ED 100 392   IR 001 494

AUTHOR   Taylor, Robert S.
TITLE   Manpower and Educational Programs for Management,
                Research, and Professional Growth in Library and
                Information Services. Related Paper No. 6.
INSTITUTION   National Commission on Libraries and Information
                Science, Washington, D.C. National Program for
                Library and Information Services.
REPORT NO   NCLIS-NPLIS-6
PUB DATE   Oct 74
NOTE   37p.

EDRS PRICE   MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS   Information Needs; *Information Science; Information
                Services; Information Systems; *Library Education;
                *Library Research; Library Schools; *National
                Programs; *Professional Continuing Education;
                Professional Education; Program Evaluation;
                Technology
IDENTIFIERS   Library Administration; National Commission Libraries
                Information Science; *National Program for Library
                and Information Ser

ABSTRACT
                Libraries are part of a larger information
infrastructure which must be understood before planning professional
education for librarianship. Research is needed in three areas: (1)
options within overall library objectives, (2) information needs of
different user audiences, and (3) technological and economic
descriptions of information systems. Based on the objectives of the
National Commission on Libraries and Information Science proposal,
professionals will need to have competencies in five major areas:
organization of information, information needs and information use,
information technologies, research methods, and management.
Continuation of current patterns of professional education will lead
to overpopulation of undertrained individuals. To meet short-term
needs seminars, institutes, and certificate programs should be
encouraged. Long term needs will require that professionals be made
acquainted with the total information process and that a basic
science of information be recognized as a scholarly discipline.
(Author/PF)

NATIONAL COMMISSION ON LIBRARIES AND INFORMATION SCIENCE
NATIONAL PROGRAM FOR LIBRARY
AND INFORMATION SERVICES

RELATED PAPER
NUMBER SIX

MANPOWER AND EDUCATIONAL PROGRAMS
FOR MANAGEMENT, RESEARCH, AND PROFESSIONAL
GROWTH IN LIBRARY AND INFORMATION SERVICES

ROBERT S. TAYLOR

DEAN, SCHOOL OF INFORMATION STUDIES
SYRACUSE UNIVERSITY

Describes the major components of a support program required for
the national program of library and information services described
in the second draft of the NCLIS Program Document. Special
attention is given to the education and manpower programs necessary
to provide competent professional personnel and research and
development programs which are pertinent to the national program
and can be transferred to state and multistate programs.

OCTOBER, 1974

<u>Manpower</u> <u>and</u> <u>educational</u> <u>programs</u>

<u>for</u> <u>management</u>, <u>research</u>, <u>and</u> <u>pro-</u>

<u>fessional</u> <u>growth</u> <u>in</u> <u>library</u> <u>and</u>

<u>information</u> <u>services</u>

Paper of Amplification for the National

Commission for Libraries and Information

Science

by Robert S. Taylor, Dean

    School of Information Studies

    Syracuse University

October 1974

Acknowledgements

I am extremely grateful to the following persons who read and criticized the preliminary draft of this report.

Professors Pauline Atherton, Roger Greer, Antje Lemke, and Ruth Patrick, all of the School of Information Studies, Syracuse University.

Dean George Bobinski of the School of Information and Library Studies, State University of New York at Buffalo.

Dean Margaret Chisholm of the College of Library and Information Science at the University of Maryland.

Dr. Ralph Conant of the Southwest Center for Urban Research in Houston, Texas, and Director of the Study of Education for Librarianship administered by the American Library Association.

Dr. Sylvia Fabisoff, Director of the South Central Research Library Council in Ithaca, New York.

Their comments, criticisms, and suggestions are gratefully acknowledged.

Robert S. Taylor
Syracuse, New York

Introduction

One of the critical challenges of our age is to understand and to manage within tolerable and equitable limits the incredible richness of information resources today. The Program proposed by the National Commission (1) is a bold effort to deal with a portion of this problem. The paper which follows is an attempt to describe the educational programs necessary to provide manpower to support the design, development, and management of the Program. Both short-term and long-term approaches are discussed, as well as some factors which might inhibit fulfillment of the Commission's objectives.

The paper is divided in six parts. Section A is made up principally of excerpts from the Preliminary Draft of the Program of the National Commission on Libraries and Information Science to provide context and a framework for this paper. In the belief that the assumptions of an author form an important part of the frame of reference, these are briefly discussed in Section B.

Section C, in response to the charge of the Commission to the author, briefly discusses research and development needs under three rubrics: policy research, information needs research, and technological and economic research and development.

