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ABSTRACT

Results from a year-long study on the education-to-work transition are presented in the final report, with an examination of existing linkages between the two and proposals for their expansion and improvement. Background material is provided in a preface, summary of chapter content, and introductory chapter. Further chapters include: Framework for Studying the Education-to-Work Transition, discussing the subject area and how it has been handled; Survey of Current Linkages, presenting procedures and results of a four-State survey; Survey Analysis and Interpretation, and Alternative Linkage Approaches, combining to analyze survey findings and provide analytic structure for linkage development; an examination of Barriers and Proposals; and, Recommendations for Further Research and Development for the National Institute of Education. Nine figures and seven charts supplement the discussion. An extensive bibliography containing 244 titles arranged under planning, curriculum, guidance, manpower utilization, and evaluation is provided. The references represent the broader topic of career education as well as the relationship of education and work. Lists of consortium members, survey participants, and action proposals reviewers; a survey guide and related instruments; and Florida follow-up policy guidelines for community colleges are appended. A glossary of key terms is provided. (LH)

Final Report of the State-Level Study in Career Education

Bridging the Gap: A Study of Education-to-Work Linkages

Richard I. Ferrin, Project Director
Solomon Arbeiter, Project Codirector

BRIDGING THE GAP: A STUDY OF EDUCATION-TO-WORK LINKAGES

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June 18, 1975

This Final Report was prepared by the College Entrance Examination Board for the Education and Work Group, National Institute of Education pursuant to Contract No. NIE-C-74-0146. Portions of this report were prepared with the assistance of Policy Studies in Education, New York, New York.

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The College Entrance Examination Board is a nonprofit membership organization that provides tests and other educational services for students, schools, and colleges. The membership is composed of more than 2,000 colleges, schools, school systems, and education associations. Representatives of the members serve on the Board of Trustees and advisory councils and committees that consider the Board's programs and participate in the determination of its policies and activities.

College Entrance Examination Board, 888 Seventh Avenue, New York, New York 10019 (212) 582-6210

Contents

CHAPTER Page

Following Page

List of Figures

List of Charts

Following Page

SUMMARY

FOCUS OF THE REPORT

This report focuses on the education-to-work transition, the barriers that make that transition so difficult for many individuals, and the range of mechanisms that are or might be in place to link the worlds of education and work and thereby smooth the transition for individuals moving from one to the other.

This report is the result of a year-long study conducted by the College Entrance Examination Board for the National Institute of Education. The purpose of the study was to develop a framework for studying the education-to-work transition, to document the variety of existing linkages, and to offer proposals for improved or new mechanisms. Throughout the project we have taken the position that it would be inappropriate to create linkages that were so tight between the two worlds that implementation would yield a modern-day guild system. Rather we have been guided by the principle that linkages should bring the two worlds into alignment without sacrificing the essential functions of either. A theme running through the report is that education and work are and should be distinct.

CHAPTER 1: INTRODUCTION

In the introduction to the report we note that society assigns quite different roles to schools and colleges from those assigned to the workplace. The main function of an educational institution is to produce an individual able to perform well in the multiple career areas within our society, e.g., as a parent, as a wage-earner, as a citizen. A school's primary product is an individual, and its operations and resources are focused on individual development.

The product of the workplace, on the other hand, is a societal benefit--material or service. The worker is merely one of the components that function in concert with other individuals, capital, equipment, and materials to turn out a product. An industry's operations and resources are primarily focused on corporate development. The introduction also discusses the project design, with reference to our two advisory consortiums and our four-state survey. Throughout the project there was extensive involvement by practitioners. The survey data were a direct result of on-site interviews, and the proposals set forth in Chapter 6 are a product of deliberations with educational, industry, and labor professionals.

CHAPTER 2: A FRAMEWORK FOR STUDYING THE EDUCATION-TO-WORK TRANSITION

In Chapter 2 we mapped the possible terrain for study and then outlined the several decisions that were made to delimit the current investigation. Starting from a broad mandate to investigate career education linkages, the project was first limited in terms of career areas to be studied. Defining career area as "an aspect of life in which a distinctive set of activities can be conducted around a set of interrelated goals," we identified the seven career areas in which all individuals function: work, leisure, family, citizenship, health, ethics, and esthetics. We decided to focus on the career area of work not only because of the continued importance of the education-to-work transition in the United States, but also because this decision was in keeping with the emphasis of the National Institute of Education 1973 Forward Plan.

The second limitation had to do with linkage areas. We outlined four possible linkage areas as education-to-education, education-to-occupation, occupation-to-education, and occupation-to-occupation. With the support of our advisers and the endorsement of NIE, we selected the education-to-occupation area for this current study. This decision meant that a number of interesting and complex issues would be excluded, e.g., the discontinuity between career education programs at different educational levels, the barriers facing adults as they contemplate further educational and career planning assistance. Yet millions of individuals of all ages are involved in the education-to-occupation transition annually, and there was agreement among our advisers that an insufficient number of linkages were in place and that the area was much in need of investigation.

The third limitation resulted from our operational definitions of education and work. We decided to concentrate on secondary and postsecondary education because it is at these levels that students' transitions to work occur. And we decided to concentrate on paid work, not because we have any question about the tremendous importance of unpaid work in the lives of individuals, but rather because we are convinced that paid work will remain an important ingredient in the lives of most adults and that the problems in this area impinge upon the lives of millions of individuals annually.

A fourth limitation was made with respect to the types of linkages that would be studied. Because

it was a purpose of this project to consider systemic change we determined to focus on those mechanisms, processes, and products that are or might be used to bring the segments of the education and occupation systems into a harmonious relationship. This eliminated deliberate review of guidance and information mechanisms, processes, and products established to inform students about the relationship between their present education and their future occupations. This decision meant that we were looking more at linkages designed to affect individuals through institutional change than at ones set up to work with students on an individual basis.

CHAPTER 3: SURVEY OF CURRENT LINKAGES

Chapter 3 presents the procedures and findings of a survey conducted in California, Florida, New Jersey, and Ohio to identify existing linkages and to elicit ideas for possible improved linkages. These four states were selected because of their high level of current career education activity and to make geographic representation as wide as possible. The survey participants represented the full range of types and levels of institutions: public, private, and proprietary; secondary, two-year postsecondary, four-year postsecondary, and graduate postsecondary. The individuals occupied a broad range of positions inside and outside government and collectively represented an enormous amount of experience in observing and developing education-to-occupation linkages. In general, we spent six person days in each state, interviewing 104 people altogether.

The findings are organized by states, and brief descriptions are given for about 80 of the more than 100 linkages found. As could be expected, a large portion were either advisory councils or work-experience programs of one sort or another. These two forms of linkage are widespread in each of the four states visited. In fact, in Ohio every high school vocational education program must file a plan for using an advisory council with the State Division of Vocational Education as a condition of receiving state financial aid.

The 80 linkages mentioned range from informal mechanisms, such as attendance by a community college placement officer at monthly dinner meetings of the Association of Personnel Directors of Greater Miami, to formal and well-developed mechanisms, as exemplified by the Ohio Board of Nursing Education and Nurse Registration. The 80 represent local, regional, and state initiatives and have been included in the report

in the hope that they would serve as idea generators for readers interested in improving their own education-to-occupation linkages. Twenty-six linkages, most of which were uncovered in the survey, are described in greater detail in a supplemental report titled Bridging the Gap: A Selection of Education-to-Work Linkages.

Following each state presentation are general observations offered as impressions based on six person days of interviewing knowledgeable people at state and local levels. The statements are often cryptic and no doubt in some cases distort what is occurring in a given state, but we thought readers might find such observations useful as they seek to understand linkage as a concept.

CHAPTER 4: SURVEY ANALYSIS AND INTERPRETATION

and

CHAPTER 5: ALTERNATIVE LINKAGE APPROACHES

Chapters 4 and 5 analyze the survey findings and offer an analytic structure for considering linkage development. In designing the survey we intended to look for linkages that were addressed to the interface of the education system and the occupation system in order to align education exit requirements with occupation entry requirements. For the most part, such linkages were not found. Instead, the findings indicate that schools and colleges actually use communication devices (e.g., advisory councils) to keep themselves informed about job entry requirements and working conditions and use program linking devices (e.g., work experience) to arrange school conditions that resemble working conditions.

In general, educators appear to be placing greater emphasis on bringing the processes of education and work closer together and relatively less emphasis on efforts to align the exit requirements of one system with the entry requirements of the other. This emphasis is understandable in that both educational professionals and the larger community traditionally have paid more attention to process than to outcomes. In fact, if this were not so, it is unlikely that the accountability thrust aimed at education in the early 1970s would have produced such strong reactions. But it has had its effect, and educators and lay people alike are beginning to turn their attention not only to the outcomes of the educational process but to the alignment of those outcomes with occupational entry requirements. In the proposals that come later in the report, we set forth ideas for improving linkage between the processes of education and work and between requirements.

Requirements linkages, though potentially more powerful, are also likely to be more difficult to implement.

How tightly should education and work be linked? In considering this question we regarded linkage as a continuum, with the major points on the continuum being separation, communication, participation, substitution, and integration. Educational and work institutions for the most part seem to be at the point of communication and moving toward participation. That is, efforts under way in the education world to link with the work world typically take the form of soliciting information about the nature and characteristics of specific occupations. All kinds of devices are used to accomplish this purpose, such as advisory councils, informational brochures, site visits, placement and follow-up studies, etc. At this level of linkage educational systems retain virtually complete authority over their programs, using the information they receive as they see fit. For this reason we regard communication devices as "weak" links. The information-giving agent has little authority over the agency receiving the information. And this is a likely explanation of why advisory council members, for example, often regard their activity with a degree of frustration.

Institutions moving toward the participation level of linkage typically involve outside interests more directly in program evaluation, curriculum development, and other functions of the school. Institutions at this level are also characterized by students' involvement in work settings for some period of time through such devices as work-study programs, job simulation, and other short-term work-experience arrangements.

Our findings lead us to support participation as the most desirable level of linkage for our society. We believe that the wide-scale implementation of participation linkages would maintain a healthy dynamic tension between the worlds of education and work and that this tension would produce long-range benefits to society and the individual. We believe that the domination of one sector over the other will produce a condition ultimately detrimental to both. For example, if the purpose of education were simply to train individuals with certain skills and attitudes that would enable them to meet a given set of work entry requirements or fit into a particular slot, education would become the lackey of the work

world and would be forced either voluntarily or by governmental edict to suppress programs or activities seen as tangential or contrary to job training. If, on the other hand, the work world were to adjust its entry requirements continually to correspond to the characteristics of students emerging from educational institutions, it would either jeopardize its ability to produce goods and services profitably or be forced to initiate ever more massive training programs of its own.

Although the focus of this study is on the educational sector, our advisers expressed concern that change take place not only on the education side but on the work side as well. Businessmen with whom we talked seemed convinced that the educational system should change to be more attuned to the world of work, but they saw little need for major change in the work system. Although we recognize the difficulty of effecting modifications in the work system, we stress our conviction that unless change does take place to humanize the work process, linkages that might be created to improve education will have little effect on improving the quality of life in the United States. They may succeed in smoothing the transition from education to work, but individuals may become increasingly disenchanted with the transition and eventually might reject it if socially acceptable alternatives can be found.

CHAPTER 6: BARRIERS AND PROPOSALS

In Chapter 6 we have attempted to look through the eyes of the practitioner at the barriers he/she sees that hinder the transition process. The barriers have been grouped into four categories: (1) fluctuating requirements, (2) development and use of manpower and job requirements information, (3) credentialing, licensing, and certification procedures and examinations, and (4) control and authority. As part of this discussion we offer 12 proposals, some of which are geared for local implementation, others for state or federal. The 12 should not be regarded as firm recommendations for public policy but as ideas for pilot testing that can be expanded into policy changes contingent upon an evaluation of their operational effects. In fact, certain proposals are presented as alternatives, recognizing that political realities produce differing organizational and functional configurations from one state or local situation to another.

FIRST CATEGORY OF BARRIERS. See page 98.

In the discussion of fluctuating requirements we posit that the process of bringing education and work closer together remains difficult partly because requirements are continually shifting. What does the B.A. or the high school diploma mean? What does it really take to perform well in a particular job? These are only two of the many critical questions confronting our society. Not only do requirements fluctuate, in large part because of economic and social forces, but also they tend to be developed in isolation from one another --that is, education exit requirements are typically developed by educators and work entry requirements by those in business and industry. If the transition of individuals from education to work is to be significantly improved, each sector needs to listen to and learn from the other, and both need to examine their processes and requirements in terms of the other. Perhaps we are biased, but we sense more movement on the education side of the fence in this regard than on the work side. If this is true, it is a situation that warrants attention.

Proposal 1 (page 99)

Proposal 2 (page 101)

We offer five proposals in response to this first barrier. Proposal 1 states that *opportunities for unpaid work experience should be provided for all students in all major programs at both the secondary and postsecondary levels,* and Proposal 2 states that *secondary and postsecondary graduation requirements should reflect the importance of work experience for all students.*

Work experience as a generic term covers a seemingly endless variety of activities that combine education and work. Some activities are more education, offering only token exposure to real work; others are more work, offering little relationship to a student's classroom learning. Critics have labeled the latter "cheap labor." Still other activities have provided students an effective balance and have been of sufficient length and complexity to be rewarding to both the participant and the participating work institution.

It is this third form of work experience we propose. If the experience is not rewarding to the student, an important learning opportunity will have been lost. Yet if it is not rewarding to the corporation, though perhaps not always in economic terms, it is unlikely that the corporation will sustain its commitment.

Thus far in the United States work experience has been used primarily to achieve specialized purposes and has been directed to particular audiences (e.g., dropout-prone students, needy students, gifted students). Only recently have educators and others regarded it as contributing to broad educational objectives and, therefore, as suitable for all students.

But pressing questions haunt the implementation process. Where can all the work stations be located? What incentives can be provided to industry and labor to cooperate? Will work-experience programs take employment away from adult workers, particularly the marginally employed? These and other questions bear scrutiny, and in Chapter 7 we discuss a possible role for the National Institute of Education in such an investigation.

Proposal 3 (page 102)

Proposal 3 concerns the need for more definitive information on the outcomes of the educational process and its relationship to work entry. We propose that *follow-up studies of secondary and post-secondary school graduates and dropouts who did not immediately continue their education should be conducted annually to discern the extent and nature of misalignment between education exit requirements and work entry requirements.*

Much of the follow-up work currently undertaken is conducted only with graduates of certain programs. Also, this work appears to be too imprecise to provide significant program-planning assistance, and possibly because of this, it is often not given serious attention in curriculum and program review. A hard look needs to be taken at existing follow-up survey forms in terms of their potential usefulness, and strategies need to be developed for involving those responsible for the data collection on curriculum review teams.

Proposal 4 (page 102)

Proposal 4 takes cognizance of the important role local initiative has to play in linking education and work. This proposal urges that *Community Education and Work Councils, comprised of educational, business, labor, government, and other community leaders, should be established. Sponsorship may come from the educational sector, the work sector, or the community sector--whichever is willing to assume the initiative.*

We believe that the linking process would be most aided if a council sprang from the local community at large, but we recognize that while this may be possible and desirable in many communities, other patterns may be more suitable in other communities.

However organized, the councils should have authority and responsibility to organize community resources in order to be of maximum benefit to schools and colleges and to design and implement a system for placing students in work sites consistent with their interests and long-range planning. These councils should also provide a forum for the open sharing and resolution of problems and concerns associated with large-scale educational involvement in corporate life and large-scale corporate involvement in educational life.

Proposal 5 (page 104) The fifth and final proposal issued in response to the fluctuating requirements barrier is that *the state legislature or governor should establish a state-level interagency Career Competency Assessment Board that would report to the highest levels of state educational and labor government.*

Bringing the processes of education and work closer is primarily a local activity, but aligning the exit requirements of education with the entry requirements of work is a continuing task that most likely necessitates state leadership and involvement. The assessment board would bring educational, business, labor, and government leaders together for the primary purpose of gaining commitment from their respective constituencies to participate in the process of articulating a common language that would be used by their institutions in describing secondary and postsecondary education exit requirements and job entry requirements. Agreement may be sought for a reaffirmation of particular course requirements, some sort of competency-based language, a set of common attitude or other personal characteristics, or conceivably some combination of these. The board could perform other functions, such as providing funds to educational institutions interested in developing student exit competency statements or to state licensing boards desirous of developing competency-based examinations.

If such a board is to establish credibility, its structure within the state government, its membership, and its relation to existing councils such as the state advisory council on vocational education are critical.

SECOND CATEGORY OF BARRIERS. See page 105.

The second category of barriers has been labeled "development and use of manpower and job requirements information." The collection and dissemination of data and information about jobs for use by educators and students is an area of confusion and mistrust. Although information on job requirements and job vacancies appears to be available, it is often not believed or, if believed, not acted upon. In most cases, the state department of labor or private organizations of businessmen collect data regarding job availability and job entry experience and educational requirements. These data are frequently mistrusted in the academic world because of differences in definitions of terms, a different world outlook, or an ignorance of the degree of sophistication of available data and collection and dissemination procedures.

Proposal 6 (page 107)

Proposal 6 suggests that *the governor's office should create a statewide interagency task force to coordinate and stimulate the production and utilization of manpower demand and supply data.* This task force should have statutory authority to collect relevant data, and at least some members should have comembership on other statewide planning and policy-making bodies.

The most comprehensive, detailed, and widely used national publication on job requirements is the Dictionary of Occupational Titles. Proposals 7 and 8 suggest certain revisions in this useful document to improve its value as a mechanism for curriculum development, education exit requirements adjustment, and individual guidance.

Proposal 7 (page 108)

Proposal 7 is: *The U.S. Department of Labor in its work on the fourth edition of the Dictionary of Occupational Titles should reorganize into competency statements the "Worker Requirements" section of its 114 Worker-Trait group descriptions and, insofar as possible, the definitions for the 22,000 separate occupations.*

Proposal 8 (page 108)

Proposal 8 is: *The fourth edition of the Dictionary of Occupational Titles should include a classification system organized around personal competency areas and a cross-referencing system whereby an individual with known competencies will be able to find occupations, possibly quite unrelated to each other, that require similar competencies.*

The DOT currently is in the process of revision, with a new edition scheduled to appear in 1976. We hope these proposals will be taken into consideration by those responsible for the revision. A particular benefit of the competency cross-referencing system outlined in Proposal 8 would exist for individuals desiring or required to change occupations. Through this system they could be made aware of occupations that are possibly quite unrelated to each other but require similar competencies.

THIRD CATEGORY OF BARRIERS. See page 109.

The third category of barriers is "credentialing, licensing, and certification procedures and examinations." These are the most formal and formidable barriers to the education-to-work transition. Because of the need to develop a means of protecting the public from unqualified craftsmen and professionals, a system has evolved that by its nature tends to be closed and limiting. Certification and licensing requirements typically prescribe procedures and examination, with the intended or inadvertant result being a delimitation of the number and type of individuals competing for certification. Often, a real or artificially created job shortage is produced, and individuals with established roles in the trade or profession soon come to control the licensing and certification process.

Efforts are under way to create flexibility in the system without jeopardizing the desirable consequences of certification and licensing. California, for example, passed a law recently that requires public representation on licensing boards. Proposal 9 suggests that a similar approach be taken by all states, and that initiative come from state legislatures. The proposal is that: *State legislatures should take appropriate action to require licensing boards to broaden their membership to include two new groups: those outside the trade or profession who can act as representatives of the public interest, and educational professionals who can represent those with responsibility for training in the respective areas.*

Proposal 9 (page 111)

Proposal 10 (page 111)

Proposal 10 offers an alternate or additional approach for improving the licensing function. The proposal states: *Federal encouragement and support should be given to efforts to organize state educational licensing and certification agencies into a more cohesive system in order to improve and regulate more effectively the procedures by which certification and licensure are awarded.*

The need for consolidation stems from the problems of widely varying licensing procedures and requirements, from undesirable access restrictions, and from the cleavage that often exists between training institutions and licensing boards. No doubt numerous ways of tackling these problems can be found, and Proposal 10 is intended to stimulate the discovery of solutions, whether they may in the strengthening of existing "umbrella" agencies, the adoption of the New York model of control by the State Board of Regents, or some other strategy.

Tackling the certification barrier from another position is the competency-based education movement. We endorse this movement, and though there may be some occupational fields that do not lend themselves easily to competency statements, we urge federal support of efforts to develop competency examinations in a wide range of fields. Proposal 11 states:

Proposal 11 (page 113)

The National Institute of Education should stimulate the development of model competency-based examinations and certification procedures in a number of occupational fields ranging from skilled crafts through the professions.

We suggest that NIE stimulation could take one of two forms. Either it could award a series of grants to selected occupational associations, such as a state association of craftsmen or the state board of architects. Or it could award a grant or series of grants to a state agency, such as a state educational licensing board or a legislative committee on education and work. This body would coordinate the development of competency examinations and procedures in multiple occupational fields, building on knowledge gained from one experience to facilitate further development.

FOURTH CATEGORY OF BARRIERS. See page 114.

The fourth and final category of barriers is labeled "control and authority." In the worlds of education and work a number of compartmentalized units operate in virtual isolation from one another. Funding sources are insulated from accrediting agencies, which in turn are separated from curriculum development groups, which in turn are isolated from the committees and boards that organize and rationalize jobs and work. A sense of insularity marks each process; individuals appear to operate in tightly knit units and make contact with each other only at the periphery of each of the groups. The separate rules and recognition factors within each of the groups affect students moving from school to work in different ways and with differing expectations.

Linking mechanisms between education and work should ensure that curriculum decisions, for example, are shared by the faculty with those in touch with the work world. And, at the same time, they should ensure that those in work institutions share with those in touch with education the decision-making authority with regard to organization of the workplace. Neither idea is likely to be received enthusiastically by those being asked to share authority, but until some movement is made in this direction the transition process will remain difficult and frustrating for many.

Proposal 12 (page 116)

The proposal we offer to reduce this barrier provides five alternative political structures in recognition of the different political climates and organizational structures in each state. This last proposal recommends that *states should consider some organizational mechanism for bringing together under one roof the myriad planning and funding arrangements aimed at human development. Possible alternatives include a governor's state council on education and work, a legislative committee on education and work, a joint executive-legislative lay council on education and work, state and regional human development planning councils, and a state department of human development.*

CHAPTER 7: RECOMMENDATIONS FOR FURTHER RESEARCH AND DEVELOPMENT FOR THE NATIONAL INSTITUTE OF EDUCATION

Chapter 7, the final chapter, is directed specifically to the National Institute of Education in response to the original Request for Proposals which called for the contractor to "develop a strategy(s) for NIE to consider what further research and development will allow for maximum benefit to the field...." In this chapter we recommend two research and three development activities. These recommendations grow out of selected proposals in the previous chapter and are regarded as essential first steps.

