in the region, with the ultimate objective of strengthening the information infrastructure of its participating countries.

The AIBA will be providing much the same information services that it is now offering, but will look more seriously into the following:

- a) The development of subject or commodity - oriented data banks. Though some work has already been done by us on this, we feel that it should now be a major area of concern in order to serve the needs of a wider range of users such as agro-businessmen, agro-industrialists, bankers, managers and the like.
- b) More aggressive marketing of our information services. This has been the weak link in our past activities which we hope to correct in the coming years.
- c) More emphasis on our training function. The need in the region for training in the more advanced aspects of information work is a big responsibility that we intend to be very responsive to.
- d) More representative management of the network. There is a value to re-examining the management of the network to see how it could be made to work better. The management of AIBA has always been vested in the regional center at SEARCA. Perhaps the time has come when certain responsibilities could now be distributed among the member countries. When we could do that, it would be a good index of the network's maturity.

REDUC: AN EDUCATIONAL DOCUMENTATION AND INFORMATION NETWORK SERVING DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN

Luis Brahm
Gonzalo Gutierrez

In the early seventies, reports of studies and innovations on education in Latin America and the Caribbean were generally rare and their dissemination virtually non-existent. Few researchers were producing major studies and much of what was being done was the work of foreign researchers and we were heavily dependent from the research results coming from U.S.A. and Europe. This situation has, however, changed considerably since then. The substantial rise in the number of postgraduate-level specialists carrying out educational research and the larger number of programs promoting field studies with improved and more strictly verified evaluation methods have given rise to steady growth in the production of reports on research and experiments in education.¹

This increase in available information on education in the region has not, however, been accompanied by any improvement in its dissemination. Planners, administrators and education personnel in general are not sufficiently informed of the results of much research work and many programs of action. This leads to improvisation and to measures that have no proper basis of information and involve duplication of efforts. There are several reasons² for this situation, among which mention should be made of the resources factor, for the resources available to educational institutions and personnel do not allow them to publicize their research findings or to have access to available information.

In the light of this situation, the Educational Research and Development Center (CIDE) in

Santiago de Chile began, in 1972, to publish abstract bulletins (Resúmenes analíticos en educación) covering important studies and innovations documents on education in the Latin American region. This decision, implemented initially in a modest way, made it possible to provide those interested in education problems in the region with access to major studies produced in this field. This initiative was given such an enthusiastic welcome that, in 1977, agreement was reached among several educational research centers at a meeting in Montevideo concerning the establishment of a cooperative network for the dissemination of information on education in the Latin American region; using as its basis the Resúmenes analíticos.³

It was decided that this institution would act as the coordinating center and it was assigned responsibility for devising the system. This Latin American Educational Documentation Network (REDUC) designed to continue the work of disseminating information which had been launched privately, was given an appropriate structured and received financial backing from (the International Development Research Center) IDRC in Canada.

REDUC is now in full expansion and has become a dynamic system for the dissemination of information on education in the Latin American region .

The network's starting point: information on education in the service of development

It is universally recognized that the volume, level, type and degree of coverage achieved in the dissemination of scientific information is an important indicator in ascertaining a country's level of development.⁵ The Science citation index (SCI), shows, that in 1978, 93.99 per cent of basic scientific literature originated in countries belonging to the Organization for Economic Co-operation and Development and to Eastern Europe. Of the remainder, 4.57 per cent was credited to Third World countries, Latin America accounting for 0.96 per cent. ⁶

Action to promote the availability and use of scientific information is, from this standpoint, action to promote development. However, in the field of information on education, what does such action consist of?

The basis of the REDUC system is the definition of information as the relationship established between a set of data and a set of problems with a view to making appropriate decisions designed to understand and solve those problems. The mere existence of the data gathered, research findings and experience does not imply information. Data represent knowledge at one's disposal which can be transformed into information to the extent that use is made of it in a systematic, well-referenced and selective fashion in order to tackle a problem methodically. When this relationship has not been properly established, there is a tendency to believe that information exists simply because the facts are there, but for operational purposes such data are virtually useless.

For information to be produced, therefore, three requirements must be met. There must be a set of systematic data and relationship between these data and problems or sets of problems. Furthermore this relationship must be established on a problem-oriented, selective basis; it

must tell us about something or someone, be assured of social recognition and be regarded as important by the educational personnel that play a part in it. REDUC fits precisely into this context, as will be shown below.

Objectives of the REDUC system

In keeping with the above conception of information, REDUC pursues the following objectives:

(a) to obtain as much systematic data as possible on education in Latin America on Research and Innovation; (b) to provide the means whereby users of the system may establish relationships, on a problem-oriented, selective basis, between these data and the educational problems they face.

Obtaining Systematic Sets of Data

Through a co-operative system covering twenty public and private educational research and development centers in the Latin American region (see Appendix), REDUC's centers obtain copies of the most important documents produced on education in each Latin American country. These documents are processed in the co-ordinating centers and or associated centers resulting in the following products which make up the system's data collection.

Abstract bulletins in education (Resúmenes analíticos en educación-RAE)

Each document is summarized by specialized analysts in approximately 400 words. These abstracts are published by the coordinating center twice a year in volumes each containing 200 or more summaries, and are distributed directly to users through the coordinating center or through the network's national centers. Associated centers produce their own abstracts once, twice or more per year and also are distributed throughout the network. Until today REDUC has produced about eight thousand abstracts.

Microfiches

The full texts of documents summarized in the abstract bulletins (RAE) are stored on microfiches in the co-ordinating center and are made available to users through the same channels as the RAE. Moreover, each national center possesses a complete collection of these microfiches and appropriate readers allowing users to consult them.

Bibliography

National bibliographies are prepared, alongside publication of the RAE, in an effort to assemble the material that exists in the various countries. We have produced over twenty thousand

bibliographies divided in 32 themes.

