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ABSTRACT
              A rationale is presented with examples of an approach
for professionals in the health sciences to becoming more
self-directed in the ways in which they continue their education
throughout their career. The five objectives of the discussion are:
(1) to understand the functioning of the mentor role as it is used to
guide self-directed education of health professionals; (2) to better
understand a variety of effective strategies by which professionals
in the health sciences can alternate between action problems and
knowledge resources; (3) to recognize the way in which self-directed
education fits into the broader context of continuing professional
education; (4) to recognize that self-directedness in learning is a
continuum which can be used by professionals to discover ways in
which learning effectiveness can be improved; and (5) to appreciate
the ways in which the proposed approach to life-long self-directed
education can be used. The discussion is divided into four
sections--continuing professional education, model of mentor role,
the self-directed learner in action, and guidelines for facilitation
of self-directed education. References are provided. (KM)

LIFE LONG SELF DIRECTED EDUCATION

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LIFE LONG SELF DIRECTED EDUCATION (KNOX)

LIFE LONG SELF DIRECTED EDUCATION

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PART ONE: CONTINUING PROFESSIONAL EDUCATION

Professionals in the health sciences such as medicine, nursing,
dentistry, public health, medical social work, pharmacy, and clinical
psychology, apply their competence (knowledge and skill) to help people
maintain and reestablish health. Practitioners in other helping pro-
fessions such as teaching, ministry, and law, also apply their competence
to deal with other complex problems. Because the requirements of com-
petence, the nature of the problems, and the interface between them are
constantly changing, and at an accelerating rate, continuing education
is an essential ingredient of both preparatory professional education
and the maintenance of professional competence (Vollmer and Mills, 1966,
p. 16; Houle, 1969, p. 562; Schein, 1972, p. 8; Miller, 1967, p. 123).

Relations Between Education and Practice

Most professional problems are problems of the application
of knowledge and skills to decisions and actions for which the professionals
are personally accountable. This is a major reason why continuing pro-
fessional education is largely self-directed (Houle, 1969, p. 568; Miller,
1967, p. 125).,

*The purpose of continuing education for health professionals is
the improvement of patient care and health maintenance, and the enrichment
of health careers* (Dryer, 1962). The focus should be on the patient as
a problem of treatment and as an exercise in learning (Osler, 1906,
p. 111). The basic criterion for the evaluation of the relevance and

effectiveness of continuing education for health professionals is the

improvement of patient care (Miller, 1967, p. 123). However, professional

competence has several dimensions—scientific and technological, and also

personal and societal. Continuing education to maintain competence takes
professional's
time, which is the / most precious resource, and it also takes many

other kinds of resources. A limitation of self-education
can easily
is that it/be short-sighted. This situation presents a challenge to

those who would develop programs of continuing professional education.
program development,
Some factors facilitate/ others are barriers. Some resources are local,

others are not available locally. The challenge is to strengthen the

facilitating factors and weaken the barriers, and to make resources over

large areas both known and used.

The *facilitators* of continuing education are associated with

the personal characteristics of the individual professional, his pro-

fession, and the societal setting in which he functions. The facilitators

associated with *personal characteristics* include:

1. the high level of communication ability of professionals com-

   pared with most other adults,

2. the extent to which the professional has developed a question-

   ing and problem solving orientation,

3. the recognition that people forget much that is not used or

   reviewed, and

4. the extent to which the professional has learned how to effec-

   tively learn from unfamiliar material and from mistakes.

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The facilitators associated with the characteristics of the *profession* include:

1. the centrality of life long learning in the definition of a profession,

2. the changes in the roles of many health professionals,

3. the shifting scientific base with increased emphasis on the social and behavioral sciences and a greater focus or aspects of biological and physical sciences that are pertinent to clinical practice, and

4. the conviction that the elapsed time should be shortened between the completion of secondary school and entry full time into professional practice.

The facilitators associated with the characteristics of the *societal* setting include:

1. the rapid increase in pertinent knowledge which produces obsolescence,

2. the continuing developments in technology related to the health professions,

3. the major changes in a competitive pharmaceutical industry which makes it important for the professional to place a premium on impartial information,

4. the extension of collaborative regional arrangements for health manpower, and

5. the stronger public image of continuing education which results from the expanding number of programs.

The *barriers* to continuing education are associated with the personal characteristics of the individual professional, his profession,

and previous programs of continuing education. The barriers associated
with *personal* characteristics include:

1. the image from preparatory education that education is passive
   reception of information from experts,

2. the difficulty that the professional encounters when he tries
   to break habit patterns and a life style that have excluded
   continuing education, and

3. the tendency to utilize continuing education methods that are
   convenient when more effective methods require more effort.

The barriers associated with the characteristics of the *profession*
include:

1. the frequent insulation of the practitioner from feedback and
   norms that peers can provide,

2. the heavy demands by patients for service, which is most severe
   in areas with critical health personnel shortages,

3. the inadequate basis for selecting from an overwhelming flood
   of professional literature, which often results in apathy, and

4. the lack of penalty for unused knowledge.

The barriers associated with previous *continuing education* programs
include:

1. the heavy reliance on sponsors such as universities, associations,
   and the pharmaceutical industry, and the underutilization of
   community hospitals and other settings that are closest to
   clinical practice,

2. the image of continuing education as formal programs that are
   overwhelmingly specialized, concerned with unusual developments,

organized within subject matter fields, and unresponsive to the

ways in which adults learn most effectively, and

3. the lack of convincing evaluation findings regarding a major

impact of continuing education participation on professional

practice and patient care.

Regional Health Manpower

An approach to continuing education that relies heavily on the

individual to guide his own learning activities.is vulnerable to near-

sightedness. The individual professional is less likely to become

familiar with new knowledge and practices than is a university or an

association or a hospital. A practitioner can become so beleaguered by

the torrent of professional problems which assail him that he loses the

broad perspective and the reflective attitude.

One of·the major functions of many of the regional efforts to

develop health manpower is to facilitate the efforts of health profes-

sionals to continue their education. A basic form of facilitation is to

assist the professional to become aware of and to use the resources for

continuing education that are available in the region. In some regions,

this includes the development of a telephone-based consultant service.

What better basis for a partnership,/when the professional wants what the

regional arrangement wants to provide?

Most professionals have a sense of the geographic region in

which they function professionally and socially. The size of the area

partly reflects population density. In the Rockies, the region for a

practitioner can be the area of a state or more. In New York City, it

can be a section of the city. The size of a professional's region also

reflects his own cosmopolitan or local orientation. Some professionals,

due to their renown or preferred life style, give service and receive

resources on a national or international scale. Other professionals,

whether in the Rockies or on the East Side of Manhattan, give and receive

within a very local setting. One purpose of most regional health manpower

efforts is to enrich the range of resources to which the practitioner has access.

Practitioners tend to be aware of and to use resources related

to continuing education more from habit and familiarity than from deliberate

choice to meet a specific need. Many of the current efforts to develop

regional health manpower have given some attention to inventorying resources

related to the region, to helping practitioners to become more familiar

with the resources, and to encouraging program development that draws upon

the most appropriate resources through arrangements such as co-sponsorship.

The resources related to continuing professional education in a region,

include not only the institutions, associations, and libraries in the

region, but also many of the national resources that can be utilized in

the region if practitioners know about them and about how to obtain them.

Some national resources are in the form of publications, library

holdings, consultation, statistical data, grant support, and opportunities

for unique clinical experience that are provided by agencies of the federal

government. Many are part of the Department of Health, Education, and

Welfare. Examples of federal agencies related to the health sciences in-

clude Public Health Service, National Institute of Health, National Library

of Medicine, and the Veterans Administration Hospitals. One function of

the Regional Medical Program is to make the resources for continuing

education that are available from these agencies more accessible to local
practitioners (Dimond, 1968, p. 617-619).

Other national resources are not part of the federal government,
but they serve supplementary as well as complementary functions. Examples
include the national societies and associations of health professionals,
the national voluntary health agencies, the large and nationally known
private philanthropic foundations, and the entire range of publications and
journals with a national distribution. These national resources provide
sponsorship of continuing education programs, support research, provide
information about new developments, support pioneering projects related
to continuing education of health professionals (Szczypkowski, 1971), and
engage in accreditation procedures.

The regional resources vary somewhat among regions. Examples
of regional resources include the state and local professional associations,
the state health department, the local foundations, the voluntary agencies,
the universities (especially those that include colleges related to health
professions), and both the university-related teaching hospitals and the
community hospitals. These regional resources provide sponsorship of
continuing education programs, support of projects, research related to
medical and health education, consultation, and information about oppor-
tunities for continuing education.

The individual professional may interact with national and
regional resources in various ways. The evident way is the provision of
books, journals, workshops, and courses that the practitioner can use
to continue his education. The less evident ways are also important for
the professional who is highly self directed in continuing his education.
Continuing education programs that are designed to encourage and reward a

high degree of self directedness by participants increase the likelihood that professionals will develop habits and skills of self directed education which they will use outside of formal programs. Many formal programs have little transfer to less formal settings and may even promote the idea that continuing education requires formal settings and experts. Another form of interaction relates to the ability of the professional to utilize resources to continue his education. Some continuing professional education programs help participants to become effective users of library resources, statistical data, computer print outs, home-study materials, and consultants. Professionals who are able to use these learning resources are more likely to continue their education in a self directed way. There is a tendency for university sponsors of continuing education to emphasize experts, organized knowledge, new developments, and "what ought to be." There is a tendency for professional association sponsors of continuing education to emphasize the societal context in which the professional works, practical problems, and "what is." The self directed learner needs to be able to move back and forth between these two domains; to alternate between the action problems that confront him and the knowledge resources that can help with solutions. All sponsors of continuing education can develop programs that help professionals to better link knowledge and action.

The persons whose job it is to help develop health manpower in a region have an important role to perform related to life long self directed education. That role is related both to the sponsors of formal programs of continuing professional education and to the individual professionals who continue their education in a self directed way. In working with both individuals and sponsors, the role is as a "linkage agent" between learning resources and practitioners engaged in learning. This

linkage role is typically performed by staff members with the regional

medical program, university faculty members and administrators engaged in

continuing education within the various health professions, staff members

of state health departments, and staff members and officers of the various
health related professional associations. The term "linkage agent" refers
to the similar role performed by these persons with diverse position titles.
The success of these "linkage agents" depends in part on the conceptual
model they have of life long self

directed education. Their conceptual model provides a basis for appraising

the extent to which continuing education activities are self directed and

have an impact on professional practice. As they work with sponsors,

"linkage agents" can use this model to suggest ways in which continuing

professional education programs can do more to help the participants to

develop a repertoire of effective strategies for alternating between action

problems and knowledge resources. As "linkage agents" work with individual

professionals, they can strive to accomplish three objectives. One is to

use precept and example to help professionals develop a more complete

understanding of the importance and methods of life long self directed

education. A second is to encourage and assist professionals to become

more self directed in their continuing education. A third is to develop

procedures and aids that will increase the accessibility of learning

resources for professionals who want to assume the primary responsibility

for continuing their education.

Approach to Continuing Education

This chapter presents a general approach which emphasizes life

long self directed education. The approach places the main responsibility

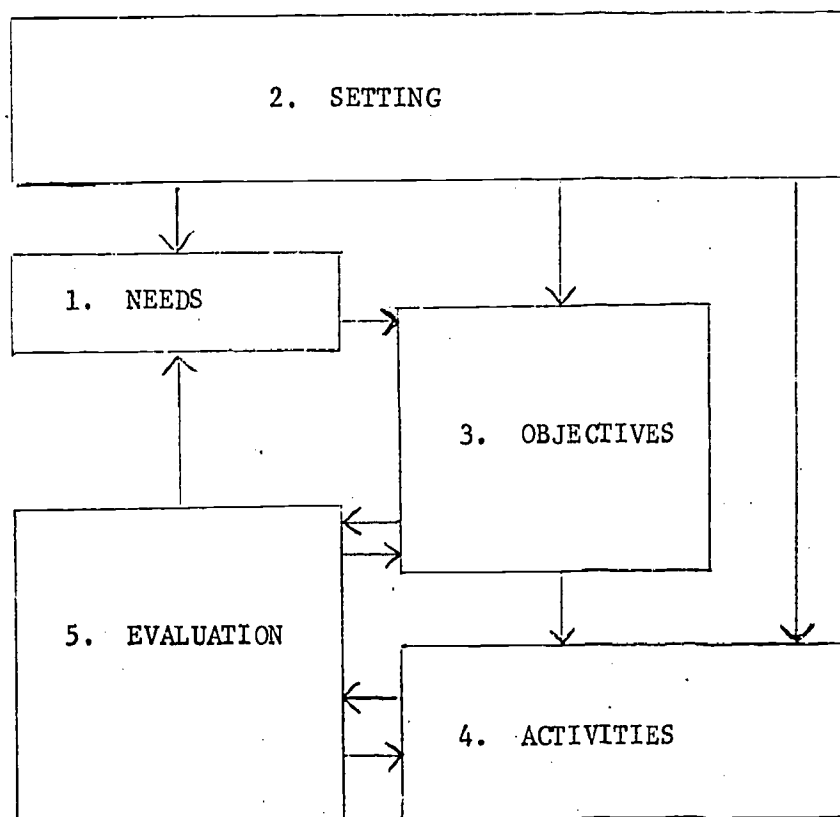for continuing education on the individual professional. It recognizes

that professionals vary greatly in self-directedness and the amount of assistance they need. The approach is ¹   ∩⁻ '¹e following three assumptions.

1. The effective self direcᵗᵉᵘ   r performs for himself most of the mentor roles that are performed by an effective teacher of adults.

2. The basic, and generally underemphasized, process that under-girds successful self directed education is the use of a repertoire of effective strategies for alternating between action problems and knowledge resources.

3. Self directed education will typically persist throughout a professional's career because the evident benefits in the form of improved professional performance are sufficient to sustain interest and to guide selection of subsequent professional development.

The proposed approach to self directed continuing professional education consists of the following five interrelated *components* which are presented schematically in Figure One.

1. Identify the major gaps between actual and criterion performance (NEEDS).

2. Become aware of the setting as it relates to continuing education, including the criterion of patient care, and facilitators and barriers to continuing education (SETTING).

3. Select those educational objectives 'hat have high priority regarding both desirability and feasibility (OBJECTIVES).

4. Select and organize learning activities that will produce and sustain more effective professional performance (ACTIVITIES).

5. Evaluate the extent to which the components of the continuing professional education activity meet the expectations of the people associated with it (EVALUATION).