The research activities focus on evaluation of the effectiveness of alternate forms of work experience at the secondary and postsecondary levels and on evaluation of the effectiveness of alternate forms of community education and work councils. The developmental activities focus on NIE stimulation of the development of competency-based examinations in occupational fields ranging from skilled crafts through the professions and on NIE support for development of issues papers and subsequent model legislation pertaining to expanded membership for licensing boards. The final activity recommended is that NIE support a series of working conferences with policy makers to consider ways to improve the transition from

education to work through implementation of the proposals in this report or of others that appear to be more appropriate.

The report concludes with a final caution. Will creating better linkages between education and work be an unmixed blessing? It seems possible that the effect of such linkages will be to create support for those aspects of the school or college program that have utility in the workplace while at the same time leading to neglect (or possibly opposition) of those aspects that have low or no utility in the workplace. If education-to-work linkages are strengthened, there is an irreducible amount of risk to those areas of the educational program that prepare a person for careers other than work. But if such linkages are not promoted, various degrees of obsolescence may continue and perhaps even grow in the education system, and problems of worker alienation may continue and perhaps even grow in the work system. In any event, the gap between the two systems is not likely to be narrowed without conscious intervention, and the difficulty and frustration faced by so many who make this transition one or more times will continue.

Clearly, the dangers of an education-work system that is too tightly and narrowly linked are real, and those responsible for overall improvement in both worlds--education and work--must weigh the issues carefully.

PREFACE

On first thought, the College Entrance Examination Board may appear to be an unlikely organization to undertake a research study on education-to-work linkages. And yet we have. Why? Primarily because the College Board is concerned not only with students' transitions from one educational institution to another but has become involved increasingly with students who are moving from educational institutions to employment and avocations and with students who are moving from work back to school or college.

The College Board, of course, is best known for its wide variety of assessment, guidance, financial aid, and informational services to high school students who intend to pursue postsecondary education. Such programs as the Admissions Testing Program (the Scholastic Aptitude Test and the Achievement Tests), the College Scholarship Service, the Comparative Guidance and Placement Program, the Advanced Placement Program, and the College-Level Examination Program are prominent on the educational landscape. However, in looking about at the current educational scene and in projecting the need for future service, the College Board, as well as many other secondary and postsecondary educational institutions and agencies, can envision a "learning society" in which people continually move from work to school and back again. That is, a society in which work and school coexist as equal partners for the growth and fulfillment of the individual and the learner/worker moves easily between the two areas. It is in this type of society, in which individuals work productively and learn rewardingly throughout their lifetimes, that the College Board sees a useful and productive arena for offering its long-established services.

Sidney P. Marland Jr., president of the College Board, in a speech at the National Association of Secondary School Principals on February 11, 1975, stated, "The familiar College Entrance Examination Board, now 75 years old, is moving briskly though cautiously to assess its place in this demanding educational concept, and, following the completion of (this project) for NIE will be wiser and we hope more sophisticated in providing you with other tools to serve the young people (and the not-so-young) of the United States."

In the same speech, Dr. Marland also cited a project undertaken with six states to study the needs for improved counseling services to all secondary school students and made reference to the expanding College Board Decision-Making Program, which offers services to a variety of traditional and nontraditional students. Therefore, the study we have undertaken, which is described in this report, is one of many projects in which the College Board is moving beyond its traditional role of assisting high school students moving to college. We seek to expand the services given directly to learners to include the diversity of adults who have an interest in broadening their understanding and abilities and, to serve the widening range of institutions (e.g., libraries, labor unions, business firms, government agencies, etc.) seeking to serve the evergrowing number of individuals in need of information, guidance, and education.

"Bridging the gap" is a phrase that carries the message that action is necessary to construct something that will facilitate the transition from one

entity to another. We think it conveys the message of this report. We have sought to develop a conceptual framework to describe where a bridge could go and what points it would touch if it were constructed. Assuming the existence of a gap, we have examined the literature and traveled in several states to discover what kinds of education-work bridges have been built in selected states and communities. Finally, we have offered proposals that, if implemented, we believe could contribute significantly to the establishment of bridges between education and work throughout our society.

In addition to this full report there is a supplemental report titled Bridging the Gap: A Selection of Education-to-Work Linkages in which 26 examples of linkages of different types are described. Each 2-3 page profile includes a statement on specific problems the linkage is intended to address, intent of the program, a description and brief history of the program, level of funding, and in each program director's own words the impact he/she thinks the linkage has made.

A number of people made large contributions to this effort. First of all, we offer special thanks to the staff of our subcontractor, Policy Studies in Education, in New York City, and in particular to Henry M. Brickell and Carol B. Aslanian, who provided excellent work on the project. They worked closely with us on the development of the framework and assumed primary responsibility for designing, conducting, and reporting the four-state survey described in Chapters 3 and 4.

Second, in addition to the dozens of people interviewed, appreciation is extended to the nearly 40 advisers listed in Appendix A who attended meetings, engaged in office conversations, and reviewed drafts of this report and the supplemental report. We were particularly pleased to have had the support, encouragement, and guidance of Dr. Marland, president of the College Board, who not only provided observations and insights throughout the project but also critically examined final manuscripts of both reports in their entirety.

Equally important to this project were Toni-Susanne White, Diana Jackson, Lilly Unguran, Susan Teply, Helen Lennon and Marcia Van Meter. Miss White worked hard and well throughout the entire project in coordinating meeting and travel plans, typing drafts of several chapters, collecting data, and performing countless other tasks that kept the project on an even keel. Ms. Jackson capably managed the development of the Bibliography and acted as project manager during the past two months to assure that we met our contract deadline. Ms. Unguran provided competent assistance in a variety of roles throughout the project. Ms. Teply and Ms. Lennon demonstrated indispensable skill in typing, proofreading, and generally assisting with various sections of the manuscripts. And Ms. Van Meter edited the two reports with exemplary skill and speed.

Richard I. Ferrin

Solomon Arbeiter

New York, New York
June 1975

Chapter 1

INTRODUCTION

In education, as in other enterprises, catchwords come and go, but those in vogue often capture the emphasis of the times. In the 1960s, words such as "excellence," "equality," and "relevance" seemed to be rallying cries for educational reformers as they sought to attack one societal need after another. And real needs they were (and are). The 1970s were ushered in to the ringing sound of "accountability," and the effects of that theme continue to be felt as strongly today as they were five years ago.

But the new word is "employability." Taxpayers want schools that will provide their young with skills that will make them employable. Undergraduates protest those programs that do not--as they see it--prepare them to obtain a good job, and enrollments in many such majors have dropped sharply. Foreign languages have been demoted to minors at some institutions and totally abolished at others.

At the same time, work-experience and cooperative education programs have blossomed. At the college level, for example, institutions offering cooperative education programs increased from 35 in 1960 to 225 in 1971. By 1974 the figure had risen to nearly 400, with 200 more in the planning stage.[1]

National data are not available for undergraduate enrollment by fields of study, but are available for earned degrees conferred. And although the latter are delayed in reflecting enrollment trends, it is interesting to note that in the field of business and management Bachelor's degrees increased nearly 20 percent between 1970 and 1973, from 106,279 to 128,057. Bachelor's degrees in computer science and systems analysis jumped nearly 200 percent during the same period, from 1,500 to 4,306. History, on the other hand, dropped 5 percent, from 43,500 to 41,167.

Community college enrollments in degree-credit (degree-credit means work creditable toward a Bachelor's degree) programs increased 38 percent between 1970-74, while non-degree-credit (occupational) enrollments swelled 87 percent during the same period. In 1970, one out of four community college students was in a non-degree-credit program; by 1974, the number was one in three. Even these figures understate the growth in occupational interest, however, because of confusion surrounding the term "degree-credit." Some institutions report all students as enrolled in degree-credit programs; other institutions have developed liberal transfer articulation agreements

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1. K. Patricia Cross, "The Learning Society." College Board Review, No. 91, Spring 1974.

with four-year institutions whereby courses taken in occupational programs such as drafting or dental hygiene are accepted for credit toward the Bachelor's degree.

One does not have to look far to see the reasons for this trend. The economic signals are clearly visible to all. To cite only one, in January 1970 the unemployment rate stood at 3.9 percent; in January 1975 it stood at 8.2 percent.[2]

Underemployment, defined as working at less than one's full productive capacity, also seems to be a growing problem. James O'Toole writes that "Myron Clark, past president of the Society for the Advancement of Management, estimates that 80 percent of all workers in America are underemployed, [and] the massive Survey of Working Conditions prepared for the U.S. Department of Labor found that 35 percent of all workers feel over-qualified for their jobs." O'Toole is convinced that "this underutilization of human resources stems most clearly from dissonances and disjunctions in the important and complex relationship between the institutions of education and work."[3]

It is largely in recognition of these disjunctions and of the need to find solutions that career education came into being. Despite its many definitions, a generally accepted objective of career education is to bring the worlds of education and work closer together, to improve the relationships between these two vital social institutions. Career education is more than this, its proponents will persuasively assert, and we will willingly agree, but central to its concern is this problem of dissonance and disjointedness.

This study picks up that concern and investigates the ways in which these two institutions have come together and the linking mechanisms that have developed to accomplish this purpose. The aim of the study is to highlight existing practices and to offer recommendations for improved linkage mechanisms and strategies.

As the study began we were aware that there were numerous possible directions in which to move. Under the rubric of career education we could legitimately have examined the state of linkage between elementary and secondary school curriculums, community college and proprietary school programs, educational programs operated under state departments of education, and the manpower training programs operated through the departments of labor, academic and vocational curriculums, civilian and military education, pure education

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2. Bureau of Labor Statistics, Employment and Earnings. Washington, D.C.: U.S. Department of Labor, Vol. 16, No. 9 (March 1970); Vol. 21, No. 8 (February 1975).

3. "The Reserve Army of the Underemployed." Change, May 1975, pp. 26, 28.

programs within schools and the total school program, and so forth. In fact, in our project proposal we outlined five linkage system areas in which we intended to work: education and work, certification/credentialization, institutional articulation, financing, and support services. In the first meeting of our internal advisory group, however, one adviser suggested that the first area--education and work--seemed to be the central topic, and that the other four could be dealt with as subtopics. This advice seemed sound, and we have followed that tack.

The purpose of education has been and will continue to be explained in various, often conflicting, terms. For this project we regarded education as "a set of preparatory activities to enable an individual to succeed in one or more career areas." Preparatory is intended to denote the purpose of the activities, not their timing. That is, we recognize that education can and does take place throughout one's life, but whenever it does occur, it is preparing an individual for initial or further success in a career area. We further defined career as "a lifelong succession of activities organized around a set of interrelated goals." Taken together, then, our operational definition of career education is: a lifelong succession of preparatory activities to enable an individual to succeed in multiple career areas. Our definition of career area is "an aspect of life in which a distinctive set of activities can be conducted around a set of interrelated goals."

Our listing of career areas includes work, leisure, family, citizenship, health, ethics, and esthetics. Some would view education as preparing an individual for success in all these seven areas, others would see it in relation to only certain of the areas, and still others see it as relating to only one. For example, some individuals we encountered during this study regard the primary purpose of education as preparation for work. We do not support that view. While we regard preparation for work as an important purpose of education, we consider it no more important than preparation in a number of other career areas.

Moreover, even as we focus on the career area of work, we recognize that none of the career areas is isolated from any other. As Figure 1 illustrates, an individual's multiple careers intersect and interact in numerous and complex ways throughout life. To cite several examples, one's work and leisure careers may be interrelated through such avenues as lunchtime volleyball games, the company bowling team, and social occasions involving colleagues (point 1 on the figure). A new baby in the family might affect one's work career, or a job transfer to a new location might upset family patterns (point 2). A heart attack might affect the work one is able to do (point 3) and might also mandate a change in types of leisure activity (point 4). One's values might lead to turning down a high-paying job in favor of one that is outdoors (point 5).

As interesting and important as each of these intersections is, the usual constraints of time and money necessitated some limitation, and in keeping with a decision already made in the National Institute of Education Request for Proposals for this project, and in accordance with

the directions stipulated in their 1973 Forward Plan, we have chosen work as the only career area to be examined. The Forward Plan states: "The initial emphasis for the NIE career education R&D program will be the responsiveness of career education to the problems people experience in finding the right jobs and advancing within them."

PRIMARY CAUSE OF EDUCATION/WORK DISJUNCTION

As we consider the institutions of education and work in relation to one another, we are struck by the different roles our society assigns the school/college and the workplace. The main function of the school or college is to produce an individual able to perform well in multiple career areas within our society, e.g., as a parent, as a worker, as a citizen. The school's primary product is the individual, and its operations and resources (teachers, buildings, textbooks) are intended to focus efforts upon the individual student.

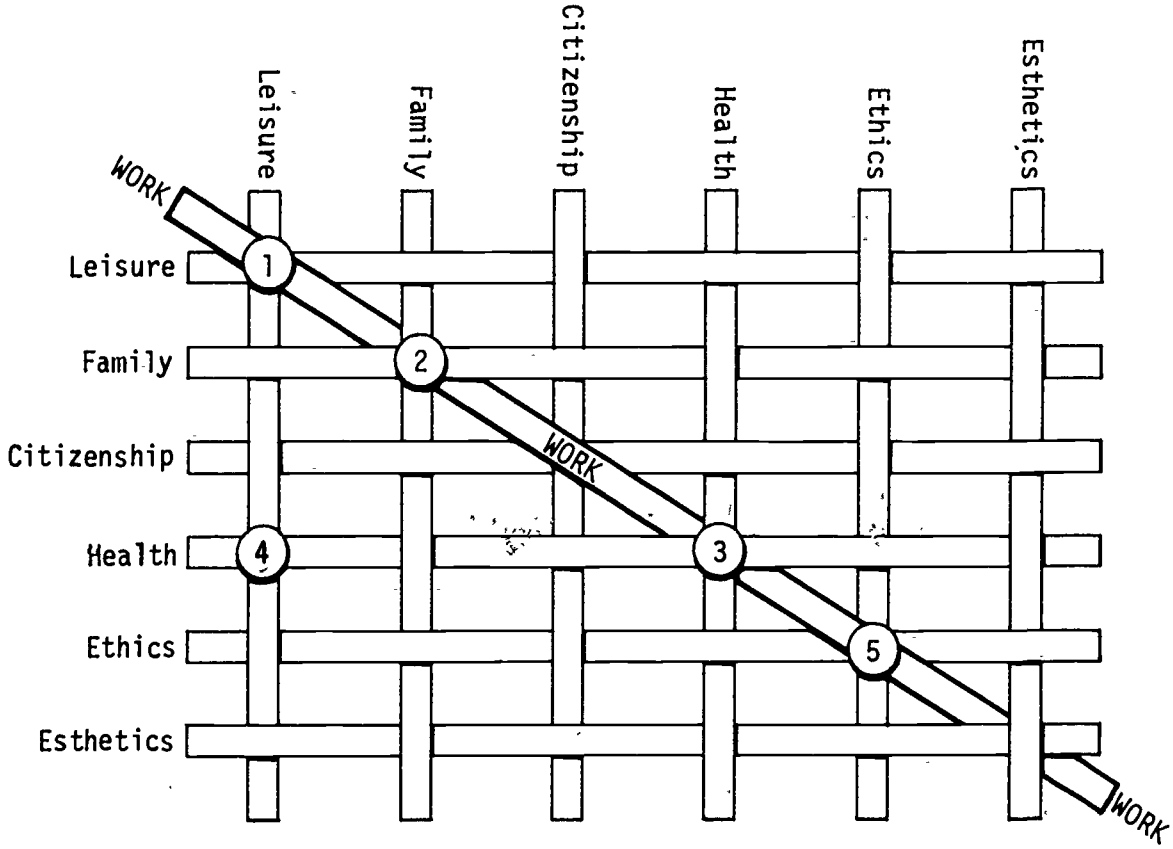
The product of the world of work, on the other hand, is a societal benefit, material or service. The individual in this world--the worker--is merely one of the components that function in concert with other individuals, capital, equipment, and raw materials to turn out a product. In fact, in some industries the individual may not even be the most important component.

Accordingly, what is required of an individual in the world of work and in the educational world may differ significantly. For example, in an interview with an elementary school teacher and her husband, a banker, the husband objected to recently hired younger employees completing their work and then spending their "extra" time in conversation or other nonbanking pursuits. It "bothered" him to see a number of employees in nonproductive endeavors. The wife, who teaches in an open classroom, nondirective setting, admitted that she was attempting to instill in her students this very attitude of nonpressured study and a relaxed approach to problems. Her school emphasizes functioning in a friendly and supportive atmosphere while performing assigned and self-assumed tasks and seeks to make the learning process enjoyable and self-directed. The banker indicated that this was somewhat in conflict with the role students would have to play in the banking industry or work in general.

Clearly, industrial and other areas of work have changed significantly from the time Henry Ford introduced automation and individuals were expendable cogs in a fast-moving machine. However, the goals of production, of turning out a "product"--a governmental service, an automobile, or a social service--require the subordination of the individual to the production of an organizational "good." This process, no matter how much enlightened employers may attempt to humanize it and seek a creative interface between employees and machines, appears to be in opposition to the contemporary educational process which emphasizes and highlights individual growth and attainment.

To the extent that schools focus on the "well-rounded individual" and the attainment of satisfaction in life and work, the educational system may be a primary obstacle to successful involvement in the work

Figure 1. Career Area Intersections



Point 1. Work/Leisure
Point 2. Work/Family
Point 3. Health/Work
Point 4. Health/Leisure
Point 5. Ethics/Work

system. Yet the educational process, if it is to help individuals to prepare for change in our society, to face new challenges and chart new directions, must train them to have open and inquiring minds and broadly developed skills. While this does not negate the need for occupational and vocational skills required by the world of work, it does suggest that open collaboration between the worlds of education and work is essential if the individual is to find satisfaction in either.

WORK VERSUS OCCUPATION

We heartily agree with those who would define work as including paid and unpaid productive activity. In a policy paper of the U. S. Office of Education, Kenneth Hoyt remarks that preparation for work is and should be one goal of education, and that work "is a concept which, while obviously encompassing economic man, reaches beyond to the broader aspects of productivity in one's total lifestyle--including leisure time."

For the purposes of this study, however, we have limited our concept of work to paid employment, not because we have any question about the tremendous importance of unpaid work in the lives of individuals for the coming years, but rather because we are convinced that paid work will remain an important ingredient in the lives of most adults and that there are severe problems with respect to the transition of individuals between education and paid work. As used throughout this study, then, the term work has a deliberate occupational tone. In fact, to minimize the confusion surrounding the term work, we substituted the word occupation during our interviews with educators, businessmen, and governmental officials in four states. For this reason, in Chapters 3 and 4, where we report the survey findings and analyze the results, we use the word occupation consistently.

DESIGN OF THE PROJECT

The NIE RFP that led to this project emphasizes the importance of "maximum stakeholder involvement." Therefore, in designing this study the staff developed two formal advisory groups (Appendix A) who have provided direction, counsel, and review at several points along the way--as individuals, in small groups, and in large groups. One group, the External Consortium, was comprised of stakeholders, i.e., practitioners, in the education and work worlds; the other group, the Internal Consortium, was comprised of College Entrance Examination Board and Educational Testing Service staff whose expertise was relevant to the study concerned. In addition, survey interviews were held with more than 100 individuals in California, Florida, New Jersey, and Ohio (Appendix B). Various working drafts of parts of this report were reviewed not only by the two consortiums but also by about 30 individuals with widely differing perspectives. In the early stages of the study the Project Director visited Arizona, Oregon, and Wisconsin in what turned out to be a worthwhile effort to document the progress and problems of career education in these geographically and philosophically diverse states. This knowledge was

supplemented by an extensive examination of the literature. The reader interested in a perusal of the career education literature is encouraged to refer to the Bibliography, which is organized for easy access into five major categories and 18 subcategories.

A major part of the project was a four-state survey undertaken to identify the variety of operational linkages. The research design utilized extensive face-to-face contact and structured but open-ended discussions, and the data, therefore, are observations more than they are "hard evidence." The reader looking for pounds of facts and figures will be disappointed, but the one who is seeking a conceptual understanding of the education-work linkage problem, a sense of the variety of linkages currently operating, and some ideas about what might be done to improve the situation will, we hope, be rewarded.

In addition to this report, this project yielded a supplemental report, titled Bridging the Gap: A Selection of Education-to-Work Linkages. This report describes 26 varied types of linkages that serve as examples of the kind of activity currently under way in this area.

Chapter 2

A FRAMEWORK

FOR

STUDYING THE EDUCATION-TO-WORK TRANSITION

This chapter presents the major components of the conceptual framework developed for studying education-to-work linkages. Key decisions made in order to clarify, define, and limit the scope of work are described and illustrated.

PROBLEM

The Request for Proposals (RFP) issued by the National Institute of Education (NIE) for this investigation of career education outlined the problem of interest as being the lack of adequate linkages between education and work. The RFP mentioned two different classes of inadequate linkages: (1) those within and between the education and occupation systems (institutional linkages) and (2) those between students and workers and the segments of the two systems (individual linkages). The first are concerned with the way the systems are connected and interconnected, and the second are concerned with the way individual participants are connected to the systems and to each other.

LIMITING THE SCOPE OF THE CONCEPTUAL FRAMEWORK

As development of the conceptual framework proceeded, it was determined that the framework should map the entire territory dealt with in the RFP, even though it became apparent that the breadth of issues suggested in the RFP could not all be investigated. This mapping, however, made it possible to undertake a systematic reduction of the territory that was proposed by the project staff and reviewed and approved by NIE and project advisers as an acceptable parcel for the study. The systematic mapping had the effect of reopening certain decisions already made in the RFP and moving through them again in an orderly series. This process in turn displayed those decisions in a logical context that was not fully explicated in the RFP itself.

The sections below explain what limitations were made and why. A glossary of key terms used in this study has been included at the end of this report.

MULTIPLE CAREER AREAS

For the purposes of this study, a career is described as "a lifelong succession of activities organized around a set of interrelated goals." A career area is defined as "an aspect of life in which a distinctive set of activities can be conducted around a set of interrelated goals." For

example:

work
leisure
family
citizenship
health
ethics
esthetics

The first limitation in the study was the choice of work as the only career area to be examined. The reasons for this choice have already been explained in Chapter 1.

NIE POTENTIAL INFLUENCE

Given the assumption that NIE wants to stimulate and encourage improved linkages within and between the education and work systems and the individuals who use them, some thought was given to where NIE might exert the greatest constructive influence. That is, would NIE be more influential with education-related agencies than with work-related agencies or vice versa?

As a research and development agency within the education sector of the federal government, NIE is probably positioned to exert its greatest influence on other agencies in the education sector of the government. Within the federal government, its influence can be greatest on education-related agencies within the Department of Health, Education and Welfare, such as the U. S. Office of Education, and, to a lesser extent, on education-related agencies within the Department of Labor, Department of Commerce, Department of Agriculture, and others. At the state and local levels, NIE can also influence state education agencies and, through them, local education agencies.

