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ABSTRACT

By definition allied health education operates in a dynamic environment influenced by the diciplines it represents, the educational system in which it resides, and the complexities of the health care delivery system which it serves. Well-designed and implemented interdisciplinary programs would assist allied health administrators in answering the needs of its diverse publics. Historically, an interdisciplinary approach in the health sciences has been demanded by these forces. Unfortunately, with its multiple definitions, interdisciplinary education confuses and poses problems for administrators attempting to implement the approach. An administrator of the allied health unit must address issues related to the tools of production (organization of the program, faculty, and curriculum), the raw material (students), and the final product (the reality of the outcome of interdisciplinary efforts). Perhaps the biggest challenge for the administrator is not only to facilitate development of innovative instructional forms, but also to deal with complex organizational change. Specific administrative decision making occurs at two levels: (1) those decisions which begin the change process including organizational goal setting, problem diagnosis, and postures necessary for interdisciplinary development and (2) those which relate to the issues of implementation and maintenance of interdisciplinary activity (program operation). (YLB)

DEVELOPING INTERDISCIPLINARY EDUCATION IN ALLIED HEALTH PROGRAMS

ISSUES AND DECISIONS

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TABLE OF CONTENTS

FOREWORD

Interdisciplinary education in allied health often generates considerable enthusiasm in principle but little support for implementation. Educators and health practitioners agree that interdisciplinary education is desirable, but relatively few educators have undertaken the efforts necessary to introduce interdisciplinary programs into their institutions.

Interdisciplinary approaches have merit in all career education programs. Rarely in working situations are job functions so clearly and narrowly delineated that they stay entirely within the parameters of a single discipline. However, to provide an orderly and systematic learning experience, a large body of knowledge has been organized into fields of study and further subdivided into specialty areas and courses. While the fragmentation and pigeonholing of educational disciplines tends to limit the potential breadth of the educational experience, it is a pragmatic approach to assimilating the vast amount of information which constitutes the total of contemporary knowledge.

In allied health disciplines, the organization of curricula is more restricted and less flexible than in some other fields of study. As the term implies, these disciplines are allied to other providers of health care and while many of the allied health professionals exercise independent judgment in the delivery of their services, comprehensive care of patients requires involvement of other health disciplines. Generally the allied health professionals are the practitioners most knowledgeable in one specific health-care service. The educational programs necessary to produce this degree of specialization in a relatively short time results in intensive courses of study which permit little expansion or experimentation.

During the early development of the allied health disciplines, the need for interdisciplinary understanding on the part of allied health practitioners was not a major issue. The role of the physician in both the delivery and coordination of patient care tended to simplify the relationships among allied health professionals. The physician gave the orders, often directly to the allied health specialist. However, as health care settings have grown larger and more complex, the practice of physicians personally directing coordination of allied health services for patients has diminished. With the medical staffs of some hospitals numbering in the hundreds, communications between physicians and the various allied health services have become formalized and impersonal.

In health care settings, particularly in hospitals, there has been an increase in the number of allied health specialties. It is not unusual for a patient to receive services from a half-dozen allied health practitioners on one diagnostic visit. Even in hospitals with good communications and coordination of services, there is fragmentation of patient care. The organization of health care delivery mitigates against the best utilization of expertise available from the numerous allied health specialists. Many of the problems in delivery of patient care result from a lack of understanding or of communications among the many semiautonomous allied health departments. Each of the allied health specialties delivers its services, often with minimal understanding of the responsibilities and requirements of the other allied health services.

Functional isolation of allied health specialists is a problem which may contribute to the high attrition rate. In some specialties, the drop-out rate among practitioners within the first few years of practice is nearly 50 percent. Considering the costs of preparing allied health specialists, the acute shortages for some specialties, and the career displacement of the individuals who drop out, a high attrition rate is exceptionally expensive. Some administrators believe that an educational experience which includes a better understanding of the related roles of allied health specialists and a team approach to

patient care produce a higher degree of job satisfaction. A number of educators and administrators point to the potential of interdisciplinary education as a means of breaking down the isolation among various health professionals and reducing the fragmentation of patient care. While there is general agreement that the outcome would be desirable, there has been considerable divergence on the best means to achieve the interdisciplinary goal.

In discussions of interdisciplinary programs in allied health, educators sometimes become more absorbed in defining the term "interdisciplinary" than in developing a workable methodology. Educational purists sometimes interpret "interdisciplinary" education as a broad educational experience which disdains course content in any of the disciplines. This concept of interdisciplinary education is impractical in allied health since the graduates of these fields of study are all specialists. If each student mastered the techniques of each field, the educational programs for allied health services would be too long to be affordable.

The authors of this work assess the various differentations in the approaches generally grouped as "interdisciplinary," such as core curriculum, team approaches, and multidisciplinary programs. The authors make an important distinction between the approaches which involve curriculum content, such as a core curriculum, and those which relate to educational process, such as team development. Generally the authors use the term "interdisciplinary" in a generic sense, applying it to any activity which involves two or more disciplines. As the authors indicate, the outcome is more important than the content, process, or terminology.

In the following pages the authors discuss the rationale for interdisciplinary education in allied health and describe some of the programs which have been developed around the interdisciplinary concept. The text does not propose a single model or plan by which an educational institution can achieve the desirable integration of allied health specialists into a cooperative work setting. The authors have placed emphasis on defining the issues and presenting examples of the various approaches, and combinations of approaches, in use today.

The major issue remains in the form of a question: Is there a method—or a group of alternative methods—which will educate allied health specialists and teach them to work with other specialists? This volume, commissioned by SREB's Allied Health Education Project and written by two allied health administrators who are leaders in interdisciplinary innovations, opens new avenues for answers.

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INTRODUCTION

Academic administrators in allied health today are confronted with a series of questions, both philosophical and pragmatic, responding to the demands of their multiple publics: faculty, students, employers, accrediting bodies, university administrations, federal and state agencies, licensure boards, and so on. One of the issues often verbalized by employers is the need to produce graduates who are prepared to function immediately in the work place. Accrediting bodies, licensure boards, and professional organizations have developed and implemented directive guidelines on the "technical skills" in each discipline's curricula, but nevertheless the pressures from employers continue to mount.

New approaches to educational technology, such as modular self-learning packages and competency-based learning, continue to be applied, but there appears to be no discernable distinction in the outcome. It is quite possible that the concerns of the employers, and occasionally students, cannot be resolved by educational technology, but, in fact, are a function of the student's difficulty in making the transition from a discipline-based learning experience to a multi- or interdisciplinary work place. It is possible that the students' and the employers' problems are not related to technical skills but can be attributed to their lack of experience or knowledge in applying those skills in conjunction with other individuals delivering patient care.

Students in allied health have little or no practical preparation in dealing with the collaborative working situation in which the traditional health care patient resides. There is realistically no unilateral care provided in the present delivery system. Patients and their multiple problems are not carried through our present health care system by a single person who functions in isolation from other health professionals. It is to that end that this monograph has been prepared. Our effort here is to present a body of material which reflects the collective experience of a great number of people throughout the country who have attempted over the past eight years to develop and implement interdisciplinary educational experiences for allied health students. These people have carried on in the interdisciplinary track in the belief that students who are taught to work together in a collaborative, interdependent approach to patient care not only will deliver a higher quality of care, but will be more effective, efficient employees and more productive human beings.

This monograph seeks to present selective issues which require decisions from allied health education administrators to implement interdisciplinary activities on their campuses. We recognize that much of what is presented here is the result of countless hours of discussion, argument, and other forms of human encounter with allied health educators across the country, and to them the authors offer their thanks. It is intended that allied health educational administrators will use this monograph as a primer for working with their various publics in developing an approach to interdisciplinary activities.

CHAPTER I — THE DYNAMICS OF THE ENVIRONMENT

Allied health education operates in an environment which is unlike that of any other field within the context of the health sciences. There is a complexity that simply does not exist in the other health disciplines. In this complexity, a dynamic environment is created which allied health administrators must recognize, define, and finally cope with in their deliberations and actions. Interdisciplinary education as a part of the total educational program in allied health is caught up in the dynamics of this environment. Simply dissected, the environmental context of allied health is divided into three parts: allied health itself, educational institutions, and the health care delivery system.

Allied Health

There are "tangible" and "intangible" forces at play in the allied health environment which condition its responses to interdisciplinary program planning. On the "intangible" side, the allied health concept is new, has had tremendous growth, and possesses a major characteristic of extreme diversity. Historically, as a major component of the academic health sciences, allied health is an infant. As such it suffers from a lack of recognition at the national level in those areas which bestow credibility. Thus, the allied health administrator is placed constantly in a position of explaining who and what he represents. With the rapid emergence of allied health in the last 14 years, the emphasis has been primarily on development of programs rather than on their educational conceptualization, analysis, and refinement.

Perhaps the greatest difference between allied health and the other disciplines is the diversity of its academic content and the educational bases from which it operates. No other health science area attempts to encompass so many disciplines taught in vocational-technical, community college, university, health science center, hospital, and graduate school settings. This diversity brings about not only communication problems, but sometimes divergent objectives and goals as well. Some of the problems allied health faces center around issues of transferability of course credits, articulation between technical and professional programs, and differentiation of faculty credential requirements. All these forces affect the allied health administrator daily.

On the "tangible" side, the allied health educational administrator must contend with the impact of accreditation agencies, multiple professional organizations, licensure and certification boards as well as the real questions of the definitive role of the academic program in preparing entry-level practitioners. In essence, these external forces condition the bounds and limits of the allied health education administrator's ability to develop creative, realistic approaches to allied health education.

Educational Institutions

Allied health disciplines, by encouraging the transfer of their educational responsibilities from clinical facilities to educational institutions, in effect have relinquished some of their previously unchallenged control to the academic institutions. Academic institutions have imposed controls and demands upon allied health educational administrators in addition to those resulting from the essential nature of allied health itself. Rigid departmental structures, schedule

requirements, faculty standards, and institutional general education requirements all affect the kinds of review and justification that each allied health program must undergo in an educational institution. The academic environment also develops a separatism in the allied health structure as the individual allied health disciplines seek to create their own identity through emulating the academic model of discipline-oriented departmental structures. Academic allied health administrators must confront these factors and operate within the context of these organizational limitations.

Educational institutions present a complex economic dynamic to the allied health administrator. Low faculty/student ratios, reliance on clinical facilities which are outside the academic organizations, and an unusual salary competition factor with the clinical market present a series of economic issues that definitely contribute to the dynamics of allied health in the academic institutions.

Allied health's participation in higher education also brings about a potential problem relative to mission conflicts. The academic institution traditionally stresses research and the scholarly approach to education, with a strong mission orientation to the creation and dissemination of knowledge. Allied health education has as a pragmatic goal the preparation of people to practice a given set of skills, an orientation geared more toward the provison of practical, task-oriented education. Allied health administrators find themselves in the position of having to adjudicate the conflict between the allied health mission and the traditional academic mission.

The Health Care Delivery System

As presently constructed, the health care delivery system provides a mirror image of the problems found in allied health education. As the demands increase for more diverse and sophisticated levels of care, the system looks to the educational sector to provide the manpower to meet the demand. The fee-for-service economics of the health care delivery system also makes allied health professionals particularly vulnerable to the system's whims, since many of the allied health disciplines—physical therapy, medical technology, occupational therapy, respiratory therapy, radiologic technology, etc.—are essentially "piece work" or reimbursable services. Their tasks are specifically defined and the system receives direct income for their services. "Piece rate" payment in the system creates separatism which is a problem for the academic allied health administrator in developing support for interdisciplinary activity. However, while the economics of the health care delivery system encourages disciplinary separation, the continuity and flow of a patient's progression through this system demands cooperation.