Figure One

SCHEMATIC REPRESENTATION OF
COMPONENTS OF MENTOR ROLE


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┌─────────────────────────────────────────────────────┐
│                    2.  SETTING                        │
└─────────────────────────────────────────────────────┘

┌──────────────────┐        ┌──────────────────────┐
│   1.  NEEDS       │        │                      │
│                   │        │   3.  OBJECTIVES      │
└──────────────────┘        │                      │
                            └──────────────────────┘
┌──────────────────┐        ┌──────────────────────┐
│                   │        │                      │
│  5.  EVALUATION   │        │   4.  ACTIVITIES     │
│                   │        │                      │
└──────────────────┘        └──────────────────────┘
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The self directed approach to continuing education of health
professionals has three additional potential benefits. One is the basis
that it provides for planning regional development of health manpower in
a way that encourages the contribution of all sponsors and resources.
The second is the contrib·   ʰat it makes to persons who endeavor to
facilitate the efforts o   . professionals to continually increase
their competence and improve patient care and health maintenance. The
third is the basis that it provides for the articulation between various
disciplines and between preparatory and continuing professional education.

Articulation Between Preparatory and Continuing Education

Most writers on continuing professional education affirm the
importance of a self directed orientation (Houle, 1967, 1969, 1970; Miller,
1962, 1967). Some of them, along with a few of the writers on preparatory
professional education, stress the importance of continuity between
preparatory education and continuing education in this regard. The typical
point that is made regarding continuity is the influence of the preparatory
education experience in medical school or nursing school or dental school
on the outlook that the professional has towards continuing education.
Less often mentioned is the renewing influence that an effective continuing
education effort of a professional school can have on the preparatory
education program.

During the past decade or so, many professional schools have
modified their preparatory education curriculum and instructional methods
in ways that have increased the likelihood that graduates continue their
education (Schein, 1972). In some instances, these modifications were
deliberately made so that a basic objective of preparatory education would

be the development of a questioning approach that would encourage and
facilitate life long learning. More often, the modifications were made
for other reasons, but the benefits for continuing education were a
valuable by-product. Preparatory professional education that encourages
students to engage in life long self directed education tends to have
the following c   :

1. in general, the existence of more curricular flexibility than
   is typically the case, which enables students to combine inter-
   disciplinary blends of knowledge and skill and to pursue innova-
   tive career paths (Schein, 1972, p. 60-65),

2. sufficient in-depth preparation in the major supporting disci-
   plines to understand the structure of knowledge in those disci-
   plines as a foundation for further study and subsequent selection
   of knowledge to solve professional problems,

3. clinical study that entails the selection of pertinent knowledge
   from several disciplines and the organization of that knowledge
   in relation to professional problem solving,

4. clinical study that occurs earlier in the professional school
   curriculum (Schein, 1972, p. 117, 118),

5. curricular integration of the social and behavioral sciences with
   the physical and biological sciences for some units (Schein,
   1972, p. 149),

6. preparation by faculty members of learning modules which students
   can study quite independently (Schein, 1972, p. 149), and,

7. administrative arrangements that encourage student self diagnosis,
   curricular flexibility, and program evaluation (Schein, 1972,
   p. 149).

When a student graduates from professional school, he confronts several crucial years of early practice (Schein, 1972, p. 54; Osler, 1906, p. 351). During this transition period, the new professional typically learns most of the practical tasks that fill his professional day, and he develops much of his self concept as a professional. In most instances, preparatory education just starts the process of becoming a professional. During the first few years of actual practice, the professional is very susceptible to influence as he responds to the demands and constraints related to his profession. Most professionals receive little help with this transition (Schein, 1972, p. 54). The transition would be facilitated for many graduates if there were greater variety in the early career paths for each profession. For example, a health professional might have the choice of solo practice, group practice, employment by a hospital, employment by a neighborhood health center, or work with a government agency. The extent of flexibility and variety that does exist for new professionals is influenced by professional schools, licensing regulations, professional associations, employers, and hospitals. Although some continuing education has been focused on this transition period, much more is needed.

Effective programs of *continuing education* can have a beneficial and renewing *influence on preparatory education* in the following four ways.

1. If practicing professionals insist on a multi-disciplinary problem solving approach to continuing education, then the resulting methods and materials can be readily adapted for use with preparatory education students.

2. If practicing professionals work with resource persons in continuing education programs and emphasize learning methods

in which the main responsibility is assumed by the learner and
the main criterion is professional performance, then the resource
persons are more likely to use these methods as they teach pre-
paratory education students.

3. If professionals with their detailed concerns about prevailing
    practice are encouraged to develop strategies to relate these
    concerns to new developments and excellent practice such as
    might be advocated by universities and major hospital centers,
    then the resulting strategies can be adapted for use in pre-
    paratory education programs.

4. If some continuing education programs are available to deal
    with important topics that are not central to preparatory educa-
    tion or that are best learned after the individual enters the
    profession, then some of the currently heavy time and effort
    demands on preparatory education can be reduced (Schein, 1972,
    p. 126).

Purpose of Chapter

The general purpose of this chapter is to present a rationale with
examples for an approach for professionals in the health sciences to become
more self directed in the ways in which they continue their education through-
out their career. More specifically, the chapter is designed to enable
the reader to achieve the following five objectives.

1. *To understand the functioning of the five components of the
    mentor role as they are used to guide self directed education
    of health professionals.* The five components are: a) the
    identification of gaps between actual and desirable behavior,

b) an awareness of the influences of the setting on continuing

education, c) the use of priorities to select the continuing

education objectives, d) the selection and organization of learn-

ing activities to increase competence and encourage its utili-

zation, and e) the evaluation process of making judgements,

based on evidence, regarding the effectiveness of the edu.

activity in ways that facilitate the use of conclusions to

improve the educative activity.

2. *To better understand a variety of effective strategies by which*

professionals in the health sciences can alternate between

action problems and knowledge resources. Professionals are

appropriately action oriented. In the health sciences their

central concern is an improvement of health maintenance and

patient care. Within each region there are many resources

available to assist health professionals to increase their

competence. The proposed approach is designed to assist profes-

sionals to diagnose their educational needs and the available

resources to meet those needs so that they can continually in-

crease their competence and improve their professional perform-

ance throughout their career.

3. *To recognize the way in which self directed education fits into*

the broader context of continuing professional education. There

is widespread agreement on the demands for professionals to

continually increase their competence and on the range of oppor-

tunities to do so. There is also widespread dismay about the lack

of participation in continuing education. Half of all profes-

sionals fail to do so in the course of a year (Johnstone, 1965,

p. 76). Explanations for lack of participation include the

beliefs that too many professionals care too little about life long learning, and that too many continuing education programs are too little related to professional practice. Clearly there are many facilitators and barriers to participation in contining education. A major challenge in the use of the proposed self directed approach to life long learning is to utilize the alternation between knowledge and action to assist the facilitators and to minimize the barriers that influence continuing professional education generally.

4. *To recognize that self-directedness in learning is a continuum, which can be used by professionals to discover ways in which learning effectiveness can be improved.* The focus of the proposed approach is on a high degree of individual responsibility for decisions regarding educative activity. The approach can be used by all professionals to help them (a) to reflect on the extent to which they are self directed learners and (b) to identify points at which they want to become more self directed.

5. *To appreciate the several ways in which the proposed approach to life long self directed education can be used.* The main applications of the proposed approach include: a) to describe procedures by which the health professional can continue to increase his competence, b) to indicate ways in which leaders of health teams can assist other team members to continue their education, c) to specify useful tasks for "linkage agents" engaged in the development of health manpower in a region, d) to provide a rationale that can facilitate the efforts of health professionals to make the transition from one specialization in their

field to another, and e) to suggest implications for ways in
which preparatory education programs in the health sciences better
prepare professionals for life long self directed education.

The *focus* of this chapter is on professionals in the *health sciences*.
There are many similarities in effective continuing education for the
dentist, nurse, physician, and medical social worker because of their
similar preparation and participation as members of health teams. In
this chapter, the term "professional" is used to refer to all types of
professionals in the health sciences, when statements about continuing
education are applicable to all health fields. There are, however, some
unique characteristics of each type of health professional that influence
their continuing education. Reference is made to specific types of health
professionals at points at which their roles differ regarding continuing
education.

Part *two* of this chapter presents an *approach* to the mentor role
by which the individual can guide his own professional development. This
approach describes the basic dynamics of the self directed learner in
action. Part *three* contains examples of *activities* related to the proposed
approach, which have occurred in the health professions. The examples are
provided to facilitate adaptation and application of the proposed approach
to specific situations. Part *four* provides guidelines for "linkage agents"
engaged in the development of health manpower in a region, by which they
can *assist professionals* to continue their education in more self directed
ways.

PART TWO: MODEL OF MENTOR ROLE

The process of effectively planning and guiding continuing

education is basically the same whether the learner is somebody else or

oneself. The basic similarities are described in the subsequent

sections on the components of the mentor role. The fundamental decisions

and procedures for each of the components occur, at least implicitly,

in both self education and education of others. In both instances, the

mentor takes learner needs and situational influences into account in

the selection of educational objectives; in both instances, he organizes

learning activities; and in both instances, he makes judgements about

the effectiveness of continuing education efforts. There are, of course,

some differences. The successful self directed learner is able to

recognize and influence the facilitators and barriers that affect his

learning. Those who are unsuccessful typically fail to do so, become

discouraged, and give up. Those with much experience in the mentor

role for others, learn to recognize learning problems, diagnose them

and then provide or seek assistance. The model of the mentor role

that undergirds this chapter applies to self directed education and

to facilitation of the learning of others.

A professional who effectively plans and guides a major learning
episode for himself or another person typically attends to five interrelated
components of the mentor role. The mentor role is comparable to the teach-
ing part of the teaching-learning transaction. However, in self directed
education, the overwhelming emphasis is on the learning part of the trans-
action. The five components deal with needs, setting, objectives, activi-
ties, and evaluation. The components are interrelated, and because their
interrelationships must be considered, the planning or improvement of
continuing education can begin with any component and proceed to relation-
ships with each of the other components until all have been taken into
account. The components are not presented as a series of five steps. Even
though there is a great range of individual differences in the extent
to which practitioners systematically increase their competence and guide
the professional development of themselves and others, the facilitation of
learning is an important dimension in the role of many professionals in
the health sciences. A major challenge to preparatory professional
education is to increase the proportion of graduates who are self directed
in their continuing professional education. One valuable result will be
to increase the proportion of practitioners who are *role innovators*, and
who explore new ways in which the health professions can be of service
to society (Schein, 1972, p. 51). The proposed approach to the mentor
role provides a rationale to facilitate efforts of the professional to
alternate between action problems and knowledge resources (Houle, 1969,
p. 562). The remainder of this part provides an overview of the five

components of the mentor role. The part concludes with a list of

activities in which a professional and another person can engage to help

the professional to continue his education in a self directed way.

Need Appraisal

A practicing professional is unlikely to change much unless a

gap is identified between his or her actual present behavior and a changed

behavior that is deemed more desirable. The term "behavior" refers to

knowledge, skill, attitude, and also the combination of all three in the

form of performance. In the description of actual practice, unless records

of observations and decisions are made and reviewed, many practitioners

will be unable to accurately describe their practice (Osler, 1906, p. 431;

Patient Care, May 15, 1971, p. 11). One way to define more desirable

behavior is by reference to criterion performance based on attainable

standards of excellence that reflect the performance of the most able

professionals in the field. In the formulation of standards of excellence

for health professionals, reference should be made to the impact of their

performance on health maintenance and patient care. Professional practice

provides the context and reference points for the need appraisal process.

The gaps that are identified can be thought of as needs, weaknesses, or

deficiencies. They can also focus on content, performance, goals, process,

or opportunities. There are usually too many gaps for a professional to attend

to at once, so some method for selection must be used, such as to focus on

the major areas of practice (Brown and Uhl, 1970, p. 1664). The identifi-

cation of some major gaps serves two purposes. One purpose is to provide

the basis for the selection of educational objectives and learning activities.

The second purpose is to assure that the person who would change has moved from apathy or slight awareness regarding the gap to interest and commitment to narrowing the gap by a change in his behavior. The habits and defense mechanisms of most professionals, along with the restraint from their autonomy and authority, are sufficiently strong so that some unsettling event, such as a difference of opinion with peers or the review of the results of need appraisal inventory, is required to "unfreeze" the individual and to stimulate sufficient motivation to engage in systematic educative activity to bring about the change (Cooper, 1970, p. 19; Friedson, 1970; Lewin, 1953). The individual professional must usually participate in the need appraisal process by which the major gaps are identified, if he is to be moved to do much to close the gaps. Personal self analysis is especially important because the selection of the most urgent needs is the most important way in which the professional can set his educational priorities. Other people can assist with the process, however. One way is by providing a rationale for the need appraisal process including specification of the types of information to be collected and analyzed. Examples of such types of information include evidence of patient care based on audits of patient charts and surveys of patient perceptions, evidence of aspirations and critical incidents related to professional practice, and the categories of diseases that are emphasized by the health agencies. A second way is to provide convenient procedures for the professional to identify the major gaps for himself. A third way is to work with the most able professionals in the field, a sort of college of peers, to prepare attainable standards of excellence to use as criterion performance that the professional can

compare with his actual present performance in order to identify the major

gaps. The need appraisal process provides a method for linking continuing

professional education with professional practice, and also identifying

educational needs of professionals that transcend problems of practice

and that explore opportunities for care　しい　chment.

Awareness oʌ setting

Both professional performance and educative activity occur within

a societal and professional context that influences the performance of the

individual practitioner. One component of the mentor role is becoming

aware of the major influences in the professional setting and harnessing

some of them so as to increase the likelihood of professional development.

There are three types of contextual influences on continuing professional

education. One type of influence is the set of criteria against which the

effectiveness of continuing education is judged. For continuing education

for health professionals, the main criteria are improved patient care,

increased health maintenance, and enriched health careers (Osler, 1906,

p. 331; Dryer, 1962). Another type of contextual influence is the set of

positive influences and resources that facilitate participation in con-

tinuing education. Examples of such facilitators include the high value that

the health professions place on life long learning; the encouragement and

help that is available from program sponsors such as universities, associa-

tions, and community hospitals; the educational materials that are avail-
        hospital quality assurance programs; requirements for relicensure;
able to the self directed learner;/and the growing public concern about

quality control in the health care field. A third type of contextual

influence is the set of negative influences that serve as barriers to

continuing education participation. Examples of such barriers include widespread professional insulation from normative standards, insistent demands for patient care, an overwhelming torrent of new information and developments, and the higher costs of many of the methods of continuing education that have a greater impact on patient care.