It seems unlikely that NIE, in the near future, can exert equal influence on work-related agencies within the federal, state, and local governments, and even less likely that it can exert influence in the private sector, as by shaping the practices of employers and labor unions. (Of course, through indirect means over a long term, NIE may exert much constructive influence on work-related agencies within the government and on organizations outside the government.) Although this impression guided the conduct of the survey that is reported in Chapter 3, we felt compelled in our development of proposals for action (see Chapter 6) to include not only ideas that NIE could move on but also some directed to noneducational agencies.

EDUCATION AND WORK DEFINED

In order to carve out a particular territory in which to conduct this study, it was necessary to define the two key terms around which the study revolved. It should be remembered that the definitions that follow were developed specifically for this study to narrow the scope to manageable proportions. As such, they should in no way be construed as definitions of what education and work should mean generally. On the other hand, these definitions should not exclude application of the results of this study to the broader forms of

Figure 2. Definition of "Education." Education is a process by which (1 who) someone teaches (2 what) something to (3 whom) someone else (4 where) at a place (5 when) at a time (6 how) with a method (7 why) for a purpose. One choice of alternatives within that definition is the following:

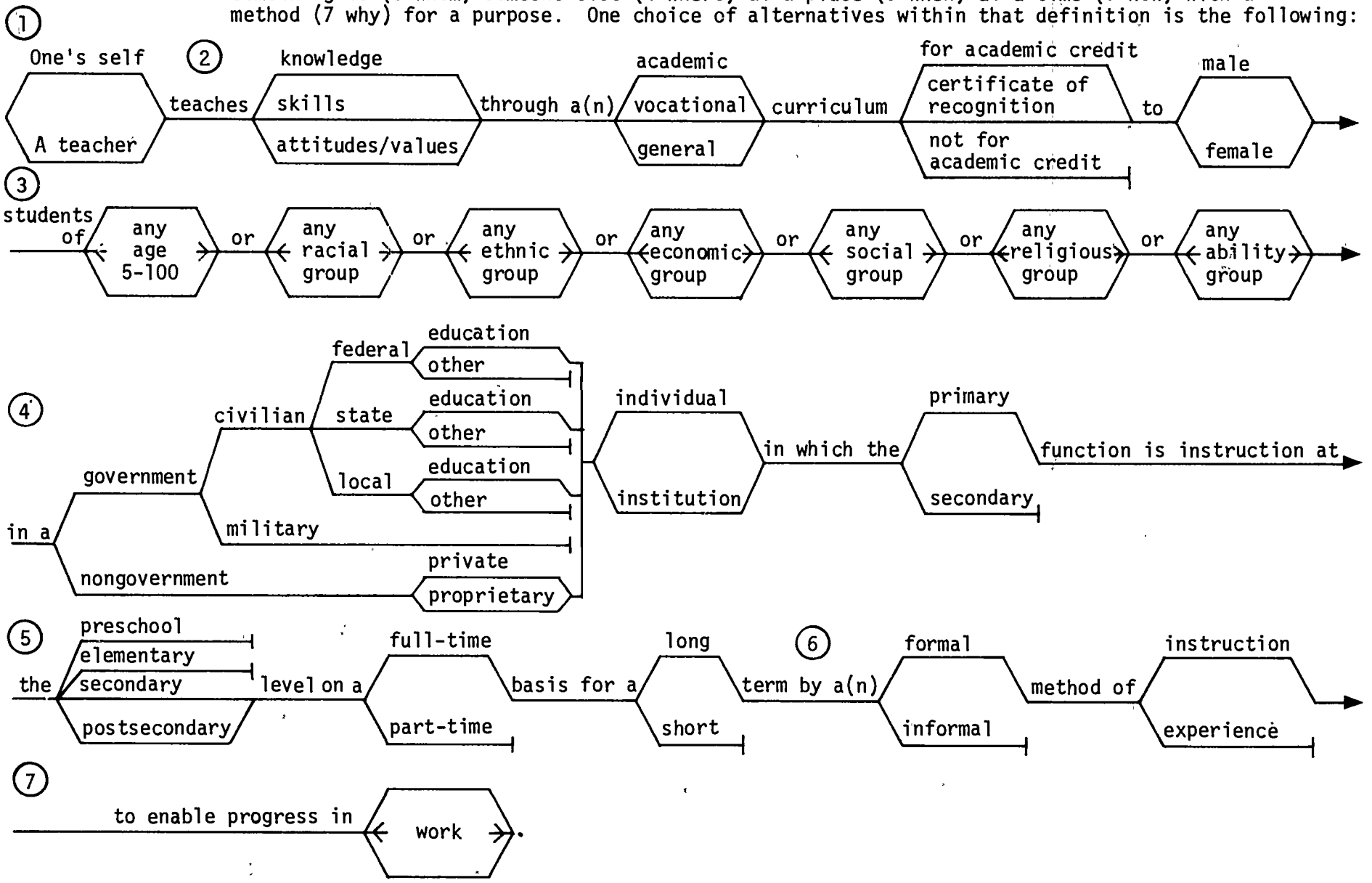
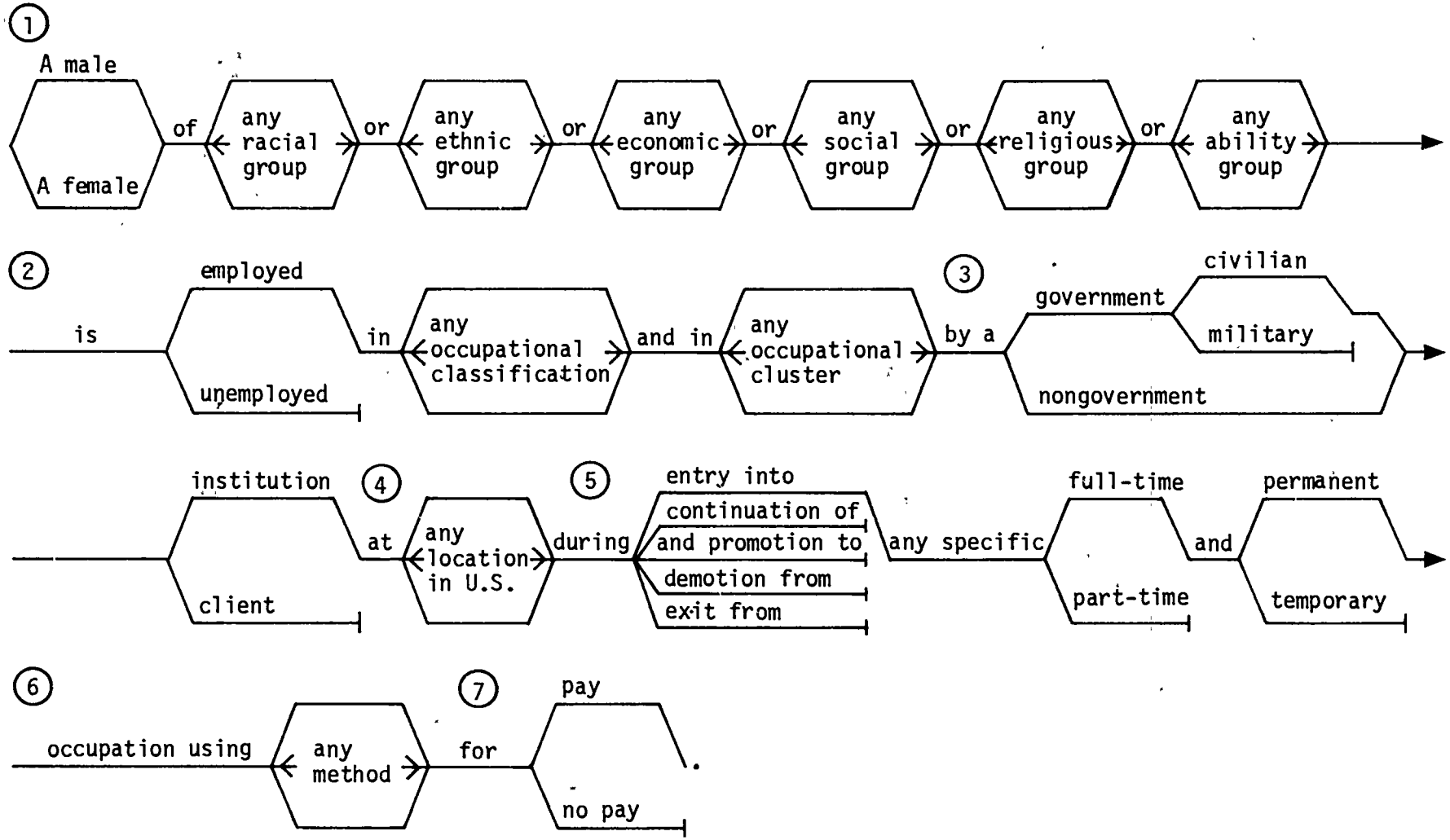


Figure 3. Definition of "Work." Work is the process by which (1 who) someone produces (2 what) goods or services for (3 whom) someone else (4 where) at a place (5 when) at a time (6 how) with a method (7 why) for a purpose. One choice of alternatives within that definition is the following.



education and work. With that explanation, then, we offer the following definitions, which guided this study. (See Figures 2 and 3.)

Education is a process by which:

- one's self or a teacher
- teaches knowledge, skills, attitudes, and values
- through an academic, vocational, or general curriculum
- for academic credit or certificate of recognition
- to male or female students
- of any age
- of any racial, ethnic, economic, social, or religious background
- of any ability
- in a government (federal, state, or local) civilian
- or a nongovernment private or proprietary
- educational institution or individual
- in which the primary function is instruction
- at the secondary or postsecondary level
- on a full-time
- long-term (40 successive week days or more) basis
- using a formal
- method of instruction
- to enable progress in work

Work is a process by which:

- a male or female
- of any racial, ethnic, economic, social, or religious background
- of any ability
- is employed
- in any occupation classification used by the U.S. Bureau of the Census
- in any occupational cluster in the Dictionary of Occupational Titles
- by a government civilian
- or nongovernment
- institution
- at any location in the United States
- during entry into, or promotion to
- any full-time (35 hours or more per week)
- permanent job (30 work days or more per quarter year)
- using any method
- for pay

Thus it is the linkage of education as defined here to work as defined here that will be examined in this study. (The term "occupation" is defined as "a specific class of work encompassing a cluster of related jobs" and the term "job" is defined as "a specific subdivision of an occupation encompassing a cluster of related tasks.")

FOUR LINKAGE AREAS

Four linkage areas could be investigated:

A. Education-to-Education
B. Education-to-Occupation
C. Occupation-to-Education
D. Occupation-to-Occupation
(See Charts 1, 2, 3, 4.)

The first linkage area (A. Education-to-Education) encompasses the set of linkages, actual or potential, within the education system itself and between students and the system. For example, it encompasses actual and potential linkages in the segments of career education. Some school districts sponsor an elementary career education program but have no high school career education program; others do the reverse. Some cities and counties have a postsecondary technical school available as a capstone for the high school program; others do not. Some college undergraduate programs are designed to move a student smoothly into a graduate professional school; others are not. The first linkage area also encompasses all mechanisms, processes, and products providing information to a student relating his/her present educational experiences to future educational opportunities without changing (1) present educational experiences, (2) future educational opportunities, or (3) educational qualifications. Some of these arrangements for informing students about the relationships of the parts of the education system are adequate; some are not.

This area of linkages is sufficiently important to justify a thorough examination. Moreover, this is an area in which NIE is able to exert direct influence in the immediate future. NIE as a federal government agency dealing with education is particularly well suited to influence the mechanisms, processes, and products used to link the parts of the education system (including the various elements and components of the career education subsystem) and to link students to the system. Nevertheless, an examination of this area does not have the same social and political urgency as an examination of other areas. And the study must be limited. Thus the Education-to-Education linkage area has been eliminated from direct examination.

The second linkage area (B. Education-to-Occupation) encompasses the set of linkages, actual or potential, that connect the education system to the occupation system. Specifically, it encompasses the actual and potential mechanisms, processes, and products used to adjust the education system to the requirements of the occupation system. Some high schools have advisory councils made up of local employers and union leaders who can forecast local employment opportunities. High schools use those forecasts to adjust vocational education courses and/or to guide student enrollment into selected courses. Some graduate professional schools have advisory groups made up of alumni, professional association leaders, and major employers. The advice rendered by these groups can be used to adjust the professional training sequence. All these are examples of mechanisms for linking the education system to the occupation system.

Chart 1. Possible Points of Government Intervention in the Relation between Education and Occupation:

A Education To Education

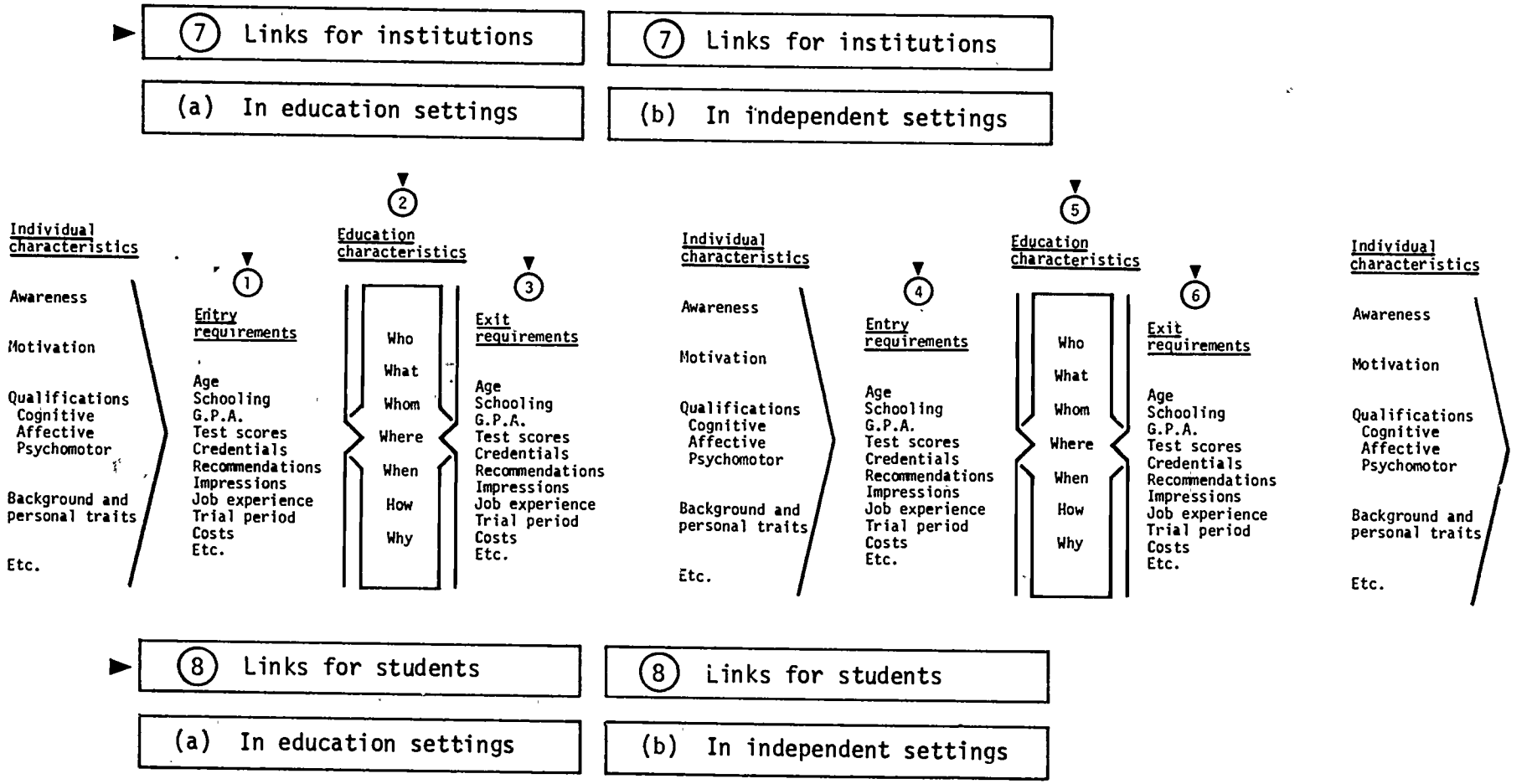


Chart 2. Possible Points of Government Intervention in the Relation between Education and Occupation:

① ② ③ ④ ⑤ ⑥ ⑦a ⑦b ⑦c ⑧a ⑧b ⑧c

B Education To Occupation

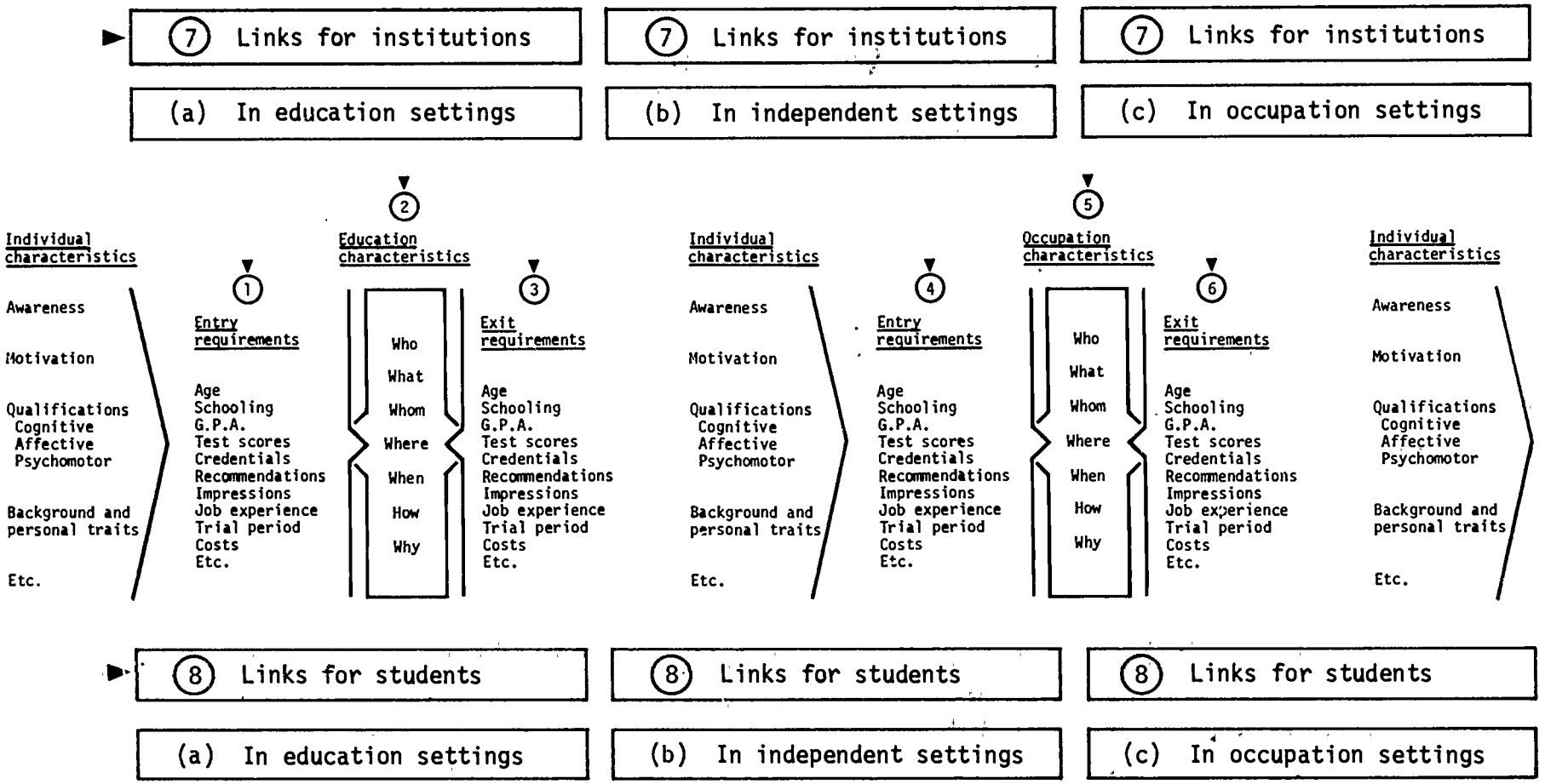


Chart 3. Possible Points of Government Intervention in the Relation between Education and Occupation:

① ② ③ ④ ⑤ ⑥ ⑦a ⑦b ⑦c ⑧a ⑧b ⑧c

C Occupation To Education

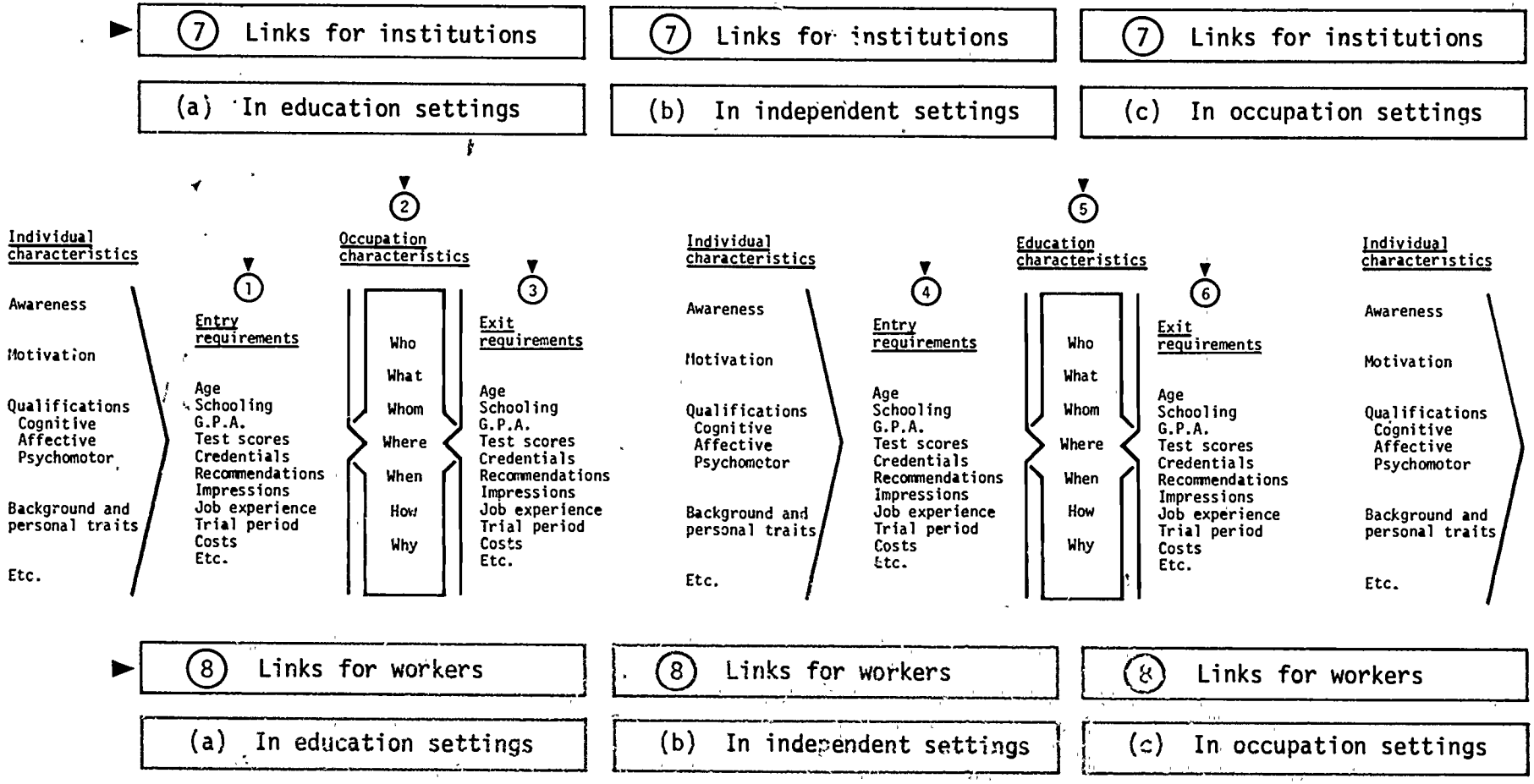
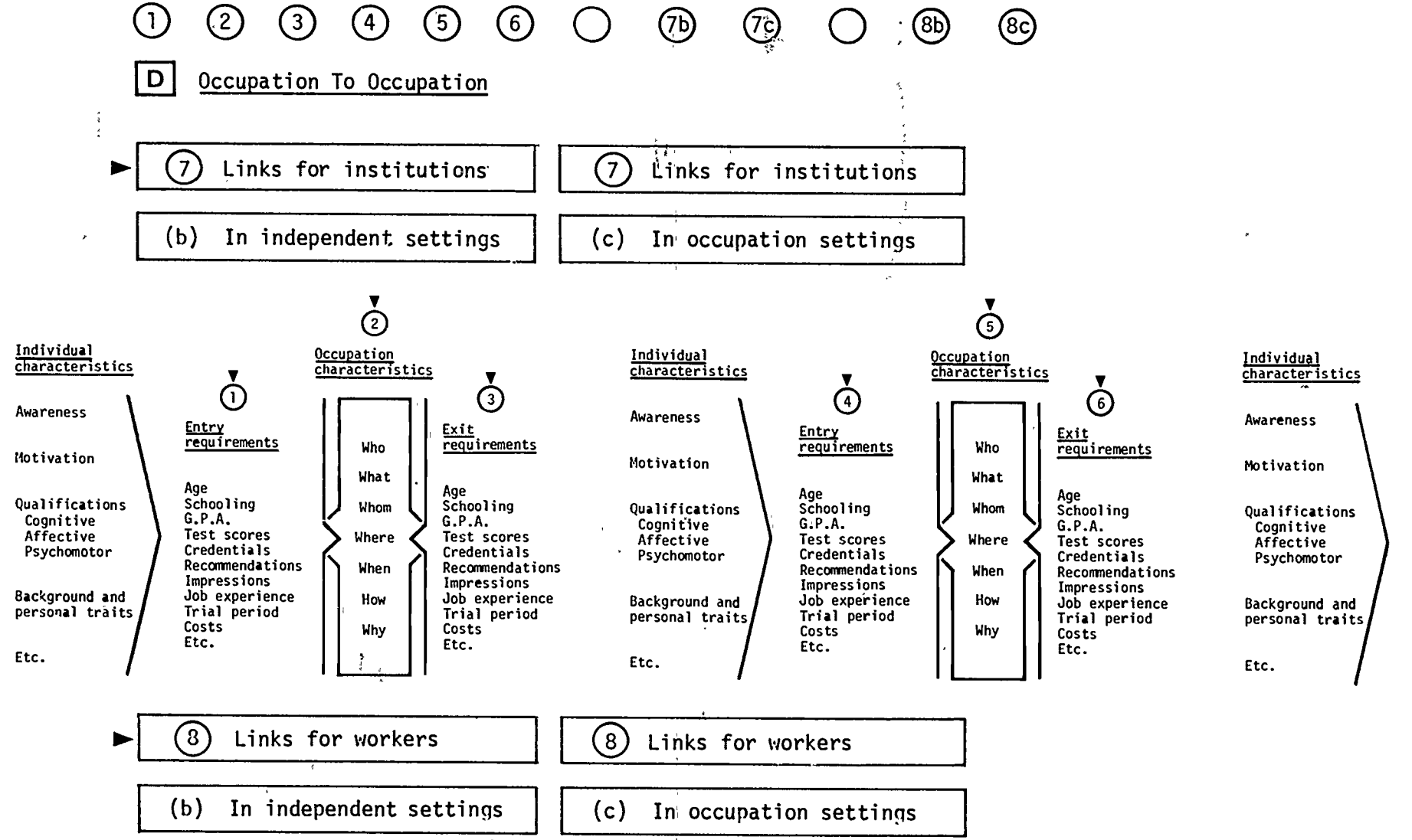


Chart 4. Possible Points of Government Intervention in the Relation between Education and Occupation:



This second area also encompasses all mechanisms, processes, and products providing information to a student relating his/her present educational experiences to future occupational opportunities without changing (1) present educational experiences, (2) future occupational opportunities, or (3) occupational qualifications. Some of these arrangements for informing students about the relationship between the education system and the occupation system are adequate; some are not.

This area of linkages is sufficiently important to justify a thorough examination. And like the first area, NIE is able to influence the mechanisms, processes, and products used to link the education system to the occupation system. Most important, however, it is a matter of social and political urgency that these two systems become better connected. For example, more than four million individuals are involved in this transition annually. Also, it is widely believed that there is currently a lack of effective linkages. For these reasons, this linkage area is determined to be the most appropriate for this study. Other linkage areas have been eliminated from direct examination, although data and impressions about them will doubtless emerge on the periphery of the main study. (Indeed, they did emerge, and to such an extent that we felt compelled to give some attention to them in our proposals outlined in Chapter 6.)

The third linkage area (C. Occupation-to-Education) encompasses the set of linkages, actual or potential, between the occupation system and the education system. Specifically, it encompasses the actual and potential mechanisms, processes, and products used to adjust the occupation system to the characteristics of the education system. Some employers offer vestibule training to equip graduates with skills they did not learn in school. Some provide on-the-job training to supplement what schools offer experienced workers. Some employers provide paid study leaves to allow workers to go back to school. Some pay education institutions to supply in-plant training for workers. Some move workers through a series of jobs intended both to train them and to ready them for additional training. The mechanisms, processes, and products used to establish these education arrangements serve to link the occupation system to the education system.

The third area also encompasses all mechanisms, processes, and products providing information to a worker relating his/her present occupational experiences to future educational opportunities without changing (1) present occupational experiences, (2) future educational opportunities, or (3) educational qualifications. Some of these arrangements for informing workers about the relationship between the occupation system and the education system are adequate; some are not.

This area of linkages also is sufficiently important to justify a thorough examination. And this is an area in which current problems have social and political significance. However, it is not an area in which NIE is likely to be able to exert direct influence in the immediate future. That is, NIE is not well situated to influence the ways employers link the occupation system to the education system. Thus, this linkage area has been eliminated from direct examination.

The fourth linkage area (D. Occupation-to-Occupation) encompasses the set of linkages, actual or potential, within the occupation system itself and between workers and the system. It is the area of career progression and of career change; it is the area of career entry, continuation, promotion, demotion, and re-entry. Some employers offer a graduated progression of jobs in which each job not only builds upon and extends skills learned in the preceding job but also prepares the person for the succeeding job.

The fourth area also encompasses all mechanisms, processes, and products providing information to a worker relating his/her present occupational experiences to future occupational opportunities without changing (1) present occupational experiences, (2) future occupational opportunities, or (3) occupational qualifications. Conceivably, a work certification program might be established so that three to five years in a job would earn the worker a certificate indicating his level of skill and his readiness for more advanced jobs. That would be a mechanism for linking the worker to the occupation system in such a way as to make job progression more likely and more orderly.

Like the others, this area of linkages is sufficiently problematical and sufficiently important to justify a thorough examination. And this is an area in which current problems have enormous social and political significance. However, it is not an area in which NIE is likely to be able to exert direct influence in the immediate future. Thus, the Occupation-to-Occupation linkage area has been eliminated from direct examination.

RELATION OF EDUCATION TO WORK

A number of key assumptions about the relation of education to work are embodied in the framework for the study:

1. General education now precedes work for most individuals.

2. Occupational education now comes at the end of general education for most individuals.

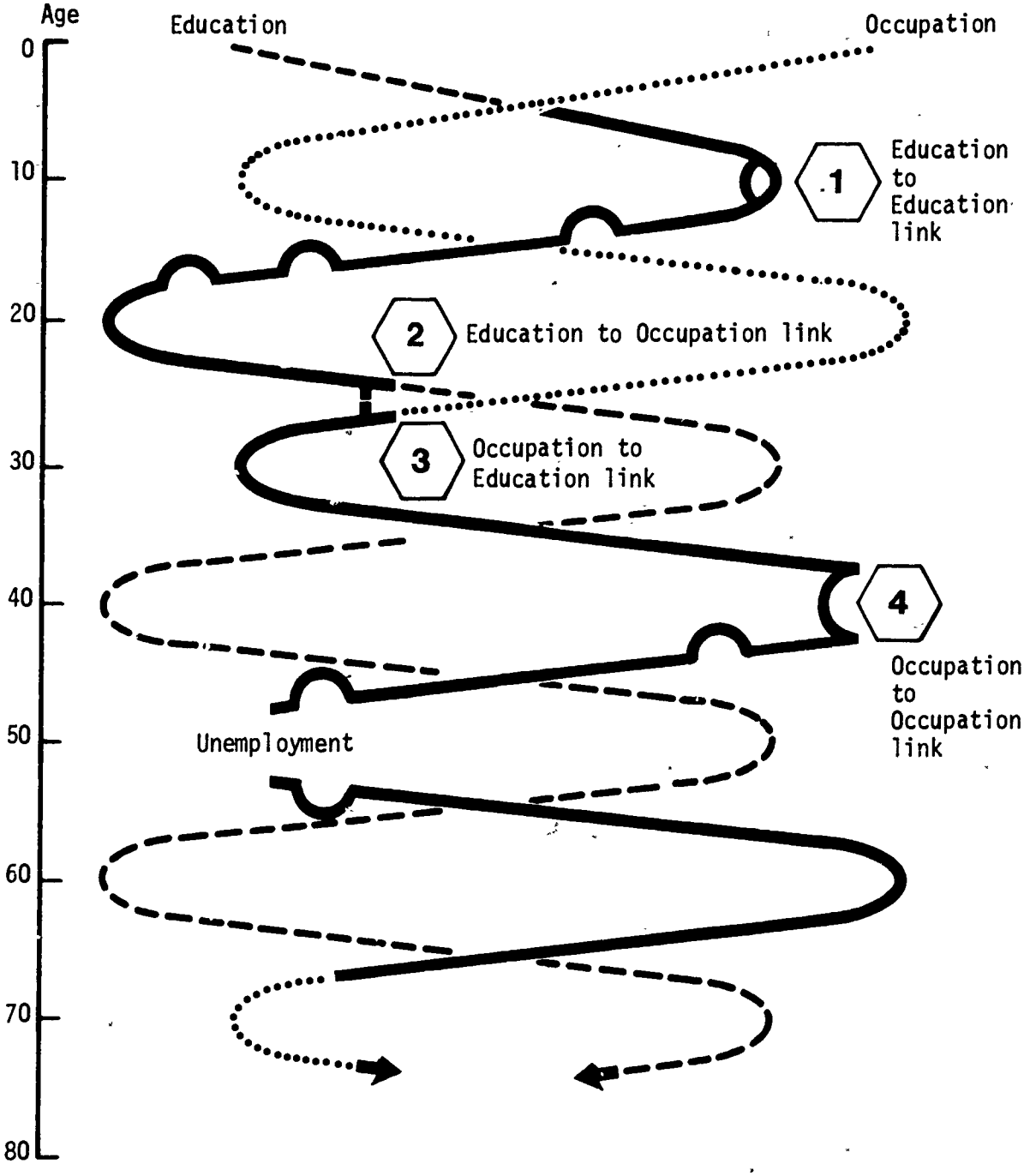
3. Most individuals are now engaged in either full-time education or full-time occupation, although there are numerous signs that this pattern is changing.

4. An occupation is interrrupted by a resumption of full-time general education or occupational education for some adult workers.

5. The linkages within and between the education and occupation systems are not sufficient to assure smooth progress for all individuals in both systems. (See Chart 5.)

In stating these assumptions, we are making no judgments about the desirability of the current dominant pattern but are simply recording what we observe to be the usual practice upon which this study has been

Chart 5. The Relation between Education and Occupation



built. (In the later chapters our recommendations do flow from a particular philosophical base. This base was clarified during the course of the study and is rooted in the concepts of collaboration and joint participation. That is, we believe that the optimum strategy for creating smooth education-to-occupation transition within the context of the multiple career area transitions to be made is to have those laboring in the education and occupation vineyards collaborate in planning educational experiences that will involve active participation in work activities. We do not support total integration of the two worlds, e.g. a modern-day guild system, for although this would assure smooth education-to-occupation transition, we believe the consequences for individuals and society would be not only unfortunate but deadly. On the other hand, we believe that complete separation of the two vital institutions is detrimental to both.)

FEATURES OF THE EDUCATION AND OCCUPATION SYSTEMS

A schematic display of possible problem points in the relation of education to occupation appears in Chart 2. The chart shows an individual with a set of education-relevant characteristics presenting himself/herself at the door of an education institution. The institution expresses its entry requirements as a set of measurements and judgments it uses to decide whether to admit the individual. If admitted, the person experiences a process that alters his/her characteristics. If they then match or exceed the exit requirements of the school, the person is graduated and certified as having specified minimum characteristics.

The person then presents himself/herself at the door of an employer, who matches the person's current characteristics with the entry requirements of an occupation or a job. If placed in the job, the person experiences a process that further alters his/her characteristics and qualifies him or her to approach the door of an employer or school and seek admission.

Key features of the education and occupation systems are identified as follows:

1. Education entry requirements
2. Education processes
3. Education exit requirements
4. Occupation entry requirements
5. Occupation processes
6. Occupation exit requirements
7. Mechanisms, processes, and products for bringing the segments of the education and occupation systems into a harmonious relationship
    a. Located in education settings
    b. Located in independent settings
    c. Located in occupation settings
8. Mechanisms, processes, or products for informing students about the relation between their present education and their future occupations
    a. Located in education settings
    b. Located in independent settings
    c. Located in occupation settings

There are many other features of the relation between education and occupation that might be singled out for attention. Choosing these rather than others constitutes a further limitation of the study.

In this model, the central concept is that the proper relation between education exit requirements and occupation entry requirements (points 3 and 4 in Chart 2) must be established if students are to make a smooth transition from school/college to work. Under completely linked circumstances, the two points would be identical. That is, what it takes to graduate is exactly what it takes to get a job. To the extent that this is not the case, students will have difficulty going from school to work. The match can be improved by adjusting school exit requirements or by adjusting occupation entry requirements, or both.

The model also embodies the "domino effect" by suggesting that each feature can affect the adjacent features. Read from left to right, school entry requirements (1) can determine what kind of school processes (2) can be used; those school processes in turn can determine what exit requirements (3) can be set; those can determine what occupational entry requirements (4) can be established by employers; those can determine what sort of occupation processes (5) can be used to produce goods and services; and those occupation processes can determine what the workers will learn by the time they exit from their jobs (6).

Reading from right to left, the desired effect of work on the worker (6) can determine what processes (5) could be used to produce goods and services, which can determine what kinds of people should be employed (4), which can determine what school graduates should know (3), which can determine what and how they should be taught (2), which can determine who should be admitted to school (1).

Accordingly, "linking" mechanisms, processes, and products are all those devices and arrangements used to bring the parts of the system into harmony: to make sure that those admitted to school can do the work: (1) and (2); that those who do the work will know what they should know at the end: (2) and (3); that those who learn what the school teaches can get jobs using their skills: (3) and (4); that those who get jobs can do the work: (4) and (5); and that those who do the work will know what they should at the end: (5) and (6). The linking devices and arrangements include advisory committees, institutional research units, planning commissions, follow-up studies of graduates, and so on. They are represented at points 7a, 7b, 7c. As indicated in Chart 2, they can be located in education settings, in independent settings, or in occupational settings.

Chart 2 also contains placeholders (points 8a, 8b, 8c) for mechanisms, processes, or products providing information to a student relating his/her present educational experiences to future occupational opportunities without changing (1) present educational experiences, (2) future occupational opportunities, or (3) occupational qualifications. These are "linking" devices for connecting students to the education and occupation systems by showing how the two are related. Thus informed, students can plan their education to advance their careers and can make a better transition from

school to work. As indicated in the chart, these linking devices can be located in education settings, in independent settings, or in occupation settings.

All these linking devices and arrangements are intended to bring each individual's education (2) and occupation (5) into a harmonious relationship so that the first prepares him/her for the second.

POSSIBLE POINTS FOR GOVERNMENT INTERVENTION

Each of the eight points in Chart 2 constitutes a point at which the government might intervene to improve the relationship between the education and occupation systems. The government might act directly upon segments of the systems at points (1) through (6), or it might act to strengthen the linking mechanisms at points (7) and (8) which keep the segments in harmony. That is, the government might become a giant linking mechanism acting legislatively, administratively, and judicially to adjust the parts of the systems. Or it might mandate, encourage, or subsidize other linking mechanisms, processes, or products to do so. The following list illustrates how the government might intervene at each of the eight points.

Possible Ways Government Might Intervene in the Relation between Education and Occupation (Numbers are points in Chart 2.)

1. Modify education entry requirements
   Examples: order nondiscriminatory admissions practices
   legislate open admissions
   finance proficiency testing for admissions

2. Modify education processes
   Examples: finance vocational training
   require job-experienced teachers
   support pilot career education projects

3. Modify education exit requirements
   Examples: lower compulsory attendance ages
   change credentialing requirements
   raise graduation requirements

4. Modify occupation entry requirements
   Examples: legislate fair employment practices
   institute credentialing requirements
   modify child labor laws

5. Modify occupation processes
   Examples: legislate minimum wages
   send government safety inspectors into mines
   use examinations for promotion in civil service system

6. Modify occupation exit requirements
   Examples: legislate periodic education leaves
   require periodic promotion
   institute work credentialing system

7a. Modify school-based institutional links
   Examples: mandate advisory councils of employers and workers
   develop model procedures for following-up graduates
   encourage accrediting associations to include employers

7b. Modify "independent" institutional links
   Examples: stimulate creation of "career entry councils"
   publish specialty fields of surplus Ph.D.s
   subsidize exchange programs for school placement officers and employer recruiting personnel

7c. Modify employer-based institutional links
   Examples: sponsor meetings of employer recruiters to learn school exit requirements
   encourage employers to invite school placement officers to visit

8a. Modify school-based individual links
   Examples: develop model college catalogs
   subsidize university placement services
   finance counselor training

8b. Modify independent individual links
   Examples: regulate proprietary employment agencies
   operate placement services
   publish newsletter reporting labor-shortage areas

8c. Modify employer-based individual links
   Examples: finance training of company personnel directors
   operate recruiting services for government jobs
   advertise government jobs

Chapter 3

SURVEY OF CURRENT LINKAGES

The survey was focused on links for institutions, on the assumption that the best way for the National Institute of Education to improve education-to-occupation linkages is to design better links in this area (point 7 on Chart 2).

Because the most critical point in the relation of the education system to the occupation system is the interface between them, the survey was intended to determine how links for institutions are used currently to create a better match at that interface. In Chart 2 the interface is the relationship between school exit requirements (3) and job entry requirements (4). The survey concentrated on how school exit requirements are adjusted to match job entry requirements, rather than the reverse.

Of course, the "face" of the education system cannot be matched to the face of the occupation system unless the other parts of the education system are designed to allow proper interfacing. Thus the survey incorporated a concern for the other elements of the education system.

PROCEDURES

The information presented below describes the procedures used to design and conduct a small-scale survey of existing education-to-occupation linking mechanisms, processes, and products.

DATA COLLECTED

The data collected were descriptions of the mechanisms, processes, and products sponsored by education, independent, and occupation institutions that are currently being used to bring the education system into harmony with the occupation system. The data were supplied by respondents during interviews in answer to questions contained in the Interview Guide prepared for the survey (see Appendix C). Each respondent discussed linkages with which he or she was familiar.

DATA SOURCES

Three sources of data were used:

1. Staff members in selected state departments of education and other state agencies. A group of officials familiar with education-to-occupation linkages for secondary and postsecondary education institutions was chosen.

State officials were asked to identify and to invite to the interviews key spokesmen for secondary and postsecondary education institutions in their state whenever possible, in order to increase the total number of respondents and thus increase the amount of information obtained.

2. Staff members in selected local education agencies. A group of officials familiar with education-to-occupation linkages for secondary and postsecondary education institutions was chosen.

3. Documents from federal, state, and local education authorities as well as documents produced by individual institutions.

SAMPLE SIZE

More than 100 individual/group interviews were conducted with state and local officials (see Appendix B for the names, positions, and organizations of those interviewed). The participants were drawn from four states.

PILOT TEST OF DATA SOURCES

A pilot test of the adequacy of selected state and local officials as data sources was carried out in New Jersey. On the basis of the pilot experience, the three data sources listed above were selected as appropriate for the survey. This decision in turn determined the number of states to be included in the sample. For example, the New Jersey pilot test indicated that the heads of individual institutions would have to be interviewed to supplement the information state officials could supply. In order to get adequate information for each state visited, the number of states included in the survey was limited to four.

CRITERIA

The four states were selected on the basis of two criteria:

1. A high level of current career education activity.

2. Nationwide geographic representation.

The four states selected as best meeting the two criteria were:

California, Florida, New Jersey, and Ohio.

The participants represented the full range of types and levels of institutions: public, private, and proprietary; secondary, two-year postsecondary, four-year postsecondary, and graduate postsecondary. The individuals occupied a broad range of positions inside and outside government and collectively represented an enormous amount of experience in observing education-to-occupation linkages. Virtually all those interviewed were well situated to keep track of events in their own states. Respondents were especially helpful in referring us to other officials who could supply supplementary information.

DATA COLLECTION TECHNIQUES

Data were collected primarily by means of on-site interviews conducted by trained interviewers.

State and local interviews took place in multiple locations within each state. A total of six person-days of visiting time was scheduled for each state.

Those interviewed were asked to supply the interviewers with references to relevant publications or with actual copies of those publications when convenient.

DATA COLLECTION INSTRUMENT

The data-collection instrument consisted of an Interview Guide designed to elicit examples of education-to-occupation linkage mechanisms, processes, and products from state and local officials and to elicit copies or titles of relevant documents (see Appendix C).