Economics also affects the numbers of allied health professionals in a single employment setting. Unlike nursing, which typically provides continuous care to a large number of people, the allied health professionals, through their specialized services, spend relatively short periods of time with selected patients. Allied health programs thus turn out a limited number of graduates into a limited number of jobs. This creates a problem of unity among the allied health disciplines and, in particular, a problem of developing mutual goals and objectives.

Movement of the allied health disciplines from their former educational base in the employment sector to the academic world set the stage for a growing gap in the expectations and needs of employers and academic programs. Previously, the allied health graduates were essentially prepared to function in the specific technical tasks of their trade, but the removal from that base has diluted the technical skills of the graduates while increasing their theoretical and conceptual competencies. The employment sector now decries the inability of "educated" allied health professionals to perform the jobs they must do in delivering patient care. Employers accuse the educators, and the educators accuse the employers, while students reside somewhere in the middle of the battleground.

All of this confrontation is compounded by the technological explosion in health

care of the Sixties and Seventies. Daily discoveries of new applications of knowledge pressured the academician and the employer both to see to it that their clients — students and patients — received the most up-to-date services. This technology explosion has also pressured the allied health educational administrator to develop new manpower resources to respond to new demands.

Summary and Synthesis

Allied health educational administrators must function in an environment that is characterized by constant change and demand. Its very diversity, newness, and growth characterizes allied health as a health science group. The rapid movement of the allied health specialties from employer-based preparation to academic-based preparation has created an increasing layering of controls on the allied health academic administrator. Changes in the health care delivery system in both economics and structure have demanded responsiveness and flexibility from the academic setting which were often difficult to deliver. Caught up in this flood of dynamics is the allied health educational administrator who must respond and act to satisfy each of these pressure areas.

As each of these areas of dynamics grows stronger, the concept of allied health becomes more fragmented. Employer demands for students who can function in the work place, professional demands for more independence, and academic demands for more intellectual preparation all seem to be running counter to one another. Convergence of the needs of these pressure points can be addressed and carried out under the umbrella of well designed and implemented interdisciplinary programs within the allied health context. The following chapters address this developmental process for the academic allied health administrator.

CHAPTER II — A PRAGMATIC APPROACH TO DEFINING "INTERDISCIPLINARY"

The word "interdisciplinary" is probably one of the most misused terms in educationl jargon. "Interdisciplinary" has been used to describe anything from freshman English to surgery teams. Repeated attempts to clarify and purify the term have generally resulted in more heat than light. Each definition concentrates on a unique concept; all make sense. The problem occurs when two persons try to communicate using the same term and two different meanings. In an effort to provide a common language base, shed a bit of light on the controversy, and, hopefully, to dispel some illusions, a two-phase process is used to explore the concept. The first phase will attempt to isolate the historical determinants of interdisciplinary education in the health sciences. The second phase will provide a concrete definition and analyze it in terms of how it has appeared in the curriculum.

Historical Determinants

Academicians in higher education have documented their thoughts on interdisciplinary studies for, at least, the past 50 years. Institutions such as Harvard and the University of Chicago have attempted large scale interdisciplinary curricula with varying degrees of success and failure. The rationale for interdisciplinary studies is based on the common observation that the problems of the real world are not separable into disciplines. The objective of interdisciplinary studies was, perhaps, most succinctly stated by McGrath when he reviewed the University of Chicago efforts:

> The chief objective was not to turn out mathematicians, historians, or psychologists, but educated men and women who, through acquaintance with the great works of all time and cultivation of the "intellectual virtues," would be equipped to lead intelligent personal and civic lives.[1]

Thus, higher education has determined a sense of direction which says that interdisciplinary education is needed to teach students in academic settings how to solve problems of real life. The major objective is not to improve the specific discipline which the student is studying, but to improve the student as a person when the study of the discipline is completed.

The arena of health services delivery clearly embodies the needs which bring about interdisciplinary efforts. No one in the helping professions needs to be reminded that the health care industry is big business. There are currently more than 200 occupational titles related to health. Technology expands at a geometric progression, doubling every 10 years. Recent conservative estimates indicate that medical care accounts for approximately eight percent of the gross national product (GNP), a 67 percent increase since 1950. We now spend more than $180 billion per year for medical care, an 800 percent increase over 1950 levels.

Any industry of this size, with this kind of technological and occupational growth, is going to experience tension, inflexibility, and resistance to change. The result is subspecialization, rather rigid definitions of roles and responsibilities, professionalism, turf-guarding, and other defensive measures.

[1] "Interdisciplinary Studies: An Integration of Knowledge and Experience," Earl J. McGrath, *Change*, Vol. 10, 1978, p. 7.

Needless to say, specialization, professionalism, and turf-guarding bring their concomitant problems. Problems in communications and coordination of health care is a recurrent theme in the literature. On an institutional level, administrators often claim that interdepartmental rivalries thrive at the expense of quality patient care. The breakdowns are traced to misunderstandings of professional roles and to the constraints and problems faced by individual departments in accomplishing their tasks. Health-related institutions, such as hospitals, are organized around professional units. Members of the professions are not generally motivated by organizational goals, objectives, and priorities. They work to meet their own professional needs. Professionalism connotes autonomy. Autonomous behaviors are extremely wasteful in an organization which depends on integrated service.

While the problems which create the need for interdisciplinary approaches to care occur in the care setting, educational institutions are not particularly responsive to these needs. Historically, the development of interdisciplinary education within health professions education has been directly proportional to the changing practice of the delivery of health care. In those areas where medicine and dentistry have opened the focus of the delivery of their services more toward patient-centered care, rather than disease-centered care, shared delivery of services (interdisciplinary, team, etc.) has increased. In responding to the question — "Why is teamwork particularly important in primary care?" Kindig responded:

> The reason is that the comprehensive relatively non-technical nature of primary care includes a large number of tasks that cannot be carried out effectively by one person.[2]

This response provides the greatest clue to the nature and role of interdisciplinary education. The proliferation of team approaches has occurred in those areas not dominated by high technology—primary care, family practice, public health, mental health, rehabilitation. The model here is one of collaboration.

The reason that interdisciplinary education has not taken root in health sciences education is because most health science centers (where schools of medicine reside) are specialized care centers. High technology, high specialization, and professional turf-guarding preclude interdisciplinary development. Where efforts have been made, the stimulus has come by and large from outside sources.

The interdisciplinary practice and education movements have been heavily subsidized by the federal government since its entry into health science education and health delivery in the mid-1960s. Federal efforts have been uncoordinated and have come from a number of sources, such as the Office of Equal Opportunity (OEO) and various components of the Department of Health, Education, and Welfare. OEO was one of the first federal agencies to support interdisciplinary activity with the Yale-New Haven Medical Center project involving medical, nursing, and social work teams in neighborhood health centers in 1966.

Although specific funds were not labeled for interdisciplinary use, a number of academic institutions, through various special project grant mechanisms in mental health, medicine, nursing, and allied health, were able to secure funds to develop projects related to interdisciplinary activities. In 1974, under auspices of the Health Professions Education Assistance Act, the Bureau of Health Manpower organized an Office of Interdisciplinary Programs. That office had as a prime responsibility the administration of the Health Manpower Education Incentive Awards Program (HMEIA). The HMEIA program was charged with fostering approaches to teaching interdisciplinary primary care to students. That program, funded only in 1975, was replaced in 1976 by a general special projects authorization as a part of Public Law 94-484.

Other federal agencies, such as the Regional Medical Programs and the Appalachian Regional Commission, have also provided support for interdisciplinary education projects. Federal initiatives in funding have consistently been

[2] "Interdisciplinary Education for Primary Health Care Team Delivery," David Kindig, *Journal of Medical Education*, Vol. 50 No. 12, December 1975, p. 100.

on a project basis with minor evidences that institutional funds have supplemented or replaced federal dollars. Federal projects appear to have been oriented primarily toward specific clinical goals, such as rural care, primary care, etc., using interdisciplinary approaches.

The response of the private sector to the development of interdisciplinary education has been significent. Foundations, such as the Robert Wood Johnson Foundation, the W. K. Kellogg Foundation and the Ittleson Foundation, Inc., have been generous with financial support for interdisciplinary educational activities. The American Medical Student Association and universities have been major recipients of support which enabled them to carry out much of their programming.

Through the support of the Robert Wood Johnson Foundation, the Institute for Health Team Development (IHTD) was founded in 1973 on the premise that a central resource could develop educational strategies, content, and training of faculty which universities could then use in preparing students for interdisciplinary approaches to the delivery of primary care. Communications on interdisciplinary activities through a national information network was also a focus of IHTD, which hoped to encourage the development of even more activity. The IHTD model, which was similar to the HMEIA effort, was based on training interdisciplinary faculty teams, prepared to teach and to provide role models for students on university campuses. The model mandated that medical centers be the focal points of activities, thus limiting the potential participation of allied health institutions.

Academic institutions have played the role of "manufacturer" in the process of interdisciplinary education, typically responding to "consumer demand" (students, funding incentives, etc.), but not aggressively researching and developing the product. It appears that interdisciplinary education, because of its project nature, has not developed into an integral component of health science education.

Summary and Synthesis

Interdisciplinary education has its roots deeply implanted in the health care delivery system. As an educational process, it has a unique developmental pattern; interdisciplinary education does not appear to be a product of educational centers, but has been demanded of the educational centers by funding incentives, students, private organizations and other forces. There has been little faculty initiative for developing interdisciplinary education, thus leaving it outside the mainstream of disciplinary curricula.

Analysis of the Term

> **Interdisciplinary education** is that process which develops as its ultimate outcome the *collaborative* and *interdependent* action among two or more persons of different disciplines, revolving around accomplishments of *tasks* or achievement of *goals* which could best be achieved through such effort.

The key concepts in this definition are *collaboration, interdependence, tasks* or *goals*, and *different* disciplines. Some authors, most notably Sue Eichhorn and Jo Boufford of the Institute for Health Team Development, capitalize on *differentiation* as a key element in distinguishing "team" and "interdisciplinary" from other instructional settings. Differentiation refers to the processes whereby students explore not only similarities but also the aspects which are unique to their chosen profession. It is through the exploration of differences that students can discover the unique contributions of other professions and ways the professions can aid each other in delivering services.

Interdisciplinary and team approaches to health care do not exist in a vacuum. Central to any group endeavor is a common *task* or *goal*. However, the task does not need to be limited. It can include collaborative planning and implementation of patient care, collaborative research, collaborative development of a project, or many other situations.

The key word which distinguishes the interdisciplinary process is the *level* of collaboration and interdependence designed into a program. Simply stated,

collaboration is working together cooperatively, but it includes facility in communication, flexibility, problem solving, and perspective. Interdependence is the full integration of two or more systems of knowledge and skills, which uniquely bear on the definition and solution of a given problem. In an interdependent situation the whole of the combined knowledge and skills is certainly greater than the sum of the parts.

With a definition of interdisciplinary, the task remains to distinguish the term from other similar concepts. The most confusion revolves around the interchangeable use of "core curriculum," "multidisciplinary," "interdisciplinary," and "team." Core curriculum is a concept devoted exclusively to *content* issues in education. Multidisciplinary, interdisciplinary and team approaches refer to *processes* by which certain content is transmitted or tasks accomplished.