Setting Objectives

The health professional typically confronts far more gaps to be narrowed by continuing education than he can attend to. *Priorities must be set*, if only by default. Some practitioners deal with this choice situation by ignoring all gaps or by participating in the continuing education programs that make the earliest or the strongest appeal, up to the point at which further time for continuing education cannot be justified. A component of the mentor role of the self directed learner is the selection of objectives upon which to focus his continuing education activities. The selection process includes a review of the sources of objectives and a listing of the major objectives that might be attended to. The main source of educational objectives is an analysis of professional practice (Miller, 1967, p. 126; Brown and Uhl, 1970, p. 1667). Other sources include opinions of practitioners, analyses of issues that impinge on the professional field, and recommendations of experts in disciplines related to the professional field. The process by which objectives are selected also includes the selection of the high priority objectives by use of two criteria, desirability and feasibility (Tyler, 1950, p. 22-28). The desirability criterion reflects both the size of the gap and the extent of the problem that is created if the gap is not

narrowed (Williamson, 1968). The feasibility criteria reflects the extent
to which the professional could actually do something that would substantially
narrow the gap, even with assistance. The self directed learner must
assume the primary responsibility for deciding on educational objectives.
There is perhaps no other component of the mentor role where his active
participation is more important. However, other persons can make secondary
contributions. Examples include helping the practitioner to reflect on
the relation between alternative objectives and his career aspirations, or
indicating the amounts and types of efforts that others have had to make
to achieve an objective that is being considered. With the combined contri-
bution by himself and others to the objective setting process, the pro-
fessional should be better able to select objectives for his self directed
education that can restructure concepts that are directly applicable to
professional practice (Osler, 1906, p. 112), but that avoid overspecializa-
tion and dehumanization (Osler, 1906, p. 212-213).

Learning Activities

The most evident component of the mentor role deals with the
learning activities themselves. Learning occurs mainly as a result of
an interaction of individuals with new information or experiences. This
interaction typically takes the form of activities such as reading,
listening, writing, discussing, and viewing. These activities have been
developed singly and in combination in dozens and dozens of learning
methods, most of which are available for use in self directed education.
This component of the mentor role consists of the selection and organiza-
tion of learning activities to achieve the educational objectives and to

fit the learning style of the individual learner. It is assumed that the mentor role components on needs, setting, and objectives have been attended to and that decisions have been made regarding priority needs, facilitators, barriers, incentives, and relevant objectives.

The range of potential learning activities from which the self directed learner can select includes some th t are formal and pre-planned such as a televised course, an auto-instructional learning module, and a weekend workshop; some that are informal and organized by the learner such as reading, travel, and informal discussion with peers; and some in which the learner guides the activity with the assistance of others who set up the arrangements such as a consultation service, a preceptorship, and a communication network. All components of the mentor role can be highly educative for the self directed learner who uses the decisions, problems, and activities that each entails as opportunities to learn more about himself and about the topics that are studied. For example, in the need appraisal process, the identification of a gap between actual and criterion performance can yield valuable insights even though no effort is made to narrow the gap. These insights can be similar to the shift from apathy through awareness and interest to commitment in the process of diffusion and adoption of innovative practices. Within that same process, the learning activities component can be similar to the trial and adoption stages.

Some learning activities enable the learner to try out new ways of thinking or performing and to accomplish a change in behavior. Examples include reading related to clinical practice or observation of a demonstration of a clinical technique. However, learning about an area of professional performance does not automatically lead to a competent level of performance

let alone incorporation of the area of performance into regular practice.

Some learning activities are more likely to enable the learner to develop

a competent level of performance and the commitment that results in a

"refreezing" of new habit patterns and subsequent utilization of the new

area of performance. These types of learning activities usually include

opportunities for the learner to practice the new area of performance in

settings similar to actual performance. Examples include role playing

and computer based simulation of diagnostic procedures.

The main criterion for the selection and organization of learning

activities is the achievement of the specific educational objectives that

were selected as of high priority. This fitting of activities to objectives

should take into account both the content that is being learned and the

behavior of the learner that is to be changed (Tyler, 1950, p. 28-30). When

a problem solving approach is used in which basic and applied science infor-

mation is integrated with clinical procedures, it is more likely that the

objectives will be attained, and that the learner will be actively engaged

in activities that are seen as relevant and that provide intrinsic incen-

tives (Miller, 1967, p. 126; Schein, 1972, p. 46).

Another criterion is the fit between learning activities and the

learner's preferences and style of learning. Some adults strongly prefer

to encounter a highly structured presentation by an acknowledged authority,

such as a recorded lecture on a tape cassette. Some other adults strongly

prefer a less structured way of exploring the same content, such as an

informal discussion with knowledgeable peers. If each has available

materials and activities that fit his preferences, it is likely that their

motivation and the learning outcomes of both will be greater.

Evaluation

The remaining component of the mentor role is evaluation. This is the process by which persons associated with the educational activity make judgements about effectiveness based on evidence in ways that encourage use of the conclusions to improve the educational activity. In self directed education, these judgements are made by the learner himself and sometimes by those who try to facilitate his efforts. The main type of judgement is a comparison between expectations and performance. For example, how close did the expected outcomes of an observational visit to a clinic correspond to the actual outcomes? Or, how well did the visit with the consultant measure up to expectations? In general, evaluation consists of a monitoring or continuing diagnosis of the educational activity to identify unsatisfactory aspects that can be improved, and to identify satisfactory aspects as a source of encouragement to continue. Further evaluation related to the unsatisfactory aspects can indicate in greater detail how to improve the activity. Assessment methods such as Goal Attainment Scaling allow both program evaluation and immediate feed-back to participants (Kiresuk and Sherman, 1968). The following questions illustrate the aspects of the educational activity that might be the focus of evaluation. Was the scope of the educational objectives too broad, too narrow, or just about right? Did the gaps that were identified turn out to be among those with the highest priority? Were the learning activities planned so that they fit well with other commit-ments and personal preferences? Were the benefits of the continuing education activity worth the investment of time, money, and effort?

"Linkage Agent" Role

In practice, if someone with regional staff development responsi-bility wants to facilitate the efforts of a professional to perform the

mentor role in order to guide his continuing education in self directed

way, the facilitative tasks of the regional staff member should be

responsive to the specific ways in which the professional performs the

mentor role. Some facilitative tasks occur before the encounter with the

health professional and some occur during the time period during which

the professional is pursuing a specific goal. The activities of both the

professional who is continuing his education and the regional staff

member who is trying to assist will vary from instance to instance, depend-

ing on the background of the professional and the educational goal he

pursues. A central purpose of the regional staff member should be to

facilitate the efforts of the professional to alternate between action

problems and knowledge resources. The following list illustrates the

types of activities in which the professional and the regional staff

member who performs the *"Linkage Agent" role* might engage, as they

interact.

1. The professional becomes aware of an unsettling trend in his

   clinical practice, such as a high proportion of his patients

   who do not follow a recommended therapeutic procedure.
                                                 "linkage agent" who is
2. In discussing this unsettling trend with a /   engaged in

   the development of health manpower in the region, the professional

   concludes that the problem seems to be one of the most urgent

   ones that confront him and his patients.

3. The professional   decides   to keep more

   careful records   on   this action problem to be able to more

   precisely describe the problem and his professional practice

   related to it.

4. The "Linkage Agent" identifies other professionals with similar concerns about the action problem, and arranges for all of them to meet together to discuss the problem and their typical approach to it. This could occur in a hospital setting or in relation to local professional association activities.

5. The "Linkage Agent" agrees to assemble information about the ways in which some especially able practitioners deal with the action problem.

6. The professional identifies the gap between his actual present performance and the standard of excellence reflected in the performance of the especially able practitioners. The concurrence by the other professionals who share his concern provides some reassurance that the gap is a worthwhile focus for his efforts.

7. The professional and his peers discuss the major influences that relate to the action problem, as a basis for deciding on the available knowledge resources and other factors in the setting that should be taken into account.

8. The professional discusses with the "Linkage Agent" the importance of the action problem and the extent to which other professionals have substantially improved their performance, as a basis for deciding on the relative priority to give to closing the gap.

9. The "Linkage Agent" arranges to help the professional to assemble some information about the action problem.

10. The professional decides to change his practice regarding the action problem so that it is more similar to the standard of excellence. He reads about the problem area and talks with

some practitioners whose practices related to the action problem
are similar to the standard of excellence.

11.   The professional decides to try the new practice and to keep
        careful records regarding the results.

12.   The professional reviews his records related to the action
        problem to be reassured whether the new practice is more
        effective or to make further modifications if it is not.

The foregoing part of this chapter has presented an approach
to the mentor role that includes the interrelated components dealing with
needs, setting objectives, activities, and evaluation. This mentor role
is performed by the self directed learner for himself. The components
also provide the basis for activities by persons who perform the "linkage
agent" role who aim to facilitate the continuing education efforts of health
professionals. The next part of the chapter presents examples of ways in
which this approach can be used in life long self directed education.

PART THREE: THE SELF DIRECTED LEARNER IN ACTION

The foregoing model of the mentor role can be used in various
ways by persons associated with the health sciences to facilitate life
long self directed education. This part describes and
illustrates   six major ways in which the model can be used. The
examples have been drawn from the health fields. The six applications
of the model relate to need appraisal procedures, specification of
objectives, learning activities, evaluation procedures, study of con-
tinuing education as it related to professional practice, and facilitation
of utilization of educational resources.

Need Appraisal Procedures

Each professional has some concept of his needs for continuing
education. This concept is implicit in the choices he makes, such as to
read one journal article and not another, and to attend one session at a
professional meeting and not another. Even the practitioner who does not
engage in any continuing education activities reflects his implicit
appraisal of his needs for increased competence in comparison with

alternative uses of his time, money, and effort. The professional who
depends on participation in formal continuing education programs can deal
with his educational needs at an implicit level by participating in pro-
grams that intuitively seem to meet his needs. However, the professional
who is more self directed in his continuing education must deal with need
appraisal procedures in more explicit ways. The *purpose of this section*
is to describe some *procedures* that a professional can use to delimit the
scope of his need appraisal effort, to collect data about actual and
criterion behavior, to analyze data in order to identify the major gaps
or needs, and to recognize how to use the conclusions as a foundation for
his continuing education efforts. Because some parts of the need appraisal
process depend on data collected from persons other than the professional
himself, persons who perform the "linkage agent" role can be especially
useful in relation to the need appraisal component of self directed
education.

Because educational needs have some connection with most aspects
of a person's professional activities, it is necessary to *delimit the
scope* of the need appraisal process if it is to be manageable. Otherwise
the costs would be greater than the benefits. The usual way has been to
select the major and emerging areas of practice in which the professional
is engaged. In part, this selection reflects trends in the individual's
career, such as the development of a new specialization or the assumption
of administrative responsibilities. The selection should also emphasize
the areas of practice in which the professional spends the most time.
The selection can also take into account the number of patients who are
served in each area of practice, the seriousness of the health problem

that they confront, and the amount of disruption that the health problem

causes in their lives and in the lives of other people associated with

them (Williamson, 1968). There are three main ways in which other people

can assist the professional to delimit the scope of his periodic appraisal

of his needs for continuing education. One is to provide an overview of the

need appraisal process so he selects procedures that serve his purpose

well. Another is to provide a guide for the collection of data for an

accurate description of his current practice (*Patient Care*, May 15, 1971,

p. 11). The third is the provision of community data about the incidence

of various health problems, such as is provided by mortality and morbidity

statistics, and health agency reports on various categories of health

problems.

The *collection of data* about needs includes decisions about the

sources of data, the types of data to be collected, and the methods of data

collection. The main *source* of data about educational needs is the

professional himself. Other sources include outstanding practitioners,

persons who work closely with the professional, patients, and experts.

The *types* of data to be collected include descriptions of the *actual*

behavior of the professional related to the selected major areas of prac-

tice; and descriptions of *criterion* behavior which includes his aspira-

tions, other people's expectations, and the behavior of outstanding

practitioners. This information typically includes both quantitative data

such as amount of time spent or test scores, and qualitative data such as

descriptions of procedures and expressions of opinions. Most need appraisal

data is collected by one of four *methods*—health records, survey research,

testing, and observation. In general, data about the actual behavior of

the individual professional is collected from him by means of self administered

inventories, review of his records, and sometimes tests, interviews and

observation. Supplementary data can be provided by peers and patients.

Data about the aspirations of the individual professional is typically

collected from him by survey research methods such as the questionnaire or

interview. Data about the actual behavior of outstanding practitioners to

use in describing criterion behavior or forming standards of excellence is

usually collected by the same methods as for the comparable data from the

individual professional. Another way to prepare a description of criterion

behavior is to obtain a consensus from a representative group of peers

regarding the behavior that they consider excellent and that can serve

as an attainable standard.

The collection of data from *health records* is an especially

promising method for the purpose of need appraisal. To the extent to

which the health professional makes a careful record of his clinical prac-

tice, including the diagnosis of the problem, the remediation and therapy

that is prescribed and followed, and the results that are obtained, the

records provide a valuable link pin between practice and education. The

health records could provide the basic data from which to reconstruct the

essence of clinical practice. Major changes in clinical practice should

be reflected in changes in the health records. This is especially so for

the physician but could be so for almost any health professional. The

health records could also provide the basic reference point for comparison

between practice and standards of excellence to use for both need appraisal

and evaluation (Miller, 1967, p. 126; Brown and Uhl, 1970, p. 1663-1665).

In actuality, much depends on the accuracy, completeness, and comparability

of the records that are made (Cross, 1969; Weed, 1970). A variety of medical records can be used including patient charts, other hospital records, health office records on patients, and clinical notes. The minimum requirement is that the record include the basic decisions made by the health professional regarding individual patients, and the main circumstances surrounding each decision. For purposes of self directed education need appraisal, the professional himself or someone associated with him can review a representative sample of records related to the selected major area of practice, and prepare a description of his typical behavior. To the extent to which the records are adequate and the behaviors readily identifiable, the task of describing typical behavior is relatively straightforward. A caution should be noted. Some of the efforts to conduct a similar review of health records, such as a peer review of hospital records (Richardson, 1972), noted inadequacies of records and inconsistencies when independently prepared summaries by qualified peers are compared. However, when an individual professional periodically reviews his own records to describe his own practice in an effort to increase his own competence, one result should be health records that *are* adequate for periodic need appraisal. Also, the reliability of data collected from records can be increased by the use of standard definitions and forms for data collection.

Survey research methods such as the questionnaire and interview have been the methods most frequently used for need appraisal studies. The self administered questionnaire, or inventory, is especially applicable for the self directed learner. The survey instruments for studies of use of professional time (Brody, 1970) and of educational needs and interests

(Callan and associates, 1969), contain items that could be included in a self administered and scored inventory. Major sections of the instruments used by Storey and associates (1968) could be used in this way. Persons engaged in the development of regional health manpower could in three major ways *facilitate* the efforts of self directed learners to *appraise their educational needs*. *One* is to provide copies of inventories related to various health fields. A *second* way is to obtain and provide normative data on responses to the inventories that could be used by self directed learners to interpret their own responses. The *third* is to obtain and provide survey research data to present the perceptions and expectations regarding health care by patients (Fisher, 1971), experts, and the types of persons who work closely with the professional.