DATA ANALYSIS

The education-to-occupation linkages identified during the survey were classified according to the state in which they are located and on the basis of sponsorship (state or local) and on the basis of function (communications device or program linking device). A separate state-by-state description of the linkages follows. General observations about patterns of activity in each state appear at the end of each state report.

FINDINGS

The findings of the four-state survey derive a great deal of their potential meaning from the conceptual framework for studying education-to-occupation linkages developed for the study.

KEY CONCEPTS, TERMS, AND CLASSIFICATIONS

A number of major concepts, institutional classification schemes, and special terms are used in reporting the state-by-state findings that follow. They are reviewed briefly here.

The key concept is that of linking educational systems to occupation systems -- that is, connecting schools to places of employment. The framework divides links into two major classes: links for students and links for institutions. The distinction is important because links for students are not designed to connect educational institutions to occupational institutions and probably are virtually powerless to build such connections. In contrast, links for institutions are -- or should be -- designed explicitly for that particular purpose.

A link for students was defined for the purposes of this survey as "a mechanism, process, or product providing information to a student relating his present educational experiences to his future occupational opportunities without changing (1) his present educational experiences, (2) his future occupational opportunities, or (3) his occupational qualifications."

A link for institutions was defined for the purposes of this survey as "a mechanism, process, or product for bringing the education system into harmony with the occupation system." Links for institutions are further divided into communications devices and program linking devices.

A communications device was defined for the purposes of this survey as "a mechanism, process, or product employed by the education system to determine job entry requirements and working conditions in the occupation system." (A vocational advisory council is a mechanism. A faculty get-together with company recruiting officers to discuss recent changes in the work place and what they imply for the school curriculum is a process. Manpower data published by a state labor agency projecting personnel shortages in selected occupational fields is a product.)

A program linking device was defined for the purposes of this survey as "an arrangement in the elements of the educational institution to enable graduates to meet job entry requirements and to find success in the working conditions of an occupational system." The elements of an educational institution were defined for the purposes of this survey as the 10 identifiable components of a process by which (1) someone (2) for a purpose (3) deals with someone else (4) at a place (5) at a time (6) using a method and (7) equipment and materials and (8) evaluates the outcomes (9) against criteria and (10) provides rewards. More specifically, the elements are the components by which (1) a teacher (2) in order to produce learning (3) instructs a student (4) at a school site (5) before work begins (6) using the method of instruction by the teacher accompanied by study by the student (7) using instructional equipment and materials and (8) evaluates the student's performance by using his or her judgment (9) in comparing it to the performance of other students and (10) provides rewards in the form of grades and graduation from school for the student. In summary, a program linking device is a deliberate arrangement of one or more of those 10 elements to help students obtain and retain paid employment. Institutional links (both communications devices and program linking devices) were the exclusive subject of this investigation.

Distinctions are made in the findings for each state between communications devices and the program linking devices used at state, regional, or multi-state levels in contrast to those used by individual institutions. (Institutional accreditation requirements established by accrediting agencies and associations are treated as a special and powerful class of program linking devices.) A distinction is also made between secondary and post-secondary institutions at various levels and among public, private, and proprietary institutions.

LIMITATIONS OF THE SURVEY

The process and the rationale used for limiting the survey to the examination of education-to-occupation linkages in secondary and postsecondary institutions are explained at length in the conceptual framework developed for the study. But there are additional limitations arising from the constraints of the procedures used.

The original plan was to survey a substantial number of states -- perhaps 8-10 -- to identify and to quantify existing education-to-occupation linkages. While the planned survey was not large enough and the states to be selected were not representative enough to yield a substantial body of data constituting a national study, it was intended to yield sound information on the types of linking devices currently being used, their relative frequency, and perhaps their quality. As the work proceeded, that

early plan had to be modified. The procedures actually employed were subject to the following constraints:

1. The initial pilot test of the data-gathering procedures indicated that only four states could be visited, given the time and resources available. The findings apply to other states only to the extent that they resemble those four.

2. We interviewed about 25 people in each state, most of them state government officials and staff members in selected statewide nongovernment organizations. They were selected by virtue of the positions they held. Since the four states do not have identical governing structures and identical statewide nongovernmental organizations, the information gathered in the four states is not exactly parallel.

3. Teams of interviewers with overlapping but not identical membership went to different states, conducting the interviews with somewhat different techniques and doubtless with somewhat different patterns of selective listening.

4. We spent no more than three days in each state conducting most interviews in the state capital and several additional interviews in at most one or two supplementary sites. Thus the findings are limited to what we could gather in short visits to two or three sites in each state.

5. Some of the individuals we interviewed were able to supply detailed information about individual linking devices; others did not supply such details but offered generalizations, opinions, and ideas. While we found both kinds of information valuable, the two kinds did not come evenly from each respondent.

6. Most of the sample linking devices appearing in the body of the report were described for each state by one individual. There was little or no opportunity for cross-checking the perceptions of other informants.

7. Not all the linkages we identified are reported here. The reasons include insufficient information, multiple examples of the same kinds of linking devices, and descriptions of activities peripheral to what we were seeking.

8. The opinions and viewpoints interspersed among the data are chiefly our own. We have written them largely to sharpen and advance our own thinking. They cannot be attributed to our respondents, many of whom doubtless have different and perhaps conflicting opinions. We regret that we were not able to explore those differences through discussion while making this survey.

CALIFORNIA

In contrast to the interviews in Florida, New Jersey, and Ohio, the California interviews held in Sacramento and Los Angeles turned out to be as much a survey of ideas about and current support for education-to-occupation linkages as a survey of linking devices currently in use, even though the second was the primary objective of the study. Unlike the subsequent sections detailing the findings in the three other states, this description

of the California findings contains a particularly good statement about the need for education-to-occupation linkages. It is noteworthy for several reasons: it is a clear and a straightforward statement, it comes from a highly significant set of institutions, it comes from the most populous state and from one of the most active in educational affairs, and it presents a forward-looking approach to the role of higher education institutions in creating better linkages. The statement, taken from a brand new report just published by The California State University and Colleges, probably best represents the current level of interest in building better education-to-occupation linkages and the spirit that guides this interest in California.

California is so large geographically and in population and in number of institutions that the time allocated to the visits was not sufficient to develop as many descriptions of specific linking devices as we would have desired. Many of the state officials we interviewed offered generalizations rather than citing specific examples. California state officials themselves cannot maintain up-to-date information about what is happening at individual sites across the state.

Frontier Thinking In the State University and Colleges

The California State University and Colleges have just published a remarkable report giving the views of the Advisory Committee on Career Education appointed by the chancellor in 1973.[1] The report explains the committee's view that career education is a worthy function for the 19 campuses of The California State University and Colleges. It is built around 25 recommendations on how the chancellor's office can help build better education-to-occupation linkages.

The report finds historic justification for career education both outside and inside CSUC. It begins by arguing for the reconciliation of liberal and occupational education, a reconciliation already accomplished in CSUC, which confers about 60 percent of its bachelor's degrees and about 85 percent of its master's degrees in occupational fields such as business administration, teaching, engineering, the health professions, and a dozen others. It ranges from Dewey in 1916 to Dumke in 1972 in citing authority.

"Both practically and philosophically, the key to the present educational situation lies in a gradual reconstruction of school materials and methods so as to utilize various forms of occupations typifying social callings, and to bring out their intellectual and moral content . . . Only in this way can there be on the part of the educator and of the educated a genuine discovery of personal aptitudes so that the proper choice of a specialized pursuit in later life may be indicated."
(John Dewey in Democracy and Education, 1916)

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[1] Career Education: Proposals for the Seventies and Eighties. Report to the Chancellor, The California State University and Colleges, Chancellor's Advisory Committee on Career Education, September 1974.

"The antithesis between a technical and liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical: that is, no education which does not impart both technique and intellectual vision. In simpler language, education should turn out the pupil with something he knows well and something he can do well. This intimate union of practice and theory aids both. The intellect does not work best in a vacuum." (Alfred North Whitehead in The Aims of Education, 1929)

"A baccalaureate degree from our State Universities and Colleges should embrace now, as in the past, a dual approach: a foundation of liberal education and, based upon that, a specialized program enabling the student to fit himself into the economy or society in a practical way." (Glenn S. Dumke in The Future of General Education in The California State University and Colleges, Office of the Chancellor, 1972)

The report goes on to cite the 1972 statement of former United States Commissioner of Education, Sidney P. Marland Jr., to the effect that "no lines need be drawn" between liberal education and occupational education. It cites as proof of public interest in career education the 1973 Gallup Poll finding that 9 out of 10 people in all major groups sampled said they would like to have the schools give more emphasis to career education.

The report then offers its 25 recommendations, most of them addressed to the chancellor's office. The thrust of those recommendations is illustrated by the following samples excerpted from the report:

"The chancellor's office monitor federal and state policies and activities relevant to career education and disseminate significant information to the campuses.

"The chancellor's office work with the Industry-Education Council of California and other organizations with similar goals to establish a coordinated industry-education-labor program, and encourage campuses to work with local industry-education groups.

"The campuses, as an interim response to the dwindling job market for liberal arts graduates, encourage students to take a complementary minor, concentration, or second major in a professional-occupational field. In the long run and for the greatest effectiveness, such experiences should be integrated into the total educational program.

"The campuses establish regional coordinating committees composed of adjacent community colleges and high schools (and the University of California and independent institutions, if possible) to bring about more effective integrations of the curriculum.

"A continuous evaluation of various phases of the career counseling, planning, and placement programs be undertaken by each campus, with information on effective techniques shared regularly on a systemwide basis.

"The chancellor's office, through consultative processes, define and establish uniform procedures for awarding credit through cooperative education.

"The campuses identify a coordinator of cooperative education with requisite authority to promote greater utilization of this effective adjunct to classroom instruction.

"External degree programs be conducted and administered with state support, generating FTE and taught by faculty supported by the General Fund.

"The chancellor's office adopt the 'Continuing Education Unit' (CEU) as the non-degree measurement of instruction and seek to place it on an equal support basis with community college offerings, thereby increasing career education instruction to adults."

Written at a time when not all CSUC graduates can find jobs and when, perhaps as a consequence, the current crop of students is shifting into occupational curriculums, the report was the most articulate and comprehensive statement on the need for education-to-occupation linkages we found.

State and Regional Linkages

The interviews in Sacramento and Los Angeles identified a great diversity of communications devices designed to operate either statewide or within regions of the state. As was the case in the other three states, actual program linking devices tend to operate at the level of individual schools and colleges rather than at the level of state or regional governing mechanisms.

Communications Devices. Federally funded vocational educational programs are required to use advisory councils. California, like the other three states, uses a three-tiered pyramid of such councils--state, regional, and institutional.

The California Advisory Council on Vocational Education and Technical Training has been established to advise the State Board of Education on the design and conduct of job-related training. Council members represent the full spectrum of business and labor interests in California. The council draws its information not only from advisory committees operating at regional and institutional levels but from many other sources as well.

California has been divided into 12 regional areas for vocational planning. The State Department of Education has established and finances the operation of Vocational Planning Committees in each area. The composition of the committees parallels that of the California Advisory Council, described above. The function of the committees is to create a master plan for vocational education in each of the 12 regions, based on manpower supply and demand data as well as on knowledge of currently available vocational programs.

The individual institution counterparts of these state and regional advisory councils are described later.

Advance approval of program offerings and later appraisal of program effectiveness both require that those making the judgments be thoroughly familiar with the current and future needs of the occupational system.

The two examples below illustrate how advance approval and later appraisal currently work in California.

The chancellor's office of CSUC reviews the plans for any new degree program proposed by any of the 19 campuses in the system. The review procedure requires the applicant university or college to supply data demonstrating both a market demand for holders of such degrees and to establish the social need for them. Applications for new master's degree programs are especially expected to demonstrate a current or future market demand for holders of the proposed degrees.

The Community College Occupational Program Evaluation System (COPES) is a cooperative statewide effort sponsored by the California Community Colleges Division of Occupational Education requiring active participation by the public community colleges themselves. Occupational education programs in all those colleges have exhaustive systematic self-appraisals validated by outside visiting teams. The teams are composed of college presidents, deans, faculty, and administrators, business, occupational education, and industrial leaders, and so on. Informed by self-appraisal data supplied in advance by the colleges, the teams inspect campus facilities and interview faculty, students, and community leaders in what is typically a three-day visit. Team members get advance training for the work. COPES intends to pinpoint areas of strength as well as priority needs for improvement.

In California as in the other three states, many of those interviewed made a special point of explaining that school and college faculty and administrators use many informal techniques for keeping abreast of job entry requirements and working conditions in the occupational system. Among the informal communications devices mentioned were membership in professional and technical societies, consulting assignments with business and industrial organizations, part-time employment in business or industry, and patterns of personal friendship linking teachers to workers. Such informal linking arrangements have the advantage of supplying current and credible information to school personnel but lack the advantage of structural connections between outside influences and the governing machinery of schools and colleges.

In keeping with the pattern we found in other states, the California Chamber of Commerce encourages its local members to build close relations with schools, especially high schools and community colleges, both in the spirit of community service and in an effort to insure a steady supply of trained manpower for the companies. Our interviews with Chamber of Commerce officials in Sacramento turned up many examples of local cooperation, including service on vocational advisory committees, opening company offices and plants to visits by students, sending company representatives to speak at summer workshops for high school and college faculties and administrators, arranging for students to have work experience in company sites, and so on.

The Industry-Education Council of California (a brand new entity growing out of the recent merger of two such councils, one in northern California and one in southern California) is a statewide association of employers seeking closer ties with schools and colleges. A number of the education officials when interviewed, particularly those responsible for

high school vocational education, said they hoped the new council would serve as a central clearinghouse for education-to-occupation linkages. The council's scope would include a broad array of possibilities, encompassing advisory councils to help guide school and college programs, assistance in developing new training techniques and materials, the use of company facilities as training sites, career orientation for students, work experience for faculty and students, relating company training programs to school and college offerings, and so on, virtually without limit.

Schools and colleges in California, as in the other states visited, depend on other government agencies to supply information about manpower needs. Getting the right data in the right form at the right time and deriving their implications for school curriculums continue to be problematical, despite many efforts over the years by education and non-education agencies to work together. Schools and colleges expect most but not all manpower information to come from the state labor agency. One example of another source is the California Commissioner of Real Estate, who makes a study of manpower needs every 10 years, draws implications for training programs, and points to adjacent occupational fields in which the skills needed in real estate transactions could also be used. But the state labor agency, recently renamed the California Employment Development Department (EDD) has traditionally been and continues to be the prime source. The three examples below illustrate the current range of EDD activities that have implications for school programs.

1. The California EDD projects manpower needs for the state as a whole and for the 13 largest Standard Metropolitan Statistical Areas. Revised every two years, the projections cover about 450 occupations, giving more elaborate attention to nonprofessional jobs. The projections employ procedures used by the U.S. Department of Labor Bureau of Labor Statistics and report data by the categories of the U.S. Department of Commerce Bureau of the Census. The projections are distributed to every school and school system in California, from high schools to graduate schools. The data are intended to help the heads of occupational training programs plan for the future.

2. The California EDD prepares and distributes guides describing a variety of occupations, as listed in the Dictionary of Occupational Titles. Each guide contains topics such as: job duties, working conditions, employment outlook, pay and hours, promotions, entrance requirements, training needed, job-seeking techniques, and so on. The guides are distributed to schools.

The schools appear to use these guides primarily as individual links rather than as institutional links. That is, they are used chiefly by guidance counselors to help individual students become familiar with occupational fields rather than by school program designers to update their offerings. However, the guides have the potential for doing the second.

3. The Los Angeles office of the California EDD has adopted a microfiche system for presenting occupational information. Occupational fields available in Los Angeles County are listed along with employers and the job skills required in those fields. The use of microfiche allows for

easy updating and economical distribution of revised fiche cards to vocational rehabilitation offices in Los Angeles County and to high schools that have microfiche readers. To date, 50 occupational fields have been placed into the system.

On the basis of past experience, the California EDD knows that "passive" information transmission systems like those described above are not sufficient to get school personnel to use the data. Thus it uses more "active" techniques such as the two described below, both of which of course require energetic participation by school personnel to achieve the best effect.

1. The California EDD currently assigns 22 employment counselors housed in local EDD offices to spend one day each week working with schools. A total of 49 school districts take part. EDD has developed a two-day training package suitable for use with high school teachers and counselors for explaining such tools as the DOT and GATB. EDD counselors also deliver local labor market information to high school administrators and counselors and meet with groups of students to explain such topics as unemployment insurance. The EDD counselors encourage schools to multiply their work by extending the training to others.

2. The California EDD has joined with the State Department of Education to demonstrate the use of manpower information by high school and community college officials in Ventura County. The work is financed by Federal Vocational Education Act funds and has been in operation since 1970. The manpower management information model is designed to project manpower need over a short term (up to five years) for a Standard Metropolitan Statistical Area. It superimposes anticipated manpower supply on projected manpower demands, computes discrepancies, and converts the computations into advice for educational planners in modifying curriculums, hiring staff, designing facilities, and offering career guidance to students. The model is still in a developmental stage but is regarded by school officials in California as having high potential utility for high schools and community colleges and perhaps for other institutions as well.

Information given us about devices for building ever tighter linkages between schools and employers was sometimes accompanied, particularly in our interviews with college officials, by observations about the dangers in having those linkages become too tight. The dangers cited included: (1) Manpower demand data collected by the California EDD sometimes combine information about positions employers would ideally like to create along with data about positions they can afford to create, inflating the demand statistics unrealistically. (2) Training sequences that prepare students specifically for currently available jobs may be so narrow that they fail to equip them for future jobs. (3) School programs that are too responsive to changes in volatile areas of the labor market (for example, shifting quickly to train students for a hoped-for expansion of jobs in ecological studies and environmental control, an expansion that may not occur) may render their graduates unemployable in their specialities. (4) The lack of a genuinely reliable body of information about what employers themselves actually want in their workers argues for providing a broad-gauged education rather than job-specific training.

Individual Institution Linkages

The California interviews identified a wide array of linking devices employed by individual institutions. We found several types of communications devices and several types of program linking devices. Had we been able to spend more time, it is likely that we would have located an even greater variety.

Communications Devices. The third tier of the three-tiered pyramid of vocational advisory committees is located in individual schools and colleges.

Every secondary and postsecondary vocational education program through grade 14 must be guided by an advisory committee as a condition for receiving federal funds. The typical committee is composed of about 18 members drawn equally from positions in management, labor, and government (the California EDD is often represented). The advice of each committee is directed to one or another of assorted administrative and policy levels in the institutions they are advising. They are reported to be more or less effective depending upon local circumstances.

Differences in the effectiveness and helpfulness of vocational advisory committees seem to arise from differences in the way they are attached to the governing structure of the school or college, differences in the capability and interests of their members, and differences in the degree to which they advise a program or actually take a hand in operating it. Since the data behind these observations appear more explicitly in the reports from Florida, New Jersey, and Ohio, our tentative conclusions about what makes advisory councils effective are reserved for those later sections of this report.

Other kinds of communications devices are illustrated below. Their activities differ from those of advisory councils, but all seem to be intended to inform school personnel about job entry requirements and working conditions so that they can adjust school programs accordingly.

High school vocational teachers in some Santa Clara County high schools go out to work sites to observe and record the job skills actually required for successful performance. The descriptions are used to adjust the methods and materials used in high school vocational courses and to inform individual students about skill requirements in currently available jobs in the county. Observations are concentrated on entry-level positions open to high school graduates.

The direct study of job-skill requirements as a base for curriculum building is especially prominent in a number of performance-based curriculum development projects in Florida colleges, especially community colleges, as reported later.

Another linking arrangement is the training of school faculty in the production techniques and equipment currently used in business and industry.

The largest employers in the California automobile industry (General Motors, Chrysler, and Ford) invite community college faculty engaged in preparing students for automotive jobs to participate in summer training

events. The companies sponsor and pay for the workshops, supply the trainers, employ company automotive manuals among other training materials, and have company mobile vans demonstrate new company products at the sessions.

Making a follow-up study of graduates is one way of gathering information about whether an educational program has worked well. Unlike Florida, which requires public high schools and community colleges to make such studies, California leaves the matter to individual school and college initiative. Most follow-up studies examine the postschool histories of all graduates, not only those in vocational education sequences, as illustrated in this example:

Project Search, conducted for a number of high schools in the San Francisco Bay Area, traced the steps of all graduates through successive schooling and employment for a period of five years after they received their diplomas. Data were collected from graduates, school officials, and employers. A number of the questions sought opinions about the value of specific high school courses in helping students meet educational and occupational requirements during their first five years. The data were deliberately intended for use in modifying high school curriculums.

Sometimes schools get volunteer assistance in making follow-up studies.

The San Jose Unified School District solicited the assistance of members of its local vocational education advisory committee in conducting a recent follow-up study. Participating committee members telephoned recent graduates of local vocational education programs, asked them questions about their current job status and recent job progression, solicited their opinions on the relevance and utility of high school vocational courses as job preparation, and then helped San Jose school officials interpret the results.

This is one of several cases in which advisory committee members in California and in the other three states went beyond offering advice to school officials. Other examples appear later, along with our impressions about the relative helpfulness of such activities.

Program Linking Devices. The communications devices we identified in California are distinguished from the program linking devices described below in that the latter constitute some actual merging of the personnel or activities or equipment or time or place of education and work while the former simply provide the information needed to guide such mergers.

State vocational education officials reflected during our interviews on the difficulties of using high school program linking devices which actually merge one or more elements of the education setting and the work setting. They explained that both the separateness and the stability of school courses are enhanced by existing formulas for federal and state financial aid. Changing the local program means risking the loss of financial help. Another stabilizing influence was said to be the requirements for teaching credentials. Another was the practice of employing full-time teachers who lack the kind of daily on-the-job experience that part-time teachers can offer. Another, not surprisingly, was the tenure system, which makes it difficult to replace staff members whose skills have become obsolete.

And yet another was the fact that local school districts are permitted to initiate vocational education courses before applying for state approval. Such new courses become institutionalized so rapidly that a needs assessment conducted after they have started has little effect.

Work experience for full-time students and on-the-job training for part-time students were suggested as two arrangements that work primarily because they make end-runs around established school programs by locating instruction in work sites where the personnel, activities, and facilities are updated automatically as a normal part of keeping the occupational setting current and competitive. When asked whether high school work experience coordinators, given their frequent contact with places of employment, are able to bring back information that can cause changes in high school courses, California vocational education officials expressed doubt, although acknowledging that the potential is there. This view echoed what we heard in other states: the work experience coordinator in today's high schools lacks the academic credentials, the expert authority, the administrative connections, and the responsibilities to be an effective agent of institutional change. He can be understood, in the terms used in this study, as constituting an individual link connecting students to the work place rather than as an institutional link connecting school programs to the work place.