Core curriculum is used to describe those courses devoted to common content of the involved disciplines. "Core" can refer to preprofessional courses, as modeled by the University of Nevada at Reno, to professional basic sciences, and to common interest topics, such as health systems, ethics, problems of aging, etc. The philosophy behind this movement is that if students learn together they use the same language base, facilitate communications, and thus collaborate more easily. A second theory is that by increasing student/faculty ratio in common content areas, universities can maximize resources and reduce costs. Unfortunately, experiments in core curriculum for basic health sciences have not been very successful, since the informational needs of the professions vary so much that such a core produces more frustration than positive learning.

Multidisciplinary approaches involve several disciplines focusing on one problem or issue juxtaposed so that each point of view is exposed, but without making explicit the possible relationships between disciplines. The critical difference between *multi-* and *inter-*disciplinary approaches is the level of *collaboration* and *integration* designed into the process. The typical hospital serves as an excellent example of multidisciplinary activity.

A myriad of goods and services are offered to the patient under one roof in the hospital—X ray, laboratory, physical therapy, emergency, housekeeping, nursing, and many others. Each of these services is embodied in a particular department with its own staff, policies, procedures. Each department may meet certain needs of the consumer but not in an integrated manner. Scheduling becomes a monstrous task when the needs of individual patients conflict with policies and procedures of departments. Hospitals are multidepartmental organizations, organized around the needs of departments, not those of the consumers.

Interdisciplinary team building is also used interchangeably with interdisciplinary education. Team building is, in reality, the next point on the continuum, building new applications and new concepts to the collaborative and integrative concepts of interdisciplinary. Team building is really *transdisciplinary*, beyond the disciplines. Whereas interdisciplinary programs begin with the disciplines and integrate activities, teams start with the issues or problems and, through the process of problem solving, bring to bear the knowledge of those disciplines that contribute to a solution. It is a problem-oriented approach.

The formats for educating students of different disciplines together fall on a continuum from core curriculum and multidisciplinary efforts to interdisciplinary efforts to team building. An ideal educational approach to interdisciplinary activity would begin as soon as the students enter their professional programs. Core curriculum on the basic issues in health could provide the various disciplines a common language base. On the professional level, an interdisciplinary student orientation program would be useful in fostering communications and also have a great symbolic impact. This orientation would reinforce the need to use collaborative techniques as a normal method of delivering patient care. Interdisciplinary seminar courses on the junior and senior levels could provide instruction in the base-line interdisciplinary objectives. On the clinical level, interdisciplinary teams could then apply the base-line objectives in the

practical situation (i.e., sharing information, developing trust levels, collaborative problem solving, etc.).

What Does It Look Like?

Thus far the term interdisciplinary has been defined; distinguished from, and related to similar concepts. The task remains to look at predominant models of activity and to determine their outcomes, similarities, and place in curriculum. Interdisciplinary programs in academic centers roughly break down into four major models of presentation:

I. Common Issue:
Typically a didatic approach in the classroom setting using a combination of lecture and small group discussion with a common issue, i.e., health care systems, ethics, etc.; generally emphasizing information exchange with limited or no collaboration or interdependence required of students. In this sense, it is a multidisciplinary activity.

II. Case Presentation:
Typically a problem-solving approach utilizing a patient or topical area which permits input from a number of disciplines; can be a real case or simulated activity; generally initiates role sharing, information sharing, and the early stages of collaboration and interdependence; does not require actual delivery of service or activity.

III. Team, Research:
A more intensive problem-solving approach focusing on the need to produce a product at the completion of the activity, generally a project-oriented program, normally focusing on community type subjects (directory of community services); intensifies interdependence and collaboration with introduction to role differentiation among specialties.

IV. Team, Patient Care:
Generally takes place in a clinical setting with students participating in a collaborative, interdependent manner focusing on the delivery of patient care, utilizing referral techniques and with a major focus on a team approach.

The common issue model is by far the most predominant interdisciplinary format. At the University of Minnesota, at the behest of the students on campus, the administration of the medical center formed a faculty committee from all disciplines to develop common courses. Using allied health as an administrative focus, 14 elective courses of an interdisciplinary nature were developed. Courses ranged from such core functions as coronary pulmonary resuscitation to more interdisciplinary activites, such as health systems and ethics.

One of the exemplary allied health efforts in interdisciplinary strategies was initiated at the University of Connecticut in 1973. A two-semester sequence of coursework was developed. The first semester focuses on common disciplinary issues, with students participating in large lecture situations then breaking into small interdisciplinary groups for discussion. A team project is required as a part of the course, thus intensifying participation. The subject matter includes team concepts, health care organization, and consumerism. In the second semester, students are allowed to choose topics of interest through mini-course offerings. These courses are also essentially didactic, but done in small groups. In the summer of 1978, the university developed a clinical experience for students to apply the didactic work.

In 1973, the University of Kentucky College of Allied Health Professions developed a similar two-semester sequence entitled "Allied Health Colloquium." The first semester course now employs an interactive small group-oriented mode to such common issues as communications, ethics, law, problems with the elderly and handicapped, problems in interprofessional interaction, death and dying, and others. The second semester is devoted to more in-depth mini-courses on such topics as health economics, community health

assessment, value clarification, education, management and survival in organizations.

The case presentation model is most commonly seen through simulation or grand rounds. Paradoxically, this kind of activity is a common clinical education tool. Unfortunately, reports in the literature of interdisciplinary twists are few and far between. This area is fertile ground for development since the interdisciplinary process could be easily integrated into the course.

The literature is fraught with team programs past and present. Probably the oldest and best known health team approach is the foundation-supported American Medical Student Association (AMSA) Health Team Project. Using a research team format, students from various universities and health disciplines spend eight weeks in rural communities accomplishing tasks specified by the communities.

The University of Kentucky developed a health team program in 1972—the Kentucky January Program. Employing both research and patient care team formats, the program focus was either community health assessment or family care through home health agencies. One of the first team projects based in allied health, the program grew into a national program with students in 18 disciplines from nearly 20 colleges and universities participating. The program closed in 1979 with the opening of the Health Systems Clerkship program.

The University of Kentucky's Health Systems Clerkship incorporates all of the basic interdisciplinary models. Students prepare for the experience and develop their teams in a mini-course designed around community assessment simulation. Once in the field, the team combines preceptorship activities and community assessment into case presentations. Students select a case through relevant community structures, collect needed information for other members of the team and, during case presentations, develop a collaborative treatment plan for the patient. A community assessment is also included as a team task.

The University of Kentucky also sponsors the Summer Interdisciplinary Team Experience (SITE). Run concurrently and cooperatively with the AMSA and Consortia for Health Education in Appalachia Ohio (CHEAO) health team programs, the program combines preceptorship, community assessment, community project, and patient care tasks into a six- to eight-week program.

Most of the institutions participating in the Health Manpower Incentive Awards Program combined classroom and clinical activities. The Universities of Washington at Seattle; Nevada, Reno; Alabama in Birmingham; and North Carolina developed excellent programs oriented to family practice. Unfortunately, most of these efforts diminished as funding ceased. The University of Nevada, Reno is the only institution which has successfully maintained its rural health team program.

Each program administrator has made some decisions relative to the interdisciplinary course content, but more often than not, the interdisciplinary concept emphasizes application more than content. Recognizing that a variety of teaching strategies were being implemented under the rubric of interdisciplinary education, the Center for Interdisciplinary Education in Allied Health constructed the following taxonomy of teaching strategies. The matrix attempts to illustrate the outcome effects of different interdisciplinary models and teaching strategies as they relate to the basic developmental needs for interdisciplinary collaboration and team development (see Table 1).

This approach reinforces the concepts of interdisciplinary education as an action, real-world process. This table does not suggest that straight delivery (lecture, etc.) is inappropriate in interdisciplinary education, but that learning outcomes are better as the student participation level increases. Application of these teaching strategies rarely occurs in an integrated fashion. Interdisciplinary coursework is usually either didactic or clinical in nature with little integration of the two approaches.

Despite the differences in format, outcome, and activity of interdisciplinary models, they all have certain factors in common. Seen as either a blessing or a curse by educators, interdisciplinary courses

TABLE 1

TEACHING STRATEGIES AND THEIR POTENTIAL OUTCOME EFFECTS RELATED TO TEAM DEVELOPMENT NEEDS

Teaching Strategy	Development Needs: Goal Setting	Role Negotiation	Group Procedures	Interpersonal Relations
Common Issue				
Lecture	very low	low	very low	very low
Seminar	medium	medium	medium	medium
Case Presentation				
Simulation	medium high	medium high	medium high	medium
Clinical Conference	medium high	medium high	medium high	medium
Research Team	high	high	high	high
Patient Care Team	very high	very high	very high	very high

- Focus on selected commonalities among disciplines
- Generally invoke an activity level
- Are problem-oriented
- Sacrifice depth for intensity and rigor
- Generalize minor points in order to accommodate multiple types of students
- Attempt to provide realistic approaches to subject matter
- Require facilitative, not directive, teaching

These similarities will be seen to a greater or lesser degree in both "team" models and "common issues" models. Since by definition interdisciplinary education is as concerned with the *process* of learning as the *content* of a given topic, certain trade-offs are necessary. A physical therapy student could certainly gain much more depth in the practice of physical therapy in a clinical situation if he/she were not in a team. However, the student would not have the opportunity to deal with the total context of patient care as seen through other professionals' eyes. Thus, the decisions on the utility, depth, and quality of interdisciplinary education in the health science curriculum become philosophical ones.

To Go or Not To Go Interdisciplinary

In 1977, Ann Golin and Alex Duncanis of the University of Pittsburg surveyed 124 health professions schools to ask three simple questions about the extent of interdisciplinary team training in their schools.[3] Table 2 depicts the result of that work.

It is interesting to note that while 90 percent of the respondents indicated that it was important to have specific teaching about the health care team, only 34 percent offered such coursework. Social work and nursing were the disciplines most frequently offering such courses. Only about one-third of the allied health programs responded that health team func-

[3] "Studies of the Operation of Interdisciplinary Health Teams Being Conducted," Anne Golin and Alex Duncanis. *Prospectus for Change*. Center for Interdisciplinary Education in Allied Health, Lexington, Kentucky, Vol. 2 No. 3, May-June 1977.

tioning was a part of their curriculum. Ultimately the interdisciplinary concepts must be dealt with by allied health educators in relation to the interdisciplinary role in health professions education. A hard rethinking of the very foundation of the educational process is necessary.