The *examination* has a long history as a means of quality control for professions, and it is receiving renewed emphasis for that purpose. The use of the exam as a method by which the professional can obtain information about his competencies and needs for continuing is a more recent development (*Patient Care*, May 15, 1971, p. 29, 31). A profile of sub-scores from an exam can indicate to a professional his current level of knowledge, and a comparison with normative data can enable him to identify the major gaps. Various types of exams have been proposed and used for this purpose. Included are the specialty board certification (Holden, 1970), the challenge exam for relicensure (Hubbard, 1971, p. 422), the self assessment exam, and the use of simulated patient problems for the identification of deficiencies in diagnostic procedures (Williamson, 1965).

Although it has seldom been used for the purpose of continuing education need appraisal, *observation* is an applicable method of data

collection in some instances. The specific procedures for recording data
include anecdotal records, check lists, and rating scales.

Regardless of the *method* of data collection, the purpose of this
phase of the need appraisal process is for the self directed learner to
make explicit his present behavior (knowledge, skill, attitude, performance)
and the behavior to which he aspires related to the selected major areas
of practice; and to discover how these two categories of behavior are
perceived by others. "Linkage agents" can assist by providing instruments
that the self directed learner can use to collect this data from himself
and by providing summary information about the performance, expectations,
and perceptions of others.

The *analysis of data* about educational needs consists of com-
parisons among four categories of data to discover gaps and discrepancies.
Listed below are the basic comparisons for each major area of practice,
that are made by the self directed learner to complete the need appraisal
process.

1. *Compare his description of his current behavior with the behavior
    to which he aspires, to identify the gap as perceived by himself.*

2. *Compare his description of his current behavior with a descrip-
    tion of his current behavior as perceived by others, to enable
    him to confirm or modify his self report.*

3. *Compare the behavior to which he aspires with the comparable
    behavior of outstanding practitioners, to enable him to discover
    how excellent his aspirations are.*

4. *Compare his description of his current behavior with the comparable
    behavior of outstanding practitioners to enable him to discover*

the gap that exists in relation to standards of excellence.
These four comparisons allow the professional to place his performance and aspirations in perspective and to recognize the gaps and discrepancies that are most important for the appraisal of his educational needs. The remaining four comparisons will help the professional to better understand his own educational needs in relation to those of his peers.

5. *Compare his description of his current behavior with normative information about comparable behavior by his peers, to enable him to discover how typical his behavior is.*

6. *Compare the behavior to which he aspires with the comparable aspirations by his peers, to enable him to discover how typical his aspirations are.*

7. *Compare the current behavior of his peers with the behavior to which they aspire, to identify their gap as they perceive it.*

8. *Compare the current behavior of his peers with the comparable behavior of outstanding practitioners, to identify their gap in relation to standards of excellence.*

In order to *illustrate* some of the ways in which these comparisons might be made as part of the data analysis stage of the need appraisal process by a self directed learner, *adaptations of several need appraisal procedures* are described below.

A powerful procedure for need appraisal might be termed the *health care audit.* Although this way to appraise needs has evolved mainly for use with physicians working in hospital settings, the basic procedures can be used with most health professionals in most of the settings in which they work. One of the most complete set of specifications, procedures, and forms is available from the Professional Activity Study and the Medical

Audit Program (PAS-MAP) of the Commission on Professional and Hospital

Activities based in Ann Arbor, Michigan. *A health care audit has the*

following features, most of which could be adapted for the health pro-

fessional who is not associated with a hospital or similar health

facility (Eisele, 1967, 1969; Brown and Uhl, 1970).

1. *The professional must complete a problem-oriented patient*

    record based on his interaction with the patient (Weed, 1969).

    The content of this record varies among health fields, such

    as medicine, dentistry, nursing, and medical social work.

    However, to serve as the basis for a health care audit, each

    record should be organized around a health problem of a patient

    and should include information about the symptoms of the problem,

    situational and personal factors that seem to be associated

    with the problem, the diagnosis or explanation of the probable

    causes of the problem, the plan for remediation, the therapeutic

    or remedial or patient management activities that occur, and

    the outcomes or results.

2. *Priority is usually assigned to some areas of practice in which*

    to concentrate the initial health care audit (Williamson, 1968;

    Brown and Uhl, 1970). A typical way is to select those health

    problems that cause the greatest amount of preventable disability,

    as reflected in incidence, severity, and extent of disruption

    for the patient and others associated with him.

3. *The patient records are summarized for ease in storage and*

    retrieval. If there is a large number of records, such as would

    occur in most hospital settings, it will be necessary to employ

a record librarian or someone comparably skilled in abstracting and modern data handling methods.

4. *The person or persons whose continuing education needs are to be appraised, participate in planning and conducting the health care audit.* This makes sure that the focus of the audit is the professional's own patients and experience, increases the relevance of the activity and commitment to use the results, and minimizes concern about external interference in professional activities. Even when a single practitioner is conducting an audit for himself, it would be helpful for him to arrange for one peer to work with him to plan and conduct the audit. The other member of the "audit committee" can provide experience, perspective, and interpretation.

5. *A crucial task of the audit committee is to agree upon criterion performance.* This criterion performance consists of an attainable ideal or standard against which to judge actual performance by the professional or professionals engaged in need appraisal. If a large number of persons are engaged in an audit, such as all of the physicians associated with a service of a large hospital, it is well for all of them to serve in rotation as members of the audit committee, because of the great benefits from helping to decide on criterion performance. Review of the patient records of a sample of professionals who are acknowledged as outstanding practitioners can help greatly in arriving at an agreed upon standard that is an attainable ideal.

6. *The actual performance of the health professional* (or members of the Audit Committee) *can then be compared with the criterion*

performance to identify the gap to be narrowed through continuing education. The professional who has participated in the health care audit process is far more likely to accept the gap as something to do something about and to have some ideas about what to do about it, than a comparable professional who merely has a deficiency pointed out to him.

7. *In addition to need appraisal, the health care audit has the following benefits.*

   a. The professionals' behaviors for closing the gap to improve patient care can be translated directly into *objectives* for continuing education.

   b. The behaviors that are needed to close the gap can indicate the relative *emphasis* in the educational activity that should be given to knowledge, skill, attitude, or performance.

   c. The educational objectives are likely to be closely related to improvements in the quality of *patient care.*

   d. The professionals are likely to be *motivated* to increase their competence when they see anonymous comparisons between their performance and criterion performance.

   e. The results of a periodic health care audit can help to evaluate the impact of continuing education activities.

   f. The health care audit can be conducted in almost *any setting* in which health professionals work. Where there is little contact with peers, it may be necessary to provide descriptions of procedures and information on criterion performance.

The most widespread procedure for systematically ascertaining

needs for continuing education is the *need appraisal survey*. As used in

many professional fields, it is a survey research procedure to obtain

summary information for planners of formal programs of continuing educa-

tion. Need and interest surveys have been conducted in various health

science fields in recent years, often on a state or regional basis

(Callan and associates, 1969). One statewide survey (Castle and Storey,

1968) was conducted in the context of a project designed to demonstrate

procedures to help individual health professionals to diagnose and meet

their own educational needs (Storey and associates, 1968). The proposed

procedures are especially applicable to self directed education, and

could be associated with any survey by provision of self administered

and self scored forms, by provision of normative information to interpret

the results, and by provision of advisers or peer groups to assist the in-

dividual practitioner. *The augmented need appraisal survey has the follow-*

ing features.

1. *The entire process is helped greatly if there is some organiza-*

   tional arrangement through which the professionals who are

   willing to appraise their educational needs can help plan the

   process, be encouraged to participate, explore the implications

   of the findings, and receive assistance in using the findings

   to plan their continuing education activities. This arrangement

   for communication and interaction is typically associated with

   the individual's professional association or society but it could

   be associated with a university, hospital, or regional medical

   or health program. If a large number of professionals participate,

one person from each location or area can serve as a member of
an advisory or coordinating committee and he can also handle
distribution and collection of questionnaires and facilitation of
use of findings by individual practitioners.

2. *A representative advisory committee can help with the selection
   of sections of the questionnaire, adaptation of items, and plan-
   ning of related procedures.* The individual members of the
   committee can be considered "faculty members" in a "college of
   peers." This involvement will typically increase the relevancy
   and utilization of the survey findings, as well as increase
   the response rate.

3. *A self administered survey questionnaire is completed by the
   professionals who want to appraise their needs.* When only one
   or a few professionals participate, the procedures should
   result in two copies, one for the professional and one without
   a name attached for the survey coordinator. The completed copy
   that is retained by the professional should be self scored so
   that he can easily analyze the results. The anonymous copy that
   is sent to the survey coordinator is for use in assembling norma-
   tive information to provide in summary form to the respondents
   to use in the interpretation of their own completed copy of the
   form. If a large number of professionals participate, it may
   be more efficient to use a computer to analyze the results and
   to provide a summary of the analysis for each respondent.

4. *The questionnaire should contain sections on needs and on re-
   lated characteristics to be used for interpretation of the*

information about needs. For example, one inventory of the

professional's own continuing education needs contained the

following five sections (Castle and Storey, 1968, p. 612).

a. professional characteristics

b. circumstances of professional practice

c. currently available continuing education opportunities

d. individual perceptions of continuing education needs

e. major patient problems encountered in practice

5. *Someone in the role of "linkage agent" or continuing education*

adviser should talk with each professional who completes the

survey questionnaire. The purpose of these conversations is

to assist with interpretation of findings and use of findings

to plan the professional's continuing education activities.

6. *Provision must be made for the preparation of materials for use*

in the survey. The materials include the plan for a survey,

copies of questionnaire forms, instructions for the completion

and analysis of the questionnaires by the practitioner, instruc-

tions for the preparation of normative information for interpreta-

tion of findings, copies of summaries of normative information,

and lists of materials for further study that are keyed into the

professional's performance on the survey.

A need appraisal procedure that has recently been implemented in

a variety of health fields is the *self-assessment inventory.* This proce-

dure is similar to an examination except that it is self administered by

the professional to diagnose his own knowledge and to some degree competence.

There is no passing or failing grade. The professional compares his per-

formance on the inventory with a criterion or normative standard in order

to identify his strengths and weaknesses, so that he can plan his continuing education. Most of the inventories have used a large number of objective items such as multiple choice questions, grouped by major areas of practice within the health specialty (e.g., Hubbard, 1971; Daeschner, 1971). An alternative type of instrument that places greater emphasis on the assessment of clinical judgement is a set of simulated patient management problems (Williamson, 1965). *The self-assessment inventory has the following features.*

1. *An inventory is developed to assess basic knowledge in a health science specialty by an organization that is competent in test construction.* Experts and leaders from a health science specialty field such as surgery, nursing, or mental health, in which the inventory is to be used contribute to a pool of test items and in other ways help plan the inventory. Test specialists from the testing organization such as the National Board of Medical Examiners or Educational Testing Service, do the technical work in the preparation of a balanced and clinically oriented inventory. Most of the items in the inventory deal with topics that are basic or emerging for most practitioners in the specialty. The items are grouped in standard categories within the specialties to allow the scoring of sub-scores.

2. *The individual professional obtains the inventory materials, completes the set of items and sends the answer sheet to a bonded agency.* The professional's name is separated from an identification number which preserves the anonymity of the professional who completes the inventory. No information about

his personal performance is available to any testing organiza-
tion, professional association, government agency, hospital, or
university.

3. *The bonded agency sends the answer sheet with the anonymous
    identification number to the testing organization for scoring
    and returns the report on performance to the professional via
    the bonded agency.* This procedure accumulates normative infor-
    mation about the performance of a large and representative
    sample of peers in the health specialty. The scoring of the
    answer sheet and the preparation of the report on performance
    is handled by a computer. Only the bonded agency has both the
    individual professional's name and number. The report is sent
    to him in an envelope that he addresses and the envelope is
    marked confidential.

4. *The report on performance includes a total score and sub-scores
    for each of the categories that indicate the per cent of peers
    who scored lower than the professional.* The computer also prints
    out brief interpretations of the performance that fit the
    profile of scores. This print out enables the professional
    to use the results diagnostically.

5. *The set of materials sent to the professional also includes a
    listing of reference materials.* The list of materials and
    learning resources are keyed into levels of performance on the
    inventory so that the professional can increase his knowledge
    on topics for which he recognizes a need for increased under-
    standing and competence.

6. *A short form of the inventory could be scored by the individual
    as long as a set of norms had been prepared.*

7. *Summary information could be used by sponsors of continuing education programs to guide program development.*

Regardless of the procedures that are used to collect and analyze data about continuing education needs, the main criterion of effectiveness of the procedures is the *utilization of results.* Need appraisal procedures with the following characteristics should effectively contribute to utilization for program development.

1. Flexibility that allows the individual practitioner to focus his need appraisal on his priority areas of clinical practice.

2. Availability of other persons to discuss the need appraisal procedures with the practitioner, including rationale, results, planning, and implementation.

3. Production of a description of the practitioner's actual current behaviors in the selected areas of practice.

4. Provision of descriptions of criterion behaviors or attainable standards, based on normative data about peers, performance of highly competent practitioners, or consensus regarding excellent practice.

5. Comparison of current performance with criterion performance to identify gaps as a basis for selection of objectives for continuing education.

6. Arrangements that preserve the anonymity of the individual practitioner and minimize threat and defensiveness.

7. Provision of information about learning resources to increase competence, that are keyed into the gaps that are identified.

8. Repetition of need appraisal procedures to provide continuing diagnosis and evaluation.

Specification of Objectives

The professional who is engaged in self directed education is
forced to select some objectives for increased competence and to disregard
many others. Most health professionals confront an almost overwhelming
number of problems and opportunities that call for increased competence.
Even if the individual professional only attends to the needs for increased
competence for which there is a high sense of urgency, the selected needs
typically extend far beyond available resources of time, money, and
energy. The individual is forced to select, if only in the most intuitive
and even accidental way. The specification of priorities and selection of
objectives can be a more useful process for the self directed learner if
he has a way to conceptualize the process and some procedures so that the
continuing education activities that are undertaken will be most beneficial
for the effort invested. A basic and widely used way of conceptualizing
the process by which educational objectives are specified has been developed
by Tyler (1950).

Procedures that the self directed learner can use to set priorities
regarding the selection of continuing education objectives can be helpful
in several ways in addition to assisting him to select from an overwhelming
array of sometimes competing objectives. One way is to help him to avoid
overlooking some educational objectives that are exceedingly important to
him but that may not otherwise be sufficiently evident to be considered.
For example, learning an attractive new medical procedure may be more
easily considered as an educational objective than improving a basic
patient management procedure which could be far more beneficial to a large

number of patients and to the professional's practice. Another way in
which more explicit objective setting procedures can be helpful is
improving the fit between the needs that are identified and the learning
activities that are undertaken to meet the needs. A continuing process
of reviewing and modifying the relative importance that is assigned to
continuing education objectives is one of the best means of assuring the
relevance of continuing education and of increasing the application of
what is learned. In general, a more explicit process for objective setting
can increase the utility of continuing education for the individual and can
increase the likelihood that he will learn something he can use.