REDUC information bulletin (Boletín de noticias REDUC)

This bulletin includes essential information on the network's activities, events, seminars, ongoing research work and bibliographic and other data which may be of interest to users. It helps to maintain the dynamic character of relationships and communication between centers associated with REDUC and of communication with users.

Press clips bibliographies

States of the Arts: On main regional problems

General indexes: Of the whole network

National seminars of researchers in education

Regional seminars

Visits to the centers

Research training

ESTABLISHING RELATIONSHIPS, ON A PROBLEM-ORIENTED SELECTIVE BASIS, BETWEEN THE DATA OBTAINED AND USER'S PROBLEMS

This is a particularly important problem facing the REDUC system and it is tackled in three ways:

Establishment of technical processes that help to bring this relationship about: bibliographic references and the use of keywords (based on the UNESCO/IBE education thesaurus) making it possible to enter data under specific subjects.

Implementation of activities designed to train educational personnel to handle scientific data.

Establishing a logical relationship between sets of data and sets of problems is not sufficient if users do not regard this relationship as something that is of use to them personally and if they fail to acquire the habit of establishing it and making the use of scientific data part of their daily activities. REDUC promotes and implements various forms of action in this connection: seminars, courses for teachers and future teachers, workshops for planners and administrators. At the present time, the training of educational personnel in the use of scientific data is a priority program within the REDUC system. It is based essentially on efforts undertaken by associated centers with the support of the co-ordinating center.

Making analyses of information in order to systematize and discuss the known 'facts on a given subject, using the abstract bulletins (RAE) as a basis. These analyses form part of the training of educational personnel in using scientific information. Carried out by the personnel of REDUC and the national centers, they provide an excellent opportunity for establishing relationships on a selective, well-referenced basis, between sets of data and problems.

Organization of the network and its plan for expansion. 7

The organization of the REDUC system is based on a co-operative arrangement consisting

Twenty associated centers situated in seventeen countries in the region. The task assigned to these centers may be defined as: (a) organization of a national documentation center; (b) compiling of important documents on education in their respective countries, (c) preparation and publication of national abstract bulletins; (d) transmission of these documents to the associated centers; (e) setting up of reference services for users (documents, microfiches, etc.); (f) establishment of training activities for educational personnel in the use of scientific data; (g) preparation of state-of-the-art reports; (h) conduct of research on priority problem areas in the country .

A coordinating center (CIDE) located in Santiago, Chile. This center's task is to: (a) process documents received from national centers; (b) prepare and publish regional abstract bulletins in education (RAE); (c) produce and distribute microfiches of the full texts of documents summarized in the RAE; (d) promote regional training activities for educational personnel in the use of scientific data and support activities carried out by national centers; (e) prepare regional state-of-the-art reports; (f) produce specialized bibliographies.

Coordinating centers responsible for compiling and distributing information on education within specialized networks like UNESCO CRESALC (Higher Education) CINDE (Pre School Education) REDUC maintains liaison with centers outside the system which specialize in such areas as vocational training (Inter-American Center for Research and Documentation on Vocational Training-CINTERFOR, Montevideo), educational planning (Inter-American Center for Studies and Research in Educational Planning - CINTERPLAN, Caracas).

In addition, the REDUC system keeps in touch with other information systems such as that of the International Bureau of Education (IBE, Geneva), the European Documentation and Information System for Education (EUDISED) of the Council of Europe and others.

Prospects for REDUC

Considering the rapid growth of REDUC since its creation, its prospects are promising. The interest in it has been maintained at a high level, as is borne out by the fact that new centers are constantly making requests to join the network.

We are working today trying to computerize the data processing and retrieval system in all center's belonging to the network.

The provision of training for educational personnel in handling scientific data is once more being considered as a priority program. Regional and national activities have been planned for this purpose so as to inculcate in users of the REDUC system the habit of drawing on available

data in order to tackle their educational problems. These activities should be accompanied by others designed to transform these users into producers of information, so that, as practicing teachers, administrators, planners, researchers, students, etc., they themselves may produce sets of data that relate, on a problem-oriented, selective basis, to sets of problems.

This is the contribution of the REDUC system to the development of Latin America: solutions to the educational problems in the region which, being based on fuller and more reliable information, are accordingly more effective.

1. This situation is described in works such as the following A. J. Gouveia, 'A Pesquisa educacional no Brasil, Cadernos de pesquisa, No. I, Sao Paulo, Fundacao Carlos Chagas, 1971, and 'La Investigacion educacional en Chile, Revista del Centro de Estudios Educativos, No. 4, Mexico City, Centro de Estudios Educativos, 1973; J.E. Garcia Huidobro and J. Ochoa, Tendencias de la investigacion en educacion en America Latina, Santiago, Centro de Investigacion y Desarrollo de la Educacion, 1978.
2. See Garcia Huidobro and Ochoa, op. cit.; also P. Latapi, Reflexiones acerca del exito de la investigacion educativa, Revista del Centro de Estudios Educativos, No. 4, Mexico City, Centro de Estudios Educativos, 1977.
3. Seminario de Centros Latinoamericanos de Investigacion Educativa (Quito), Informe, Montevideo, Centro de Investigacion y Experimentacion Pedagogica, 1977.
4. G. Gutierrez, Diseño preliminar de una Red Latinoamericana de Documentacion en Educacion (REDUC), Santiago, CIDE, 1978.
5. Jose Antonio Viera Gallo, Documentacion para el cambio, Rome, IDOC, International, 1981, 55 p.
6. Instituto Colombiano de Estudios Tecnicos en el Exterior (ICETEX), 'America Latina: productividad de la ciencia, carta informativa 30., no. 3, Educacion hoy, No. 46, Bogota, Educacion hoy, 1978.
7. REDUC, La Red Latinoamericana de Documentacion en Educacion, Santiago, CIDE, 1982, 26 p., app.