Section D outlines and discusses the professional skills, knowledges, and attitudes necessary to provide an effective and well-trained manpower base to carry out the program envisaged by

the National Commission. Building on these bases, in Section
E the author discusses manpower questions and suggests educa-
tional approaches that might be taken to meet both short-term
and long-term manpower and research needs. Section F is a
summary of the major points of this paper.

A. Excerpts from NCLIS Report

The brief excerpts in this section indicate some of
the diversity of problems and variety of contexts within
which this report is written. It should be noted that
these are selected excerpts, and as such may show the
author's bias. Not all objectives are included because
it was felt that some were not applicable to this paper
or were redundant.

Objective 1: Ensure that basic minimums of library and
    information services adequate to meet the needs of all
    local communities are satisfied. (p.49)

    "It is, therefore, imperative that the National
    Program provide that local communities attain
    certain basic levels of service and materials
    and that their human resources are also strength-
    ened." (p.49)

Objective 2: Provide adequate special services to
    special communities, including the unserved. (p.50)

    "Such groups include the poor, the illiterate,
    the blind, the visually and physically handi-
    capped, the ethnic minorities, American Indians
    on reservations, the very young, senior citizens,
    other parts of our society." (p.50)

"...and where such services exist, the personnel
who operate them are sometimes perceived as in-
sensitive and unresponsive." (p.51)

Objective 4: Develop and continually educate the human

resources required to implement a National Program.   (p.54)

"The program must have people in it who are
competent, sensitive to user needs, and able to
employ new techniques." (p.54)

"The domain of library and information science
is interdisciplinary." (p.55)

"It is essential, therefore, that the National
Program give consideration to both basic and
continuing education of personnel at all levels,
professional and paraprofessional. A new approach
to educational curricula will be needed in library
and information science if librarians, informa-
tion scientists, library technicians, and auxiliary
personnel are to learn to function as an inter-
disciplinary team." (p.55)

"...will require new approaches to manpower
development, continuing education, technical
training, trustee orientation, and other matters
relating to human resources." (p.56)

Objective 6: Make the private sector an active partner

in the development of the National Program.   (p.58)

"The private sector.../is/ initiating new types
of information services." (p.58)

"Taken together, these new commercial or private
non-profit information services are growing
rapidly in number, function, and value." (p.58)

Objective 8: Plan,develop, and implement a nation-

wide network of library and information service.   (p.62)

(Note: too extensive to be excerpted, but the following
words and phrases will provide context and flavor)

interstate
computer and telecommunications facilities
development of networks

common technical standards
reprography and micrographics
centralized services for networking
cooperative, time-shared, multi-institutional approach
    to computer use
integrate teletype, audio, digital, and video signals
    into a single system
to support research and development
world-wide information network

B. Personal Assumptions and Observations

In the belief that communication is facilitated by knowing where a writer stands, the author briefly discusses here some of his assumptions and hesitations. He states these because he believes in the importance of the broad goals of the Commission. There is the danger, however, that these goals can be diluted or even destroyed if the profession does not honestly recognize its weaknesses, and reverts instead to a defensive posture which can only undermine the implementation of the Commission's proposed program.

1. Libraries are part of a larger information infra-structure. A failure to understand the operation of the whole system and the role a library can play in the information transfer process will tend to isolate the library even more than it presently is. Such a failure will also strengthen alternative agencies and services more sensitive to real user needs. Though the NCLIS report mentions the larger

context several times, it does not delineate the
basic need: an understanding of the total system
of information transfer in society - how, why, what,
where, and when.

2. The tradition of the library as conservator, as archive,
may be unsuitable to the concept of true information
service. The archival function is a necessary one,
but in order to meet the needs of information service
it will be necessary to develop new methods of
collecting, organizing, and purging highly dynamic
information. Too much attention is still paid to
formal information packages, i.e. books and media
packages, which satisfy only a small portion of the
real demands for information. The present design
of information systems are dictated by the package
rather than by the needs of people. They are both
necessary.

3. There is a real need to develop a societal con-
sciousness of the value and pervasive role that
information plays in our lives. We swim in a
sea of information, but, like fish, we really do
not know much about the water. The recognition of
the value of information may well initiate a power
struggle, in which the profession is poorly equipped
because it is institution-bound.