In an effort to capture some data on that issue, Rodger Marion of the staff of the Center for Interdisciplinary Education in Allied Health at the University of Kentucky conducted a survey of 138 allied health, medical, pharmacy, social work, and nursing programs. The survey was designed to elicit academic perceptions of a set of ideal outcome goals for health professions education. The outcome goals were generated through a modified Delphi technique with representative faculty and academic administrators from a cross section of Southeastern and Northeastern health professions programs. Nine outcome goals were established:

1) Technical/Professional Skills
2) Verbal Communication Skills
3) Problem-Solving Skills
4) Philosophy of Practice
5) Health and the Relationship Between Man and the Environment
6) Professional Role in Health Care
7) Collaborative Action Skills
8) Interpersonal Regard Skills
9) Value Clarification Skills

There was agreement among those surveyed that these nine goals included what should be expected of health science graduates. However, the importance of each goal within the disciplines had some variation. Of importance to interdisciplinary education are the goals relating to the professional role in health care,

TABLE 2

CURRICULAR PROVISIONS FOR TEACHING ABOUT THE FUNCTION OF THE HEALTH CARE TEAM IN PROFESSIONAL SCHOOLS

Percent Answering Yes to the Questions

Question	Allied Health (N=22)	Dentistry (N=24)	Medicine (N=24)	Nursing (N=29)	Social Work (N=25)	Total (N=124)
Is it important to have specific curricular provisions for teaching about the functions of the health care team?	94	88	79	93	96	90
Have you considered including such a course or unit?	90	79	70	72	84	79
Do you have such a course or unit?	32	21	25	41	48	34

collaborative action skills and interpersonal regard skills. Respondents gave strong support to professional role and collaboration skills but not as much for interpersonal regard skills. It is of particular interest to note that the allied health educators gave less importance to collaborative action than any of the other professions. While apparently supportive of the need for teaching the professional role in health care, allied health educators were less interested than educators in medicine, pharmacy, and nursing in teaching collaborative skills.

Marion's results indicate that within this study population, allied health educators apparently feel that those skills which conceivably could be taught through interdisciplinary activities are among the less important skills needed by graduates of health science programs. Allied health educators identified skills within the disciplines as most important, while in contrast, medical and nursing educators felt the transdisciplinary skills were more important.

Perhaps the greatest factor in defining the role of the interdisciplinary concept within the spectrum of allied health education is that of having allied health educators accept the philosophy that within the process of preparing allied health professionals, all activities carried out do not have to lead to specific, definitive, technical competencies. As presented in the literature of higher education, the ultimate outcome of interdisciplinary education should not be construed to produce a better technician in a specialty but, in fact, a better person who can apply that specialty. The issue then becomes involved with the differences between a technician and a professional and what processes are incorporated to create these differences. This raises questions for interdisciplinary education as to what roles it has at the vocational-technical level and community college level as well as at the university level of allied health education.

Answers to the questions of what kind and how much interdisciplinary education is needed depend largely on the answers to questions regarding the purposes of the educational program and expected outcomes of instruction. Additional light will be shed by administrators as they deal with issues of resource allocation. The issue relevant to interdisciplinary education is not always what is taught but how it is taught. The implication is that concurrent with a curriculum review there must be analysis of how faculty can be developed to incorporate the new teaching methods, philosophies, and behaviors into everyday teaching.

A final caveat is warranted here. Simply because a health professions school cannot build a patient-care team model of interdisciplinary activity should not preclude investigation of other models. A common issue model, though outcomes are relatively modest, is an excellent starting point from which to build.

CHAPTER III — ISSUES EXPLORATION

A number of issues must be addressed by the administrator of the allied health unit in developing an interdisciplinary thrust. These issues are essentially related to the tools of production (organization of the program, faculty, and curriculum), the raw material (students), and the final product (the reality of the outcome of interdisciplinary efforts).

Organizational and Resource Issue

The health science education institution presents two major organizational barriers to the development of interdisciplinary activity. First is the basic nature of the structure of academic institutions. Faced with a variety of missions imposed upon them by a multiple set of publics, academic institutions have a tendency to develop complex, rigid structures to deal with the multiplicity of expectations. This rigidity has been reinforced through the standards of regional and program accrediting bodies. These agencies have established procedural and curriculum structures to which the institutions have responded by developing time frames of learning episodes (semesters, quarters, etc.) and schedules (classes, labs, etc.). These structures were established to bring order and effective use of scarce resources (facilities, faculty time, etc.) to these complex institutions. Another major purpose was to create a universal standard of quality in academic programs. However, the result has been a sameness in which all learning endeavors are alike and of equal value (credit hours) and conducted under similar institutional conditions (classrooms, labs, clinics, etc.). Basically, academic organizations have shown little creativity in designing structures from which to deliver the educational product. Disciplines have tended to draw together, creating an organizational separatism (colleges, departments, etc.) which creates barriers to joint or interdisciplinary endeavors. All of these activities and movements are necessary to the preservation of the traditional academic institution, but are an impediment to non-traditional, innovative approaches to learning.

The second major barrier to interdisciplinary education within academic institutions is the organization of health science education itself. Basically, the nature of health science education is such that it thrives on the orderliness and separatism created by the academic institution's organization. As disciplines pull inward, it becomes more difficult to bring students together in a meaningful manner. Schedules and curriculum requirements cause students to have less time for activities outside their discipline, thus limiting the overall exposure of the students to matters not of the discipline. As each discipline becomes stronger, different objectives begin to appear—more discipline-oriented than health-oriented. The patient as a total entity becomes less important than the patient as perceived by that discipline. As a result, commonalities among students and their educational programs decrease, making more difficult the efforts to bring about common learning experiences. Complex barriers may also be brought about due to different levels of students in academic and clinical settings—undergraduate and graduate—as well as different levels of educational programs—associate degree, baccalaureate degree, master's degree—in each discipline. All of these elements of separatism create continuing dialogue problems among faculty, students, and administration—the holder of the resources. The final combination of organizational (structure) barriers and health science education (process) barriers leads to problems in the design of interdisciplinary education.

Interdisciplinary activity, no matter the original structure, ultimately depends upon individual efforts. There is, however,

a "catch-22" in which the efforts of individuals can and will be conditioned by the structure and the environment of the institution. It must be understood that traditional academic organizations (universities, colleges, schools, and departments) are typically developed to enhance monodisciplinary, not interdisciplinary, activities. Individual effort then becomes the tear in the organizational fabric that develops the interdisciplinary concept.

Without resources that the organization provides, however, the interdisciplinary effort would fail. The organization's support for interdisciplinary activity generally falls into two categories:

1. Hard Resources
2. Philosophical Agreement

Hard resources are generally those items which can be seen or counted—money, faculty time, space, equipment, and support services (duplicating, secretarial time, etc.). Within a traditional organization these are typically the most desirable areas of support, but for interdisciplinary activities they are usually the last supports to be made available.

Philosophical agreement as a support resource is typically evidenced by those activities under an individual's control: meeting attendance, willingness to consult, cooperative behaviors, efforts to understand concepts, etc. In developing interdisciplinary activities this is probably the easiest support resource to attract for the initial short-term development phase.

These two support resources come in varying degrees and combinations. Strong and equal degrees of each can and should produce interdisciplinary education that has both longevity and depth. While the philosophical support is necessary for development purposes, the hard institutional resources must be present to insure the survival and permanence of the interdisciplinary activity.

Identification of these support resources is not enough without determining their sources. Generally, there are three basic organizational publics in education which control elements of the two basic support areas:

1. Administration
2. Faculty
3. Students

Each of these groups has at its disposal an ill-defined control over the support resources. Administration, as defined here, includes all those involved in controlling hard resources—the board, the president, vice president, dean, and department chairman. While philosophical agreement is not that difficult to obtain, the real trick is to finally ferret out the hard resources that will sustain the interdisciplinary effort.

Faculty and students are generally asked to pay the highest price in providing support for interdisciplinary activities. The organization's administration, through its philosophical agreement, makes no commitment other than a passive promise not to impede. Students in particular make a strong personal commitment when they agree to interdisciplinary activities. Because these activities generally impinge upon disciplinary matters, students potentially relinquish some knowledge they might be gaining in their chosen profession.

The development of interdisciplinary activity depends on the ability of the developer to deliberately construct and deliver an interdisciplinary program that will meet the specific needs of each support public. In essence, a determination of the needs of each public must be made and then the interdisciplinary program must be designed to deal specifically with those needs. If full-time-equivalent (FTE) students are critical to the administration, then the larger the enrollment the better. If tenure is important to the faculty, the interdisciplinary activity must be developed to meet tenure requirements. If students want to participate at a certain time of the year, the program should be scheduled at that time.

Faculty Issues

Faculty issues raised by the interdisciplinary approach tend to group themselves into four major categories: incentives, new teaching skills, new management skills, and evaluation. Most academic reward systems are built upon.

disciplinary activities of teaching, research, and service. Commitment to and participation in interdisciplinary activities requires great involvement of time and energy. To maintain this commitment level, academic institutions need to adjust their incentive concepts, specifically promotion and tenure, to accommodate the contributions of faculty to interdisciplinary teaching, research, and service because faculty tied to traditional discipline-oriented rewards will not make a commitment to the interdisciplinary process.

Closely in line with promotion and tenure issues is the problem of conveying new teaching skills to faculty. Interdisciplinary teaching generally requires that faculty become facilitative and less directive within teaching approaches. It further requires flexibility in meeting objectives. Since the outcomes of the interdisciplinary experiences are sometimes vague and delayed in occurring, faculty must be able to adjust their style to accommodate this uncertainty.

In sum, interdisciplinary approaches require faculty training programs. Before they can effectively model and deliver interdisciplinary concepts, faculty themsleves must be prepared. This can be a major issue of resistance on the part of senior-level faculty.

Evaluation becomes a major faculty issue in the interdisciplinary approach. In discipline-oriented activities, faculty generally evaluate students and they, in turn, are evaluated by students on the basis of specific content delivery. The subjectivity of the interdisciplinary course requires that faculty evaluate students not only on content but on affective grounds as well, a sometimes difficult responsibility. Faculty, too, are now evaluated by students in an affective manner which is often subject to less than objective thinking. Peer evaluation brought on by interdisciplinary activities is another sensitive issue for faculty.

Academic allied health administrators must be alert to establishing the parameters of these faculty issues and be diligent in their administration.

Student Issues

Students also bring issues of concern with them to the interdisciplinary program. Spitzer, writing in the December 1975, *Journal of Medical Education* on "Issues for Team Delivery of Interdisciplinary Education," recounts some of these by stating:

> Frequently, there are real and perceived incompatibilities in learning goals, career goals, and basic background brought to the [interdisciplinary] experience . . . [these] are aggravated when the rate of learning desired or anticipated is not synchronous among the various disciplines.

Students usually enter the interdisciplinary experience after they have developed a strong professional identity: then they are confronted with a situation which requires them to admit to deficits in their knowledge and their need to depend on others to accomplish patient-care tasks. This creates insecurity and potential resentment of the experience. Relating the objectives of the interdisciplinary experience to the students' spheres of reference, their discipline, is critical in the interdisciplinary process in order for the students to transfer the learning.

Faculty responses to a question on student participation in interdisciplinary activity, as described in a December 1976 *Regional Spotlight* published by the Southern Regional Education Board, reinforce these observations:

> Indiscriminant mixing of students is often a problem. Because of past conditioning to ordered and accumulated learning, many are unable to accept such an unstructured and, many times, inconclusive situation. Perhaps interdisciplinary study should avoid students whose expectations are irremediably conventional.

Academic allied health administrators must then deal with several real issues: Should the interdisciplinary courses be required? How much credit should be given? How will students be evaluated and graded?

Once the delivery mechanism of the

interdisciplinary course is determined, the general trend is to make the experience voluntary. In essence, this approach preselects the students based on interest and often makes the delivery of the course easier because of higher motivation. Mandatory participation, on the other hand, often converts students who would normally not participate, but such experiences do tend to be conducted in a stressful atmosphere. The decision of mandatory or elective participation is an issue each allied health program must face independently.