APPENDIX: National Centers in the REDUC network

ARGENTINA Centro de Investigaciones Educativas
(CIE), Zabala 2677,
1426 Buenos Aires

BOLIVIA Centro Boliviano de Investigacion y
Accion Educativas (CEBIAE),
Hnos, Manchego 2518,
Casilla 1479,

La Paz

BRAZIL

Fundacao Carlos Chagas
Av.Prof. Francisco Morato 1566,
Caixa Postal 11478,
CEP-05513,
Sao Paulo

CHILE

Centro de Investigacion y Desarrollo
de la Educacion (CIDE),
Erasmus Escala No. 1825,
Casilla 13.608
Santiago

COLUMBIA

Pontificia Universidad Javeriana
Fac de Estudios Interdisciplinarios,
Programa de Investigacion y Tecnologia Educ.,
Carrera 10 No. 6548,
Bogota

Centro de Investigaciones
Universidad Pedagogica (CIUP),
Avenida 46 - No. 15-99
Bogota

COSTA RICA

Centro Multinacional de Investigaciones
Educativas (CEMIE),
Calle 37-No. 40 Sur,
Barrio Los Yoses,
San Jose

DOMINICAN REPUBLIC

Universidad Catolica Madre y Maestra,
Centro de Documentacion e Investigacion
Educativa (CEDIE),
Santiago de los Caballeros

ECUADOR

Centro de Investigacion, Planificacion
y Tecnologia Educativa (CIPTTE),
Foch 681,
Casilla 9131 Suc. Almagro,
Quito

MEXICO

Centro de Estudios, Educativos (CEE),
Avda. Revolucion 1291
Apartado 27-321,
01040 Mexico, D.F.

PANAMA

Instituto Centro Americano de
Administracion y Supervision de la Educacion
(ICASE),
Universidad de Panama,
Apartado 3368, Panama 4

PARAGUAY

Centro Paraguayo de Estudios Sociologicos
(CPES),
Eligio Ayala 973,
C.C. 2157, Asuncion

PERU

Instituto Nacional de Investigacion y
Desarrollo de la Educacion (INIDE),
Van de Velde 160,
Apartado 1156, Lima

URUGUAY

Centro de Investigacion y
Experimentacion Pedagogica (CIEP),
Jaime Cibils No. 2810, Montevideo

VENEZUELA

Centro de Reflexion y Planificacion
Educativa (CERPE),

Apartado 61 .393,
Caracas 10600-A

EDUCATIONAL INFORMATION SYSTEMS: AUSTRALIAN EXPERIENCES

Laurie Howell

Australia's involvement in the development and operation of information systems spans a number of decades yet the establishment of systems geared to the needs of curriculum developers, practising teachers and educational researchers is but a recent initiative. At the national level (which in the Australian context of a federation of independent states makes any national system something akin to our considerations today of a regional system for SE Asia), the decision to establish a nationwide curriculum information system followed the establishment in 1975 of the country's Curriculum Development Center. Section 5(1) (d) of the CDC Act legislated that one of the six functions of the new center was:

"to collect, assess and disseminate, and to promote and assist in the collection, assessment and dissemination of, information relating to school curricula and school education materials."

As a result high priority was given to establishing the Curriculum Information Service which was expected to progressively provide a comprehensive information service covering the spectrum of unpublished and published materials for professional curriculum developers, teachers and students from both Australian and overseas sources.

In designing the CIS, the Curriculum Development Center considered the existing Australian educational information services, and also the recommendation of its own Study Group formed in mid 1976 to report upon 'The Feasibility and Mode of Operation of the CDC Information Center.'

Preparation for the first trial began in November 1976 and invitations to participate were sent out to prospective contributors in February-March 1977. The first trial commenced in September 1977. Approximately six hundred selected users nominated specific areas of interest, chosen from either a curriculum process or a school subject area within the Center's then priority focus - the lower secondary stage of schooling (grades 7-10). Plans included provision for a wider trial during 1978 with a view to full implementation of the service from the beginning of 1979.

The elements of the Center's first Curriculum Information Service were:

- interchange of curriculum documents;
- interchange of State media center materials;
- interchange of overseas curriculum materials and information;
- development of a register of curriculum development projects and developers
- documentation of teacher education courses; and
- data base development.

Specifically, these elements involved the following information gathering, documentation and delivery tasks:

Interchange of Curriculum Documents

This part of the CIS was concerned with the progressive establishment of a comprehensive abstract interchange and document retrieval service of mainly unpublished documents of interest to teachers, professional curriculum developers and others interested in curriculum matters. Some of the types of documents to be contributed were:

a) Information about developmental projects including small projects in any of the following stages:

- i) preliminary planning ideas;
- ii) development;
- iii) trial;
- iv) publication;
- v) dissemination;
- vi) evaluation/revision

(NB Projects included those concerned with developing processes, techniques, courses or materials).

b) Resource descriptions, reviews, critical assessments, and evaluation reports - either of commercially produced materials, material produced by media centers, or material produced by educational agencies, schools or groups of schools.

c) Information about practical aspects of curriculum development, e.g. budget, use of ancillary staff, production techniques, publishing and editorial procedures and other practical management issues outside a teacher's usual experience.

d) Syllabuses/courses/units and curriculum information bulletins.

e) Unpublished reports, case studies, evaluation, research papers, speculative or critical papers on curriculum development.

f) Information about curriculum theories and processes.

g) Informational publications, newsletters, bibliographies.

h) Publications or information about publications.

i) Conference reports and advice on future conferences.

j) In-service or teacher development information, e.g. courses, programs, lecture notes,

course evaluations and other papers or materials.

k) Advice on useful contact persons and their areas of expertise within their own system or sub-system.

l) Advice on the existence and availability of relevant curriculum materials not covered under other categories.

m) Material on the effects of building and the school environment on curriculum.

This first element of the CIS required the full-time employment of two seconded officers in addition to current permanent Center staff.