4. Despite what may seem to be disparaging observations
in the last several paragraphs, the library as a

societal agency - especially the public library - may
be the one agency in society with the necessary
neutrality and cultural halo to act as a true informa-
tion service for all types of audiences in society.
Such action, however, will require some fundamental
changes in professional attitudes and abilities.
Perhaps more fundamental is the necessity for change
in those persons and groups - e.g. trustees, academic
faculties, local and state governments, etc. - whose
attitudes and decisions affect the budgets and
operations of libraries and related information centers.

5. As a profession, librarians have traditionally held
low expectations of themselves and of what they
could and should do. There is a need now to develop
a profession of breadth, of confidence, and of high
ability. The problem may well be outside the pro-
fession in, or example, the image of the library and
librarians. In the context of this paper, the pro-
fession must develop more fruitful interfaces with
the public at large. This paper attempts to address
these problems, both in short-term and long-term contexts.

C. Research and Development

The charge to the author of this paper stated
"...Special attention should be given to the education and
manpower programs necessary to provide competent pro-
fessional personnel and research and development programs

which <u>are</u> <u>pertinent</u> <u>to</u> <u>the</u> <u>national</u> <u>program</u> <u>and</u> <u>can</u> <u>be</u>
<u>transferred</u> <u>to</u> <u>state</u> <u>and</u> <u>multi-state</u> <u>programs</u>." (italics
added.) There are at least three levels of research and
development required in this context. There is a larger
set of problems concerned with complex systems which will be
remarked on briefly in Section E.

1. <u>Policy research</u> is decision-oriented research and it
   operates in real time. As James Coleman has pointed
   out:

   > "The defining characteristics of policy research
   > are two: the research problem originates out-
   > side the discipline, in the world of action; and
   > the research results are destined for the world
   > of action, outside the discipline." (2)

   At this stage in the development of the Commission's
   Program, policy research (a) can present the range
   of options within the overall objectives of the Program;
   (b) can state and discuss advantages and disadvantages
   of a particular course of action, sometimes within a
   probabilistic framework; and (c) can make recommenda-
   tions. Within the context of the Commission's objec-
   tives, effective policy research can isolate and define
   areas where significant data can be collected, analyzed,
   and used for planning and decision.

   We must be very clear, however, that this is
   developmental research, with all the pitfalls of sub-
   jectivity, unclear objectives, and unconscious or
   culturally biased analyses and interpretations. Such

research can point to and illuminate problems for which significant data either exists or can be easily collected. It can thereby reduce some of the areas of uncertainty in the planning process.

Within the context of the Commission Program there are several areas where policy research is needed. At this stage, such research would be concerned with surface analysis, defining the elements of the problems noted below.

(a) What is the infrastructure of information services presently operating in the United States?

(b) What present and potential technologies are necessary to support the dissemination of information in this country? And what are the economics of each technology?

(c) What are the similarities and differences of varying kinds of information audiences and information environments and what is their effect on system design if we assume the total information service envisaged in the NCLIS Program?

(d) What are the political and legal problems which constrain or enhance such a program?

(e) Is there sufficient data for the definition of a set of "information indicators?" How can these be used as a framework for policy?

2. Information Needs Research. Recognizing that such
    research on information needs can be endless, there,
    are nevertheless important areas which can provide
    immediate input in support of the Commission Program. (3)
    Most studies of this nature in the past have not been
    truly generalizable. Consequently we have a wealth
    of data, very little of which can be used outside
    specific situations studied. (3) We need analytic
    studies of the information needs of different kinds
    of audiences: for example, school systems (pupils,
    teachers, and administrators); decision makers in
    local and state governments; professionals such as
    doctors, engineers, nurses, lawyers, and social
    workers; the research communities in governmental,
    academic, and industrial establishments; higher
    education; library users.

3. Technological and Economic Research and Development
    This area has been and will be a major area of
    research and development. However, at present systems
    design rests almost exclusively on the packages enter-
    ing the system and the available technologies. This
    report urges ·that consideration now be given to the
    fact that people and their information needs, in
    whatever context, are as important to systems design
    as books and other information packages.

        With this caveat, the following are some of the
    immediate technological and economic concerns.

(a) cost-effectiveness studies of the range of
technologies in support of inter-library lend-
ing - including mail, messenger, facsimile,
computer networks, and telecommunication systems.

(b) technologies and attendant costs of serving
specialized audiences through library networks
and alternative networks.

(c) technologies and attendant costs of serving
specialized audiences, both sophisticated and
naive, within local systems, with special
attention paid to the urban disadvantaged,
Indians on reservations, and rural populations.
Such audiences may require less technology as
direct service than an increase in sensitive
personal and professional attention.