Credit and evaluation are closely tied together as incentive for the student to participate in the interdisciplinary experience. Academic credit based on traditional formulas is a must for the interdisciplinary program. Because of the interpersonal requirements in the interdisciplinary course, there is a tendency to grade on a pass/fail basis. This in essence says to the student that the interdisciplinary learning is not as valuable as the discipline's learning because it cannot be certified with the same degree of letter-grade accuracy. Students also feel that evaluation on a graded basis for interpersonal behaviors is subject to unfair bias by faculty. For this reason interdisciplinary courses should be treated like discipline courses; if qualifications of learning are evaluated in the disciplines, then they should be evaluated in the interdisciplinary courses.

Curriculum Issues

Organizational and resource issues, faculty issues, and student issues are all superseded by issues related to the overall framework of the allied health unit's curriculum structure and its constraints.

Accreditation is perceived as perhaps the biggest "tangible" barrier to implementing and conducting interdisciplinary educational activities. Marilyn-Lu Jacobsen, in her doctoral dissertation study, *Perceptions of Interdisciplinary Health Professions Education within Health Science Centers*, found that the vice presidents of academic health science centers responding to her research considered "rigid accreditation standards" as the number one external barrier to conducting interdisciplinary education.

The Study of Accreditation of Selected Health Educatiqnal Programs, Commission Report (SASHEP) of May 1972, concludes:

> Fundamental changes in the organization of accreditation of allied health educational programs are needed to promote improvement in interprofessional relationships; to provide greater assurance to society that the accrediting process will be conducted in the public interest; and to provide a more equitable balance among the many diverse parties having a legitimate interest in the accreditation of allied health educational programs.

The SASHEP study indicated that accreditation was a process which isolated the disciplines, thus, academic programs could hardly be expected to meet the demands of separate accreditation standards with interdisciplinary programs. As a final proposal for restructuring the accreditation system, the SASHEP report recommended, as part of its Council on Accreditation for Allied Health Education, the formation of:

Essentials and Educational Standards Committee

A broadly representative committee on essentials and educational standards should be established to encourage a coordinated approach to comprehensive curricular development among the allied health occupations. Because of the interdependence of the allied health professions in both the educational and service settings, it is imperative that educational standards for any given health profession be considered in the context of those for other related health professions. Thus, while individual health professional organizations will

likely continue to take the initiative in developing, drafting, and recommending essentials for the accreditation of allied health educational programs, the committee on essentials and educational standards should be responsible for studying, analyzing, and reviewing all essentials in the context of those for other related professions.

Accrediting bodies use course titles in evaluating programs. Interdisciplinary experiences tend to be content-oriented and broadly titled, thus providing a course problem across disciplines. In structuring the interdisciplinary course, accreditation is not the problem it might seem if well-defined content is laid out in the design process.

To the allied health educational administrator, one of the foremost barriers to the interdisciplinary experience is that of the schedules developed by the respective programs within the allied health unit. Each discipline typically develops its own course scheduling which inevitably creates the first wall of resistance to designing efforts to bring students together. There are several approaches to solve this scheduling problem:

1. Offer the interdisciplinary course outside the normal scheduled time: summer, evenings, weekends, etc.
2. Construct the interdisciplinary schedule to meet the discipline schedules as closely as possible, knowing some students will be left out.
3. Reconstruct the schedules of the discipline programs to accommodate the interdisciplinary activity.

Within the context of scheduling problems, is also the issue of course content and its sequencing. The nature of allied health disciplines is such that course content normally is not synchronized.

Perhaps the most effective manner in which to deal with scheduling, content sequencing, and content objectives is to restructure the discipline schedules to make a common time available for all students in the allied health unit and develop the interdisciplinary experiences at levels within the discipline curriculum — junior, senior, etc. This probably creates the biggest shock initially—but establishes a smoother course in the long run.

Potential economies can be attained in the interdisciplinary approach through shared content instruction. The issue of shared content across multiple discipline curricula has caused much debate but can be answered through revised approaches to instruction. Mini-course offerings around an interdisciplinary core, such as conducted in Kentucky and Connecticut, are an alternate vehicle for developing shared content through the interdisciplinary approach.

Outcome Realities

Interdisciplinary education has, as its main selling point, its outcome potential for both students and faculty. While the problems associated with developing and implementing the interdisciplinary experience become the focal point for discussion, the outcome realities are the most important issues. Allied health disciplines, in the rush to legitimize their role in the delivery system, have succeeded in developing well structured, yet isolated, approaches to patient care. In most instances, these approaches do not hold up in the practice environment. Students taught to rely on themselves, in professional isolation, have problems with effectively delivering their skills in the context of actual practice. Interdisciplinary experiences force students into collaborative and interdependent situations, which set the stage for their practice environment.

Faculty face the same problems as students in rationalizing their roles outside the context of their specific discipline. Interdisciplinary activities condition faculty to become more receptive to change and cooperativeness, thus improving their effectiveness in the academic environment.

The outcome reality for the interdisciplinary experience is that it is not something that adds to the discipline base of each allied health profession but, in fact, contributes to the effectiveness with which each allied health professional carries out

services. There is great difficulty in quantifying the gain in cognitive or psychomotor skills brought on by the interdisciplinary experience as it is essentially an affective experience.

While students and faculty gain added diversions of individually possessed skills through the interdisciplinary approaches, the allied health institution should begin to observe a more tangible gain in its reputation for producing graduates who can be accommodated in the work place. Graduates who can realistically function in job situations as well as in the academic program help bridge the gap of expectation between the work place and academia.

Summary and Synthesis

Academic allied health administrators must identify and analyze the specifics of several issues related to interdisciplinary education's impact—organizational structure and resources, faculty, students, curriculum, and outcomes. Each of these issues will occur in different forms and levels within various allied health units. Their resolution will also be different from place to place.

Within all of these issues however, one message is clear: interdisciplinary education requires an unprecedented explanation of how allied health education has been managed in the past. The complexities of establishing and maintaining interdisciplinary experiences cannot be delegated to a departmentalized faculty, but must be carried out by a well managed and coordinated effort of the entire allied health unit's human resources. Interdisciplinary education must be in a position to consume more than it gives at the onset and it must be continually monitored throughout its implementation. Interdisciplinary courses are painful to traditionalists, but are necessary for improvement of the educational process and product of allied health.

CHAPTER IV — ADMINISTRATIVE DECISION MAKING

Possibly the most ominous barrier to the development of interdisciplinary activity in health professions education is the very organizational structure designed to foster the educational process. Complex organizations are departmentalized in order to gain some measure of control over both internal processes and product. However, when departments are built around single professions, the effect is one of building barriers to communication. The departments isolate themselves into safe fiefdoms, fighting over resource allocation but holding sacred control over their students and curriculum. The challenge for the administrator, then, is not only to facilitate development of innovative instructional forms, but also to deal with the complex web of organizational change. This change will certainly aim at organizational behavior patterns and could reach as far as the organizational structure itself.

To deal with such a large scope of administrative decision making, this chapter will explore two levels of decisions. The first level represents those decisions which begin the change process. It includes organizational goal setting, problem diagnosis, and postures necessary for interdisciplinary development. The second level of decisions relates to the issues of implementation and maintenance of interdisciplinary activity, the nitty-gritty of program operation.

Phase 1: Managing the Change Process

As stated previously, development of interdisciplinary programming depends on a serious rethinking of the foundations of the educational process. Specifically, administrators must seek answers to three basic questions:

1. For what are students being prepared
   —appreciation for life, culture, arts?
   —technical tasks?
   —the world of work?
2. What characteristics (outcome goals) are expected of graduates to meet those ends?
3. What modifications are needed to insure that graduates possess those characteristics?

In essence, the answers to these questions begin the change process. They necessitate an analysis of the existing state of affairs and the establishment of goals for the desired state of affairs. The task which remains is the management of that process which will bring the organization to the new state of affairs. It includes identifying limitations and constraints, determining what kinds of strategies are necessary (faculty development, structural changes in the organization, management style analysis, action planning, etc.), selection of strategies based on institutional readiness, implementation, and evaluation.

Readiness is a key factor. It represents the process of thawing the status quo and overcoming resistance points so change can take place. The success of change is directly dependent on several factors that will break down or neutralize resistance. These factors are personal, organizational, and environmental.

The process of change meets with resistance from all those involved in the process. Interdisciplinary behavior is an excellent example of changes in the social norms of health care practice. Professionals, who are used to working in discipline groups with a complete understanding of the norms for that group in that setting, become quite resistant when faced with interdisciplinary behaviors even though

their knowledge and their values are directed to better patient care and logically would support that change.

Resistance to change as demonstrated by individuals, groups, or organizations is therefore a symptom related to the readiness for change. The change agent must, therefore, understand these symptoms and be prepared to design intervention strategies that minimize the resistance to change, increase the organization's, the group's, and the individual's abilities to accept the new behavior.

Once the planning process has progressed from the chiefly philosophical level to the programmatic level, new issues arise. Assuming the change is not to be structural but will change programs in curricula, five new issues arise:

- Objectives
- Administrative Responsibility
- Program Content Control
- Faculty Input
- Program Structure

1. Objectives

At the heart of each interdisciplinary effort is the task of establishing well-defined, specific objectives and goals for the program. The different perspectives and expectations engendered by the interdisciplinary concept mandate that all of those involved, students, faculty, and administration, have the same understanding of the program objectives. One must be careful to understand the difference between interdisciplinary (program) objectives and professional (discipline) objectives, but at the same time recognize that the ability to meld the two will greatly enhance the interdisciplinary effort. Once these objectives are understood and agreed upon, the development, implementation and evaluation processes are much easier to consider. The reinforcement of these objectives must be a continuous process for students and faculty. Because of the variety of interdisciplinary programs, objectives are critical to determining activity, but they can and will be different from program to program.

2. Administrative Responsibility

In the administration of an interdisciplinary effort, organizational responsibility should be pinpointed as soon as possible. The complexities of dealing across departmental, college, or university lines can be fatal to the interdisciplinary efforts if the administrative hierarchy is not quickly clarified. While specifying administrative responsibility for the interdisciplinary program is a positive structural approach, a constant concern for obtaining a variety of inputs and ideas from all sources must be maintained. Depending upon the objectives and the scope of the program, the management of the interdisciplinary program should probably be vested in a structure outside of a traditional college department. Efforts based at the departmental level can succeed as long as the resources are adequate. When the program begins to monopolize departmental resources, problems develop.

Interdisciplinary efforts also require faculty loyalty, which is easier to maintain when faculty persons feel they are supporting their own department's efforts and not those of another department competing for the same limited resources.

3. Program Content Control

The old joke about the definition of a camel—"a horse that was designed by a committee"—is a realistic parody which has to be faced in the design of an interdisciplinary effort. Control of the content of an interdisciplinary program can be a destructive or building force in programming. Resolution of this issue in most program efforts is found through the committee concept. However, the clear delineation of objectives and the pinpointing of administrative responsibility, coupled with the sharing of program input with department chairmen and selected faculty, generally provide the anticipated elements of democracy. Because the interdisciplinary effort is usually designed to meet the needs of a wide variety of professions, it should be kept in mind that rigid control of a program's content will probably stifle the creativity that brought the program about in the first place. "Compromise" is a key word in the development of the content of an interdisciplinary effort.

4. Faculty Input

In health science education, the lack of expertise in interdisciplinary efforts will create a natural selection process with only a few faculty taking the lead. These faculty should have open input relative to program content design as they gain experience. It should also be kept in mind that faculty, in spite of their interests, need an intensive orientation to the interdisciplinary effort. There is a natural discomfort for some instructors who have to deal outside their discipline with students from other areas. The issue here is not merely one of control of content, but responsibility for carrying out the tasks of presenting the content material.