Interchange of State Media Center Materials

This element involved the development of a national holding and a national catalogue of materials produced by State media centers. The principal aim was to increase the use in other systems of materials produced by a particular system and to identify what was available already when national curriculum projects were being planned. The operation of the interchange was to be assisted by meetings of state supervisors of media/audio-visual services and serviced by the secondment of two full-time officers. Plans for a later stage of the project included the examination of possibilities for national marketing and distribution of media centers' materials.

Interchange of Overseas Curriculum Materials and Information

This element involved the development of information links with overseas curriculum development centers, the interchange of curriculum and materials and the monitoring of developments in the services they provide to their users.

The full-time employment of one seconded officer was a requirement in addition to permanent Center staff.

Register of Teacher Education Courses

This element involved the regular collection and collation and publication of information about current curriculum projects in Australia; and the compilation of a directory of people working on projects or undertaking curriculum research within agreed curriculum areas.

Register of Teacher Education Courses

This element involved the collection, collation and publication of basic data on curriculum related courses in tertiary institutions.

Database Development

It was necessary that the development of techniques and procedures for storing the information contained in the CIS took place concurrently with the development of a database which would:

- i) facilitate the compilation of special purpose bibliographies, reviews and other publications of the CIS;
- ii) handle the volume of material and information anticipated for the comprehensive CIS;
- iii) provide easy access to and from other databases within and outside Australia;
- iv) provide links with other Australian organizations with related information needs and activities.

This element required the appointment of an additional permanent officer to the CIS staff.

It may not come as a surprise to any of you that the Curriculum Information Service was an abysmal failure for reasons which in hindsight are now abundantly clear. Three reasons among many, stand out. Firstly, implementation demanded resources beyond the Center's capacity and few of the State partners in the venture were prepared to commit the necessary resources of money and people that might have made the project viable. Secondly, the project was far too ambitious. It attempted to canvas almost every conceivable informational need and made little, if any, attempt to establish selection criteria and input categories. Finally, the project never distinguished between, on the one hand, a curriculum information system, and on the other, a curriculum materials clearinghouse. It tried to provide both and in the process provided neither.

That experience, in which I must admit I played a part, was a bitter one made all the more so because it had been agreed by all that the establishment of the CIS was to be the Center's number one priority. Fortunately in all the other programs we achieved considerable success which, to some degree, re-established our credibility and standing. Looking back there were clearly a number of questions/issues which we did not adequately address or certainly decide upon before setting forth on the exciting task of establishing and operating the system. These questions/issues included:

- a) What kinds of information do teachers, curriculum developers and educational administrators really need?
- b) In what form and from whom will information be most acceptable?

- c) What happens to material which is disseminated through such a system? What are the consequences of having additional information available?
- d) How can the mechanical, discrete, observable dissemination network of a curriculum information service link up with informal diffusion networks?
- e) What is needed by way of human, technological and financial resources to prepare educational material for use in a computer database which would be able to link-up with overseas systems?
- f) What are the relative cost benefits of the various ways of achieving high precision ratios? (Proportion of relevant to retrieved citations).
- g) What are the uses/effects/consequences of a curriculum information service in an educational region?
- h) What categories best relate materials to research findings, population and syllabuses?
- i) Is the ERIC thesaurus (which was used by the CIS) suited to an Australian curriculum information service? The Australian National Library's report on its ERIC On-Line Research Project in 1977 concluded that almost one quarter of users felt moved to comment on poor quality indexing, inconsistent and misleading assignments of index terms, as well as peculiarly American term connotations.
- j) Is it more economical for a curriculum information service to use a minicomputer for information retrieval and storage?
- k) What are the relevant advantages/disadvantages of an information system as opposed to a clearinghouse function?

Note: During 1977-79 the GIS engaged four full-time staff and had an operating budget of approximately A\$350,000 (i.e. approximately US\$250,000).

Although our first attempt to set up a cooperative information system for curriculum and research materials was a disappointment, it did stimulate and, in one instance, strengthen a number of related initiatives which were successful and which today serve a variety of needs. In the sections that follow I want to briefly outline some of these and in the process deduce a number of guiding principles which I believe will assist us in seeking a possible model for a SE Asian regional information system:

The Australian Directory of Educational Research and Researchers was established by the Educational Research and Development Committee of the federal Department of Education .

The most recent directory lists some 780 persons and descriptions of on-going and completed research. Inputs result from questionnaires sent to possible contributors and/or selected institutions. The questionnaire is tightly structured and inputs are therefore to an agreed format.

These are also screened although much of this occurs at the stage of selecting potential contributors. Collected information is entered into the AUSINET database (description below) and accessed either on-line by AUSINET users or by reference to the hard copy publication, "Directory of Educational Research in Australia". This is issued free to all contributors and to all major educational institutions and agencies. Future inputs will be based on the "Australian Thesaurus of Educational Descriptors" - an Australian adaptation of the ERIC thesaurus (see below).

Australian Education Index (AEI)

The Australian Education Index is an Australian education information system designed and compiled by the Australian Council for Educational Research (ACER) Library. This system is extensively used across a broad spectrum of the education field by researchers, teachers, administrators, education planners, curriculum developers, lecturers, and students. The need for a comprehensive index of educational literature became apparent in Australia during the early 1950s and in 1957 ACER commenced the publication of the Index. From 1979 the service has been compiled by means of computer facilities and produces a machine-readable database for information searching.

The Index is a comprehensive index to current literature relevant to Australian education. Items for inclusion are selected from a wide range of Australian sources including monographs, research reports, conference papers, periodical articles, legislation, parliamentary debates, newspaper articles, tests, reviews of books and, to a limited extent, curriculum materials. Articles and reports by Australian authors or about Australian education published in overseas sources are also included.

Documents are identified, collected and indexed by the ACER Library and Information Services Unit. Additional input is received regularly from two specialist clearinghouses. The National TAFE* Clearinghouse, co-ordinated by the TAFE National Center for Research and Development (see below), collects documents in the areas of technical and further education, career education and vocational and occupational training while the Australian Clearinghouse for Library and Information Science (ACHLIS), co-ordinated by the South Australian College of Education library, collects documents in the areas of librarianship and information science.