(d) the comparative economics of various computerized
bibliographic and other data bases for catalog
information, location data, bibliographic access
and retrieval, and for "housekeeping" activities
of network members.

(e) standardization and inter-network compatability.

(f) the role and function within information networks
of

    state library agencies
    large research libraries
    local library systems
    special libraries
    subject information centers

publishers
commercial information services
citizen information centers
museums
mass media
historical associations and archives

Determination of role and function of these various information agencies exists in a political and legal context, with all the ambiguities, compromises, and power plays inherent in such situations.

There are obviously dozens of other researchable and more specific technological problems. It is not, however, the intent of this paper to list all possible problems, but rather to delineate general categories of research.

State and multi-state agencies should obviously be concerned with the design, development, and evaluation of networks, including costs and economies of scale. State library agencies, especially in the context of federalism and revenue sharing, must begin to exercise leadership rather than authoritarian bureaucracy. This is obviously a delicate line, but there is a pressing need for an effective leadership and voice at the state level. It is critical that basic standard norms be agreed upon and that inter-network compatibility be established at the beginning as a necessary framework for planning. It is necessary to include school media centers in any overall plan,

for it is in such centers that young people develop
the patterns and habits which will allow them to
make effective use of information in the future.

D. Skills, Knowledges, and Attitudes Needed

In order to implement the Program envisaged by NCLIS, the
professional manpower required will need to have certain
competencies. The list that follows is not complete, but
is intended as a frame of reference when discussing
actual educational programs. (5) It is extremely doubtful
that all professional personnel will possess all the
competencies listed. It is important however that knowledg-
able awareness exist among information professionals so
that decision-making can be informed, justified, and
relevant to the broad objectives of the Commission Program.
These competencies will provide the professional with
the ability to analyze critically new developments which
may alter systems and their design. They are grouped and
discussed under five general headings: organization of
information; information needs and information use;
information technologies; research methods; and management.

1. Organization of information

The principal objective of these competencies is to
assure complete familiarity with both conventional

and (currently) unconventional systems for information organization.

- -knowledge of and skill in standard library descriptive cataloging, library classification systems, and library subject analysis

- -knowledge of and skill in indexing and abstracting

- -knowledge of and skill in analyzing information for computerized retrieval systems, including vocabulary control, intersystem vocabulary compatibility, and computer file organization

- -ability to transfer these knowledges and skills to information in any format and in any media

- -ability to utilize these knowledges and to improvise from them to design information systems to meet the information needs of a variety of publics, from the sophisticated to the naive

- -extensive familiarity with machine-readable bibliographic systems, e.g. MARC, etc.

- -knowledge of basic types of information resources and services and their usefulness to various publics

2. Information Needs and Information Use

- -knowledge about information-seeking and information-using behavior in all types of populations from the naive to the sophisticated.

- -knowledge of community organization and community information structures (community = city, neighborhood, school, company, government agency, university, etc.)

- -ability to analyze community information processes and to translate findings to improved information services.

- -knowledge of organization theory and the role of information in the organizational and decision-making processes.

- -participation in experiential learning situations to develop self-awareness in information/communication contexts.

      -ability to work with a variety of populations
in information situations and to understand
and serve their needs in a variety of media.

      -knowledge of the information transfer potential
of various media to different audiences, e.g.
television, books, newspapers, radio, etc.

      -knowledge of the roles of the growing information
industry in meeting information needs for varying
populations.

      -knowledge of interpersonal and non-verbal
communication.

3. Information Technologies

      -knowledge, both general and specific, of the
impact of computers, telecommunications, micro-
graphics, and reprography on the current operations
of information agencies such as libraries and net-
works.

      -skill in computer programming (note: this is not
necessarily intended to train programmers but
rather to train intelligent consumers of specialized
systems design).

      -knowledge of computer architecture, including
knowledge of the functions of storage devices,
central processing unit, input and output devices,
and computer communication systems.

      -knowledge of telecommunications technology and its
relationship to the transfer of bibliographic
information, media images, and systems informa-
tion.

      -knowledge of networking and support technologies,
including the ability to analyze information flow,
channel capacity, and comparative costs in systems
ranging from interlibrary lending to bibliographic
networks such as OCLC, from management information
systems to on-line conferencing.

      -knowledge of and skill in systems analysis of
libraries, information retrieval systems, and
information networks of all types.