5. Depth of Structure

Interdisciplinary efforts tend to run the total spectrum of the scale from intense structure ("Today you all will work together and visit the following agencies, ask the following questions, and write a report on the following topic.") to total lack of structure ("We will drop you off in this community and come back for you in a week, meanwhile you all do a project together."). While these examples may be oversimplified, they do typify a basic problem—deciding how much direction to give students and how much freedom to allow. Faculty/student ratio is related to student direction. In some interdisciplinary team-oriented programs, a faculty person has been assigned to each student in the program. In other instances, one faculty member per team of students has been successful. The variations of program structure and faculty control must be determined, based on a combination of program objectives, location, and activities. It should be understood that the same pattern does not fit each interdisciplinary program.

Each of these issues is situational, has no right or wrong resolution. Each must be solved early to effectively develop the interdisciplinary program.

Some Anticipated Outcomes of Implementing Planned Change

Based upon previous experiences of other fields, several outcomes are quite likely to occur and the implications of these outcomes magnify as the size of the change effort increases, according to Gillespie and Thompson in *Planning for Interdisciplinary Education*.

First, people will underestimate the amount of resistance. Second, at times, each person involved with the change program will experience the Atlas syndrome of carrying the whole project on his/her shoulders. Third, logistics management will consume most of the time devoted to the project while the real issues are deferred. Fourth, critical evaluation of the change program will be performed perfunctorily. Other outcomes to be anticipated in pursuing interdisciplinary education are that:

> Conflict resolution is essential to the stability of the project.
>
> Resistance to change may scapegoat the change agent, and educational principles of providing theory before application are challenged.

The resolution of conflicts for the unskilled change agent is extremely difficult. Conflicts are often avoided because of the fear that confrontation will lead to losing whatever developmental ground has been gained. The "don't rock the boat" syndrome, however, can result in counterproductive behaviors. Conflicts are also symptoms of resistance that require resolution before true interdisciplinary behavior can emerge. In fact, conflict resolution can be a healthy, creative process, producing strategies to get over the next hump in the process of change.

The internal change agent must be prepared to assume the role of scapegoat. Anything that upsets the social group norms, producing tension, will be turned toward the source of that work group and will require building new support systems. The last outcome relates to student reactions. Students prefer to act and then discuss the theory of their behavior. Although there are poor data to evaluate this phenomenon in interdisciplinary education, some educational philosophies do support "learning by discovery."

The above caveats, while negative in connotation, are not intended to discourage but rather to confront the participant with reality. Planned change can be fun, but the challenges are complex. The concept of interdisciplinary education programs has been around a long time, but the actual implementation in some systematic way is just beginning. Even with the armament of conceptual knowledge and rational understanding about such programs, there is still much to be learned in the "actualizing" process of interdisciplinary programs.

Phase II: From Concept to Practice

The best instructional design remains simple until it can be successfully implemented and integrated into existing curricular structures. This phase is the most difficult. The creative exercises related to conceptual and instructional development are stimulating. Implementing the concepts requires patience, tact, political skills, and attention to detail.

Most of the decisions on how a program will be implemented will be made long before actual implementation. The parameters of decisions will be formed regarding instructional design, faculty and student issues, classroom or extramural locations, relative costs, etc. As a result, no hard and fast rules can be provided for putting concepts to practice. The purpose here is to isolate and explore the issues related to the implementation and maintenance phase.

The Administration of Interdisciplinary Programs

Program administration refers to those activities necessary to build an organization which will develop, refine and implement the interdisciplinary program.

Key to the issue of building an organization is finding the appropriate locus within the institution and determining who will be responsible (and accountable) for the interdisciplinary activities. The organization to implement interdisciplinary programs should:

a. Provide the necessary resources to develop the program to its full potential.
b. Develop the program in such a way as to elicit maximum student and faculty ownership in the process.
c. Facilitate communications among colleges, departments and, if extramural, community and/or clinical participants.
d. Prepare all participants for the learning process.
e. Manage program logistics in such a way as to maximize faculty and student time devoted to educational ends.
f. Be accountable to the involved publics for the quality and effectiveness of the program.

These goals imply a centralized organization that can cross traditional institutional boundaries of communication. In reality, there is no ideal "slot" in the institution which can meet the needs of this activity, and any attempt to maximize ownership outside the traditional communication boundaries and reward systems will be difficult at best. The only guide which can be offered is through the experience of other similar situations.

Programs located in a given college or school have the inherent weakness of poor communications with other needed academic disciplines. Some programs have been housed in schools of medicine to insure medical student participation and to align with the resources and power associated with that school. Other programs, housed either in the school which provides most disciplines (allied health) or which originally developed the idea, have had to deal with both the lack of medical participation and communication barriers with all other schools.

An alternative is to vest the program at the vice-presidential level. The wisdom of this move depends on the political strength of the vice president and the willingness to become involved in academic affairs on the operational level. There is also danger in locating so far from line faculty.

Another alternative is a special task force approach to organization. A select group of faculty from all participating colleges is appointed to develop the program. If the program includes the entire medical center, the task force may well be

located at the vice-presidential level. The closest organizational forms to approach a task force are the programs developed under the tutelage of the Institute for Health Team Development. Faculty role model teams were developed for both program development and student instruction. One weakness observed in this model related to faculty ownership. Faculty members outside the teams were happy to "let *them* do it." A second weakness was related to the ability of the institution to alter reward systems and provide resources to carry out the task force concept. Not many institutions can develop such an organizational structure without strong administrative support.

Interdisciplinary efforts defy easy placement in traditional educational organizations. However, successful programs can be found in all of the structures mentioned here. Program designers should be cognizant of the goals of the new organization, the trade-offs inherent in each locus, and the activities necessary to overcome the weaknesses.

Once the locus of the interdisciplinary program is determined, the task remains to develop strategies for meeting the goals of the organization.

Provision of Resources

The interdisciplinary program organization not only must find the funds to operate but also find the resources of faculty time for development and teaching and, if extramural, community facilities for student placement. Funding is always of prime concern to those contemplating interdisciplinary efforts. Few universities have been able to develop innovative projects, such as interdisciplinary education, without seed money from outside sources. Unfortunately, funding earmarked directly for development of interdisciplinary team approaches to health care and health sciences education is on the decline on both the federal and foundation levels.

The decline of outside financial support directed specifically to interdisciplinary approaches does not doom the search for resources; it only makes the search more challenging. The federal government and many foundations are now actively involved in finding new approaches to many health care problems. Most lend themselves easily to interdisciplinary programming, i.e., primary care, rural health care, gerontology, chronic care, and specific diseases. The strategies for interdisciplinary education may not only match the educational needs of students but also the funding priorities of outside sources.

One other source of support cannot be overlooked, the institution itself. If the philosophical commitment is high, the time and energy necessary to develop interdisciplinary education can be procured from within. An internally supported activity will probably have greater impact and longevity than one supported from outside. The University of Connecticut School of Allied Health Professions exemplifies self-supported activity. For the last eight years, the faculty has slowly developed not only a complete curriculum incorporating core courses, common interest formats and team building, but also an organization designed for better support to interdisciplinary activities.

Student and Faculty Ownership

The organization developed to promote, design and implement interdisciplinary education comes into most conflict with itself when it seeks to involve others in ownership. The more centralized the organization, the easier getting the job done will be, and the more difficult will be the task of developing ownership.

Student ownership seems to be a function of two major factors, the maturity of the student and the perceived reward for involvement. The student reward system revolves around grades and the reinforcement of discipline-related faculty. Analysis of grade scores during the 1976 Kentucky January Program seems to bear this out. Faculty sponsors for each interdisciplinary student team were asked to rate students on 10 parameters of student involvement, preparation, and completion of the program as a measure for a pass/fail grade. Each parameter was rated on a one-to-five scale; an average of three was needed for a passing grade. Students who

volunteered for the program scored approximately one point higher than students who were required to participate. However, when grade scores were analyzed based on students' department of origin, another trend emerged. Students required to participate but originating from departments where the faculty strongly endorsed the program scored on a level with voluntary students. The conclusion here is that student performance is not only reflected by motivation but also by faculty support.

As a practical matter, student involvement and ownership in the development of the program cannot be maintained over long periods of time. Students are transient; hopefully, the program will have some permanence. The best that can be hoped for is that students themselves initiate the interdisciplinary programs, as did the Vanderbilt Student Health Coalition. If care is taken to select class leaders and controllers of the informal communication processes, good results can be obtained over the short run.

Development of faculty ownership is a critical element of program success. The reward system will certainly have impact. Commitment of department chairmen will be important for endorsement and release time. However, the key to success in generating faculty ownership will be communication patterns that are developed and the responsiveness of the interdisciplinary organization to suggestions of faculty.

The most common form of communication device for program planning is the representative committee. This mechanism provides for maximum input into the process while controlling the direction of planning, developing informed inputs and decision making, and creating communication lines to the involved publics. No research confirms that decision making by committee is of higher quality than that made unilaterally. Faculty members frequently represent themselves instead of acting as communicators to their home departments. Often the committee is a defensive mechanism, a way of saying to outraged faculty persons that they had a chance for input through their colleagues. Given the necessity of centralized administration, the committee may lengthen the planning process and can act to confuse the issue rather than to clarify it.

The bottom line of faculty acceptance and ownership in the building process is the responsiveness of the organization to faculty needs, suggestions, and criticisms. The ability of the organization to pay attention to detail in this regard will bring either great reward or constant headaches. Some experience shows that faculty members become most alienated when they give suggestions which are neither acknowledged nor followed-up. Even the most vacuous verbal suggestion should be acknowledged by memo with an explanation of why the suggestion could not be acted upon. This mechanism educates faculty and also symbolizes the active role they play in program design and operation.

Facilitate Communications

Issues related to communications are very similar to those of ownership. Interdisciplinary organizations must develop rather complex communication networks in order to report to, protect the interests of, and be accountable to the many publics involved. Not only must the organization respond to individual faculty, but also to departments, colleges, the university, community participants, funding agents, and political forces. In traditional organizational systems, communication with and among these various publics is sporadic at best. The interdisciplinary program must have as a major objective keeping all informed.

Facilitating communication is much easier said than done. Once again, the key is attention to detail. Activities involved in effecting the objective should include advisory groups, at least semi-annual department faculty meetings, department chairmen meetings, visits to community participants (three site visits are optimal — one for preparation, one to monitor the program, one for evaluation), letters, memos, newsletters, telephone calls, and at least yearly general conferences where all participants can communicate directly with each other. This effort, more than any other, justifies the need for full-time administrative support for the interdisciplinary organization.

Preparation

Nothing can kill an interdisciplinary effort more quickly than for one or more of the program participants to be unprepared. It stops any momentum the program may have generated. A major responsibility of the interdisciplinary organization will be materials development and preparation for the experience.

Student and faculty preparation have been discussed in earlier chapters. However, one caveat bears repeating in regard to faculty. Faculty members are generally authoritarian in nature. In day-to-day teaching they control the content of a course, its evaluation, and the environment of the class. Often the faculty facilitator for an interdisciplinary group of students is not intimately involved in course design and planning. As a result the faculty person feels uncomfortable with this outside force which controls the elements of instruction. This fact combined with unfamiliar content may easily lead to the course being relegated to a low priority. Great care needs to be taken to prepare faculty in facilitator skills and any unfamiliar content. This preparation is needed despite problems inherent in getting diverse faculty in one place and at one time for preparatory sessions, and faculty resistance to being "told what to do."