The Index contains three main sections. These are:

Main Entry Section: Citations are grouped in broad subject categories. Each citation is assigned a number which is used to arrange citation records within the issue. This number is unique to one document.

Where possible, abstracts are included with citations and in all cases major Australian Thesaurus of Education Descriptors (ACER 1984) subject descriptors are listed under a citation. A list of periodicals scanned is published with each issue.

Author and Institution Index: This index provides access to documents by personal and corporate authors, institutions, and by names of conferences. Numbering refers to document num-

bers in Main Entry Section.

Subject Index: The subject content of documents is analyzed and descriptors and identifiers are assigned to each record to express the concepts contained in the documents. Descriptors are selected from the controlled vocabulary of the Australian Thesaurus of Education Descriptors (ACER 1984). Identifying terms are used for concepts outside the scope of the Australian Thesaurus of Education Descriptors i.e. names of places, persons, projects and studies, e.g. Australian Science Education Project. These terms are listed in an alphabetical string under each citation in the Main Entry Section.

It is possible that not all areas of education may be covered in any issue of the Australian Education Index and therefore not all terms are utilized. However, the concepts expressed in the documents are often related and other similar and related terms can be used when conducting a subject search.

Australian Thesaurus of Education Descriptors (ACER 1984)

Based on the Thesaurus of ERIC Descriptors (Oryx Press, 1982), and using the Australian developed Macquarie Dictionary (Macquarie Library 1981) as a guide to current Australian English usage, this controlled vocabulary of educational terms has been produced by the ACER for use in Australian educational information systems. The subject descriptors are defined and interrelated by a system of cross references. Called hierarchical, the NT (Narrow Term), BT (Broad Term), RT (Related Term) relationships assigned to each subject descriptor provide the capability for narrowing down the indexing and searching process to the most appropriate i.e. specific level of subject matter required.

The terminology is being constantly reviewed with changes in the language usage within the field of education literature being monitored. Users are advised of thesaurus additions and changes by supplements to issues of the Australian Education Index.

The AEI is produced as a hard copy publication in March, June and September of each year. Subscription to the "Australian Education Index", is A\$90 (US\$63) a year to Australian subscribers and A\$95 (US\$67) a year to overseas subscribers. The publication provides details of availability and price for many documents. However, the majority of documents are available from the ACER Library on inter-library loan but some specialist publications in the library science and vocational education areas are available only from the TAFE and ACHLIS Clearinghouses.

Since 1979 the Australian Education Index has been included in the Australian Education database, part of the Australian Information Network (AUSINET). The records from the "Bibliography of Education Theses" in Australia are also included in the AEI database, which means an on-line search of the database provides comprehensive access to all materials included in both publications.

Bibliography of Education Theses in Australia

The findings of higher degree research are of value to the education community and further research. They contribute much to their fields because of the highly specialized character of the data and because of the wide use of primary sources, experimental investigations, and statistical information. These studies present a storehouse of valuable research which needs to be disseminated. However, research studies conducted for higher degrees at universities and colleges are rarely disseminated through the usual channels of information transfer. Although some theses deservedly find their way into print as books, and others are partially recorded as articles in periodicals or as parts of research series, most remain as unpublished theses deposited in university or college libraries. Usually the only mention of their existence is through such publications as the Union List of Higher Degree Theses in University and College Libraries (University of Tasmania Library) and in annual listings of research by the higher education institutions.

The Australian Education Council, the Council of Ministers for Education, at its 44th meeting, October 1981, accepted the recommendation of the 'Working Party on Information Retrieval' to support a project to identify, collect citations and include higher degree theses in the Australian Education Index database.

The uses of providing access to this information source are numerous:

- A collective inventory of the theses saves future degree candidates time searching the holdings of individual institutions.
- Librarians and researchers searching in the educational areas have access to a central, permanent and complete bibliographical list which is kept up-to-date by subsequent volumes.
- The list helps avoid duplication, provides new ideas and is the means for pointing the way for future research: for example, by designating areas currently being explored; by identifying the approach to research which may be historical, descriptive, or statistical; by detailing the methodology used in studies and surveys; by encouraging the examination of controversial issues or experiments, and by indicating gaps in knowledge.

The Higher Degree Theses in Education Project involves the identification, collection and indexing of theses which were accepted by universities and colleges from 1980 onwards. Citations of these theses are compiled and published in annual volumes of the series. Details are collected through the assistance of the libraries of the universities and colleges and also the faculties of education. There is a concerted effort by all personnel to ensure that all appropriate titles are included.

National TAFE Clearinghouse

The Technical and Further Education (TAFE) Clearinghouse system was established by the

Conference of Directors of Technical and Further Education in November 1978. The individual six State and two Territory Clearinghouses, linked together by the National TAFE Clearinghouse, are responsible for accessing documents and distributing copies of these in response to requests. The National Clearinghouse has responsibility for co-ordinating the system and, in particular, for the entry of information from all accession forms into the Australian Information Network (AUSINET), as well as into the present hard copy publication "Initiatives in Technical and Further Education".

The diagram (Pls. see Diagram) illustrates the relationship of the State Clearinghouses to the National TAFE Clearinghouse, and to the AUSINET system and the AEI database.

The objectives of the TAFE Clearinghouse are to:

- give TAFE staff greater access to TAFE material on a national basis
- encourage new initiatives in TAFE
- provide the opportunity for material produced by TAFE bodies to be disseminated on a national basis.
- prevent the duplication of research and other initiatives, thus reducing wastage of resources.
- provide avenues for the publication and dissemination of project documents.

As a consequence of the wide and diverse audience being serviced by the system (e.g. TAFE teachers, counselors and researchers) the following materials are included:

- Research reports/technical reports
- Evaluation studies
- Curriculum materials of an innovative nature, which could include syllabus documents, student materials (including textbooks), teachers' guides, audio visual materials, materials for TAFE teacher education, and tests. (Only a limited number of curriculum materials are accepted for publication in each issue)
- Questionnaires, etc.
- Feasibility studies
- Catalogues of instructional materials
- Bibliographies

Only completed documents are accepted.