-knowledge of cost-benefit analysis and ability
 to apply suitable criteria in judging relative
 merit of competing systems.

-knowledge of legal constraints resulting from
 technological application, including copyright,
 regulations of the FCC, and information for a
 fee services.

-knowledge of the technology and methods of "alter-
 native" information dissemination systems such
 as book and media publishing, television and
 radio, and newspapers.

-knowledge of and beginning skill in the production
 of messages in film, video, and other media.

It is obvious that high skill and deep knowledge
in all of these technologies is not possible. The
objective for the acquisition of these competencies
is to develop (a) an informed skepticism concerning
the application of various information technologies
and (b) an ability to make technological choices
based on rational criteria and extensive systems
knowledge. It is worth noting that the present library
grew out of two major technological revolutions of
mankind: the development of writing and the inven-
tion of printing. We are now faced with a third
revolution - which goes under the general rubric of
information technology. We must be able to marry
the humanistic base of the library with the techno-
logical restlessness and social impact of this informa-
tion revolution. Even within the temporally limited

context of the Commission's program, the necessity

for informed technological choice is critical,

because these decisions will establish patterns of

services for at least the next quarter century if not

longer.

4. Research Methods

> -beginning skills at least in the methods of exper-
> imental design and survey research.
>
> -skills in problem formulation, data collection,
> data analysis, and data interpretation.
>
> -ability to develop and apply suitable criteria
> for the evaluation, including cost-effectiveness,
> of comparable systems.
>
> -ability to develop and use mathematical models and/or
> simulation of library and information system networks.
>
> -understanding of the role and approach of policy
> research in planning and policy development.

The principal objectives of the development of these

competencies are (a) to educate critical consumers of

research results, especially in the social sciences and

applied technology; and (b) to develop the ability to

participate effectively in the design, analysis, and

interpretation of relevant experiments and research.

It is not the purpose here to turn out highly competent

and original researchers, though some professionals,

because of background and ability may become such

researchers.

5. <u>Management</u>

In reviewing potential competencies under the
rubric of management, it is necessary to realize that
not all people have the potential of being "good"
managers, though they may be able to make many other
professional contributions to the program of the
National Commission. This implies that potentially
"good" managers may enter the profession with inherent
qualities of leadership and an inchoate sensitivity to
the types of problems and problem solutions that are
part of the managerial process. The real question
then exists in identifying those persons who have
those attributes that make "good" managers. The
competencies below should be seen in this context.

-knowledge of the role and function of management
  in an organization, including the variety of
  managerial styles and their effectiveness.

-knowledge of the structure and function of units
  and departments in information agencies such as
  libraries.

-ability to envisage and implement alternative
  organizational structures for better utilization
  of personnel.

-knowledge of and skill in budgeting and cost-
  accounting.

-ability to develop and implement policy and to
  interpret policy both to parent organization and
  to staff.

-ability to isolate and to define problems and to
  develop the necessary criteria and action for
  their solution.

-ability to develop effective personnel policies,
including criteria for selection and evaluation.

-ability to work easily and effectively with
personnel at all organizational levels and to
develop management contexts in which the full
potential of staff can be tapped and utilized.

-knowledge of the varieties of organizational
structures and ways that they can be altered
to meet different kinds of problems and organ-
izational needs.

E. Manpower and Educational Needs

Within the context of the competencies discussed

above, there is a desperate and pressing need for persons

who can deal with the total information process. These

are persons for whom the process and movement of messages

are important, not the specific device (book, computer,

or video tape), nor the particular agency (library, computer

utility, or educational system). With very few exceptions

such persons are not being graduated from library schools.

The exceptions, one may suspect, are due more to individual

personality and ability than to the professional education

they receive. This has something to say about recruiting

for the profession and will be remarked on below.

The following summary of library manpower is derived

from the study in draft form of the Bureau of Labor

Statistics (6) and from North American Library Education

Directory and Statistics 1971-1973 (7).

1. The total employment in libraries is expected
to rise by about 60 percent between 1970 and 1985
(235,000 to 374,000). In the same period, of this
total the total librarian employment is predicted
to rise about 41 percent. This latter figure includes
graduates from both bachelor's and master's programs
and from both accredited and non-accredited programs.

2. In 1972-73, between 8,000 and 8,500 Masters
degrees were granted, about 80 percent of which
were from accredited Masters programs.

3. Th₂ main source of demand for librarians through
1985 will be replacement requirements. Replacement
of those who leave the labor force will greatly exceed
the numbers needed to fill newly added positions.