The objective setting procedures for self directed education can
be grouped in three phases. The three phases are reviewing *sources* of
objectives, applying criteria for *selection* of objectives, and *stating*
the selected objectives.

The self directed learner should consider many of the same
sources of objectives that are considered by the planners of formal
programs of continuing education. Such planners often depend on popularity
of topics and preferences of experts. Topics of continuing education pro-
grams which many peers attend are assumed to be meeting a need and can be
considered by a professional as possible topics for his own continuing
education. Topics which are selected by resource persons in continuing
education programs and faculty members in professional schools tend to
reflect their view of important developments in the field and should also
be considered. Regardless of how satisfactory these two sources of ob-
jectives may be for some formal programs of continuing professional education
in which a sufficient number of enrollees can be taken as evidence of
relevance, they are not sufficient for the self directed learner. For the

professional who guides his own efforts to increase his competence, the
educational objectives that are selected should be more specific and
personal. *The two main sources of objectives are information related to*
the health and illness of his patients and information related to his
own career.

The basic information about *patients* results from the need
appraisal process in which gaps are identified between the professional's
actual current behavior and criterion behavior. The sources of this
information include analysis of practice such as the health care audit,
health statistics such as hospital records, and expert opinion. These
sources of objectives related to the improvement of patient care and
health maintenance tend to be closely associated with the professional's
current occupational activities.

The self directed learner should also examine his own *career*
as a source of objectives. One function of continuing education is the
enrichment of professional careers. If current professional practice
was the only source of objectives, the resulting continuing education
activities would be too narrowly prescribed in scope and in time. Most
professionals are specialists and run the risk of overspecialization
to the point that they lose perspective on their professional role within
the larger context of themselves as a human being (Houle, 1969, p. 573).
Even within the professional field, a greater understanding of related
specializations helps the professional to restructure concepts instead of
This is especially important for the most innovative professionals.
just adding bits of information (Schein, 1972; Houle, 1969, p. 576)./ An
exclusive concentration on current practice is restrictive because careers
develop and emerge. Two types of information can help the professional

to select continuing education objectives related to his own career. One type is information about the individual's own aspirations. Another is information about developmental trends in the career cycle of other health professionals. An example of an emerging need is the mid-career assumption of administrative responsibility by many professionals. Information about career aspirations and career cycle constitutes a valuable and neglected source of objectives for continuing education. These types of objectives related to career enrichment are pertinent to both occupational education and liberal education for professionals.

Most professionals confront a large number of potential objectives and they are more likely to select some that have high priority for them if they have some criteria to use. Two types of criteria that have been useful for screening educational objectives relate to desirability and feasibility. Three of the criteria related to desirability are the extent of the health problem, the size of the behavioral gap, and emerging career directions. Three of the criteria related to feasibility are realistic objectives, available resources, and professional commitment.

One desirability criterion is the extent of the health problems that confront the patients whom professionals seek to serve. Some health problems are more major than others, and improvements in practice related to the more major problems would be expected to be of greater benefit to the individual patient and to society than comparable improvements related to more minor health problems. Three indicators of the relative extent of health problems have been proposed (Williamson, 1968). They are, how many people are affected by the health problem, how much disability do they experience, and how much social disruption is entailed?

A second desirability criterion is the size of the gap between the professional's actual current behavior and the standard of criterion behavior. This is perhaps the most important criterion and the basic information about it should result from the need appraisal process. If this process is especially effective, it will not only identify the larger gaps but also provide sufficiently detailed descriptions of current and criterion behavior to be able to state objectives as specific changes in behavior that are needed to close the gaps.

The third desirability criterion is the professional's emerging career directions. The career cycle of most professionals shifts periodically, such as toward greater specialization, or toward more administrative responsibility, or toward the integration of several specialties. It would seem well to place more emphasis on educational needs related to aspects of the career that are emerging than to aspects that are being phased out.

One feasibility criterion is the extent to which the objective can realistically be achieved by the professional. There are various ways in which predictions can be made about the likelihood that the professional can change his behavior and achieve the objective. Persons who are familiar with continuing education might advise the professional about how likely he is to be able to achieve the objective. The r ofessional can make an estimate for himself by comparing the characteristics of his peers who already meet the standard, with the characteristics of his peers who do not.

A second feasibility criterion is the availability of resources to help close the gap. Examples of educational resources include resource

persons such as consultants, advisers, specialists, professors, and "linkage agents;" and educational materials such as journal articles, text books, film strips, audio tapes, and computer based education lessons. More emphasis might be placed on objectives for which pertinent educational resources are already available than upon objectives for which few resources are available.

The third feasibility criterion is the level of the professional's own commitment to achieve the objective. With such a commitment to change, a professional is far more likely to follow through and achieve an educational objective and use the increased competence in professional practice. Without such a commitment, even an urgent objective might best be postponed until the professional is ready to deal with it, or perhaps the professional might even undertake an educational activity for the purpose of exploring why the objective seems to be of greater urgency for others than for himself.

The final phase in the specification of objectives is the selection of objectives on which to actively work and the stating of them in a form that is most useful for the guidance of learning activities and evaluation. When the self directed learner applies the selection criteria to the pool of possible objectives, it is likely that a few will rank at the top of the list. It is helpful if the professional then discusses these few high priority objectives for his self directed education with one or two persons who can help him to reflect on the few objectives that should be selected. Often someone in a role as adviser or a "linkage agent" or mentor can help the professional to explore the pros and cons of each objective, which leads to a more beneficial selection.

The selected objectives should be stated as clearly and as pre-
cisely as possible. This can be done by describing the intended behavior
at the conclusion of the educational activity which was not present at the
beginning. The term "behavior" refers to outcomes that emphasize knowledge,
skill, and attitudes along with their combination as competence. Each
statement of an objective should reflect the subject matter content with
which the objective deals and the type of mastery that the professional
should acquire. It makes a big difference if the professional intends to
acquire an appreciation of some new clinical procedures or a high level
of competence that makes a major difference in patient care.

A well stated set of educational objectives can be a great help
to the self directed learner in two respects. One is to help guide the
selection and organization of learning activities that appear to be the
most effective way to achieve the objective. The second use is to guide
the evaluation efforts by which the professional finds out how well his
educational activities are progressing.

Learning Activities

*A self directed learner needs a rationale for the selection
and organization of learning activities.* A professional typically engages
in continuing education in order to change. This is especially so for
the self directed learner who is less likely to engage in an educational
program associated with a tour or convention for largely social or political
reasons than his less self directed peers. The anticipated change in be-
havior sometimes emphasizes increased knowledge, improved skill, or changed
attitudes but more often the objective is a combination of all three in the

form of more effective performance.

Almost any change in behavior results from an active interaction between the individual and conditions in the environment that facilitate the changed behavior. Many of the daily activities in which a professional engages serve to reinforce existing behavior or have little influence on his behavior. By contrast, some activities have a greater likelihood to produce changed behavior. When such activities are engaged in for the purpose of changed behavior they are called learning activities. Thus, if a practitioner actively prepares problem oriented health records that describe his interaction with his patients and periodically reviews the records of patients who have a common health problem in an effort to improve his diagnostic procedures, he is engaged in learning activity. However, if he passively attends a lecture on a health topic from which he seeks nothing new, he is not engaged in learning activity. Especially in the context of this chapter on self directed education, the term "learning activity" refers to an active search for changed behavior on the part of the learner, not to what a teacher does.

Some self directed learners intuitively make the major decisions about learning activities. However, efforts to encourage a larger pro-portion of professionals to be more self directed in the ways in which they continue their education should help to make these major decisions more explicit. *Decisions about learning activities cluster around four themes—acceptance of responsibility for self directed education, recognition of the range of learning activities from which to select, selection of the learning activities that seem best in a specific instance, and organizing the learning activities most effectively.* "Linkage agents"

engaged in the development of regional health manpower should recognize
the main conditions of effective learning by professionals so that they
can facilitate self directed continuing education.

Initiative or *self directedness* in continuing professional
education is similar to self directedness in one's occupation or in any
other domain. It depends on a degree of self discipline. The self
directed learner is one who has a sense of direction, some basic coping
and inquiry skills, and who can work somewhat independently. He has
some strategies for facilitating specified behavioral changes, and for
seeking and accepting assistance when needed. He may engage in a formal
continuing education course to alert himself to new directions or to
efficiently achieve a specific educational objective that he has identi-
fied. However, his self directedness is reflected in his selection of
objectives that have high priority, followed by his selection from a
range of learning activities those that are most appropriate for the
specific circumstances he confronts (Horn, 1969; Mager, 1968). Persons
who seek to facilitate self directed continuing professional education
should recognize those practitioners who are prepared to accept the
primary responsibility for increasing their competence, should respect
and encourage their autonomy as learners, and should make available
educational resources and resource persons who can provide consultation,
help with planning, and in general assist the professionals to identify
and meet their major educational needs.

The professional who recognizes the range of learning activities
from which he can select, is more likely to make wise selections than a
professional who is aware of only a few ways in which he can continue his

education. A specific learning activity typically reflects both the learning methods that are used and the generalized influence of the sponsor or other persons who are associated with the activity. Sponsors subtly influence the relative emphasis in a learning activity on either solving action problems or using knowledge resources. For instance, university sponsored post graduate courses tend to emphasize the transmission of knowledge by experts, regardless of whether the courses occur in a lecture hall, over television, by correspondence study at home, or at a residential retreat. Continuing education programs sponsored by university related hospitals tend to be similar with their em .asis on specialization and in-depth study. By contrast, voluntary health agencies and state health departments tend to emphasize the solution of widespread health problems. Many of the community hospitals that have assumed responsibility for continuing professional education have emphasized improvement of widespread professional practices, by use of methods such as the health audit. Recent listings of opportunities for formal programs of continuing medical education show about one half of them sponsored by universities and about one fifth of them sponsored by hospitals, most of which are university related. Professional associations often co-sponsor continuing education programs in addition to their own meetings and journals. The question has even been raised about the influence of extensive pharmaceutical company advertising on the educational impact of health related professional journals (Ingelfinger, 1969). Learning activities are especially valuable when they assist the participants to relate action problems and knowledge resources. Co-sponsorship can increase the attention to this relationship. The important task for

the self directed learner in this regard is to select activities and
settings that are likely to push him in a direction he wants to go
(Tough, 1967   ).

The self directed learner could conceivably achieve almost
any educational objective by almost any type of learning activity. If
the objective is the acquisition of knowledge, he could read about it,
listen to an audio tape, discuss it with peers, or receive detailed
advice from a consultant, and as a result achieve the same objective.
The question is, which one does it best for him? In addition to
emphasis on application and method of learning, there are other dimen-
sions of learning activities that should be taken into account by the
self directed learner as he selects learning activities. Listed below
are the main *criteria* that should be considered as the basis for
deciding in which learning activities to engage (Tyler, 1950, p. 42-44).

1.   There is high congruence between the content of the learning
     activity and the behavioral change that was stated in the
     high priority objectives which were selected.

2.   There is substantial opportunity to practice the behaviors and
     to deal with examples that are relevant to the selected
     objectives.

3.   The learner prefers the relative emphasis on acquisition of know-
     ledge compared with application in action settings.

4.   The level of sophistication of the learning activity is within
     a range in which the learner is neither overwhelmed nor bored.

5.   The methods of learning that are used are preferred by the learner
     and contribute to continued motivation to learn and search for
     meaning.

6. There is sufficient flexibility to adjust to pacing problems
    if they arise and to provide for supplementary assistance if
    it is needed.

Almost all learning activities have some applicability to life
long self directed education. However, *there are some types of activities
that are especially useful for the self directed learner.* Because there
are so many methods of learning, they have been grouped below in *five*
categories. Each category contains a brief overview of the types of
activities that are included in the category, followed by a more detailed
description of one type of learning activity that is especially perti-
nent to self directed education. The five categories are print media,
electronic media, informal group, formal group, and tutorial.

During the past century, the most familiar activity for self
directed continuing professional education has been reading. The *print
media* in all forms has been assumed to be the basic educational resource
available to the practicing professional (Houle, 1969, p. 58; Williams,
1967). It is assumed that the dedicated professional subscribes to and
reads his journals, maintains a core library of basic reference books
in his office and study, and consults major medical and health libraries
in the hospital or university when needed. In practice, some busy prac-
titioners are so overwhelmed by the amount of printed material available
that they are unable to sustain any systematic program of professional
reading. A few do little professional reading beyond the flyers that
pharmaceutical companies send with their samples. In addition to the
great amount of printed materials that may overwhelm the professional,
most of the articles and chapters deal with new developments and ideas

that are several steps removed from daily practice. Most professionals

have difficulty applying their professional literature to their clinical

decision making.

There are several ways in which printed materials can be more

directly related to clinical practice. One is home study or correspondence

study in which someone selects printed materials that relate to an action

problem of clinical practice, and prepares a syllabus to guide the learner.

There may or may not be someone who corresponds with the learner during

the time period in which he is studying the home study course. A similar

arrangement is the preparation of self contained study modules on clinical

topics (Schein, 1972, p. 133-137). Each of these learning methods allows

the learners to select a topic of immediate practical interest to him

and to efficiently review the available information that relates to it.

The effort to prepare an effective study module can be justified because

it is used thousands of times (Storey and Associates, 1968, p. 31-33).

The applicability of the module is increased to the extent to which it

simulates the decision making process in which the professional will use

the new information, instead of consisting mainly of a listing of new

information. The retention and utilization of what is read can be increased

further by the use of questions to accompany the materials. The questions

encourage the reader to reflect on and evaluate what he has read. Such

questions can also suggest to the professional the types of questions

that he might pose for himself when he reads other professional literature

(Frase, 1970; Anderson, 1970).

The *Patient Management Problem* provides a provocative example

of the imaginative use of print media for self directed continuing education

(Storey and Associates, 1968, p. 7-9, 55-77). *The main features of the Patient Management Problem, which was designed for use with physicians, are listed below.*

1. *The Patient Management Problem (PMP) is a simulated exercise* prepared for the AMA Department of Postgraduate Programs and was designed by John W. Williamson. It provides a relatively realistic framework in which a practicing physician can make a series of clinical decisions, and then compare his decisions with those of a panel of experts.

2. The professional first reads the *set of instructions* that explain the procedures that he should follow to administer the PMP simulation to himself. The instructions include the admonition that he assume that the patient has a single disease and that the physician should restrict his patient management decisions to the problem described and avoid a complete diagnostic work up.

3. He then reads a *brief description of a specific patient,* his health problem, and the information obtained by the nurse when the patient arrived.