Logistics Management

Logistics of program administration include all the details which form the environment within which learning is expected to take place. Issues of primary concern relate to timing, policies and procedures, extramural processes, and public relations.

Few things are more frustrating to a coordinator of interdisciplinary activities than the continual game of "yes-but" played by participating departments over program logistics. Program timing is the first gambit in the game.

In one sense, lack of time is a defensive measure for resisting change. In another sense, it is a very real logistical barrier. In health science centers, different colleges often have different academic calendars; different departments have different curricular constraints; most programs cram as much content as possible into a short time frame, leaving little or no time for innovative activity. The result is complete chaos when trying to develop the schedules for interdisciplinary programs.

The length of the experience will probably be determined more by academic constraints than by rational design. Such is the reality of higher education. Great benefits have resulted, however, by concentrated time off-campus, rather than the typical two to three days a week. Though this raises the cost substantially by adding lodging and food expenses, the benefits are enormous. Students are taken away from counterproductive peer influences and other conflicting stimuli, can experience community life beyond the eight-to-five, five-day week, have the luxury of time to discuss their activities and synthesize concepts and observations.

Two methods of determining when the experience takes place seem to hold most promise for program scheduling. One is the "curriculum window" concept in which all concerned departments agree not to schedule classes or other activities during a given time period each week or during a given block of time during the semester. Michigan State University, the University of Minnesota, and many other universities across the nation have found this to be most successful. The other method is a coordinated approach to scheduling clinical rotations. If all students are involved in clinical experiences at the same time, the step of developing collaborative approaches is much easier.

Both of these solutions are much easier said than done. They require a high level of collaboration and integrated activity on the departmental level. They require a commitment to the interdisciplinary effort which is not easily developed. Evening classes, special arrangements with departments, and compromise may be the only ways to effect any kind of movement. These efforts are accomplished at the risk of the program being considered "add on" and the inconvenience factor will certainly affect the program outcomes.

Policies and Procedures

Difficulties are certainly present in interdisciplinary designing, but the careful analysis of prospective problems takes only patience and attention to detail. Of critical importance to community participants and academic departments alike are the issues of malpractice and liability insurance, especially if the program is clinical in nature. If there is no blanket insurance provided to students, some resolution of the issue is paramount. This by no means needs to kill a program. Professional and student organizations often provide student insurance policies.

This issue leads to a companion issue — the degree of clinical supervision and the need for clinical guidelines for care. Two guidelines are extremely important to local communities and clinical sites:

- No team activity should be initiated which cannot be completed by the team or continued by local professionals when the team has concluded the project. When the activity will be continued locally, agreement should be sought beforehand.
- There should be a mechanism to insure that patient care plans are implemented, services coordinated, the activities of the team supervised, and the performance of the team evaluated. General guidelines to students regarding accountability steps, decision-making processes, and care protocols need to be established.

The extramural or concentrated time-blocked programs face a number of problems for which solutions, policies and procedures must be developed. A partial list includes:

- expected standards of conduct
- personal costs
- dress codes
- health insurance
- provision for illness
- procedures for application, transfer, withdrawal
- food and lodging arrangements
- conflicts with 'institutional' deadlines (fee payment, drop-add course deadlines)
- transportation arrangements, policies, procedures
- reimbursement procedures
- liability, collision, and malpractice insurance provisions
- grading procedures
- team assignment procedures
- appeal process
- faculty procurement, assignment, and minimum requirements

Extramural Processes

Off-campus courses not only raise the cost of education, but also dramatically increase the complexity of the communications processes. For each team site to be developed, at least one and often many local participants must be selected, trained, and kept thoroughly informed. If preceptorship experiences are sought, a local participant must be selected, trained, and informed for each student. It is certainly not an impossible task, but depending on the size of the program, many hours will be logged on the road by program staff.

The increased administrative load, faculty support needed in the field, logistics, and other program costs can easily amount to a cost of over $250 per student per week in the field. Given a team of seven students accompanied by an on-campus faculty person, a typical program cost breakdown may include the following:

Cost/Student Week	
Faculty Time	$ 85
Administrative Support	50
Food	35
Lodging	50
Transportation	15
Materials	8
Local Support	25
Total	$268

Naturally, these costs can be reduced through use of hospital dorms, free food arrangements through hospitals, and the like. Students could bear other costs. The point to be made here is that extramural programs are expensive. Depending on cost of faculty time and payments for loss of productivity to local agencies, the cost can increase. Ideally, the cost should be measured against educational benefit. Practically, this is very difficult to do. More often than not, decisions for extramural programs will be based on a combination of philosophical commitment and availability of resources.

Hospital administrators are usually quick to see the benefits of educational linkages, interdisciplinary approaches, and the possibilities for student recruitment. One caveat is indicated here. Overselling a program can be very dangerous for future participation, especially if student recruitment is the prime motivation; make promises only where a high probability exists that the promises can be kept. Since educational institutions rarely control where graduates work, overselling recruitment benefits can come back to haunt the program designers.

Once a facility or community has accepted a team, the next step is to develop a local organization to aid in planning and arranging the experience for students. The purpose is to capitalize on those most knowledgable of the community and also to develop community ownership in the program. The organization can be a committee of local citizens or a single individual at the site. The composition of the organization will need to match the needs of the program and the resources of staff. Qualifications of the person who will provide the major linkage to this educational institution should include expertise in the learning content, knowledge of the community, and the time to devote to the program. The better qualified the linkage person, the easier are the tasks of community and resource development, training of local participants, and operation of the program.

Finally, consideration should be given to the instructional needs of each local participant. Preceptors will need to learn more about the interdisciplinary activities of students, other local resources will need to know the context of their part in the experience in relation to the goals of the program. The local coordinators will need thorough instruction on all aspects of the program.

Accountability and Evaluation

The experience will need to be evaluated on two levels—the ability of the sequence of study to meet the educational objectives and the ability of the program to meet political ends. The political aspects are similar to public relations needs. Program designers will need to anticipate who antagonists will be, the nature of their complaints, and be able to generate objective data to answer the issues. Similar activities will be necessary to insure the support of protagonists. Evaluation should generate data relative to the processes involved (i.e., relationships of logistics to outcomes, extramural vs. on-campus approaches, relationship of preparatory activities to outcomes, relationship of faculty variables to outcomes.) The interdisciplinary program is accountable to many publics. Early data retrieval is important so that the publics receive feedback while the experiences are still fresh in their minds. The real value of this kind of programmatic evaluation not only meets political ends, but also serves to identify those items which need change to better meet student needs.

The final analysis of the interdisciplinary approach to health science education rests with the ability to measure and demonstrate long term behavior change on the part of its participants. As a result, it is extremely important to collect data regarding the preparation, attitudes and activities of graduates prior to any interdisciplinary curriculum change. Baseline data are vital to any comparison of graduates with and without interdisciplinary training. If at all feasible, employer analyses should also be included in the research design.

CHAPTER V — SUMMARY AND DIRECTION

Four major areas have been addressed in this monograph: The dynamics of the allied health educational environment, a pragmatic approach to defining interdisciplinary, the exploration of issues related to interdisciplinary education, and the decisions which the allied health educational administrator must address during the development of the interdisciplinary process.

Allied health education by its very nature operates in a dynamic environment influenced by the disciplines it represents, the educational system in which it resides, and the complexities of the health care delivery system which it serves. All of these forces do not operate in a homogeneous fashion, which often creates problems for the allied health educational administrators in determining what their priorities should be. Interdisciplinary activities frequently take a low priority within the academic allied health environment because administrators must respond to such diverse publics.

Definitions and formats of interdisciplinary education are a confounding component of the total interdisciplinary approach. Confusion between definitions and goals poses problems for the administrator attempting to create an organized and orderly approach to allied health education. Interdisciplinary education, with its multiple interpretations, also carries with it an extraordinary administrative requirement which not all allied health units can manage.

The interdisciplinary concept involves the faculty, students, curriculum, and every organization of the allied health unit. Interdisciplinary educational experiences are a product of a multiple group of individuals and disciplines, thus drawing on the total resources of the allied health unit.

Because each allied health unit is different and the potential outcomes for the interdisciplinary experience can be so different, each administrator must evaluate the decisions on how to proceed. Philosophical decisions must be made on the purpose of the educational program, the planning process, and the administrative approach. Hard decisions on resource allocation and commitments are also a big factor in how each allied health unit proceeds with interdisciplinary activities.

Future Commitment

Interdisciplinary educational activities are something that each discipline in allied health may survive without, but for the sake of producing effective practitioners for patient care, the interdisciplinary experience is a necessity. Patient problems do not normally come in disciplinary packages, thus requiring that effective patient care take place in a collaborative setting. Allied health educational administrators can improve patient care through the development of interdiscipinary activities on their campuses.

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The Center for Interdisciplinary Education in Allied Health will provide additional bibliographic information on request. The Center has been formed to assist educational programs in the development and operation of activities which foster and establish a team approach to the delivery of health care in their graduates. All inquiries should be addressed to:

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INTERDISCIPLINARY EDUCATION IN THE HEALTH SCIENCES 1972—1978

Sponsoring Unit	Activity	Disciplines Involved
PENNSYLVANIA COLLEGE OF PODIATRIC MEDICINE Pennsylvania College of Optometry Philadelphia College of Osteopathic Medicine Philadelphia College of Pharmacy and Science Temple University — College of Allied Health Professions and School of Pharmacy University of Pennsylvania School of Dental Medicine and Nursing	"Philadelphia Interdisciplinary Health and Education Program" (PIHEP) Didactic course one semester and optional clinical rotation in various clinics (all year long)	Medicine, Dentistry, Nursing, Optometry, Podiatry, Pharmacy, Social Work, Educational Psychology, and Allied Health
STUDENT AMERICAN MEDICAL ASSOCIATION AND APPALACHIAN REGIONAL HOSPITALS, INC.	"SAMA-ARH Affiliated Student Health Project" Teams of students in five rural Kentucky areas conducted screening and patient educational programs as well as some patient care (summer program)	Health Education, Nutrition, Medicine, Pharmacy, Nursing, Social Work, Dentistry, Medical Technology
UNIVERSITY OF KENTUCKY College of Allied Health Professions	"Kentucky January" Students placed in interdisciplinary teams in rural communities throughout Kentucky, combination of didactic work, participative observations and clinical activities, project report required (intersession program)	Community Health, Dental Hygiene, Medical Technology, Physical Therapy, Nursing, Respiratory Therapy, Radiologic Technology, Dietetics, Dentistry, Medicine, Speech and Hearing, Social Work, Physician Assistant, Pharmacy and Dental Laboratory Technology