We found several program linking devices that are interesting primarily because they do manage to make end-runs around the typical structure of school programs. One example from the Los Angeles Unified School District is the following.

The Regional Occupational Program Center in Los Angeles does not employ school teachers, does not use typical school materials, does not take place in school buildings, and does not operate during school hours. Instead, it hires full-time company employees and pays them extra to work as teachers (under the supervision of certificated personnel from the Los Angeles Unified School District). The company employees themselves design the curriculum to reflect their current on-the-job activities. Classes are located in the facilities of the companies where the employees/teachers work; sometimes special company training facilities are used. Instruction is scheduled two afternoons a week for three hours per session after regular school is out or is scheduled for an equivalent six-hour period on Saturdays. Rockwell International is one Regional Occupational Program Site where regular employees serve as part-time teachers after finishing their regular jobs. They currently teach 21 classes in such areas as computer programming, photocopying, and welding. The employee/teachers get honorary teacher credentials, letters of commendation from school officials, and the satisfaction of working with high school students interested enough to show up for classes in late afternoons or on Saturdays. The Los Angeles school supervisors can get the side effects of keeping up with current conditions in actual work sites and watching the employees/teachers use nonstandard techniques with students, but this is an extra, not a central purpose.

Some programs accomplish an even closer merging of the school site and the work site.

The Santa Barbara Unified School District executes contracts with local employers to provide training to students enrolled in selected high school vocational education courses. The School District's director of vocational

education negotiates with participating employers about what skills are to be taught and how successful learning is to be judged. The companies supply trainers, training sites, work sites, and supervision for high school students during their training.

We also found examples of merged programs in community colleges:

Some California community colleges arrange to grant academic credit to interested full-time employees whose jobs embody unusual learning opportunities. While the employers (such as Southern Pacific, a cooperating company) do not sponsor, finance, or take responsibility for the program, they do permit community college faculty members to visit work sites to evaluate the learning of each student/worker so that appropriate college credit can be granted when sufficient learning has taken place. The student/worker pays for the college credit himself. Because the arrangement takes community college faculty members into company work sites, it has the potential of leading them to change their campus courses. But such a change is a side effect, not a main purpose.

General Observations about Linkages in California

We left California with a number of overall impressions about the present and future of education-to-occupation linkages in that state. Although we did not gather sufficient data to validate these impressions, we offer them below as a summary of what we could observe within the limitations of our survey.

1. The California State University and Colleges, as demonstrated by the singular report of the Chancellor's Advisory Committee on Career Education, is heavily engaged in occupational education and expects to be increasingly so in the future. While there is a continuing debate within the system about liberal education versus occupational education, the debate has already been resolved at the level of daily operations in favor of program designs that combine the elements of both whenever possible but carry a clear obligation to equip the graduates of specialized occupational curriculums with the skills they need for employment upon graduation.

2. CSUC offers an impressive array of communications devices and program linking devices for strengthening relationships between the education system and the occupation system.

3. The CSUC Advisory Committee on Career Education had little difficulty in locating intellectual as well as political justification for recommending that California's public four-year and five-year institutions place greater emphasis on career education. Doubtless, it could have found substantial economic justification as well at a time when college students appear to be becoming increasingly concerned about finding jobs upon graduation.

4. If it is true that what is going to happen in education happens first in California education, higher education institutions across the nation can be expected to become increasingly conscious of the relationship between education and work.

5. California's three-tiered system of advisory councils appears to be working reasonably well. However, the functions assigned to these councils are so numerous and diverse as to suggest that this particular communications device is being burdened with functions not originally intended and not particularly suitable. A more careful analysis of the work to be done could lead to the invention of devices better tailored to do it. (Similar observations about the councils in other states appear later in this report.)

6. What we term communications devices are operated in California at state and regional levels as well as within individual institutions, whereas what we call program linking devices are operated only by individual institutions. (This conforms to the pattern in other states, as demonstrated later in this report.)

7. The Office of the Chancellor of The California State University and Colleges and the Office of the Chancellor of the California Community Colleges both exert strong pressures on the individual institutions under their control to initiate and to maintain education-to-occupation linkages, especially when initiating new programs and most especially when initiating them in occupational fields.

8. The periodic program reviews sponsored by the California Community Colleges Division of Occupational Education serve to tighten education-to-occupation linkages in the programs reviewed.

9. California schools -- particularly high schools -- appear to need and want some kind of clearly designated mechanism such as the Industry-Education Council to identify companies with a declared interest in assisting schools to design and operate occupational programs. Perhaps the schools need this kind of clearinghouse to simplify the enormously complex map of companies in California so that they can approach only the interested ones.

10. California state education and labor agencies are continuing to experiment aggressively with new and possibly better methods for using manpower supply and demand data collected by the labor agency to influence programs offered by the education agency. Both agencies deserve to be commended for continuing to work on a problem that evidently will not yield to easy solutions. What are currently the most promising approaches are still in a developmental stage. Repeated experiments may be necessary.

11. Information about occupational requirements supplied to schools to guide individual students in making occupational choices probably will not result in change to the school programs. Information intended for the second purpose would probably have to be delivered to school authorities responsible for program design and would possibly need to be accompanied by careful explanations of what it implied for program design.

12. "Passive" information transmissions systems that expect users to exert abnormal amounts of energy or initiative are less likely to achieve their purposes than "active" information systems in which the sponsor seeks out the user, persuades him to use the information, and shows him how to use it.

13. The dangers in building tight linkages between schools and employers include the creation of narrow training programs lacking educational value, over-responsiveness by the school to unstable conditions in the labor market, and reliance on manpower demand projections that may not be accurate for the short term and are less so for the long term.

14. The typical school follow-up study is not sharply designed either to yield data that could help current students make better decisions based on the experience of recent graduates or to guide program designers in modifying school programs. The trouble may lie in the difficulty of attributing the graduates' later experiences directly to what they learned in school rather than to alternative explanations such as personality factors, economic conditions, or luck.

15. Factors stabilizing school programs in their present form may include current patterns of state financial support, certification requirements, tenure, and the use of full-time teachers who get no direct exposure to current working conditions outside the classroom.

16. The simplest way to get around the stable features of existing school programs is to arrange work experience for students. Work experience brings with it a radical change in the personnel, methods, materials, facilities, and time of instruction that cannot be accomplished as readily by the other program linking devices now known.

17. A number of California schools and colleges are now operating programs that break with the standard school environment as radically as work experience programs, but they require considerably more administrative initiative in creating a special instructional environment. The simplest of these arrangements closely resemble work experience programs.

FLORIDA

The 2½-day visit to the state capital at Tallahassee and to the largest school district (Dade County) headquartered in Miami revealed a modest number of linking arrangements currently in use and a larger number projected for the future. Most but not all the linkages duplicated those found in the other three states.

State, Regional, and Multistate Linkages

The visits to Florida identified a number of separate communications devices, a number of other communications devices blended together with program linking devices, and two accrediting arrangements that serve to link nonpublic institutions to the job market.

Communications Devices. Florida uses both state and regional advisory councils of outsiders to inform educators at both secondary and postsecondary levels about job entry requirements and what these imply for school programs. The state council advises the state education agency, and the 10 regional councils inform all state agencies engaged in training, including the state labor agency and the state commerce agency.

A statewide Committee of 100 labor, business, and industrial leaders advises the state education agency, particularly the vocational education unit, on current and prospective changes in the demand for trained workers in Florida and what these imply for current and future high school training programs. Because the Committee of 100 constitutes a cross section of the geography, agriculture, commerce, and industry of the state, it can speak for all of Florida.

Working under authority assigned to it in a new 1974 legislative act, the Florida State Planning Department has divided the state into 10 planning areas. Each area has a Manpower Advisory Council with members representing labor, business, the general community, and the education profession. The councils consolidate information about training needs in their geographic areas and forward reports to the State Planning Department. It then informs the governor about needed secondary and postsecondary training so that he can make a coordinated allocation of responsibility among various state agencies for operating needed programs.

It is reasonable to assume that advisory councils such as these can also speak convincingly both to the state administration and to the state legislature about the need for financial support to operate training programs, supplementing whatever professional educators might say. Council members can give direct testimony when needed about the relation of manpower training to the state's economy.

Hard data to underpin the advice of the councils are now being gathered in two closely related projects operated by state agencies. Both sides of the manpower supply/demand equation are being filled in, replacing the unknowns with knowns. In time, the councils should be able to speak in voices that are authoritative as well as politically influential.

Both of the data-gathering activities described below arose from restlessness in the Florida state legislature about the accountability of state administrative agencies for their secondary and postsecondary occupational training programs. Armed with the information the two projects will supply, the legislature can hold administrative agencies accountable for adjusting manpower training programs to balance the supply/demand equation.

1. Using federal vocational education funds, the state board of regents for higher education and the state education agency for elementary and secondary education have joined together to sponsor the systematic collection and summarization of data on the supply of manpower now moving through the training system in Florida. (The training system includes all educational institutions, all apprenticeship programs, and all manpower programs--public, private, and proprietary.) When assembled and presented, the supply data can be combined with matching demand data (see below) to guide future training.

2. The state education agency, the state commerce agency, and the statewide Manpower Advisory Council are jointly operating a three-year project titled Occupational Information Delivery System (OIDS). The vocational education unit of the state education agency supplies two members of its staff to work with the state commerce agency. OIDS is

surveying and presenting manpower demand data in a matrix format. The matrix displays a hierarchy of jobs against each of the occupational fields in the Florida economy. Data at the intersections display intensity of demand. The resulting matrix can be superimposed on a matching matrix of manpower supply data (see above) so that surplus and shortage job fields can be identified.

Communications Devices Combined with Program Linking Devices. While combinations of the two kinds of devices were found in other states as well as in Florida, the other states also yielded some examples of separate program linking devices. Evidently Florida's experience thus far indicates that program linking devices should be joined closely to communications devices. This arrangement has the potential advantage of assuring that findings about job entry requirements will be translated immediately and faithfully into alternative school programs. Three examples appear below.

1. A Joint Apprenticeship Committee operates under state sponsorship with the cooperation of labor and management associations in Florida. Two years ago the committee initiated a Pre-Apprenticeship Program under which a trainee attending any committee-approved high school program is granted one year of credit toward a standard sequence of apprenticeship training. The fields covered include carpentry, electricity, ironworking, masonry, and printing. At the inception of the plan, the committee announced that participants would have a priority claim on entry into standard apprenticeship training once they completed two years of committee-approved schooling. Nevertheless, key figures in the state legislature seem to believe that the program is not going well and needs to be examined and perhaps redesigned.

The sensitivity of the state legislature to vocational education and manpower training was evident throughout the Florida interviews. Such sensitivity is explained at least partly by the higher-than-average cost of those endeavors and partly by their close relation to the well-being of the Florida economy. Whatever the full explanation, such legislative sensitivity creates continuous pressure on state administrative agencies to build tight linkages between training offered and jobs available.

Performance-based training in various occupational fields is of considerable interest in Florida. Two major projects now under way at Florida State University in Tallahassee--one a Florida project and the other a multistate project--illustrate this concern. In both cases, communications devices are employed to learn job entry requirements, and program linking devices in the form of new curriculums are created to help schools modify their training sequences so their graduates can meet those job entry requirements.

2. The Curriculum of Attainments Project is developing performance-based degree programs beginning with upper-division courses. The project establishes intended attainments (objectives), an instructional program (curriculum), and a judging procedure (evaluation) for each occupational area. The intended attainments were derived differently for each of the first three programs: the marine biologists conducted a content analysis of the existing curriculum; the nurses conducted task analyses of jobs in the nursing profession; the urban planners identified major knowledge domains underlying their profession. Each area has a separate Curriculum Committee

including outside professionals to recommend performance standards, and each uses a separate three-member jury including an outside professional to certify the attainments of individual students before they graduate. The project plans to extend its work to leisure studies, library science, music, religion, and theater next year, then go on to business and psychology.

3. Florida is participating in a 10-state consortium organized through the Southern Association of Schools and Colleges to develop curriculum units for use in secondary school vocational education courses. Organized in 1973-74, the consortium intends to relate vocational education more closely to actual occupational tasks. The development of curriculum units begins with a two-stage task analysis in each occupational area: (1) industry spokesmen are surveyed to find the frequency with which each job competency is used; (2) workers are surveyed to validate specific performance objectives. Twenty occupational areas are scheduled for completion in 1974-75, with each of the 10 participating states sharing the work. The pace of development is expected to be even faster in 1975-76. Eventually, all secondary school vocational areas are to be covered. Federal vocational education funds support the project.

Each of the three examples of communications devices combined with program linking devices offers a different approach to determining job entry and performance requirements and to adjusting school programs accordingly. The Joint Apprenticeship Committee serves in a review capacity, using its power to allow apprenticeship credit as an incentive to make schools modify their programs. The Curriculum of Attainments Project uses outsiders not only to review school programs, but to help set objectives and review individual performance. The Southern Association consortium identifies job performance requirements, then develops ready-made curriculum units for schools to meet them. In every case, the technique used goes well beyond simply communicating job requirements to the schools.

But Florida, as well as the other states visited, goes even beyond that in trying to guarantee education-to-occupation linkages, as shown next.

State Accreditation of Independent Schools and Colleges. In addition to its concern about close linkages between education programs and job opportunities, as described above, the state of Florida is concerned about whether entire institutions are related (or linked) to the job market. In the case of nonpublic postsecondary institutions--whether degree-granting or not and whether proprietary or not--Florida has established two separate licensing boards to determine whether the existence of each such institution is in the public interest. The creation of both licensing boards during the past two years is further evidence of the insistence of the Florida state legislature that occupational training be connected with occupational opportunities, even when that training is not publicly financed.

The Florida State Board of Independent Colleges and Universities was established in 1972 out of the legislature's interest in consumer protection. The board licenses all nonpublic private and proprietary degree-granting colleges and universities. In 1971 there were 453 such institutions; since the board was established, 106 have closed. The others have had to meet standards established by the board in order to stay open. The board is

composed of five educators from independent colleges and universities, two educators from public colleges and universities, one businessman, and one attorney. The board cooperates with the Florida Attorney General, Better Business Bureau, Chamber of Commerce, and consumer agencies in setting and maintaining standards.

The Florida State Board of Independent Postsecondary Vocational, Technical, Trade, and Business Schools was established in 1974 out of the legislature's continuing interest in consumer protection. The board licenses all postsecondary proprietary non-degree-granting institutions in every occupational field except barbering, cosmetology, nursing, and real estate, all of which had established their own licensing boards prior to 1974. Whether this new board will meet with the same success as the board for degree-granting institutions described above remains to be seen, since it is so new. However, its composition and powers are similar. It is composed of five educators from the kinds of institutions it licenses, one educator from a public college and three representatives of the general public. The board cooperates with the Florida Attorney General and uses his investigative services to make certain that licensed institutions meet established standards.

Individual Institution Linkages

Florida's Dade County (Miami) public schools have a number of communications devices and a number of program linking devices. Since these operate somewhat separately, despite suggestions from some sources that they ought to be themselves linked, they are described separately below.

Communications Devices. Our brief visit to Miami to learn how Dade County maintains education-to-occupation linkages was not long enough to identify all the communications devices in use. Those we did identify seemed relatively underdeveloped when compared to the new state-sponsored communications devices currently being created. This perception may arise from our shallow information about Dade County, or it may indicate that state authorities are trying to create a set of communications devices for all schools in Florida superior to those found in the largest school system.

Dade County maintains 57 separate advisory councils to advise on occupational competency requirements in 57 trade and technical areas. The councils shape their advice according to shifting state requirements for licenses in these various trade and technical fields. Their advice is translated into exit requirements and curriculum modifications in vocational education sequences in local secondary schools.

Some state education officials in Tallahassee complained--not about the 57 advisory councils in Dade County but about many such groups statewide--that they do not help secondary and postsecondary schools assess manpower demands precisely enough. One suggestion for correcting the situation was to change the membership from local business and industry "figureheads" to lower-level working supervisors and recent school graduates. Another was to train council members in how to function. Another was to have the members not merely offer general advice, but actually to join with the faculty in placing graduates and following up their job performance.

Following those suggestions would improve the technical information

and assistance supplied by the councils. This is the kind of help that operational-level school personnel need most. However, following them might also diminish the ability (actual or potential) of such councils to influence policy-level decisions such as those made by the governing board of an institution. The present composition of the advisory councils in Florida might be better for that function.

Advisory council functions--be they policy advice, technical assistance, supplying student work sites, public relations, or whatever--should be stated and their composition and operating procedures determined accordingly.

The school officials we interviewed in Dade County supplied a number of examples of their occasional and informal contacts with employers in the interest of maintaining good relations. For example, the Division of Vocational Education in the schools encourages and cooperates with the local Automobile Dealers Association in holding an Annual Banquet at which the Association gives awards to outstanding teachers and students in auto-mechanics courses. Other local business and civic associations sponsor similar events with the division's assistance. Similarly, the placement officer in one of the Dade County community colleges attends monthly dinner meetings held by the Association of Personnel Directors of Greater Miami. While informal communications devices of this kind seem desirable, they are not designed to have an impact on the school program and may not have any. The formal arrangements we identified seem potentially more powerful in improving education-to-occupation linkages. As mentioned earlier, the new state-sponsored communications devices now being created seem more promising than what we were able to identify as now operating in Dade County.

Two state mandates originating in 1972 legislation are applicable to Dade County, as well as to all other secondary and postsecondary institutions in Florida:

1. Dade County is obligated to file an acceptable placement and follow-up plan with the state education agency. Dade County may choose to designate one of its occupational specialists (a new position in the secondary schools of Florida, as explained later) to serve as placement and follow-up officer. The Florida legislature mandated the state-funded activity to supplement the follow-up of vocational education graduates already required by the U.S. Office of Education as a condition of federal vocational funds. The target of the new effort appears to be those graduates who are neither college-bound nor job-trained.

2. Dade County's community colleges, along with each of the 28 such public institutions in Florida, are required to assign one person to operate a follow-up system to trace their graduates. The systems are to seek feedback data for curriculum revision. The intent is to base program changes and program additions on a clear demonstration of need. The state legislature is expected to appropriate approximately one million dollars in 1975-76 to sponsor demonstration projects showing how follow-up data can be used in management information systems to guide program planning.

Program Linking Devices. As explained above, our visit to Dade County was too short to learn about all the arrangements being used to make various elements of the school program resemble matching elements of the work place.

Two examples follow of what is now being done in Dade County to give students at both ends of the ability spectrum a substantial exposure to the work place while they are still in school.

1. One of the six geographic areas into which the Dade County schools are divided sponsors a pilot Student Leadership Development Program for gifted high school students. Students are placed in public or private professional offices for 18 weeks, during which six to eight itinerant teachers for the gifted monitor their experiences. Students earn full credit toward graduation. The plan seems to be working well and may be expanded. Expansion will be easier in 1975-76, when all Dade County high schools will be open year-round.

This new program is similar to another that has operated in Dade County high schools for approximately eight years. The Laboratory Research Program places approximately 125 talented science students in professional laboratories for a number of weeks. The intent is both to expose the students to the realities of the world of work and to arouse their interest in scientific careers.

A similar but longer experience is available to students who do not intend to go to college and are interested in obtaining paying jobs as soon as possible.

2. The Job Entry Program is designed for high school students in their senior year who are interested in going to work immediately after high school graduation or before. If a student and his teachers decide he would profit more from working full time in his last year than from being in school, he can take a paying job yet gain sufficient scholastic credit to graduate with his class at the end of the year. The program appeals primarily to students who have already had some vocational training in high school. The school staff is expected to monitor the experience of each such student to make sure that it constitutes a learning opportunity, not exploitation of the student as an underpaid worker.

Both these programs--the Student Leadership Development Program and Job Entry Program--represent a virtually complete integration of the education and occupation settings for up to one year of high school, full time.

Like all other school systems in Florida, Dade County participates in a state-initiated, state-funded program to supply vocational counseling to students who otherwise would not get it.

The Florida state legislature appropriates 8.7 million dollars each year in categorical funds to pay the salary of one occupational specialist for each 20 vocational education teachers in each county school system. The occupational specialists provide guidance to high school students interested in work, evidently to balance the traditional guidance counselor's attention to college-bound students. The program is supporting over 500 occupational specialists in 1974-75. Each one must have at least two years of full-time paid work experience and must complete a training program supplied by the local district. Occupational specialists must be paid at least as much as classroom teachers, even though they need not have college

degrees. The program was begun in 1971 and given a five-year term ending in 1976-77, at which time it will be evaluated by the state legislature and its future determined.

This is not actually a device for linking education institutions to occupations as defined in the conceptual framework used to guide this study. It is instead a linking device for individuals, intended to inform students about the relationship between their educational program and their occupational opportunities. However, the occupational specialist is expected to form and lead local advisory councils to get ideas for modifying the school program. Those occupational specialists who perform this function (some do and some do not) are in fact operating a communications device to inform the schools about job entry requirements and what these imply for school curriculums.

A number of curriculum development projects under way at individual community colleges with or without the assistance of an outside agency are quite similar in purpose and procedure to a number of the state-level or multistate endeavors described earlier. While the two examples described below are not operating in Dade County, they represent the kind of activity that any community college in Florida might sponsor or adopt the results of. The examples also serve to demonstrate again the strong interest in performance-based instruction evident at many leading institutions in Florida.

1. Florida Atlantic University is working with two public community colleges to develop performance-based training programs in several professional fields. Initially, the project staff conducts a task analysis by making site visits to places where full-time professionals are at work. These detailed task descriptions are then converted into performance objectives, summarized into curriculum goals, and made the basis for follow-up procedures to determine whether graduates succeed in using what they were taught.

2. The Hillsboro County Community College is now developing a competency-based instructional program in nursing, with the hope of expanding the approach to other fields later if it is successful. The project is directed specifically to the clinical portion of the training program and is seeking an adequate set of evaluation tools and procedures. The project engages faculty members, former students, and work supervisors from local hospitals in developing a set of input descriptions, needs analyses, competency descriptions, and output measures as the basis for a program design. The staff has turned to Educational Testing Service for assistance with the evaluation problems.

General Observations about Linkages in Florida

The data and the impressions we gained during our brief visit to Florida lead to the following observations, a number of which would doubtless be modified if we had been able to stay longer and learn more.

1. Legislative initiative on behalf of creating better education-to-occupation linkages is clearly evident.

2. Legislative concern about holding state administrators accountable for the objectives and the success of job-training programs is equally evident.

3. The legislature has acted decisively and forcefully to raise standards for nonpublic postsecondary schools and colleges. The standards created by the two new licensing boards appear to be effective in closing weak institutions.

4. State-sponsored linkages and state-mandated local linkages appear to be potentially far stronger than locally initiated linkages.

5. The legislature has supplied supplementary funding to local districts to operate specific programs favored by the legislature.

6. A number of the current and planned activities envision data-based management information systems to guide schools in linking themselves to the work place.

7. The many local, regional, and state advisory councils could probably be made more effective if their several functions were spelled out and the councils were restructured and operated accordingly.