4. In Part One, the professional lists and rank orders the six *medical conditions* he would check initially.

5. In Parts Two and Three, the professional lists in the sequence in which he would proceed, types of *data he would seek* on the first office visit. The data includes case history and physical exam/office procedures. He then erases the corresponding spaces to reveal the data he would obtain.

6. In Part Four, the professional lists and rank orders his *hypotheses* regarding the health problem, on the basis of the data

thus far.

7. In Parts Five and Six, the professional lists in chronological order the *laboratory studies* to test the above hypotheses, and then erases the corresponding spaces to reveal the data he would obtain.

8. In Part Seven, the professional lists in order of probability the one or two *conditions* that most likely account for the patient's trouble, along with mention of associated conditions that will influence treatment.

9. In Parts Eight and Nine the professional indicates the essential and helpful *therapeutic measures* he would consider and then erases the corresponding spaces.

10. In Part Ten, the professional indicates his *follow up* on the case.

11. The professional next consults the Key which is based on the *responses of a panel of experts* on the disease who perform a faculty role and provide a standard against which the professional can compare his own performance.

12. For each item on which the professional's decision differed from the panel, the professional can refer to the accompanying Item Commentary for the *rationale used by the panel members* and to documentary *references from the latest literature* on the subject. The professional's further reading can then be very specific and selective.

During the past quarter century, a variety of *electronic media* have become available for use in education. As each has been introduced there has been a wave of enthusiasm and anticipation. In a few years

each has taken its place as one of the resources to be used as needed.

The typical constraint on more extensive use has been the lack of high

quality educational materials to use with the hardware. The electronic

media category includes radio, television (especially closed circuit),

single concept films, dial access information retrieval, communication

networks using telephone lines, videotaping of performance for analysis,

audio tape cassettes, and computer assisted instruction. Especially for

health professionals who practice some distance from a medical center,

an arrangement such as the Medical Information Service via Telephone

(MIST) allows a physician in rural Alabama, for example, to call on the MIST circuit

from any place at any time toll free and obtain split second access to

specialists at the University of Alabama in Birmingham from whom they

receive information about the latest and best treatment for a variety of

medical problems. A similar project in Missouri provides an Automated Phy-

sicians Assistant for a small town general practitioner. Computer terminals

and telephone lines connect the automated physical examination equipment

in the physician's office with the computer at the University of Missouri

in Columbia and with the Medical School's specialists. The computer

stores and analyzes the data, specialists help to interpret the results,

and a standardized patient record is stored for future retrieval (James

Miller, 1968).

The PLATO system of computer based education at the University

of Illinois is a recent development that is just beginning to be used for

continuing education of health professionals (Bitzer, 1972). The develop-

mental stage of the system is shifting to a demonstration stage in which

it is being used for instruction in various fields including health

sciences, such as nursing, veterinary medicine, and medicine. The system

can be used for anonymous self assessment, or for the collection, storage, and analysis of health history data collected directly from the patient and efficiently presented to the health professional. The following example illustrates its use for direct instruction.

The main features of the PLATO system as it can be used for mastery learning in continuing education for health professionals are listed below.

1. *A health professional decides that there are some topics he would like to review and learn more about, and he goes to a PLATO IV console located in a university or a hospital.* The console is a square cabinet that sits on a table, has a plasma display panel in the front and a typewriter keyboard below it. The console is connected by telephone lines to a large computer which may be hundreds of miles away. The professional selects the lesson on which he wants to begin; the lesson may run for ten minutes or as long as several hours.

2. *A great deal of work was required to make an effective one hour lesson available.* In addition to the development of a very powerful and flexible hardware system, many supporting computer programs were prepared so that authors can prepare the lessons themselves by use of the TUTOR computer language and learners can use their natural language at the keyboard for questions and responses. Even with misspelling, the supporting computer programs will interpret and use the input.

3. *An author prepared the lesson.* In his selection of the topic and his way of writing it, he took into account such considerations as a) the importance of the topic, b) the use of simulation or

other procedures that utilize the potential of computer based education, c) the extensive and continuous feedback to the learner of information about how well he is performing, d) a high degree of learner control and individualization regarding pacing and emphasis, e) the selection of objectives and content in which maximum mastery and minimum failure are important, and f) the selection of a topic that is difficult to teach otherwise.

4. *In the preparation of the PLATO lesson, the author made decisions about content and about the way in which the computer program would operate.*

5. *The professional selects the lesson from those currently available* and uses the keyboard to store in the memory of the computer some information including the name of the lesson and his own name.

6. Instantly the *computer presents* on the plasma display panel of the PLATO IV console some brief *information about the lesson* and instructions for the next step by the learner.

7. Assuming that the lesson deals with a clinical health problem, such as diagnosis of unusual heart sounds, the lesson would present on the display panel a *detailed diagram of the chest area.*

8. The professional is instructed to place his *finger* on the *display panel* at the location where he would place his *stethoscope* on a *live patient.* The touch panel frame surrounding the display activates a random access audio device which transmits the heart sound that corresponds to what he would hear if he placed his stethoscope at the location touched.

9. The professional *repeats the process* until he decides on the *optimal location* from which to listen and the probable cause of the unusual heart sound.

10. *The professional then indicates his diagnosis.* If his conclusion is the same as that of a panel of experts, his decision is confirmed with a brief explanation and he proceeds to the next part of the lesson. If his conclusion is not correct, he receives instant feedback and suggestions about how to proceed. This process is continued until the process and underlying concepts are mastered. He then proceeds to the next part of the lesson, which is selected in part on the basis of his previous performance in the lesson.

11. The professional is presented with *related knowledge in small amounts that are specifically connected with the simulated clinical procedure.*

12. The console has the capacity to rear-project microfiche *color slides* onto the display panel instead of or along with the regular text and diagrams.

13. The computer can *accumulate data,* such as problem oriented health records from a series of simulated patients with similar health problems, to allow the professional to discover regularities and trends.

14. The computer can also keep a *record of learner responses* and decisions. An analysis of this response data can be used to identify characteristic learning strategies. Professionals with ineffective learning strategies might then receive assistance in adopting a learning strategy which for many people is more

The long standing means by which professionals have endeavored to continue their education has been *informal contact with peers* (Houle, 1969, p. 572). This is the origin of the professional association. A recently publicized manifestation is the "invisible college" that some researchers and scholars create, which consists of an informal inter-personal network of peers with similar or complementary interests who may be anywhere in the world but who exchange their writings often at draft stages and who sometimes meet together to discuss emerging topics of mutual interest.

There are various ways in which such informal groups can become more potent forces for life long self directed education. The most impor-tant way is for the individual professional to recognize that such an interpersonal network can be a valuable resource for life long learning (Tough, 1967, 1972; *Patient Care*, May 30, 1971, p. 44 ff). Another way is to formalize arrangements for a consultant service in the health fields so that the individual practitioner has easy access to an expert who can provide assistance on a specific professional problem that he confronts. After a number of successful encounters, a professional is likely to augment his own informal interpersonal network of peers which is similar to the network with whom many professionals interact to test new ideas and seek reassurance. Another way is to travel and visit other professionals in the region. An in-depth exposure to a new practice and the people who are using it is a powerful stimulant to professional growth. Some professional associations have tried to encourage this type of inter-change by including as a part of their meeting or association activity, a living case study in which a member who is using an innovative practice

allows some of his peers to become very familiar with the practice and the factors related to it.

The *learning exchange* provides an example of a way in which a professional can develop and utilize an informal interpersonal network of peers as a vehicle for continuing his education. It has been used in some communities for the entire range of topics in which adults are interested and could be adapted for health professionals. *The main features of the learning exchange as it can be used for self directed education are listed below.*

1. Someone in a region agrees to *coordinate* the learning exchange, and to provide an address, a phone number and clerical assistance to process the information.

2. A *professional* who is interested in extending his network of peers for continuing education *completes a file card* for the exchange that contains sections on interest topics; on whether he wants to give consultation, receive consultation, or discuss each selected topic with peers; and on brief background information about the professional, including address and phone number.

3. A *clerk* at the learning exchange *matches cards* on each topic and notifies the professionals who have complementary interests in each topic.

4. It is up to the *professionals* who are thus notified to *contact each other* and make all arrangements regarding time and place of meeting and fee if any. The exchange conducts no educational activities, only brings together professionals who want to do so on their own.

5. The *exchange* periodically prepares a *listing of topics* that have been requested to help professionals identify topics on which they may be interested.

6. The *exchange* maintains a *listing of places* where participants may meet, such as hospital conference rooms, for people who do not want to meet in homes or offices.

7. One function of the sponsor of the exchange is to let health professionals *know about the exchange* so that they can use it if they want to.

8. The *cost* of the exchange is very *small* and can be covered by some office in the region concerned with the development of health manpower, without any charge to those who participate.

9. The learning *exchange* could also maintain a *file* of more *formal opportunities* for continuing education to assist participants in finding out about them.

10. One of the main benefits of the learning exchange is that it *brings together* the more self directed learners in a field to explore topics of mutual interest which they would prefer to explore with peers.

11. Especially for health professionals who practice in *isolation* from peers in the same specialty, such an interpersonal network provides some of the *interaction* that tends to occur in group practice or in clinic settings.

12. The exchange makes it easy for a professional to make an *initial exploration* of a topic with little risk, which he may later decide to study in greater depth in some other way.

An increasing proportion of health professionals are closely
associated with a *formal health related organization* such as a hospital,
clinic, group practice, or health center. In such organizational settings,
professionals perform interdependent roles and have a stake in the per-
formance of their associates. Some of the continuing education procedures
that are used in organizational settings constitute an approach called
organization development (Beckhard, 1969;/Bennis, 1969; Schein, 1969).
Beckhard, 1972;
Such procedures are concerned with both increased competence of individuals
and greater vitality, productivity, and effectiveness of the organization.
One advantage of the formal organizational group for continuing education
is that the shared learning experience increases the likelihood that new
competencies will be applied in practice.

Some personnel development efforts in organizational settings
focus mainly on increased performance such as improved patient care. For
example, an in-service educational program for the nurses on one floor of
a hospital might be conducted in response to the finding that some estab-
lished procedures were not being adequately followed. Other organization
development programs deal with the relation between individual effective-
ness and organizational effectiveness (Blake and Mouton, 1968). For
example, health professionals with administrative responsibility may parti-
cipate in a "Grid Seminar" by using a "do it yourself organizational
development kit." Participants compare their relative emphasis on produc-
tivity and people,with organizational,expectations. Discussion of leader-
ship style includes problem solving and communications, but the emphasis
is on learning from experience and application. Still other continuing
education programs concerned with performance in organizational settings

focus mainly on personal development (Solomon and associates, 1970). For example, a group of ten health professionals may meet together for a series of ninety-minute sessions on improving interpersonal effectiveness. Each session begins with an audiotape introduction followed by discussion and activities designed to help each participant better understand his feelings and those of others, and to facilitate the development of a learning community in the organization, which will foster personal growth.

In many continuing education self help groups without paid leadership, the emphasis is on learning from direct experience and personal knowledge (Phenix, 1964). Each individual participant assumes personal responsibility for working on the solution of a problem that he is not presently able to solve. The other group members provide concern and support for the individual and sometimes their interactions are part of the content to be studied. Sometimes the individual engages in a self audit.

The health care audit provides an example of self directed continuing education in an organizational setting. The early stages of a health care audit can be part of need appraisal and can be repeated for periodic evaluation. The latter stages of an audit can provide powerful learning activities that can be directly reflected in improvements in patient care (Brown and Uhl, 1970). *The main features of the health care audit as it is used for self directed education are listed below.*

1. The *professionals* who engage in a self audit, help to *assemble information* about attainable standards of excellent professional performance.

2. They then anonymously *compare the standards with their own behavior*, with a sharing of summary information regarding the

gaps that exist between actual and desirable performance.

3. The *professionals* themselves *identify the gaps* that most need to
    be narrowed.

4. The educational *objectives* are the descriptions of the *behaviors*
    that need *to be acquired* in order to narrow the gaps.

5. The *organization,* such as a hospital, can help by *arranging for
    the time, facilities, and materials* for the professionals to
    practice the desirable behavior.

6. These *learning activities* can be solitary or they may be with
    other participants in the health care audit.

7. Some of the *audit procedures can be repeated* periodically as a
    way to review progress.

8. The participants are able to use this *feedback* to shift the
    topics and emphasis as needed.

9. The audit procedures provide a very specific and *clinical focus*
    for related educational activities.

10. The participation by all of the professionals in a work setting
    in a health care audit provides strong *encouragement* for continuing
    education for those who are *least active* in the more formal kinds
    of continuing education.

Many self directed study arrangements in both preparatory and
continuing education entail someone other than the learner who performs
parts of the mentor role and engages in some kind of tutorial relationship.
Some of the recent "university without walls" arrangements for under-
graduate independent study that does not entail supervision by regular
faculty members, have indicated the importance of having someone to help
with such aspects of the mentor role as guiding plans, supervising study

activities and providing for quality control (London, 1972). Some type of counsel is important because of the difficulty that most people have in monitoring their own behavior. Another function of a "linkage agent" who provides some counsel and monitoring is to alert the professional to learning resources that he may not know about. An arrangement that contributes to a mutually satisfactory tutorial relationship is the "contract" that formalizes the agreement regarding the expectations for each person involved. Some mid-career traineeships include a tutorial relationship along with direct contact with grand rounds in the hospital and "live" clinics (Dollinger, *et al*, 1972).

The preceptorship provides an example of the tutorial relationship as a vehicle for life long self directed education (Davidson, *et al*, 1971). The present emphasis, however, is on the value of being the preceptor for the continuing education of the *preceptor*. It has often been observed that one learns more from teaching about a topic than from the usual student role (Thelen, 1968). In addition, the educational value of working with younger men in a profession has long been recognized (Osler, 1906, p. 151). *The main features of a preceptorship for self directed education are listed below.*

1. A preceptorship / might be designed to emphasize professional practice with its concern for *alternating between action problems* of clinical practice to promote health maintenance and patient care, *and knowledge resources* that can increase the competence of professionals.

2. The tutorial relationship may include work in a *community hospital* with its typical range of common health problems and flexible arrangements for preceptorships.

3. The *student* who works with a preceptor is likely to be a student in *professional school*, but may be an *undergraduate* student who is considering going into the health field, or a new professional during the early years of practice.

4. After an initial exploration, *the parties* to the tutorial relationship *work out an agreement* or "contract" regarding the educational objectives and procedures of the student and the contributions to be made by the preceptor.

5. The *student* brings to the tutorial relationship a *recent familiarity with organized knowledge* from college courses, which can alert the preceptor to knowledge resources and procedures that he can pursue further.

6. The *preceptor* can help the student to develop a feel for the *realities of clinical practice*, as a context in which to interpret and apply what he learns.