Apart from on-line access through AUSINET the Clearinghouse database is accessible through two hard copy publications, Initiatives in Technical and Further Education (issued twice a year), and TAFE Projects in Progress (also issued twice a year). Microfiche copies of the database are also made available to State Clearinghouses which distributed these along with the hard copy publications.

As can be seen from the diagram there are eight State Clearinghouses and each, despite considerable population differences, contributes an equal number of items for each batch input. The model places heavy demands on the individual clearinghouses as a result of the need to identify and document all inputs and the provision of hard copy and/or microfiche to users. The latter is particularly exacerbated when input items consist of computer software, audio-visual materials and curriculum kits. Only one of the eight clearinghouses has an appointed full-time officer to perform these tasks. Significant features of the TAFE Clearinghouse project are:

- No provision is made for deletion and/or up-date of files.
- As a result of providing semi-annual printout there is a need for production, on a regular basis, of a cumulative index.
- State Clearinghouse personnel need to have librarian skills whereas the central office person is essentially an editor/publisher.
- The file entry indicates both a central file number as well as a State Clearinghouse number.
- Clearinghouse personnel have stressed the importance of a flexible thesaurus of descriptors for this area of education.
- Documents are located by using the Author and/or Subject Indexes. These are arranged in alphabetical order with accession (TD) numbers of related documents listed under each entry.
- Once documents have been located by either on-line or manual search, requests are forwarded to the Clearinghouse in the State or Territory from which the document originated using a Document Request Form or, where the Clearinghouse is not involved in the distribution, requests are forwarded, together with payment, if any, to the author/institute concerned.
- The National TAFE Clearinghouse entries are included in the Australian Education Index and the AEI database, which is a part of AUSINET. This gives users access to the information through an on-line bibliographic search in addition to the manual search facility provided by the hard copy publications.
- TAFE documents are assigned descriptors according to subject content. These descriptors are found in the Australian Thesaurus of Educational Terms, which constitutes an authoritative list of broad, narrow and related terms applied to the field of education, and the developing Glossary of TAFE Terms (see below). The Australian Council for Educational Research (ACER) continually modifies the list of descriptors during the formation of the Australian Education Index publications while additional modifications are made to suit the particular requirements of the TAFE database.
- Identifiers have been allocated for aspects of Technical and Further Education not adequately covered by the Australian Thesaurus of Educational Terms, and for new terms, such as names

of specific conferences, which have not previously been used. Both descriptors and identifiers are used in the compilation of the Subject Index.

- A Glossary of TAFE Terms is currently being developed and this will form the basis for usage of TAFE terms in publications put out by the Clearinghouse. Terms in the Glossary will be consistent with those in the Australian Thesaurus of Educational Terms.
- Contributions to the TAFE Clearinghouse System are made by completing and forwarding a TAFE Clearinghouse Submission Form, together with two copies of the document, to the relevant State or Territory TAFE Clearinghouse.

Operating costs for the TAFE Clearinghouse in the 1983/84 financial year consisted of:

Data processing and related costs	A\$ 24,394
Publications	A\$ 7,969
General office expenses	A\$ 3,077
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	AS 35,440
	(US\$ 25,000)

However, these costs do not include salary of the central office personnel (estimated at A\$20,000) nor any of the costs incurred at the State Clearinghouse level. The central office costs of A\$35,440 were met by equal contributions of A\$2,266 by each State Clearinghouse with the remainder coming from the National Center's operational budget.

GUIDE TO STRATEGIES FOR REPACKAGING AND DISSEMINATION OF POPULATION INFORMATION EXECUTIVE SUMMARY

Carmelita Villanueva

1. The real measurement of the effectiveness of a population information center is not necessarily in the number of books acquired but in the extent to which these materials have been put to use. The main goal is to facilitate and ensure the appropriate dissemination and use of information by its users.
2. There are many information services offered by a population information center (PIC) to ensure an effective dissemination and use of information. These services range from those which are individual-oriented such as inquiry/reference service, referral service, current awareness such as routing of new periodicals, inter-library loan, etc. to those which are user-group and outreach-oriented such as document distribution, translation services, SDI services, redistribution, etc. This guide will specifically focus only on those types of information services meant for large groups of audiences or user communities and not to servicing individual client

or user. This guide will emphasize on outreach information services which will ensure that information and materials get into the hands of the potential groups of users found in their actual locations of work. Most importantly, a large part of this guide will take up practical strategies for identifying special user communities and providing the most relevant and effective information services for each of these user communities.

3. The information services discussed in this guide are in a nutshell called repackaged information. Repackaging of information simply means transforming information into a more understandable, readable and acceptable presentation and putting it into more usable forms. The objective of repackaging and dissemination is to motivate the client to take action upon receipt of a publication. Some publications, however, fail to accomplish that objective for several reasons: (a) the publication is in a very highly technical language, or is in the "wrong" language; (b) the publication was so poorly written that it fails to communicate the message that it intends to convey; (c) the publication is presented in a form that discourages further reading and use. Processing and repackaging of information entail a good knowledge of the intended users, of transformation of information into readable, understandable and usable materials to respond to different situations and problems facing the users.
4. But the job does not stop with the efficient processing and repackaging of materials. More importantly, a systematic method of or strategy for getting the materials into the hands of potential users is essential. Very often, however, potential users are not known or cannot be located. Furthermore, the physical mode of distributing the materials are often inefficient. An effective distribution strategy is a result of a precise knowledge of the information needs and location of the audiences and the capability of existing channels that can be used for moving the materials to their destination.