4. The demand will remain strong for library personnel
with certain types of specialized training, community out-
reach abilities; media training; and computer capabilities.

5. In 1973, there were about 59 programs for library
technical assistants, one-third of which were in
California. Data on these programs are difficult to
determine. Many have no full-time faculty and enrollment
is small. Most programs are at the developmental stage. (8)

The shrinkage in demand is already apparent to current

library school graduates, because of the limited vision of

the schools and the sense of being institution-bound by

their graduates. It appears that mobility, quality,

specialized competencies, and justified self-assurance

are necessary attributes in finding professional employment.

It also appears that many libraries are not yet prepared

to use effectively the better graduates from present

professional programs.

There are probably enough professionals presently in

the field, plus those who will be graduated from professional

library schools, to provide the necessary manpower for
the Commission's Program. However, only a minority are
sufficiently prepared, either by training or by temper-
ment, to provide the skills, knowledges, and leadership
potential necessary for the Program. In addition,
because of the failure of library education in the past
to prepare students for change, many professionals have
cultivated an antagonism to systems technology and develop-
ment, and, in many cases, to true public service. This
is a generalization and should obviously be treated as
such. This has forced the library profession to turn
to outside specialist advice with concomitant loss of
control over decisions that determine the shape and
role of professional work.

There are two possible approaches to manpower develop-
ment and professional education necessary to support the
Commission's Program. The first concentrates on short-
term efforts and limited goals, centered principally
around continuing professional education and upgrading
of selected working professionals. The second focuses
on long-term changes in professional education and
professional definition. Education must focus on the
training of both operational and research personnel
competent to design, manage, and evaluate information
systems and networks and who at the same time are sensitive

to human needs for information at all levels of society.

1. <u>Continuing</u> <u>Professional</u> <u>Education</u> is the one area of
   educational concern that, if properly planned and
   implemented, might have real and measurable impact
   during the 1970's on the profession and its ability
   to respond effectively to the needs of the NCLIS
   proposals. However, to assure a successful continuing
   professional education program, it will be necessary
   to convince not only the library professional
   community in the efficacy of the NCLIS program, but
   also a broad spectrum of other information interests
   including -

   the science and technology information community

   the growing information industry

   the publishing industry

   the "community of the information-poor"

   those areas of telecommunication and computer

      interests which touch the concerns of the

      NCLIS program

   legislators and executives on the state and

      national level

   The NCLIS-commissioned report on continuing education (9)
   issued in May 1974 developed an extensive long-range plan,
   which has been endorsed by representatives of relevant
   associations and agencies. Within the framework of this

larger plan a two-pronged program of continuing education should be encouraged. The first is a series of one to two week institutes designed around three competencies:

-experiential seminars to develop self-awareness, receptivity to change, managerial effectiveness, and ability to work with a variety of populations in information/communication contexts.

-network design, technology, and evaluation, including bibliographic and other data bases, centralized processing systems, and telecommunications.

-information needs and uses, including the study of the role of information in communities and organizations of all types and community analysis.

At present such institutes, when they exist, are offered as one-shot events by schools and private organizations. This paper urges that these three recommended institutes be designed in a continuous framework, say over the period of one year. It is further recommended that participants be required to complete all three in order to receive some formal certification upon completion. There should be careful selection of participants in order to assure a high probability of impact, a sort of leaven in the loaf. Over a three year period, i.e. three generations of participants, approximately 600 to 1,000 persons should be programmed in these institutes. Support for these institutes should come from the federal government with state, local, and private agencies underwriting some of the participant costs.

A second approach suggests programs toward the Certificate of Advanced Study (CAS) or whatever variant is appropriate to local situations. These would be programs of longer duration designed to develop as many of the competencies listed in Section C as possible for professionals (including non-library professionals in the information field) who would spend one full year in the program in seminars, courses, and internships. Such activity could range up to three years in duration in order to fit the working requirements of professionals and their working environments. For such a program, it might be possible to develop Continuing Education Units (CEU) which could be transferred from one institution to the "home" institution. Regional consortia of cooperating library, information, and communication schools should be encouraged to examine the potential of joint instructional efforts and the exchange of CEU's. Start-up costs should be underwitten by the federal government, together with continuing costs of partic-ipants' tuition and associated administrative costs .