8. Florida does not now exhibit the full range of possible state and local linkage arrangements that might be imagined.

9. Almost every communications device and program linking device identified was addressed specifically to a vocational education or manpower training program. There were very few examples of linkages between general academic or liberal arts curriculums and occupational settings.

10. While a number of the communications devices (such as follow-up studies) were designed to feed back data for program revision, not all devices with this potential were so designed.

11. The community colleges constitute a particularly active frontier for building linkages.

12. The widespread interest in performance-based instruction paves the way toward tight education-to-occupation connections.

NEW JERSEY

The time spent in New Jersey was used largely to interview state officials and individuals associated with statewide professional and business associations. However, a brief supplementary trip to the Bergen County Community College proved particularly useful in supplementing the information collected in Trenton. The linkages identified in New Jersey were similar in nature to many of those found elsewhere, but there were a number of noteworthy differences.

State and Regional Linkages

The New Jersey visit turned up a number of communications devices, some operated by government agencies and some by associations of employers. No examples of multistate linkages came to our attention during the visits, as had happened in other states. More time in New Jersey probably would have revealed some examples.

Communications Devices. The New Jersey Department of Higher Education uses two distinct and complementary communications devices to guide its disposition of the many requests for new programs it receives every year. The first is described below.

The Office of Community Colleges in the Department of Higher Education refers new program requests to the Curriculum Coordinating Committee of the Council of Community Colleges, representing all such publicly supported institutions in New Jersey. The committee advises the office about establishing programs. If the office decides to initiate the requested training, it solicits the interest of all community colleges by mailing a notice. Most new offerings are pilot tested by one or two interested community colleges for a year before the office recommends their adoption by others.

To take a recent example, the New Jersey National Guard approached the office about arranging college credit for certain ongoing National Guard courses. Simultaneously, the guard wanted colleges to initiate certain new courses for the guardsmen. When the committee approved and three community colleges expressed interest, the courses were piloted and found satisfactory within one year.

To take another example, the New Jersey section of the American Institute of Banking asked the office to allow community colleges to accredit and/or carry out some of the training then being conducted by the AIB. The AIB itself had already identified two prospective colleges. The office approved the arrangement once the Curriculum Coordinating Committee was informed and gave its endorsement.

In yet another case, a request from construction industry representatives for training in low-echelon management skills was approved through this procedure, and industry representatives were invited to help design the courses.

This arrangement allows the committee to judge the educational worth of requested courses as well as the chance that they will draw sufficient enrollment. It also gives every college a chance to volunteer as a pilot test site and keeps it abreast of program requests emerging throughout the state. The training offered under such outside sponsorship has high practical utility.

The second communications device supplements professional judgment with hard data:

The Office of Master Planning and Research in the Department of Higher Education collects information on manpower demand whenever new program applications are submitted from two-year community colleges, four-year colleges, graduate schools, or professional schools. The office collects data from the New Jersey Department of Labor, assembles national figures, and conducts its own surveys when relevant data are not on file. The office advises against approving the applications if there will not be sufficient demand for those completing the proposed sequence. The office was created in 1966 by legislative enactment growing out of a desire that higher education institutions in New Jersey spend public money in training students only for jobs that were actually available. While the office is effective

in preventing needless additions, the data it gathers have little influence on eliminating existing offerings, some of which continue for logistical and political reasons even though they are economically unsound. The function of the Office of Master Planning and Research in gathering and analyzing data centrally may be contrasted to the pattern used in Ohio by the Board of School and College Registration (described later) which relies on the applicant institution to prove that new programs are needed. While the New Jersey office does not rationalize all existing higher education programs, it evidently helps suppress misguided growth impulses.

The Office of Community Colleges in the Department of Higher Education helps the public community colleges aid another unit of government, the State Civil Service.

The office and the Civil Service agency work together to adjust Civil Service entry requirements as needed and to adjust community college exit requirements accordingly. The effect is a better match between the two. Civil Service personnel help community college staff design the curriculum and set exit standards. Thus graduates of approved programs have the benefit of being trained in curriculum content that Civil Service personnel have helped select. The linkage is thought to be effective.

In addition to the data collected by the Department of Higher Education in Trenton, including data originated by the Department of Labor, the Department of Labor itself tries energetically to supply data to influence decisions made in the education sector. Three examples follow.

1. After an unsuccessful attempt to supply data to schools in the 1960s, the Division of Planning and Research in the Department of Labor has just begun a new series of forecasts of occupational demands and job openings. The data are organized by city and county. One shortcoming is the lack of accompanying information on manpower supply. The information is intended primarily for the Division of Vocational Education in the Department of Education and for the Department of Higher Education. Reports are to be mailed to all secondary and postsecondary school libraries. No formal means have been chosen for interpreting the implications of the data for training programs or for transmitting these implications to state officials.

2. The Department of Education requires school districts in every county to form County Career Education Coordinating Committees. Department of Labor staff serve as technical advisers to these committees. Some staff members, such as labor analysts, come from the research divisions in the department; others come from the employment services division. The intent is to make manpower demand statistics conveniently available on a county-by-county basis to guide local planning.

3. The Department of Labor translates the official Occupational Handbook for New Jersey into a set of readable "occupational guides" concentrated on 100 occupations requiring only a limited level of education. In the past, the guides have been updated every four years, and 20 copies of each have been sent to each high school guidance department in the state. In the future, the guides will be modified to contain information on occupations appearing in the department's manpower forecasts.

It appeared in New Jersey, as it had in Ohio and in other states,

that fully satisfactory techniques still do not exist for taking data available from the Department of Labor and putting it into the form most useful for modifying school programs. The labor department in each state has tried in the past, is experimenting in the present, and has laid plans to do better in the future. It appears that there are some fundamental problems in this transaction that have yet to be solved and that certain of the research and development projects now being mounted by the U.S. Department of Labor will be needed to solve them. The problem may lie in the difficulty labor specialists and school curriculum specialists have in deriving implications from supply and demand data and from detailed job descriptions, although implications concerning which training programs to operate and what to include in their curriculums seem to be clear. The fact that the communications devices employed by the Department of Labor are now addressed to such school personnel as guidance counselors and librarians rather than being addressed to administrative officials and other institutional leaders may explain their current lack of impact.

Two nongovernment agencies with a clear stake in occupational training use their initiative in attempting to link education settings to occupation settings. One is the New Jersey Chamber of Commerce; the other is the New Jersey Manufacturers Association.

In April of each year, the Chamber of Commerce invites about 30 faculty members from about 30 campuses to bring about 250 students to meet with about 30 businessmen in a group of five-hour symposia. The companies pay for the event and provide speakers. The agenda is built around the results of a survey of students and faculty, asking them to identify three subjects on which they would like information from businessmen. The event has been carried on for about 10 years and is regarded as successful.

For the past three years, the Chamber of Commerce has sponsored a program based on an idea supplied by the U.S. Chamber of Commerce. Intended to counteract anti-business student attitudes, the program brings businessmen to high school and college campuses to discuss the economy, business, politics, and their relation to education. Eighteen companies in New Jersey supply businessmen to conduct the sessions. College programs are held in the afternoons or evenings; about 100 students ordinarily attend. High school programs are held after school; attendance varies.

Both of these Chamber of Commerce activities arrange direct encounters between individual businessmen and individual professors and individual students. From what we observed in New Jersey and elsewhere, this particular device would be unlikely to precipitate significant changes in school and college programs. Thus the arrangement could be classified as an individual link rather than as an institutional link. It is true, certainly, that individual professors enjoy considerable autonomy in many institutions, especially at the graduate level, and that they would be free to modify what they teach to incorporate ideas from the seminars. It is equally true that they would have no obligation to do it and no new financial resources to help themselves do it.

The New Jersey Manufacturers Association works in an entirely different way to improve education-to-occupation linkages. It works primarily in Trenton to influence legislative and administrative actions that would create

a better climate for New Jersey manufacturers, as by producing a trained labor force through the public school system. The two examples below illustrate the association's working style.

In 1970 the Association's Education Committee learned about the Technology for Children Project then being conducted by the Division of Vocational Education in the Department of Education. The Association's Committee drew the governor's attention to the project, recommended its statewide adoption in all elementary schools, testified before the New Jersey state Vocational Advisory Council in support of the project, and prepared and published articles to arouse the support of its membership and the general public. Members of the association sit on local boards of education, local, county, and statewide vocational advisory committees, and other groups in which they can exert their influence in behalf of better education-to-occupation linkages.

In 1972 the association persuaded the governor to issue an executive order creating an Advisory Council on Economics in Career Education to promote economic understanding by introducing more economic concepts to the school curriculum. The council advises both the Department of Education and the Department of Higher Education. The association asked the governor to issue his order because of its concern that the American free enterprise system was not being adequately covered in school curriculums.

It is apparent that the efforts of the New Jersey Manufacturers Association are not directed toward building immediate linkages between individual schools and individual employers but rather toward influencing state policy positions that would lead in time to such linkages. The Association activities offer interesting examples of communications devices addressed to the most powerful levels of state government. It has access to a level of governmental machinery that has great power to modify school programs if aroused to do so.

Individual Institution Linkages

The New Jersey visits yielded a set of communications devices and a set of program linking devices used by individual school systems and colleges. The first set included advisory councils and follow-up studies; the second set included employers helping with curriculum development and work experience for students.

New Jersey, one of the most highly industrialized states in the nation, seemed to be an environment in which business and industrial organizations were unusually energetic in reaching out to influence school programs. It seemed true also that current local practice is closer to the aspirations of state officials than we found elsewhere. The situation may be attributable either to energetic local performance or to realistic attitudes by state officials.

Communications Devices. As explained earlier, the secondary schools in every New Jersey county are obligated to form a County Coordinating Council, which serves as a planning unit.

Each New Jersey County Coordinating Council is served by a County Coordinator employed by the Division of Vocational Education in the state

Department of Education. The coordinator collects manpower statistics, meets with employers, and interviews students to determine manpower demand in beauty culture, health occupations, transportation, and other fields for which high school vocational education programs prepare workers. His findings go to his council, which frames a plan for adjusting the offerings of vocational high schools in the county to supply the needed manpower. The county plans are submitted to the Division of Vocational Education. The operation of the councils is regarded as effective.

The placement of the county councils at an intermediate position between local school districts and the state Department of Education may put them in an especially influential position. They are close enough to the local scene to collect data immediately relevant to local high school training programs, and they are simultaneously obligated to file with the state authorities the plans they develop. This could work to give those plans the best combination of local reality and state authority.

New Jersey is rich with advisory councils. There are more than 3,000 in the state. These include an advisory council for each separate occupational area in high school and community college programs, the County Coordinating Councils described above, councils associated with New Jersey's four Area Vocational Technical Schools, a number of Industry-Education Councils (the one located in Woodbridge being a particularly strong example), and so on. They include advisory groups initiated by local and county Chambers of Commerce, of which the following are but two examples.

1. The Eastern Union County Chamber of Commerce has an Interface Committee which brings together businessmen and school personnel to discuss the relationship between school programs and business enterprises in the area.

2. The Princeton Board of Education determined from a local needs analysis that the high school principal and guidance counselors should maintain better contact with local employers. The mechanism chosen was to schedule a series of conversations with members of the Princeton Chamber of Commerce. A typical topic was the concern of the employers about a lack of worker motivation on the part of high school graduates who applied for local jobs.

These two cases exemplify communications devices that are not tightly connected to upper levels in the authority structure of the schools. We gained the impression from these and many other examples that such connections increase the impact of the advice given.

Work experience programs in New Jersey, as in other states, are led by part-time or full-time coordinators. Approximately 700 Cooperative Coordinators are located in high schools of all types throughout New Jersey. Each coordinator represents a single occupational cluster for which his high school prepares students. The coordinators serve as middlemen between the schools and the employers to match individual students to specific jobs. Moreover, they offer advice to their County Coordinating Council about manpower supply and demand and about what kinds of modifications in local high school programs would be desirable, on the basis of their substantial knowledge of employers' needs as well as students' abilities.

Some of the state officials interviewed in New Jersey expressed the opinion that work experience coordinators who have suitable academic credentials can be more influential in shaping high school programs than coordinators who lack such credentials. They said that a teacher chosen from one of the academic departments could be particularly influential in dealing with academic teachers who have had little work experience outside the classroom. What the coordinator learned from serving on advisory councils of employers and supervising students in actual work sites could be more powerful in modifying academic programs to link them better to the current and future job market.

Follow-up studies in New Jersey high schools are not mandated by the state legislature, unlike the situation in Florida. Even so, some high schools in New Jersey do make follow-up studies of their graduates. State officials told us there is currently a positive climate for linking high schools to the world of work because high school administrators, counselors, and teachers realize that today's college graduates cannot always be sure of later employment. Thus they need information about the job market even while they are still in high school so that they can make better choices in college. Some follow-up studies collect data to inform high school academic teachers about which career fields the high school graduates entered after obtaining their college degrees. The information presumably can be useful in helping high school academic teachers relate the content of their subjects to career fields.

Some New Jersey high schools conduct follow-up studies "live," by having graduates of the previous year come back to talk to students in their English classes about the relation of high school studies to later education and employment. The graduates also meet with the faculty of academic departments to give their views on the adequacy and relevance of their high school courses.

Like most community colleges in New Jersey, Bergen Community College offers a number of terminal two-year training sequences designed to place graduates into immediate employment. (Like most of them, it also offers two-year general education transfer sequences.) And like most community colleges in New Jersey and in the other states visited, Bergen Community College has a strong community service outlook. The business and industrial segment of the community needs service from the college, needs it continuously, and is motivated and able to pay for it either through individual tuition or through employer-paid tuition. As would be expected, the combination of terminal sequences leading to employment and a decided community service outlook leads to the building of linkages between Bergen Community College and employers. The two complementary communications devices described below illustrate how such linkages are built and maintained.

Bergen Community College has established 15 Career Advisory Councils--one for each career area represented in the college offerings. Each council is made up of employers and/or individual professional or technical workers associated with the career area. The councils meet four to five times per year to report on the job market, identify work experience sites, and review college curriculums. Some council members participate in the actual development of materials and the design of training activities, translating their advice into specific operational suggestions. The members

of the councils are nominated by the president of the college and are appointed by the board of trustees. Each council meets with and advises the administrative head of the career program for which it is appointed.

The Bergen Community College Director of Institutional Research conducts an annual follow-up study of a sample of graduates. The sample is drawn so as to represent all areas of college preparation. The results of the follow-up study are presented to the dean of instruction and are shared with the president's cabinet consisting of all key administrators in the college.

Both of these communications devices are connected to the highest levels of administrative authority in the college, which helps explain why course offerings and curricular sequences that fail to win the endorsement of council members or graduates are less likely to be continued. The councils are regarded as very effective. Notable features of their operation include the fact that they are appointed by the president and the board of trustees, meet approximately every two months, and go beyond being mere communications devices to naming actual work experience sites for students and to help design training materials. In this sense, they serve as program linking devices, a valued function of advisory councils, as found in California, Florida, and Ohio. The college councils can thus be thought of as communications devices combined with program linking devices.

The Community Services program at Bergen Community College has been created specifically to respond immediately to community training needs as they emerge. The training is short-term or long-term, formal or informal, daytime or nighttime, and for students of any age, education, or experience--depending upon what will best meet community needs. As might be expected, the Community Services program is both sensitive and well connected to job market requirements in Bergen County and surrounding counties. Some of the communications devices it uses are described below.

The Director of Community Services chairs an advisory committee consisting of local leaders in real estate, insurance, banking, and other occupational areas likely to have rapid shifts in manpower needs. If the advisory group identifies a need, the director moves quickly to hire part-time faculty and open short-term, non-credit courses. Courses can be conceived, staffed, and begun within a few weeks after the need first surfaces.

The Explorer Scouts in Bergen County conduct an annual survey of career interests on the part of students. The study is carried out in all high schools in the county, and the responses are reported by school and by career area. The results, useful in planning the Explorer Scouts program, are also useful to the Bergen Community College and the Community Services program in knowing what career areas are of potential interest to high school graduates when they become candidates for entry to the college.

The Bergen Community College Community Services program conducts follow-up studies of its graduates. The studies are specifically designed to offer ideas for future Community Services courses. Most of the career areas in which Community Services training is offered--such as banking, construction, insurance, and real estate--are in a state of continuous change

because of new laws or administrative regulations from state and federal agencies as well as because of intense competition among businesses in these fields. This means that workers require continuous upgrading simply to remain competent; it also means that they need training specifically designed to ready them for promotion to advanced jobs. The follow-up studies are designed to gather suggestions from former students--who are also currently employees--concerning training they need both to remain current and to prepare for advancement.

What distinguishes these linkages is their directness and purposefulness. That is, the Community Services Advisory Committee consists of employers who can recommend their own employees for training; the Explorer Scouts' annual survey of job interests can be translated directly into course offerings because of the remarkable flexibility in the way Community Services are designed and administered; the follow-up study is not a matter of general curiosity about the well-being of the graduates but is instead intended to garner training ideas that would cause the graduates themselves to re-enroll as students. Such features also characterize the communications devices employed by proprietary schools in Ohio, as reported later.

Officials in the Office of Community Colleges in the Department of Higher Education in Trenton reported that tight linkages of the kind maintained by Bergen Community College, and specifically by the Community Services program, are not unusual in character, although they are especially well executed in practice. We were told that it is typical for the deans in various divisions to maintain close contact with the employers and professional groups in their own career areas. For example, the dean of a division training personnel in the allied health fields can be expected to maintain close communication with county medical societies and professional associations of nurses.

Communications Devices Combined with Program Linking Devices. The Division of Vocational Education in the New Jersey Department of Education sponsors the operation of a computerized data bank to inform students and teachers about job opportunities and working conditions. This system is a communications device in the sense that students can use it to match the profile of their interests and abilities to job requirements and can locate actual job openings in the state; the system is a program linking device in the sense that high school faculties can use it to get up-to-date job descriptions as a basis for curriculum construction.

The Computer Assisted Career Information System (CACIS) is a rather comprehensive data bank of employment information for the state. The computer has on file: (1) descriptions of career fields available in New Jersey, (2) names of New Jersey residents willing to serve as consultants about job opportunities and requirements in these career fields, (3) work sites for observing and talking with workers in these fields, (4) information on how and where to locate jobs in those fields. The information allows students to make better decisions about career choices and career training for themselves; it allows teachers and curriculum developers to prepare materials giving students realistic, up-to-date information about job opportunities and guides them in choosing instructional activities for training programs. CACIS has one central computer with terminals in all 21 counties in the state. Terminals are usually based in comprehensive high schools so that all students and all faculty can use them.

Program Linking Devices. The New Jersey visits turned up an interesting variety of program linking devices. We found examples of work experience for students--the most common program linking device identified during the visits to the four states--and we found others as well.

One of the most distinctive was an arrangement in which the education system was merged completely with the occupation system:

New Jersey's Thomas Edison College offers no courses. Instead, it locates and accredits company training programs meeting certain criteria and offers college credit to workers who enroll in them. The training takes place at the employers' work sites using employers' facilities and employers' personnel as trainers. Thomas Edison looks for programs that have value to the worker beyond the immediate job for which he is being trained by his employer.

Programs like those accredited by Thomas Edison have solved the linkage problem by eliminating it. That is, there are no school personnel, no school curriculums, and no school facilities to be somehow linked to company personnel, company skill requirements, and company facilities. This kind of complete merger may arouse concern that the instruction is training rather than education, narrow rather than broad, of short-term rather than long-term value, perhaps useful as on-the-job training but not deserving of college credit. The same concern can be raised about many of the best-linked education programs we located, in the four states, even though few of them constitute the kind of complete integration of education and work sought by Thomas Edison. Whether some less integrated arrangement can give the combined advantages of broad training and practical application without the disadvantages of scholastic irrelevancy on the one hand, or transitory skill training on the other, merits careful thought in designing model linking systems in the larger endeavor of which this status study is but one part.

Bergen Community College, as would be expected, yielded examples of program linking devices growing rather directly out of its unusually good communications devices, described earlier. The device described below has some of the advantages of using company personnel as teachers without using the full integration of every element of the training--personnel, content, and facilities--practiced by Thomas Edison College.

Courses offered in the Community Services program of Bergen Community College are taught by part-time faculty. Community Services courses in fields such as banking, construction, insurance, and real estate must be completely current in order to be useful. The use of part-time faculty allows teachers to be added and dropped as necessary to keep up with changes in the job market and assures that all faculty have current information and relevant job experience in their specialties. For example, local bankers are employed as part-time instructors in courses designed to upgrade current bank employees.

The structure and operations of the Bergen Community Services seem similar in some respects to those of the College of Journalism at Ohio State University, described later. In both cases, some attributes of a "closed system" are apparent. In the case of the Community Services program,

a local banker might appear as a member of the advisory council, be asked to assist in choosing content and materials for a course to train loan officers in banks, be employed as the instructor in the course, arrange for loan officers in his own bank to enroll, and be contacted in a follow-up study as an employer to evaluate the usefulness of the training. The example is entirely hypothetical, but the structural components and operating policies of the Community Services Division would allow such a circular arrangement.

New Jersey public and private institutions of higher education, like other such institutions across the nation, can take advantage of federal funds to arrange student work experience in local community agencies as described below:

Title I of the Higher Education Act provides federal funds to support college students as interns in community service agencies. Interns can earn college credit. A number of New Jersey colleges take advantage of the opportunity to arrange internships for students majoring in political science, sociology, and other social sciences. A campus coordinator--usually an assistant to the president of the college--works with academic department heads to identify faculty volunteers willing to recommend students for internships and grants course credit for their experience.

While the HEA Title I internships are essentially work experience opportunities for students, the faculty contact with interns and their work sites in the typical New Jersey college can lead to changes in campus courses taught by the faculty if they want to relate the academic content to students' field experiences.

Funds from HEA Title I and from the Manpower Development and Training Act are combined to operate a special counseling service for veterans, as follows:

At five Outreach Counseling Centers in New Jersey, counselors contact veterans about their need for and interest in postsecondary training, then contact employers to locate or create apprenticeship opportunities for the veterans. Interested employers design and carry out apprenticeships with advice from officials in the Department of Labor and the Department of Higher Education. Like all apprenticeships, the training combines practical class work with on-the-job experience. Approximately 400 veterans were enrolled in internships during 1973-74.

General Observations about Linkages in New Jersey

Our visits in New Jersey generated considerable information and yields the following observations. We offer them simply as our clearest overall impressions.

1. Both the state-level and the individual institutional linking devices employed by the public community college system in New Jersey are designed to keep them highly responsive to community training needs.

2. Among those community training needs, the demands for trained manpower rank among the most important, most clearly and specifically

articulated, and most sharply advocated. Both employers and individual workers seeking jobs and promotions ask for manpower training and are ready and willing to pay for it. Thus it is not surprising that the devices for linking community colleges to local job markets are direct and generally effective.

3. Those devices include having employers serve on community college advisory councils, participate in designing courses, provide work experience sites, serve as part-time faculty members, and participate in evaluation.