A. Repackaging

5. Repackaging information can be done in many different ways:
 - By excerpting or extracting only the most relevant and useful information. from the entire article or publication;
 - By assembling related but high quality materials under one topic through photocopying or reprinting;
 - By abstracting or summarizing lengthy materials, highlighting salient points;
 - By translating materials into a language more commonly understood;
 - By critically reviewing and assessing different literature on a particular field of discipline, recommending which ones could be used;
 - By pulling together results of research, projects, and experiments, highlighting recommendations and action implications to improve policy and practice;

- By comparing, synthesizing and drawing from various literature, new knowledge which did not exist before;
- By providing a state-of-the-art information on certain subjects to keep people current on recent developments and possible trends;
- By undertaking secondary data analysis, interpreting, reclassifying and transforming quantitative and highly technical data into manageable and usable forms;
- By consolidating scattered information and converting it into a more practical and how to do format for practitioners.

The final forms into which this transformed information can be put are diverse: excerpts, extracts, reprints, abstracts, summaries, special assemblages of materials or packages; current awareness materials, bibliographies, directories or inventories, literature reviews, state-of-the-arts, case studies, bulletins, newsletters, news sheets and audiovisual materials.

6. To avoid waste of funds, time and effort, the manager of a population information center must take the following factors into account before deciding which repackaging activities should be undertaken .

a. Characteristics and subject interests of the potential user communities.

7. User community is a group of individuals who are more or less similar to each other with respect to the type and level of work and activities they are doing and consequently, are commonly interested in the same subjects and require similar types of information.

It is important to know in the preparation of materials whether the potential user is a policy-maker, practitioner, researcher, middle-level administrator or information provider and to be familiar with user's specific area of work (e.g. research, training, teaching, curriculum development, fieldwork, delivery services). The following matrix illustrates the interrelationships between the users, their professional levels, subject interests and the type of repackaging activities that will best suit their needs.

b. Functions of the population information center

8. When the population information center is primarily a lending institution/library, the appropriate repackaging activities will be in the form of current awareness such as lists of new arrivals, acquisitions lists, bibliographies, which will alert the users of the publications they can borrow from the library. If the center's main function is gathering and providing analysis of data for researchers and project developers/implementors, the most appropriate repackaging materials that can be provided are literature reviews, state-of-the-arts, critical reviews, or secondary data analysis. Case studies of similar projects can also be reviewed focusing on results, problems encountered and solutions and lessons learned from' the projects. When a center serves mainly as a referral center, it will have to be equipped with profiles, directories and

inventories of the various sources of information and other resources in order to effectively direct users to the correct sources of information. If the center is charged with the responsibility of putting various audiences interested in the same subject in touch with each other, a newsletter is recommended to provide news and information on each other's activities. Therefore, the type of repackaging activities that a population information center should undertake depends upon its functions and responsibilities.

c. Availability and capability of trained personnel

9. The type of repackaging activities that can be undertaken also depends on the size and level of experience or qualifications of the population information center staff. There are four stages to be considered in assessing the manpower requirement of a center's repackaging activities: (a) collection of the source of materials to be included; (b) preparation of the copy; (c) production; and (d) distribution. For instance, a librarian assistant is needed in gathering the material. Then a writer or the subject specialist prepares the material after which it goes to the editor or publications officer for publication and finally ends with the distribution assistant who sees to it that the publication is disseminated. However, some repackaging activities do not entail the services of so many personnel. The preparation of a bi-weekly list of new arrivals or accessions lists requires the services only of a librarian at a junior level and one typist. A monthly abstract bulletin covering a special field of knowledge requires one librarian at a junior level, one documentalist/subject specialist at a senior level and the clerical staff. A newsletter can either be prepared by a group of personnel, e.g. librarian, writer, editor, artist etc. or by just two or one person at a senior level who can be the writer, artist as well as the editor depending on the simplicity or sophistication of the newsletter.

d. Budget

10. Manpower, production and distribution are economic factors to consider in determining the type of repackaging activities that should be carried out. A detailed schedule of the work involved in each stage should be prepared to establish the cost of publication. In the gathering and preparation stage, it is essential to look into the cost of personnel. For example, if your population information center intends to publish a newsletter or bulletin regularly and it is only manned by two junior librarians, your budget will determine whether a senior person (writer) to work regularly on it can be hired on a permanent basis or it can be contracted out to an outside writer and publisher. The cost of production, which is the second stage, varies widely with carbon copying at one end and letterpress or offset printing at the other.

11. Determining the cost of distribution becomes routine once you have experienced distributing various kinds of publications to different parts of the country or outside the country. The cost of distribution varies according to the use of various channels or modes of distribution. It could be free of cost if they are hand carried by one of the personnel in the office going to some parts of the country on a routine basis or by sending them by pouch. Sending by surface mail is of course cheaper than sending by air mail. Sometimes, government offices can avail themselves of free franking privileges in distributing materials of propaganda in nature. The cost also depends on the extent of distribution -whether internal or external circulation and the volume and size of the publication in an envelope. For external circulation, placing an accom-

panying letter with the publication will be more expensive than without the letter. Knowing the costs of available distribution methods will also influence a population information center in deciding whether to produce publications made from heavy paper or material, or not.

e. Reproduction facilities

12. The type, scope and frequency of repackaging activities, as well as the size and number of copies required and the method of reproduction, are related to the type of equipment already available in the population information center. A population information center which has access to photocopying and mimeographing machines can produce current awareness materials, extracts, excerpts or photocopies easily. With available graphic and audio-visual facilities and an electrically-operated typewriter and efficient off-set litho, the center can produce a variety of publications such as newsletters, literature reviews, bibliographies or packages of materials and audio-visual materials as well. The number of copies for each publication will depend on the existing methods of reproduction. Generally, carbon, diazzo or photocopying are economical only up to about 20 copies; stencil and offset-litho duplication, up to about 1,000 copies; and xerography and off-set plate, up to about 10,000 copies.

f. Administrative policies

13. Ideally speaking, the interplay of the five factors just mentioned above should determine the types of repackaging activities a population information center should undertake. More often however, realities in the field do not allow a systematic and complete observation of these five factors. Over and above these factors, administrative policies tend to have stronger influence in the decision made with regard to repackaging activities. These administrative policies are shaped by current political situation, financial, manpower or personal factors. For instance, the users of the population information center might require more technical, academic and in-depth analysis of population situation in the country but the administrator whose main concern is to popularize and publicize his activities may opt for a newsletter. The whole program then becomes more institution-oriented rather than user-oriented.