7. All parties to the tutorial relationship can extend their repertoire of effective *strategies for alternating between action problems and knowledge resources*.

The foregoing five categories of learning activities do not of course include all methods of continuing education and the examples that are provided for each category are but a few of the many ways in which professionals systematically increase their competence. What the examples have in common is their utility for self directed education. They illustrate the considerations that a health professional might take into account in his selection of one or two types of learning activities that are likely to be most helpful to him, to achieve his objectives, under the circumstances.

After the selection of learning activities that fit both the objectives and the learner, the remaining step before engaging in the activities is to *organize the learning activities* so that the learner progresses well through them and achieves the objectives. This organizational aspect of the mentor role is as much aesthetic as scientific. In doing so, the self directed learner should consider both the way in which he prefers to organize the sequence of learning episodes, and the main factors that contribute to effective learning by adults.

Adults vary greatly in their learning style and these variations are partly associated with personality (Hill, 1960; Stern and Cope, 1956). An individual health professional is likely to learn more effectively and to persist longer in the series of learning episodes if the organization of learning activities fits his preferred learning style. Some learners have a very orderly and explicit and initiatory learning style, some depend heavily on external authorities to set goals and provide structure, still others have an intuitive and almost groping learning style that seems disorderly to others. Because of the great variability in characteristic learning styles, it is well to encourage health professionals to reflect on their previous approaches to learning that have been most satisfactory and satisfying and to incorporate major elements of those approaches in the way in which they organize their own learning activities. There are, however, three principles that might be considered as the self directed learner makes decisions about the organization of his learning activities so as to optimize progression, application, and gratification.

The first principle of organization is *progression.*(Tyler, 1950, p. 62-64). The achievement of educational objectives typically requires

persistence in learning activities over a period of time. Persistence is
more likely if the learning activities have a sense of coherence and
sequence and forward movement, in contrast with brief and unrelated learn-
ing episodes. A useful way for the self directed learner to achieve
continuity and persistence and progression in learning activities is to
select a theme of personal importance to use as an organizing principle.
The prime sources of such themes are those areas of professional practice
in which there are major gaps between current performance and the per-
formance toward which the individual aspires.

The second principle of organization is *application*. In continuing
professional education, the main reason for behavioral change is to be
able to apply the increased competence in the form of improved performance.
The likelihood of application is greater if new topics are studied in
relation to the context in which they are to be applied. This concern for
application is important, regardless of whether the emphasis is on the
acquisition of organized knowledge, on improvement of professional action,
or on interrelationships between knowledge and action. One approach to
the organization of learning activities that would seem to be especially
pertinent to health professionals, parallels the usual process of diagno-
sis and remediation. With this diagnostic approach, the focus of the
educative activity alternates between study of professional practice
and study of relevant knowledge. The self directed learner initiates
the series of learning episodes either with the identification of a pro-
blem of clinical practice or with information from literature or peers
that alerts him to a probable problem of professional practice. This
episode is followed by episodes in which the professional studies several

areas of organized knowledge that seem to be most useful for a better

understanding of the action problem, and then uses the resulting insights

to redefine or further specify the problem. With the greater specifica-

tion of the problem, the professional can proceed to seek information from

the literature or from peers or from his own professional health records

that suggests alternative solutions to the problem. The specific problem

can next be examined as a basis for deciding which solution seems most

applicable. Again professional literat .e and clinical data can be con-

sulted to help develop a detailed course of action to achieve the solu-

tion. In the process of implementing the solution, the professional can

reflect on progress and make adjustments as called for with a diagnostic

problem solving approach to the organization of learning activities. In this way, the

professional's continuing search for meaning and understanding alternates

between study of the action problem and study of organized knowledge

related to the problem.

The third principle of organization is *gratification*. To be

sure, if a professional persists in a relevant educational activity, it

is likely that he finds the experience gratifying in some way. But in

what way? There is mounting evidence that adults who participate in

the same continuing education activities do so for some quite different

reasons (Houle, 1961; Solomon, 1964; Burgess, 1971; Tough, 1967). Al-

though people participate in important activities for multiple reasons, one

or perhaps two typically predominate. Some of the dominant reasons are

expressive and the benefits to the participant are directly related to the

learning activity itself. Examples include interest in the subject matter

content,   enjoyment of the learning activity, and interaction with other

people who are related to it. Some of the dominant reasons are instru-
mental and the benefits to the individual are realized as he uses the
learning outcomes to achieve external purposes. Examples include use of
increased competence to achieve a personal goal such as/a career change,
                                     through
and use of increased understanding to help others such as improved health
care. The self directed learner can use this principle to organize learn-
ing activities so that they provide a sufficient amount of the types of
gratification that are important to him.

The self directed learner can also contribute to the effective-
ness of the learning activities in which he engages, by performing the
aspect of the mentor role that takes into account conditions of effective
                          consider conditions of effective learning
learning. The learner may /   when he reviews his learning plan, and
also from time to time when   he is engaging in the learning act. Listed
below are some of the major questions that a health professional might
ask himself in order to decide if there are additional ways in which he
could modify the *organization of his \learning activities so that they
are more effective.*

1. Has he assumed sufficient *responsibility* for the major decisions
   about his educational needs, priority objectives, content
   emphasis, and type of learning activities? Effective self
   directed education requires active participation by the learner.

2. Is the organized *knowledge* to be studied *relevant* to the solu-
   tion of *action* problems? Relevance is sometimes greater when
   a learning topic includes elements of basic science, applied science,
   and clinical practice.

3. Does the context in which the learning is to occur sufficiently

resemble the context in which the changed performance will occur? Great similarity facilitates transfer, application and persistence of the changed behavior.

4. Is there sufficient provision for *feedback* so that he will receive knowledge of results? Effective procedures for monitoring, evaluation, and quality control can contribute both to satisfaction from progress and correction of shortcomings.

5. Are there sufficient *intrinsic incentives* and satisfactions? If there are not, the pa   n of learning activities should be modified or else the learner is likely to withdraw from the learning activities.

6. Is the physical and social *setting for learning at least minimally conducive to success?* It is sometimes necessary to select   a location that is associated with study in which there are few distractions,   and to terminate a study period when learning effectiveness begins to drop.

7. Have crucial external *educational resources* been utilized? Sometimes even the most autonomous learner must use people and materials to assess needs, set priority objectives, confront new ideas and practices, and evaluate practice.

Even though the self directed learner continues his education in highly individualized ways, the use of the foregoing concepts about educational design should enable him to guide his educational activities so that they are more effective and satisfying.

Listed below are a dozen ways in which a "linkage agent" engaged in the development of regional health manpower can facilitate the efforts

of professionals to more effectively select and organize learning activities
for themselves.

1. Help health professionals in the region to become more familiar
    with the rationale and procedures for being more self directed
    in the ways in which they plan and guide their learning activities.

2. Increase the awareness of health professionals regarding the
    range of available methods for self directed study.

3. Provide information to help practitioners locate peers and
    experts who could serve as educational resources, through such
    arrangements as a learning exchange or a consultant service.

4. Help to arrange for preceptorships.

5. Organize retrieval procedures to assist practitioners to locate
    materials that they could use to continue their education.

6. Select printed materials, organize them and provide study and
    review questions, and make the resulting pamphlets readily
    available so that health professionals who want a brief review
    of a topic can efficiently obtain it by reading the pamphlet.

7. Encourage appropriate organizations to develop new materials
    and delivery systems for self directed continuing professional
    education, such as tape cassettes, correspondence courses,
    single concept films, and computer based education.

8. Create new educational materials when they are badly needed
    and no one else does so.

9. Encourage community hospitals and other organizations with which
    health professionals are associated to assume responsibility for
    organization development and other programs to encourage continuing
    education.

10. Publicize procedures for a health care audit.

11. Assist with the development of standards of excellence for health professionals, based on normative data and the performance of outstanding practitioners.

12. Prepare and disseminate case studies about health professionals who are particularly active and effective in continuing their education in self directed ways.

Evaluation Procedures

Self directedness in most activities requires objectives and conviction and effort and *evaluation*. Without feedback from evaluation the individual has difficulty knowing whether or not he's making progress. Knowledge about progress encourages perseverence. Knowledge about inadequate progress provides the basis for making changes to improve progress. To evaluate progress, it is helpful to know where you are and where you're going and to have some standards by which to judge whether the changes that occur constitute adequate progress. This applies especially to the function of evaluation in self directed continuing professional education.

Evaluation consists mainly of two activities, describing and judging. The health professional who wants to evaluate his continuing education might prepare three descriptions. One is of the *current* characteristics of his educational activity. A second description is of the *intentions* regarding his educational activity. The third is of the *standards* that are useful to interpret any disparities between intentions and actuality. The standards can include normative data and data on the performance of outstanding professionals.

In the evaluation of an educational episode or series of epi-
sodes, each of these descriptions might helpfully be divided in three parts.
One part is the *inputs* at the start, such as his beginning level of com-
petence, available materials, and amount of time allocated for education.
A second part is the educational *process*. The third part is the educa-
tional *outcomes*, such as knowledge, skills, attitudes, competence, perform-
ance, and health care at the end of the educational activity that might
be attributed to the educational process.

Judging consists of making two types of comparisons. One is
between *intentions and actuality*. This comparison helps the professional
to recognize how well his plans measure up to his performance. He may
discover that he intended to spend twenty hours on a learning episode but
actually spent thirty. He may also discover that he intended to divide
the time about equally between reading and discussion with peers but
actually spent all of it in discussion. The second comparison is between
the *gaps* that he discovers between intentions and actuality, and informa-
tion about the educational activity of other people which can serve as
standards against which to interpret the changes that occur for him. He
may discover that a small change in his competence is more than most
professionals accomplish through continuing education. He may find no
gap between his performance and his intentions, but discover that both
are far below the level of performance of most of his peers. His problem
may be a low level of aspiration.

The reason for evaluation is to make judgements about effective-
ness of the educational activity so that the conclusions can be used to
improve the educational activity (Knox, 1969). The major gaps between

intentions and actuality, indicate points at which the self directed

learner can concentrate his efforts to improve his educational activity.

The comparisons between gaps and standards indicate the types of efforts

that seem to be directed at the most . .   nt needs, such as changes

in level of aspiration or changes in methods. The descriptions of current

circumstances indicate the foundation upon which improvement efforts can

be built. The self directed learner can use the resulting conclusions

to continually improve his continuing education activities so that their

benefits are greater than the investment.

The evaluation component of the mentor role is at once compre-

hensive and selective. The self directed learner should have a procedure

by which he can quickly obtain a *comprehensive view* of how well his

continuing education efforts are progressing. He also needs a procedure by

which he can evaluate in some *depth* those aspects of his educational

activity at which the results of evaluation are likely to lead to the

greatest improvements in the educational activity. The improvements in

how much he learns and is able to use in his practice should be well

worth the investment in evaluation. For the self directed learner, educational

evaluation is the continuing process that he uses to make judgements based

on evidence about the effectiveness of his continuing education effort,

in ways that encourage and facilitate his use of the results of evaluation

for the improvement of his educational effort. Most of this evaluation

he can and should do for himself. At some points, he will benefit greatly

from a more objective contribution by others.

Listed belo.   a 18 steps tha a alth professional might follow

to obtain a comprehensive over   his continuing education effort.

In an hour's time, he might list briefly :: it he already knows about
regarding the first 15 steps, and briefly note probable plans for the remain-
ing 3 steps. The resulting summary can provide a basis for deciding where
to *focus his evaluation activities* so that they produce the greatest
return on the investment. The relationships between these 18 steps are
presented schematically in Figure Two. The 15 numbers in the cells and
the three below the matrix refer to the evaluation steps. It is not
necessary to proceed through all of the steps in sequence. For instance,
the nine descriptive steps could be completed in any order. This pro-
cedure could be used for a continuing education effort of any duration,
a learning episode that entails a few hours, a series of episodes such as
a health care audit that extends over several months, or his entire
continuing education effort for the year. For the following listing of
18 evaluation steps, it is assumed that a professional is evaluating a
series of learning episodes that extend over several months in relation
to a health care audit, in part to decide whether or not to repeat the
process for another area of health care.

1. *Describe expected inputs.* How much time does the professional
    intend to spend on continuing education? What other people are
    expected to be associated with the educational activity? What
    should their roles be? What learning materials and other educa-
    tional resources does he expect to use? How much expense is
    likely to be entailed? (Note: the information for steps 1,
    6, and 11, on expectations and intentions, may have to be.
    estimated after the educational activity is completed if no
    description of plans and expectations was prepared beforehand.)

Figure Two

FRAMEWORK FOR EVALUATION PLAN

	TYPES OF INFORMATION ABOUT CONTINUING EDUCATION				
	DESCRIPTIONS			JUDGEMENTS	
	Expected	Actual	Standards	Compare expected with actual	Compare with external standards
Inputs	1	2	3	4	5
Process	6	7.	8	9	10
Outcomes	11	12	13	14	15

16. Select aspects for more intensive evaluation.

17. Conduct intensive evaluation.

18. Use results for improvement of educational effort.

2. *Describe actual inputs.* What were the inputs of time, people, materials, money, and other educational resources that were actually used during the educational activity? What was the professional's competence or performance related to the objectives at the start of the educational effort? Self assessment inventories can help to collect this data, as can a health care audit.

3. *Describe external standards related to inputs.* What inputs do peers allocate to similar types of continuing education efforts? What is the range? How about the most effective self directed learners? How much consensus is there regarding optimal amounts and types of inputs for this kind of educational activity?

4. *Compare expected with actual inputs.* Did the professional's plans and intentions work out as expected? Where were the major gaps between expectation and actuality? Did he spend more time but locate fewer materials than anticipated? On which gaps should he concentrate in order to improve future educational efforts?

5. *Compare the internal comparison between expected and actual inputs with external standards regarding inputs to comparable educational efforts.* Is there information available on comparable activities to use as standards to interpret personal experience? If so, how does the professional's experience compare? Are there any inputs, which the external standards indicate as crucial, that seemed to be inadequate for the professional?

6. *Describe expected process.* In what ways does the professional intend to interact with learning materials, other people, and the other educational resources in order to achieve his educational objectives? What does he intend to do? What does he expect others to do? What is the intended sequence of learning episodes?

7. *Describe actual process.* What were the learning activities and related procedures that actually occurred? How much time was spent doing what with whom or with what? Some types of learning activities such as a correspondence course, a patient management problem, or a health care audit typically result in a record that provides a brief description of the process. For many types of learning activities in which a self directed learner might engage, the professional must prepare such a summary description for himself. In many respects, this is the easiest description to prepare even though the process is complicated, because it deals with active behavior by the learner.

8. *Describe external standards related to the learning process.* What do peers do when they engage in similar learning activities? Are there some parts of the process that seem to be crucial? How about the most effective self directed learners? Are there alternative learning styles that should be taken into account? Detailed case studies of professionals who effectively use comparable types of learning activities can be especially useful.