Sponsoring Unit	Activity	Disciplines Involved
UNIVERSITY OF MINNESOTA Health Sciences Center (planned in conjunction with coordinators for 19 health science programs)	HSU-5-001, "Interdisciplinary Team Training for Health Care Delivery" Didactic course, lecture, community project, (three academic quarters)	Medicine, Pharmacy, Dentistry, Nursing, Veterinary Medicine, Public Health, Social Work, Allied Health
STUDENT AMERICAN MEDICAL ASSOCIATION AND KENTUCKIANA METROVERSITY (consortium of five colleges and universities in Louisville, Kentucky area)	"A Community Health Orientation Program for Students" (CHOPS) Didactic classroom and participative observation in community and health care agencies (semester in length)	Medical, Dental, Nursing, Social Work, Nutrition, and Sociology
UNIVERSITY OF PENNSYLVANIA School of Allied Medical Professions (committee governance from medicine, social work, allied health, nursing, and dentistry)	"Institute on Interdisciplinary Health Care Practice" Administrative unit designed to develop and implement interdisciplinary courses, primarily didactic in nature, some community visitation (semester and intersession course)	Medicine, Nursing, Dentistry, Occupational Therapy, Medical Technology, Physical Therapy, Social Work and Health Administration
DELHOUSIE UNIVERSITY Faculty of Medicine, Department of Preventive Medicine	"Comprehensive Health Care Project" Students in teams are assigned one family to work in the community within provision of care and health education, faculty preceptors (year-long activity)	Medicine, Nursing, Social Professions, Dietetics and Dental Hygiene
UNIVERSITY OF CONNECTICUT Schools of Allied Health, Nursing and Pharmacy	Team, consumerism, and health care organization Discussion and group project (one semester in length)	Nursing, Pharmacy, Physical Therapy, Dietetics, Medical Technology, Social Work, Rehabilitation Counseling

Sponsoring Unit	Activity	Disciplines Involved
INSTITUTE FOR HEALTH TEAM DEVELOPMENT Montefiore Hospital and Medical Center	Establishment of educational strategies and learning environments which prepare health science students from various disciplines to render comprehensive primary health services as members of health teams	To work with established health science centers nation-wide
MEDICAL COLLEGE OF OF GEORGIA" Schools of Medicine, Allied Health and Nursing	"Interdisciplinary Health Team Curriculum (IDHTC) Complete curriculum articulation for three disciplines beginning in entering year, to be trained as a team throughout professional education (formal two-year curriculum)	Medicine, Nursing, and Physician Assistant
INDIANA UNIVERSITY-PURDUE University at Indianapolis	Student-employee health clinic and neighborhood clinics students formed into teams with preceptor guidance (summer program)	Medicine, Nursing, Chaplaincy, and Pharmacy
UNIVERSITY OF PITTSBURGH School of Health Related Professions	"Department of HRP Interdisciplinary Programs" Administrative unit to provide teaching support for school-wide common needs and design of interdisciplinary activities (year-long activity)	Physical Therapy, Child Development/Care, Health Care Records, Medical Technology, Dental Hygiene
UNIVERSITY OF NEW MEXICO School of Medicine	"Project Porvenier" Student teams are assigned to rural community clinics in teams, both preceptor and team activity takes place (year-long activity)	Medicine, Nursing, and Pharmacy

Sponsoring Unit	Activity	Disciplines Involved
RANCHO LOS AMIGOS HOSPITAL USC ALLIED HEALTH INTERDISCIPLINARY EDUCATION PROGRAM School of Medicine, Department of Community Medicine	Clinical patient care in special cord injury neurology, pediatrics or arthritis Students are assigned into teams with preceptors, working in clinics and home visits (summer program)	Medicine, Nursing, Social Work, Occupational Therapy, and Physical Therapy
UNIVERSITY OF MINNESOTA Faculty Committee for Allied Health Interdisciplinary Education	"HSU-5002— The Patient and the Health Care Team" Didactic, case study course presented in clinical problem-solving method—theology (one quarter)	Nursing, Medicine, Social Service, Recreation Therapy, Dental Hygiene, Medical Technology, Nutrition, Occupational Therapy
NATIONAL HEALTH COUNCIL and a. Medical Care Development, Inc. (Maine) b. Health Power Associates, Inc. (New Orleans) c. University of Arizona (College of Medicine, Department of Community and Family Medicine)	"Manpower Distribution Projects-Multidisciplinary Team Preceptorships" Students are grouped in teams and placed in clinics in urban and rural areas, primary care and team activities stressed (summer program)	Medicine, Nursing, Pharmacy, Dentistry, Allied Health
STATE UNIVERSITY OF NEW YORK AT BUFFALO School of Health-Related Professions and School of Medicine	Rural preceptorship program Students were specifically focusing on rural health care delivery, interdisciplinary was a secondary function (summer program)	Medicine, Nursing, Pharmacy, Physical Therapy, Podiatry, Hospital Administration, Social Work, Dentistry, Medical Technology
OHIO STATE UNIVERSITY College of Medicine, Department of Preventive Medicine	Rural health and team work Teams assigned to off-campus rural child development program (quarter-long rotations)	Medicine, Dentistry, Nursing, and Nutrition

Sponsoring Unit	Activity	Disciplines Involved
STUDENT AMERICAN MEDICAL ASSOCIATION	"SAMA Foundation Health Team Training Project" Originally carried out as a summer project in Kentucky in 1972, it was developed into a year-long program with 5 rotations of 9 weeks each offered in Kentucky, Virginia, Tennessee, South Carolina, Michigan and Papago Indian Reservation in Arizona	All health science students
STUDENT AMERICAN MEDICAL ASSOCIATION and a. Eastern Virginia School of Medicine b. Medical University of South Carolina c. University of Colorado	"Health Team Curriculum Project" Development of on-campus activities for interdisciplinary primary care	All health science students eligible, dependent upon which disciplines were on the specific campus
INSTITUTE FOR HEALTH TEAM DEVELOPMENT and a. University of Alabama at Birmingham b. University of North Carolina at Chapel Hill c. Michigan State University d. University of Washington at Seattle e. University of California	"Curriculum Development Program" Faculty teams from selected institutions trained by the IHTD staff and return to their campuses with the intent of developing student interdisciplinary activities in clinical primary care delivery	Faculty from Medicine, Dentistry, Pharmacy, Nursing, and Allied Health
UNIVERSITY OF HAWAII Colleges of Health Sciences and Social Welfare	"Health Team Development Program" Didactic courses (semester in length)	Medicine, Nursing, Public Health, Social Work, Human Development, and Special Education
MEDICAL COLLEGE OF GEORGIA School of Medicine, Department of Neurology	Developmental disabilities with interdisciplinary cooperation Student teams work in out-patient clinics	Medicine, Nursing, Physical Therapy, Occupational Therapy, Social Work and Pharmacy

Sponsoring Unit	Activity	Disciplines Involved
OHIO STATE UNIVERSITY College of Medicine, School of Dentistry, School of Allied Medical Professions and School of Nursing	Teamwork and group process Didactic course (one academic quarter)	Medicine, Nursing, Dietetics, Dentistry, Hospital Administration, Respiratory Therapy, Physical Therapy, Occupational Therapy, and Biomedical Computing
LEHMAN COLLEGE OF THE CITY UNIVERSITY OF NEW YORK and THE MONTEFIORE HOSPITAL AND MEDICAL CENTER	"Health Professions Institute" Students are on Lehman campus for three years then link up with medical students in fourth clinical year	Social Work, Nursing, Health Sciences Administration, then Medicine in fourth clinical year
UNIVERSITY OF HOUSTON College of Optometry	Community Health and Teamwork Combination of didactic classroom work and community visitation (one semester)	Optometry, Pharmacy, Nursing, and Allied Health
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO College of Medicine, Division of Ambulatory and Community Medicine	"Training in Interdisciplinary Team Approach" Develop and implement an integrated, sequential interdisciplinary education program for pre-professional degree students	Dentistry, Medicine, Nursing, Pharmacy, Dental Hygiene, and Physical Therapy
UNIVERSITY OF WASHINGTON College of Medicine, Department of Family Practice	"Health Team Training" Didactic and clinical curriculum in interdisciplinary health team care	Medicine, Nursing, Pharmacy, Dentistry, Dental Hygiene, Social Work and Health Administration
UNIVERSITY OF ALABAMA School of Medicine, Department of Family Practice	"Interdisciplinary Health Care Delivery Team Training" Train students, faculty and clinical health care delivery teams in use of interdisciplinary team approach	Medicine, Dentistry, Nursing, Optometry, Allied Health and Social Service

Sponsoring Unit	Activity	Disciplines Involved
MICHIGAN STATE UNIVERSITY College of Human Medicine, Department of Family Practice	"Interdisciplinary Health Team Development" Educational program for interdisciplinary care teams in a service model by developing linkages with other levels of care	Medicine, Nursing, Social Work, and Allied Health
UNIVERSITY OF KENTUCKY	"Center for Interdisciplinary Education in Allied Health" Administrative unit established to design, develop and implement interdisciplinary activities	All health students, principally allied health
COLUMBIA UNIVERSITY (student-run course — Nursing, Medicine, Allied Health)	"Making Health Teams Work" Didactic course focusing on roles and stereotyping of professionals	Medicine, Nursing, Physical Therapy, and Occupational Therapy
VIRGINIA COMMONWEALTH UNIVERSITY Medical College of Virginia, Center for Community Health	"HMEIA — Interdisciplinary Team Training" Didactic and clinical training in interdisciplinary team delivery of primary health care	Medicine, Nursing, Pharmacy, Dentistry, and Social Work
MEDICAL UNIVERSITY OF SOUTH CAROLINA College of Nursing	"Family Care in the Team Approach — Interdisciplinary Team Approach to Family Health Care" Didactic and clinical activities team and family care	Medicine, Dentistry, Nursing, Pharmacy, Allied Health
AMERICAN STUDENT MEDICAL ASSOCIATION and: a. University of South Dakota at Vermillion b. University of Missouri at Columbia c. Medical College of Georgia d. East Carolina University	"Interdisciplinary Curriculum in Primary Care" Development of curriculum on campus emphasizing team and primary care	All Health Science students eligible dependent upon which disciplines are on the specific campus

Sponsoring Unit	Activity	Disciplines Involved
MEDICAL CARE DEVELOPMENT, INC. Augusta, Maine, non-profit corporation	"Interdisciplinary Student Rural Health Teams" Clinical interdisciplinary team training in rural community (summer)	Medicine, Osteopathy, Nursing, Physician Assistant and others
DUKE UNIVERSITY College of Medicine	"Team Training for Primary Health Care" Team delivery of health care in a model clinical site located in a middle-class suburban community in a family medicine model	Medicine, Health Administration, Nursing and Physician Assistant
PENNSYLVANIA STATE UNIVERSITY Milton Hershey Medical Center	"Interdisciplinary Team Approach — Millersburg" Training in the provision of primary health care in an off campus site, focus on team delivery of care	Medicine, Nursing, Family Health Nursing, and Physician Assistant
INTERNATIONAL CENTER FOR INTEGRATIVE STUDIES (THE DOOR) Adolescent Health Center, New York	"Interdisciplinary Team Training" Training in an interdisciplinary team approach to adolescent medicine	Medicine, Nursing, Physician Assistant, Nutrition, Dentistry, Health Care Administration, Social Work and Health Education
UNIVERSITY OF COLORADO College of Medicine, Department of Preventive Medicine	"Health Professionals, Health Issues, and the Family Study" Primarily didactic course including site visits and family study, required course emphasizing professional roles and functions and family health (one quarter in length)	Medicine and Nursing
WAYNE STATE UNIVERSITY (Coordinating committee from Medicine, Allied Health, Nursing, Pharmacy, and Social Work)	"Interdisciplinary Health Care Field Experience" Extramural program with students assigned in teams to community service agencies, emphasizing team work and some preceptorship activity	Medicine, Nursing, Occupational Therapy, Pharmacy, Physical Therapy, and Social Work