B. Dissemination

14. There are different types of dissemination services, such as (a) dissemination in response to requests for information; (b) systematic organization of documents and data file and development of user guidance instructions to facilitate retrieval of information by the users themselves; (c) "aggressive" dissemination through selective dissemination, distribution of publications and out-reach activities such as through mobile libraries, exhibits, displays etc.

15. An effective distribution strategy is a result of many factors: (a) a systematic document distribution management; (b) a reliable, complete and updated mailing list; and (c) efficient and reasonably priced mailing method. As in repackaging activities, there are a number of criteria to follow when deciding on the best dissemination strategy to undertake. These are:

16. (a) Audience coverage and knowledge of audience location. A population information center which mainly serves the information needs of in-house staff requires the simplest dissemination

strategy - providing mostly inquiry-reference services and aggressive dissemination of information by hand, by telephone or through a routing slip. A nationwide distribution of materials where audience coverage is much bigger requires an accurate knowledge of audience location to determine the appropriate and inexpensive distribution mode to use. For example, while some parts of the country can be easily reached by mail, either surface or air, other far flung areas cannot. Or in countries where postal system is inefficient, it takes the same number of days to send mail by surface as by air. Still in other countries, sending materials by courier or messenger is more reliable and cheaper in the long run than sending them by surface mail where mail gets lost or arrives when it is no longer needed. The same thing holds true for international circulation. One does not send materials to Nepal by sea mail because it is a landlocked country and should avoid sending materials to South Pacific from Southeast Asia by surface mail because it can take five months!

17. (b) Existing distribution facilities. Once information has been gathered an exhaustive list should be made of the various types of modes of delivering the materials to the target audience. To determine which distribution method is the most effective, the following factors should be taken into consideration: (i) extent of reach or coverage; (ii) speed and reliability; (iii) regularity or frequency; and (iv) cost. The innovative or unconventional methods of distribution should also be explored in addition to the conventional ones such as the postal system. The following can be considered as other innovative ways of distributing information and materials: (a) through commercial channels which have the capability of quickly reaching far flung areas: information and materials could be distributed through their routine distribution services such as vehicles transporting soft drinks or field drug men distributing medicines; (b) mobile projects such as mobile libraries, mobile clinics, mobile audiovisual centers, mobile markets or by ferries, ships or boats which serve as the main conveyors of goods in some countries; (c) personal delivery through field extension workers who regularly make tracks for their audiences in the rural areas and in some countries, they have been provided with motor-bikes to make their job easier; through trainers who by conducting training programs in various parts of the country are able to gather together people who also happen to be the same individuals in your mailing list; (d) through trade and cultural exhibits displays and fairs where people come and can easily be reached by information and material. The following questions should be asked when deciding on an unconventional or innovative mode of distribution: (a) is that mode the fastest and the cheapest way of reaching your audiences or is it the only way? (b) what is the frequency and regularity of sending materials by this method? (c) does it require extra much than to send through the regular or routine distribution methods? (d): is the distribution method safe and reliable? (e) how large is the coverage of this method?
18. (c) User services capability. This pertains mostly to dissemination of information inside the organization. If the population information center is undermanned, dissemination of information can be facilitated by: (i) library tours and lectures; (ii) library handouts (guides and manuals and posting signs); (iii) library orientation through tapes/slides, films, video recordings; (iv) individual instruction or guidance as user approaches library staff.
19. (d) Types and number of materials. Some types of materials lend themselves to cheaper and faster mailing. Newsletters, news sheets or other announcements can be mailed cheaper without placing them inside the envelope. Disseminating non-book materials such as audio-

visuals are better delivered by hand or by a messenger. In case of international circulation, sending the materials by pouch is preferable. Routing periodicals or books to various organizations can also best be done by hand. The weight and size of materials to be distributed will also dictate the selection of the type of distribution mode. For example, it is more efficient to send voluminous and bulky packages through cargo or air freight services than by ordinary mail.

20. (e) Economic considerations. The selection of the appropriate type of dissemination strategy and physical mode of distribution is related to the following factors: (a) budget; (b) manpower; and (c) distribution facilities. In some countries where free franking privilege can be availed of for government materials, limited mailing funds is not much great constraint. However, even if budget is small, distribution of materials can still be done by riding on existing distribution channels such as through mobile libraries, mobile clinics or through extension workers and trainers. Use of diplomatic pouch is another method of international circulation which does not require much expenditures. Direct mailing may not be a cheap method; instead bulk delivery to various channels or branches located in different parts of the country can be effected where these network of channels can in turn mail directly to their users in their own respective areas. Manpower is another factor which influence the type of distribution method to use. For instance, if a distribution person or packager is there to handle packaging and bring them to the post office, distribution management can be done in-house. Otherwise if a PIC does not have a distribution unit, dissemination of materials can be done through a messengerial service or cargo and air freight service which may also include packing services. Presence of facilities also facilitates certain types of distribution methods. For instance, if the PIC is equipped with addressograph, franking machines and delivery vans, almost any type of dissemination strategy can be formulated.

21. (f) Distribution policies. This covers such areas as (i) is the policy to send materials mainly by surface mail and pouch except for few exceptions where the rule is to send by air mail? (ii) is the policy for direct mailing to users or by bulk mailing to subsidiaries or network of channels which in turn will disseminate individually? (iii) is the policy to send materials only to one person in an institution for routing to the rest rather than to several people in the same institution? These and other policy questions will help determine the distribution method to use.