A word of warning should be stated here. We do not, as educators, know enough about the market for continuing education. What will individual professionals pay for continuing education? What will institutions or agencies pay for staff members to participate? What are the rewards,

financial and in status, for the individual who goes through any of these suggested programs? The lack of hard data makes commitment to such programs difficult and high-risk. Indications from past experience show a high need for such programs before the fact, but actual participation is frequently disappointing, if not disastrous. What is needed now is the development of a professional "culture" in which continuing education is recognized as a way of life. One might add an important professional competency to those listed in Section D - that of being a continual, self-motivated, self-directed, life long learner.

2. Professional Education

In the light of the predictions discussed at the beginning of this section, there may well be an over-production of undertrained library professionals during the next decade unless major changes take place at the level of the first professional degree. In the context of the needs of the NCLIS Program, present M.S.L.S. (or equivalent) programs portray the following characteristics.

    a. The course of study is limited by the need for students to find jobs and courses are pitched only at the skill level, thus restricting vision and mobility in the larger information context.

b.   Within the academic setting, schools of
     library science are frequently marginal, with
     the smallest faculty and number of students.
     Consequently this results ina lack of political
     power within their parent institution.   In a
     way this reflects the low expectations of the
     profession as a whole.

c.   The majority of students who apply to and are
     accepted by library schools are self-selected
     to match an image of the library which should
     no longer be (but probably is) valid.   There is
     a need to recruit high quality students aggres-
     sively from a broad variety of backgrounds,
     especially those who may have some of the com-
     petencies discussed in Section D.

d.   Faculties are frequently poorly prepared to meet
     (a) the needs of a high technology information
     culture, and (b) the parallel need for pro-
     fessionals who are sensitive to individual in-
     formation needs and are able to negotiate
     substantively and empathetically with individ-
     uals in their own domains and contexts.

These are approximate generalizations.   There are
notable exceptions both on the individual and the program
level.   However, beginning professional training will
require some major changes in order to meet the needs of

the Commission's Program. Three aspects are in
particular need of change: curriculum, student
recruiting, and faculty competence. It may be that
the second and third are more important than curriculum
revision. As Jencks and Reisman point out in their
book The Academic Revolution:

> We have repeatedly argued (they write) that
> this sorting and certifying is considerably
> more important than what the schools actually
> try to teach. Just as it is easier to change
> the character of a college by changing the
> admission requirements than by changing
> curriculum, so too it is easier to change a
> profession by recruiting new sorts of ap-
> prentices than by changing the rules of
> apprenticeship. Professional schools have
> their students for only a few years and they
> can do only so much with whatever raw material
> they get. But to the extent that they are
> overapplied and can select their raw material
> according to some preconceived plan, they can
> influence the profession they serve decisively. (10)

How these changes can be accomplished is a more
difficult matter. Undoubtedly certain library and
information schools will take the initiative on their
own.

Under the circumstances, this author can only
recommend that the Commission put its moral weight
behind curricular experimentation and the recruiting
of students with particular attention paid to the
competencies listed and discussed in Section D.

Another approach might be taken in the establish-
ment of two-year programs for the professional degree,

somewhat along the lines suggested in the discussion of continuing education above. This would have several possible arguments for it.

a. It would allow more time to develop a true sense of professionalism, not possible in one-year programs.

b. It would provide time for offering the variety of knowledges, skills, and attitudes necessary for the Commission's objectives.

c. It would provide the opportunity to recruit and admit students into the profession who meet a different set of quality, educational, and behavioral standards.

It is probable that several schools will move to the two-year program during the 1970's. Three dangers exist however. Such programs may merely be extensions of the present professional library programs rather than attempts to meet the broader needs of the total information community. Secondly, such programs may isolate the present librarian who does not have the attitudes, skills, and knowledges necessary to play a significant role in a dynamic information culture. Third the development of these programs may cause a major split in the library profession. These factors must be recognized.

In this context it is necessary to strengthen the view of the field as a spectrum from services to system design to information science. A student, a professional, or a scientist should be able to see himself along this spectrum, with some understanding of the inter-connectedness of the variety of activities, problems, and educational programs. The dichotomies that are beginning to appear, e.g. between librarians and information scientists, must not be encouraged. The professional schools themselves must also realize that individually they cannot cover the entire spectrum. They must also begin to specialize, thereby concentrating more of their efforts on program quality and program depth.