9. *Compare expected with actual processes.* Did the learning activities and related activities take place as expected? Where were

the major gaps between expectation and actuality? Which gaps
deserve the most attention in further efforts to increase the
effectiveness and satisfaction of learning activities? Parti-
cipant reaction forms typically yield this type of data.

10. *Compare the internal comparison between expected and actual
    processes with external standards regarding processes in
    comparable educational efforts.* How does the professional's
    experience compare with that of peers who used similar learning
    activities? Do gaps between expected and actual processes
    reflect inadequate performance or unusual aspirations as a
    learner? If so, what are the implications for future educational
    efforts?

11. *Describe expected outcomes.* What does the professional expect to
    result from the educational activity? What are his educational
    objectives? What behavioral changes does he expect, in the form
    of increased competence and improved performance? What other
    outcomes should result from his continuing education activity,
    such as better health maintenance or improved patient care?

12. *Describe actual outcomes.* For some other approaches to
    educational evaluation, this is the only category of data that
    is collected. What are the behavioral changes for the learner
    and other results that actually occur? What did the professional
    learn from the educational activity? What can he now do better
    as a result? Various instruments and procedures are available
    that can be used or adapted to collect this category of evaluation
    data. Included are achievement tests, self assessment inventories,
    observational check lists and rating scales, review of health

records, video tape of performance, survey of impact on
patients.

13. *Describe external standards related to educational outcomes.*
What do peers typically learn as a result of similar educational
activities? Are there some outcomes that are most likely? What
objectives do the most effective self directed learners achieve?

14. *Compare expected with actual outcomes.* Did the professional
achieve his educational objectives to the extent to which he
intended? Where were the major gaps between expectation and
actuality? Which gaps deserve the most attention?

15. *Compare the internal cor arison between expected and actual
outcomes with external standards regarding outcomes from comparable
educational efforts.* How does the professional's achievement com-
pare with that of peers who engaged in similar educational activ-
ities? Should c   :s be made in expectations, in educational
efforts, or in both? What are the implications for future educa-
tional efforts?

16. *Select aspects for more intensive evaluation.* The professional
should review the descriptive and judgemental information that
he has summarized for each of the preceding fifteen steps. At
which points do the opportunities seem to be greatest to better
understand and improve aspects of the educational program?
Sometimes a smaller gap is a more likely place to start because
it is more amenable to improvement. The health professional
should usually focus his evaluation efforts on those gaps that
were identified in steps four, nine, and fourteen for which the
investment in evaluation is most likely to produce improvement in

his subsequent educational experiences. If he discovers that the descriptive information is inadequate for useful comparisons, it may be best to concentrate the evaluation effort on improvement of the descriptive information that is subsequently available.

17. *Conduct intensive evaluation.* All of the procedures that have been developed for educational evaluation are available to the professional who tries to find out why the selected aspects of his educational activity function as they do and who seeks ways to improve them. Many of the procedures such as self assessment inventories, check lists, and guides to review records are self administered. Some, such as the focused interview, require another person who can probe and describe more objectively than most people can do for themselves. However, when self evaluation procedures have been well developed and described, as in the case of the self audit, most professionals are able to collect and analyze the necessary data to evaluate their continuing education activities.

18. *Use results for improvement of educational effort.* One of the points at which the self directed learner can and must assume the primary responsibility for educational evaluation is in the use of conclusions. One aid to utilization is to rank order the conclusions in order of desirability and then to review each conclusion in turn regarding feasibility. Those that are high on both should receive first consideration for implementation.

The foregoing 18 steps can be performed by most professionals with a minimum of help or guidance, after an initial experience with them,

Typically, no more than one third of the time available for evaluation
should be devoted to the first fifteen steps, and about one third should
be used for step 17. Assistance by another person to increase objectivity
is most helpful for steps 2, 7, 12, and 17.

Persons engaged in the development of regional health manpower
can make their greatest contribution to the evaluation efforts of self
directed learners in two ways. One is by the development of self
administered evaluation instruments. The second is by the preparation
of statements on external standards for the topics that many health
professionals study independently. The self directed learner can then use
these statements for steps 3, 8, and 13 of the evaluation process.

Study of Continuing Education

Another use of the model of the mentor role in self directed
education is for the study of continuing education as it relates to pro-
fessional practice. As with any model that is used for empirical
research, the mentor role model explains relationships between variables
in self directed education that can be tested by the use of empirical
research procedures. Although research as well as anecdotal support
for the assertions made in the model was noted at some points, much
additional research is needed before the model could be considered validated.

An additional research approach is to use the model to identify
professionals who, in varying degrees, are self directed in continuing
their education. A beginning point might be to separate a sample of health
professionals into three categories--those who are not self directed in
continuing their professional education, those who are self directed to

a moderate extent, and those who are outstanding examples of self directed

learners.

It is likely that many of those in the latter category of the

most self directed learners will also be among the most innovative in the

ways in which they perform their professional role (Schein, 1972, p. 51).

A careful study of these exemplars of life long self directed education

can produce the following results.

1. The identification of useful selection criteria to use for

    admission to preparatory professional education so as to

    increase the number of health professionals who are self

    directed learners.

2. The recognition of ways in which preparatory professional

    education might be organized to help a greater proportion of

    health science students to become self directed learners.

3. The specification of ways in which practicing professionals

    can be assisted to become more self directed in their continuing

    education efforts.

4. The location of innovative ideas and practices for continuing

    professional education which might be adapted for use by other

    professionals.

5. The availability of these highly self directed learners as

    opinion leaders who can effectively encourage their peers to

    become more self directed in continuing their education.

The next step in this research approach is the *preparation of*

case studies based on continuing education activities of health professionals.

Case studies would be prepared for a representative sample of professionals

in each of the three categories but especially for those who are most self

directed in continuing their education. Each case study would describe one or a series of learning episodes in which a health professional engaged and would include descriptions of the types of decisions and activities that are referred to in the model, in which the professional actually participated. The final step in this research approach is to conduct a *comparative analysis* of the case studies to identify the similarities and differences among them. Some examples of the types of comparative analyses that might be conducted are listed below.

1. *Identify successful procedures that professionals use to deal with difficult points in the series of learning episodes.* In most educational activities there are some points at which many learners experience difficulty and either perform unsatisfactorily or withdraw from the activity altogether. Examples include recognizing and accepting a need for behavioral change, over-coming negative barriers such as a lack of materials, difficulty choosing between many possible objectives, engaging in learning activities when working in a remote geographical location, and linking increased competence to improved patient care. The case studies can yield illustrations of ways in which a few professionals deal well with these critical points. When several professionals successfully use a similar procedure, it is worth analyzing to discover how it might be adapted for use by many others.

2. *Recognize general concomitants of effective self directed educa-tion.* The set of cases are likely to contain a number of instances in which various professionals engaged in a similar self directed educational activity. These cases can be sorted into three groups

regarding extent of success--high, middle, and low. The three

groups can then be compared to identify some of the concomitants

of success.

3. *Identify promising innovations regarding need appraisal.* Some

    professionals will do things differently. One may use an

    unusual way to establish criterion performance to compare with

    his own in an area of practice for which standards are not

    readily available. Another professional may report that an

    unusual encounter with a peer triggered his own concern about

    changing his own practices. The further analysis of such

    unique experiences may lead to suggestions that are more

    widely applicable.

4. *Increase understanding of ways in which a greater awareness of*

    the influence of context on continuing education can be useful.

    People tend to take for granted the societal or professional

    context within which they function. Sometimes something happens

    to alert a professional to the influence of that context. For

    example, working as a preceptor with a pre-medical student may

    cause a professional to re-examine some ways of thinking that

    seemed very standard during conversations with peers. The

    introduction of an effective director of continuing education

    into a community hospital may have an impact on the outlooks of

    staff members regarding professional growth.

5. *Recognize innovative ways to select from among many educational*

    objectives. One practitioner may find that a brief review of

    his professional health records can reveal priorities regarding

    the educational objectives that are most important. Another

may emphasize objectives that are shared by peers with whom

he will continue to interact after the educational experience

as a way of encouraging utilization on new understandings.

6. *Identify promising innovations regarding learning activities.*
Examples include a highly personalized consultation service,

or pre-packaged learning modules with an emphasis on utilization,

or procedures for scheduling and preserving time for continuing

education. Each innovative educational practice that is reported

may become a useful suggestion for another professional.

7. *Recognize innovative ways for professionals to evaluate their
own self directed education.* The procedures that one practi-

tioner develops to relate his learning activities to improvements

in patient care may suggest a more general procedure that can be

described for use by many of his peers. Similar generalization

could occur for procedures by which a professional efficiently

compares his expectations for an educational activity with what

actually occurs.

The results of such comparative analyses of case studies on self

directed education can be used in various ways. The findings can be used

to modify the model of the mentor role so that it has greater explanatory

value. The findings can also be used to prepare practical suggestions for

self directed learners regarding the program development decisions that

they confront. Many of the results should be helpful in achieving greater

continuity between preparatory and continuing education in the health

sciences. A particularly useful result would be the development of ways

to more closely connect continuing education and professional practice. The

case studies also provide the basis for some interesting articles that

might encourage more professionals to become more self directed in continuing their education.

Using Educational Resources

One additional use of the model of the mentor role in self directed education is to assist the "linkage agent" who facilitates health manpower development to increase the accessibility of educational resources. Some types of educational resources, such as journal articles and peers, are relatively well known to an individual practitioner if they are within his specialized field. The practitioner is less likely to know about relevant educational resources from other health specializations. The "linkage agent" performs an especially useful function when he enables practitioners to share educational resources among health fields.

Each passing decade during this century has witnessed increased division of health professionals into specialized clinical areas (Clark, 1966, p. 3). Formal programs of continuing education have tended to reinforce this specialization (Vollan, 1955). During the past decade or two there has been a growing recognition that there are emerging societal needs for greater collaboration among professions (Schein, 1972, p. 34). Some projects have actively sought greater collaboration among health professions in the preparatory education of students through work with neighborhood health centers (Schein, 1972, p. 126). Greater sharing among health fields is also an important ingredient in continuing education.

Those who facilitate life long self directed education for health professionals in a region may be associated with any one of several

organizations. Examples include a Regional Medical Program, a state or local professional association, a state health department, a hospital, or a university. The facilitator may serve as an educational consultant to individual practitioners and may help to develop and make accessible a broader range of educational resources.

The model of the mentor role can be used to identify points at which a "linkage agent" might be most helpful in encouraging self directed education by health professionals. Listed below are some likely points.

1. Disseminate information about variability in professional performance that is likely to activate a readiness to change by health professionals.

2. Help to assemble information about deficiencies in health maintenance and patient care.

3. Assist in bringing together perceptions of gaps between actual and criterion performance as seen by professionals in a specialty and as seen by people in related roles.

4. Increase awareness of available educational resources in various specialized clinical areas within the health field.

5. Provide advance information about opportunities for continuing education to help professionals to plan their continuing education.

6. Reinforce facilitators of continuing education such as familiarity with criterion performance and availability of self study learning modules that relate directly to clinical practice.

7. Reduce barriers to continuing education such as lack of literature retrieval mechanisms and inflexible scheduling of continuing education programs.

8. Present a rationale for selecting a few educational objectives from a sometimes overwhelming number.

9. Provide criteria that professionals can use for the selection of appropriate learning activities.

10. Encourage organizations, such as community hospitals, to make arrangements that support the efforts of professionals to continue their education.

11. Suggest ways in which organizations can encourage and support changes in procedures that help to reinforce new and desirable practices that result from continuing education.

12. Prepare forms that assist self directed learners to evaluate their continuing education activities.

PART FOUR: GUIDELINES FOR FACILITATION OF SELF DIRECTED EDUCATION

The persons who have some responsibility for the development of
regional health manpower perform an important role in the facilitation of
self directed education. The persons who have such responsibility occupy
various positions such as director of continuing education in a hospital,
executive of an association of health professionals, coordinator of con-
tinuing professional education in a health science college of a univer-
sity, or an official in a state health department. They perform this
facilitation role largely by serving as a "linkage agent" between national
and regional resources related to continuing education and individual pro-
fessionals in the region.

Listed below are the
major guidelines that such "linkage agents" can use to effectively facili-
tate life long self directed education.

1.   Emphasize as the main purpose of continuing education for health
     professionals, the improvement of patient care and health main-
     tenance, and the enrichment of health careers.

2.   Recognize that the range of educational needs and opportunities
     can be bewildering, and that an effective approach to self
     directed continuing education is a selective one that enables the
     professional to set priorities.

3.   Include within the "linkage agent" role the following four
     interrelated activities:

     a.   facilitating closer articulation between preparatory and
          continuing education,

     b.   increasing the accessibility of educational resources for

the individual practitioner,

c.   helping professionals to better understand the importance

and methods of life long self directed education, and

d.   encouraging professionals to become more self directed in

continuing their education.

4.   Utilize the components of the mentor role (need, setting,

objectives, activities, evaluation) as a way to help professionals

to better conceptualize a more self directed approach to continu-

ing education.

5.   Assist professionals to appraise their educational needs by:

a.   providing information about variability and deficiencies

in professional practice that can stimulate them to recog-

nize their own educational needs,

b.   providing professionals with a rationale for continuing

education need appraisal,

c.   providing practitioners with forms and procedures that they

can use to appraise their own educational needs, and

d.   assembling standards of professional performance such as

by use of a "college of peers."

6.   Assist professionals to better understand and utilize their

professional settings for purposes of continuing their education

by:

a.   increasing their awareness of educational resources, and

b.   encouraging the institutions and organizations with which

health professionals are associated to support continuing

education as a major means of individual and organizational

renewal.

7. Assist professionals to set their continuing education objectives by:

    a. helping practitioners to become familiar with criterion performance as an attainable ideal,

    b. encouraging them to relate their educational objectives to their career aspirations,

    c. providing practitioners with a rationale for the selection of a few educational objectives on which to focus at a given time,

    d. providing information about the types and amounts of effort that are typically required to achieve some common educational objectives,

    e. assisting practitioners to explore the pros and cons of various educational objectives, and

    f. helping them to state clear and realistic educational objectives.

8. Assist professionals to select and organize their learning activities by:

    a. familiarizing them with the range of available methods of learning,

    b. helping to develop educational materials that are useful for self directed study,

    c. providing arrangements for easy retrieval of knowledge,

    d. helping practitioners to locate peers who will collaborate on continuing education activities, and

    e. providing criteria for effective continuing education.

9. Assist professionals to evaluate their self directed education efforts by:

    a. providing materials and procedures for self administered evaluation,

    b. providing external standards that practitioners can use to interpret the results of evaluation, and

    c. encouraging the use of evaluation findings to improve their educative activity.

10. Support efforts to study self directed education, by use of comparative analyses and other procedures.

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