3. Research

In line with the long-range needs for systems development, there is a need to support actively several centers of excellence. These would be schools where the interplay between professional education, policy research, and fundamental research can be stressed and encouraged. Of particular research concern are problems centered around the role of information in a complex information-rich society and the agencies, systems (both formal and informal), and dynamic processes that exist or can be encouraged in support of information transfer. Research on societal communication

must not only be encouraged, but its relationship to and impact on such services as libraries must be recognized, and translated into frameworks for effective action. There is an immediate need to isolate and define the areas of fundamental research so that, by 1980, a basic science of information with all its ramifications will be recognized as a legitimate field of endeavor.

Support for this should take the form of basic program development grants, based on the level of program planning and faculty qualifications. Tuition and scholarship assistance should be made available to a highly selected number of doctoral students who have the potential for providing a future core for ongoing policy and fundamental research. The necessary interface between practitioner and researcher can be encouraged only when the two have a context within which communication can take place.

F. Summary

This report makes the following major points

-Libraries are part of a larger information infra-
structure. We cannot understand, let alone make

decisions about, professional education in an informa-

tion culture unless we have a better understanding

of the linkages among the agencies, industries, formal

and informal networks, and technologies that feed and

support the information transfer process.

-There are three major areas of research and develop-

ment necessary to support the long-range growth of

the Commission's proposals.

    a. policy research to provide an assessment
       of the range of options within the overall
       objectives.

    b. generalizable research on the information
       needs of different types of audiences and
       information environments, including better
       definition of information in all its modes
       and formats.

    c. technological and economic research and
       development of comparable system costs,
       information product development, cost-
       effectiveness of varying delivery systems
       for differing audiences.

-There is a fundamental need to re-adjust the vision

of the profession - to view a different set of

problems - because the decisions made now will deter-

mine the form and shape of information systems in this

country for at least the next quarter of a century.

-Based on the objectives of the National Commission proposal, professionals will need to have competencies in five major areas: organization of information, information needs and information use, information technologies, research methods, and management.

-Continuation of present professional education patterns will tend toward an overproduction of undertrained library professionals unless major changes take place in student recruitment, faculty competence, and curricula.

-To meet short-term needs, two approaches are suggested in continuing education. First a series of one to two week institutes in three parts should be supported over a period of three years: experiential seminars for change agents; information networks and technology; information use and community analysis. Second, the development of future-oriented programs (Certificate of Advanced Studies, etc.) should be encouraged.

-Efforts to meet the short-term needs of manpower through continuing education are inhibited at present because there is no pattern of rewards, financial or status, for individuals who participate in such programs. A professional "culture" must be encouraged that recognizes and rewards professional growth.

-Long-term manpower needs will require major changes
in professional education. There appears to be a
growing need for persons in libraries with less
library training, and concomitantly a growing need
for professionals who can deal with the total informa-
tion process, who are not institution-bound. This
will tend to isolate some librarians who do not have
the attitudes, skills, and knowledges necessary to
play a significant role in an information culture.

-There is an immediate need to isolate and define
areas of fundamental research so that, by 1980,
a basic science of information will be recognized
as a legitimate field of endeavor.

References

(1) National Commission on Libraries and Information Science, _A National Program for Library and Information Services,_ NCLIS Working Document, Washington, D.C. May 22, 1974.

(2) J.S. Coleman, _Policy Research in the Social Sciences,_ General Learning Corp., 1972,3.

(3) See for example the excellent summary in S.G. Fabisoff, and D.P. Ely, _Information and Information Needs,_ Syracuse University, Center for the Study of Information and Education, 1974, (mimeograph)

(4) As an example of a generalizable analysis see B. Dervin, _The Information Needs of Urban Residents: A Conceptual Context,_ Baltimore, Md., Baltimore Regional Planning Council, 1973.

(5) The listing of these competencies has been aided by C.W. Stone, _Needs for Improvement of Professional Education in Library and Information Science,_ Syracuse University, Center for the Study of Information and Education, 1974. (mimeograph)

(6) Bureau of Labor Statistics, _Library Manpower - A Study of Requirements and Supply,_ Washington, January 1974. (Preliminary Draft)

(7) D.K. Weintraub, and S.R. Reed, editors, _North American Library Education, Directory and Statistics_ 1971-1973. Bloomington, Indiana, Indiana University Graduate Library School, 1974.

(8) Ibid, 23-27.

(9) E. W. Stone, R.J. Patrick, and B. Conroy, _The Continuing Library and Information Science Education Project,_ Final report to the National Commission on Libraries and Information Science.

(10) C. Jencks and D. Riesman, _The Academic Revolution,_ New York, Doubleday, 1968, 254.