4. The Office of Community Colleges in the Department of Higher Education uses a combination of professional judgment supplied by representative community college administrators and hard data supplied by the department's Office of Master Planning and Research to decide whether to honor new program requests. These two arrangements, among their other purposes, serve to keep community college administrators in New Jersey informed about emerging requests for training throughout the state and offer them a chance to participate in running pilot trials of new courses.

5. The way in which the Office of Community Colleges in the Department of Higher Education works directly with the state Civil Service system to adjust Civil Service job entry requirements as needed and to adjust community college exit requirements accordingly is an unusually straightforward matching of job entry and school exit requirements. While Civil Service personnel also advise community college faculties on the design of training sequences, as is common with many other linking arrangements, few other linkages are built on such a deliberate matching of job entry and school exit requirements.

6. Fully satisfactory techniques for putting Department of Labor manpower supply and demand data into a form useful to school faculties, curriculum specialists, and administrators do not now exist in New Jersey--or, indeed, in the three other states studied. The problem may lie in the data themselves or in the administrative or expert authority of the school personnel to whom the data are sent.

7. The Chamber of Commerce and the Manufacturers Association illustrate distinctly different approaches by business organizations interested in changing secondary and postsecondary school programs. While the Chamber of Commerce sponsors meetings of its members with groups of teachers and students, the Manufacturers Association deals with the governor and the state legislature. The Chamber of Commerce attempts to change the attitudes of individual teachers and students; the Manufacturers Association attempts to shape state educational policy. The differences arise partly from structural differences in the two organizations, in that the Chamber of Commerce is essentially a federation of local units while the Manufacturers Association is a centralized organization supported by major manufacturers and has no local network equivalent to that of the Chamber of Commerce. There are apparent strengths and weaknesses in both approaches.

8. The highly industrialized character of the state is reflected in the energetic way in which business and industrial organizations reach out

toward the schools and in the way public community colleges reach out in return.

9. The linkages maintained by schools with employers seemed to be in close harmony with the expectations of state officials, unlike other states, where state officials wanted schools to go well beyond current practice. The situation may be traceable to energy at the local level or to the realism of state officials.

10. The intermediate position of the County Coordinating Councils--located halfway between the state and local governments and controlled by both--may give their planning the best combination of local reality and commitment along with state supervision and authority.

11. The state is extraordinarily well-endowed with advisory councils, the most powerful of which supply information to well-placed school authorities and the most helpful of which participate in operating the programs they advise.

12. Follow-up studies are not a major linking device at either secondary or postsecondary schools in the state, perhaps because of a lack of state initiative.

13. The best education-to-occupation linkages in the state connect school courses so tightly to job requirements that they may merit criticism as being narrow job-specific training of transitory value rather than being more genuinely educative. How to design programs that are linked to but not dominated by labor market requirements and that are broad enough to be of value over the long-term yet also be useful in the current market is a problem to which New Jersey offers an interesting range of solutions.

14. The best linked institutions have some of the characteristics of "closed systems" in that a set of cyclical community service/community support arrangements tends to create a system that--perhaps quite desirably--is self-perpetuating.

15. A substantial number of the linking devices currently used by New Jersey secondary school vocational education programs can be traced to the initiative and the leadership of the Division of Vocational Education in the Department of Education. The rich array of local advisory councils, the county coordinating councils, and the state advisory council as well as the activities of the Cooperative Coordinators and the operation of CACIS can be attributed in whole or in part to the work of the Division of Vocational Education.

OHIO

Visits to state agencies at the state capital in Columbus and trips to the Ohio State University, the University of Cincinnati, and the Cincinnati Public Schools revealed a pattern of fairly active cooperation among state agencies and a pattern of rather aggressive linkage building by professional schools in the universities. Many but not all the linkages were replicas of those found in the other states.

State and Regional Linkages

As in other states, the visits to Ohio identified a number of state and regional communications devices, a proposed combination communications device and program linking device, and a number of actual and potential institutional accrediting arrangements that tighten education-to-occupation linkages.

Communications Devices. Under the 1968 Amendments to the Federal Vocational Education Act, each state is obligated to maintain an independent advisory mechanism to guide its plans for spending federal vocational funds.

The Ohio State Advisory Council on Vocational Education is comprised of 23 members appointed by the state education agency. The council maintains a close working relationship with the Division of Vocational Education in the agency. The council's recommendations, many of which have been accepted, are based in part on the research it carries out. Approximately $35,000 of its $105,000 annual budget is spent for research contracted to outside agencies. In addition to its subcommittee on research and evaluation, which guides the spending of these funds, the council has another subcommittee on legislation and information, and another on programs and planning. On the whole, the council appears to be effective, despite an occasional observation that some of its members serve as figureheads rather than as active participants and despite occasional feelings on the part of some council members that their advice does not have the full impact it should.

Cooperation among state agencies is initiated by the governor as well as by the agencies themselves. The two examples below illustrate both kinds.

1. The Ohio Department of Development in the Office of the Governor is responsible for promoting business and industrial expansion in the state. It has an understandably high interest in planning and promoting vocational and technical education. The Department of Development brings together the various state agencies concerned with vocational and technical education and coordinates their activities. It deals with the Division of Vocational Education in the state education agency, the Bureau of Employment Services, the Bureau of Employment Rehabilitation, the Department of Welfare, and the Board of Regents. A special interest of the Department of Development is manpower training conducted with CETA funds, an activity of direct concern to the Department of Labor and the Department of Education.

2. An elaborate pattern of cooperation linking both state and local units of the Department of Education and the Bureau of Employment Services is now in its second year. Ohio has been divided into a number of vocational education planning districts responsible for coordinating programs in high schools in their geographic areas. The local Bureau of Employment Services projects local manpower demand statistics and sends these to the state Bureau of Employment Services. The state bureau forwards the data to the Department of Education Division of Vocational Education, which sends them on to the vocational education planning districts. The district then calls local vocational educators into workshops to study the statistics and what they imply for changes in local programs, supplies the data to local vocational education advisory councils as well as to the advisory councils for the planning districts themselves, and works in other ways to link

educational programs to occupational settings. Although still in its early stages, the device seems particularly effective for long-range planning and has already created a desirable spirit of cooperation among state and local personnel in the education and employment agencies.

Three kinds of Ohio organizations--two units of state government and one trade association--publish information about educational and job opportunities. All three publications are actually linking devices for individuals rather than for institutions, given the definitions appearing in the conceptual framework used to guide this study. However, they serve to illustrate the sources of sponsorship for information relating education and occupation. Moreover, it is easy to imagine how the data supplied to individuals through the three devices listed below could be presented to institutions in such a way that their curricular implications became quite clear.

1. The Division of Guidance and Testing of the Department of Education publishes and distributes to every guidance counselor in every high school in the state a "notebook series" of publications describing all available avenues for high school graduates within Ohio. This series includes (1) a directory of college openings, (2) a listing of apprenticeship programs available with most employers, and (3) a directory of occupational sources and vocational education opportunities available through public, private, and proprietary postsecondary schools. Listings are limited to opportunities available within the state. The notebook series is reported to be somewhat effective, depending upon the use made of it by individual guidance counselors in local high schools, where practice varies widely. The series has been published for about three years.

2. Every three months the Ohio Department of Labor distributes 3,000 copies of fact sheets entitled "Labor Market Information." The sheets describe the shortage occupations and the surplus occupations in each county and for the state as a whole. The sheets are sent primarily to vocational guidance counselors in local high schools. Printed since 1965, the sheets are intended to help local schools adjust training programs so that the supply of trained manpower meets the demand for it in the geographic areas of the state. The sheets are mailed to guidance counselors by district offices of the State Employment Service, a division of the Department of Labor. The sheets are said to be not very effective in causing schools to modify their programs.

3. The Ohio State Council of Retail Merchants prepared and distributed to high school guidance counselors and high school students a very attractive brochure describing the various jobs available in retailing: e.g., management, sales, display, advertising, etc. The brochures are said to be not very effective in arousing the interest of students in retailing careers or in causing schools to expand training programs. Thousands of brochures have gone undistributed.

The data are too limited to constitute a substantial pattern, but they certainly suggest an observation. If the communications device is directed to a school official with low administrative authority and with limited claims to expertise in curriculum and program design, it is not

likely to cause a change in the school program. It appears that a communications device does not have the power to create actual education-to-occupation program linkages unless the communication is directed to a level of the institution where there is sufficient administrative or expert authority to alter school course offerings to match job market information. Linking devices for individuals like the three described above provide guidance counselors with information intended to help individual students. Since they are addressed to counselors, they do not have the power to change school programs.

Follow-up studies are commonplace in Ohio, as they are in the other three states. We found little evidence to demonstrate that such studies result in modified school programs. This may be a direct outgrowth of the fact that follow-up studies are ordinarily initiated, designed, and conducted by guidance counselors rather than sponsored by officials with higher administrative authority or greater curriculum knowledge. It is not clear whether the results of the typical study are used by the counselor to improve the advice given to students about what their futures hold or whether the results are analyzed and reported so that their implications for modified courses and new programs are made clear to administrative officials and instructional leaders. So far as we could ascertain, the former rather than the latter is the case.

Follow-up studies are potentially as useful to community colleges as to any other educational institutions. The Chancellor of the Ohio Board of Regents and the Vice Chancellor for Two-Year Campuses recently contracted with an out-of-state firm to survey employers' satisfaction with the graduates of various public community colleges in Ohio. With that study in hand, the Chancellor and the Vice Chancellor would like to undertake a longitudinal study of community college graduates. The study would collect information not only on initial placement, but on career changes, job promotions, and job transfers over a period of years. The basic purpose would be to determine the value of different educational inputs in the community college program. Both the cross-sectional study already completed and the longitudinal study under consideration are clearly intended to guide changes in community college programs rather than to serve individual students seeking placement. And the studies have the kind of high-level administrative sponsorship that could give the results genuine impact.

Communications Devices Combined with Program Linking Devices. The Ohio Board of Regents has placed in its budget for next year a request for funds to create a new way of linking public higher education institutions to occupational settings. As with the two kinds of follow-up studies described above, this proposal comes from the Chancellor and the Vice Chancellor. If approved by the state legislature, it could have a decided impact on the institutions governed by the Regents.

The Board of Regents has requested funds to employ 35 "technical job developers" to be regionally located and to serve the several higher education institutions within their regions. The individual employed as a technical job developer would assess employer needs, translate these into changes needed in training programs, and arrange work experience at employer sites for college and university students.

State Accreditation of Schools and Colleges. The visits to Ohio turned up a near-perfect linkage arrangement, combining a communications device sensitive to a changing job market with other devices for making immediate adjustments in both the course content and the graduation standards of educational institutions. It has been tested in use over a number of years, and it works.

The Ohio Board of Nursing Education and Nurse Registration was established in 1956 through legislative enactment. It is an arm of the state government charged with systematizing the training and education of nurses and linking that training to the needs of the job market. Every institution training nurses must have its program approved by the board. The board requires that a minimum number of hours (36 hours on the average) of the instruction be conducted in clinical settings. The board actually arranges the clinical experiences for the educational institutions by working with a variety of hospitals, public health agencies, clinics, nursing homes, etc. Both the sending and the receiving institutions participate in reviewing the clinical curriculum. In addition to establishing curriculum standards for institutional accreditation, the board establishes licensing standards for graduates of the program.

The operations of the Ohio Board of Nursing Education and Nurse Registration constitute a remarkable demonstration of linking principles in action. The following points are especially noteworthy:

1. The board is composed of members of the nursing profession. Institutions as well as associations of individuals are represented in its membership.

2. The board reviews and approves the education and training curriculum of every institution preparing nurses in the state, giving it monopoly control over programs.

3. The board sets licensing standards for individual nurses, giving it monopoly control over the source of manpower supply.

4. The board sets school exit requirements so that they are virtually identical to job entry requirements. What it takes to graduate is exactly what it takes to get a job.

5. The board operates in a sellers' market. That is, every graduate finds a job. This situation can work to make nursing programs attractive to colleges and universities since their graduates are guaranteed employment in their professional field, and it can work to make the programs attractive to individuals for the same reason.

6. Not satisfied with simply setting standards for clinical training--the portion of the program in which the tightest linkages between the education setting and the occupation setting can be built, the portion in which the actual practice of the profession is taught--the board actually arranges the clinical experience with hospitals and other medical institutions.

7. All necessary communications devices and program linking devices are operated centrally by the board itself.

8. The board operates with the full authority of the state government.

There is no wonder that the board is regarded as very effective in accomplishing its mission. Virtually any linking arrangement built on the same principles ought to work about as well.

There are other arrangements in Ohio that are also regarded as being very effective, even though they constitute only a partial application of the linking principles so convincingly demonstrated by the Board of Nursing. Those two cases are described below.

1. Acting out of the same kind of interest in consumer protection that motivated the Florida legislature to create its two boards governing independent schools and colleges, the Ohio legislature in 1970 established the Board of School and College Registration. The board registers and approves all secondary and proprietary institutions -- business, technical, and trade, whether they operate through classroom teaching or through correspondence and home study. A proprietary school losing its accreditation from the board must close. Moreover, institutions must register with the board any new program they wish to establish. Applications for new programs must be accompanied by firm evidence that the job market will absorb the new trainees, as shown by actual surveys. The board works closely with professional associations like the Ohio Bar Association to establish standards for new training programs such as those for paralegal aides. The board consists of representatives of proprietary institutions plus the Ohio Superintendent of Public Instruction and the Chancellor of the Board of Regents. It is said to be very effective.

It is obvious that the principles that work for the Board of Nursing work for the Board of School and College Registration. The communication device addresses its information to a group powerful enough to use it; decisions are made on the basis of actual hard evidence about job market needs; the board has monopoly control over all proprietary institutions, secondary and postsecondary; those institutions are absolutely dependent on the board for survival; it operates as an arm of the state of Ohio. It should work. It does work.

The other example is a communications device with ample power to have its communications heeded. While it is not a direct creature of the Ohio legislature, it is operated by the Ohio Department of Education. The description follows.

2. PRIDE is the acronym for the Program Review for Improvement, Development, and Expansion of secondary school vocational education in Ohio. The Division of Vocational Education sponsors a review of every public secondary vocational school once every five years, with follow-up visits to make sure that the institution has adopted recommendations made during the review. Review instruments are developed by the division staff, and administered by local vocational educators, and the findings are reviewed by teams of 7 to 10 members representing business, labor, parents, students, graduates, school administrators, vocational educators, and the

public. PRIDE examines vocational education, adult education, guidance, and administration. Initiated by the division in 1969, PRIDE is said to be so effective that 85 percent of its recommendations are adopted by schools within one year following a review.

While the PRIDE design does not seem to differ appreciably from procedures used by school and college regional accrediting associations, PRIDE visiting committees are composed of individuals having high credibility with local vocational educators, and PRIDE is backed up by the authority of the state government. Moreover, it operates in vocational education, a field in which state and local personnel are linked financially as well as by a common set of values and a spirit of mutual professional respect and friendship. These elements give the vocational system a hierarchical character that strengthens PRIDE's influence.

When we met with officials of the Ohio section of the North Central Accrediting Association, two ideas came under discussion as future possibilities for the association:

1. School/business cooperation as a criterion for accreditation was proposed as one possibility. We considered the pros and cons of having high school evaluation and accreditation require that schools maintain formal relationships with employers and operate such activities as exchanges of teachers and workers and work experience programs for students.

2. The employability of graduates as a criterion for accreditation was proposed as another possibility. We debated the advantages and disadvantages of requiring accrediting committees to determine whether high school graduates are equipped to enter the world of work and whether they succeed in the work they enter.

The suggestions are interesting particularly for two reasons. The first is that they would apply the power of an accrediting association to improving education-to-occupation linkages. The second is that they fail to apply the full array of principles observed by the Ohio Board of Nursing.

Individual Institution Linkages

State officials in Ohio supplied a number of examples of linkages created by individual schools and colleges. Some of them were communications devices, the best examples being ways proprietary schools keep in touch with what employers want. Others were program linking devices, most of the examples being work experience programs in both secondary and postsecondary institutions.

It seemed to us, as it had in the other states, that typical local practice in Ohio lags well behind the highest ambitions of state officials for what education-to-occupation linkages should be.

Communications Devices. The director of every local high school vocational education program must file with the state Division of Vocational Education a plan for using a local advisory council as a condition of receiving state financial aid. As a consequence, the use of such

councils is widespread.

There are 621 school districts in Ohio. Over 320 of these districts reported using a total of more than 1,500 advisory councils during 1974-75. The largest number of councils advised on high school trade and industrial programs (667), and the second largest number advised on business and office education (269). The councils are charged with assessing local needs for vocational education, recommending curriculum standards and equipment, arousing community support for vocational education at the local level, and arousing support for vocational education legislation at the state level. The best councils are said to be those whose members help with the actual operation of the local program, as by offering work experience to students and helping them find jobs upon graduation. Most advisory councils are judged to be effective; the best are judged to be very effective.

It was evident in Ohio as elsewhere that the best advisory councils serve not only as communication devices to acquaint schools with the job market but in fact suggest how the school program should be modified to meet the market and even go beyond that to help operate the program. This is tantamount to saying that unless a communication device changes the local program, its value is limited. It seems clear that the councils judged best in Ohio are those that not only give advice on how the school program should be amended but in fact execute their advice by helping operate the program.

The political functions of advisory councils were perhaps more apparent in Ohio than elsewhere, but the constituency-building function of the councils has been widely noted as a distinguishing feature of the vocational education system. While the procedure is essentially communications, the effect is to build a positive climate of support for vocational education. As pointed out earlier, generating political support and offering technical assistance are functions that might be best performed by different individuals, and the advisory councils might be constituted accordingly.

Ohio community colleges use advisory councils, but the relationship of the councils to the programs they advise is not as close as in high school vocational sequences.

Each public community college is required by the Board of Regents to establish for each terminal curriculum an advisory council composed primarily of individuals working in the related occupational field. The councils meet twice a year to review the college curriculum, the teaching processes used, and evidence on the skills of the graduates. Most councils do not actually visit classrooms, laboratories, and shops and do not have direct contact with the faculty and students. The councils are reported to be somewhat effective in causing changes in school exit requirements and in the curriculums. In addition to the councils for each community college, there is a statewide advisory council for public community colleges representing labor, business, and educators.

It is clear that the advisory councils for community colleges are communications devices without power to mandate program changes and with

little opportunity to help operate programs. The opposite is true for high school vocational education advisory councils, although they cannot mandate their wishes directly but must move indirectly by influencing the local board of education, or refusing to supply work experience sites, or refusing to employ local high school graduates. Councils for high schools are positioned to have a symbiotic relationship with them, whereas councils for community colleges are not so well positioned. These differences perhaps account for high school councils being considered more effective.

We found four examples of the ways proprietary schools connect themselves to employers. What is striking about the examples is the simplicity and directness of the communications device and the ease with which data can be translated into program changes. The directness of communication between proprietary schools and employers--one might say the narrowness of that communication--reflects the fact that proprietary schools are training individuals for paid employment. They are not training them for unpaid careers, and they are not offering them a broad-gauged education. Their intentions are short term rather than long term. A program that guarantees students immediate jobs upon graduation is better than one that guarantees them agility in coping with a changing job market over a decade or two.

1. The Westside Institute of Technology in Cleveland thought there might be a need for training currently employed adult workers in instrumentation skills because of the rapid growth in the use of instruments to control production processes in local manufacturing plants. But before establishing the program, Westside surveyed Cleveland employers, asking whether they needed workers with such skills. Only when the employers reacted favorably did Westside offer the courses. At present, all students enrolled are full-time employees in Cleveland manufacturing plants.

2. The Northwestern Business School and Technical Center in Lima turned to local business and trade associations in 1972 when it needed help in designing a new automative repair curriculum. The faculty visited all new car dealers and automotive repair shops, asking for advice and inviting selected individuals to become members of the Northwestern advisory board. The businessmen gave advice on the school curriculum and facilities and have since made it standard practice to refer all prospective employees and current employees to Northwestern for training and upgrading. School exit requirements at Northwestern match job entry requirements in Lima automobile repair shops.

3. The Career Academy in Columbus employs both a medical doctor and a doctor of dental surgery not only to review the Academy's training programs for health paraprofessionals but also to offer appropriate courses upon occasion.

4. One proprietary postsecondary school in Cincinnati recently arranged a full-scale review of its paraprofessional training in banking by the Ohio Bankers Association to make certain that it was teaching all the things--and only the things--that bankers wanted their new employees to be able to do. The curriculum was modified as a result. Periodic reviews are planned for the future.

Communications Devices Combined with Program Linking Devices. Two professional schools at the Ohio State University offered rich examples of linkages that include both communications devices and program linking devices.

The College of Administrative Science has engaged during the past five years in a range of activities to link itself to various businesses and industries in Ohio. Those include (1) an annual faculty lunch with corporate recruiters to exchange ideas, (2) an annual banquet to honor the 25 top graduates of the college, (3) the appointment of a business adviser and counselor to work with the college, (4) the appointment of a businessman-in-residence to teach a course and counsel students, (5) faculty employment in business or industry for a quarter of the academic year, and (6) projects conducted by faculty and students to solve problems faced by individual companies. The college finances all programs except the annual banquet, which is paid for by cooperating companies. The pattern of activities is regarded as being somewhat effective in accomplishing its purposes.

The College of Journalism engages in a number of activities thought to be very effective in linking the college program to the realities of journalism as a profession. Three activities merit special mention: (1) a minimum of three faculty members meet for lunch with each company recruiter who visits the campus, not only to recommend students for employment but to get the recruiter's ideas about what skills employers want in their new workers; (2) every student spends a minimum of two academic quarters on the staff of the campus newspaper or radio station (or an equivalent assignment), operations that are so large that the work experience closely resembles what the student will find when he takes a job after graduation; (3) the college placement office not only helps students locate jobs but conducts follow-up studies to trace their success. The design of the college program and the relationships it maintains with employers come fairly close to being a "closed system" in which graduates become employers who hire future graduates and recommend students for the college.

Program Linking Devices. Every program linking device we identified in Ohio was a work experience program in which students left the school part time or full time for paid employment and received academic credit toward graduation for the time spent.

Work experience is scheduled at the end of terminal education programs to help the student make the transition from school to work. Because terminal occupational preparation programs are available in high schools, in community colleges, in four-year colleges, and in graduate institutions, work experience programs occur in all such institutions. Thus one high school student will be experiencing full-time paid employment as the vocational capstone to his general education in the same year that a medical school student will be experiencing full-time paid employment as the vocational capstone to his general education.

Work experience is a halfway house between school and work. It is employment at a work site under periodic supervision by school personnel. It is full-time work with academic credit. It is productive labor with learning as its purpose; it is learning with useful goods and services as its result. It is the ultimate integration of the education setting and the occupation setting. Thus it is the ultimate education-to-occupation linkage. This helps explain its venerable age: work experience has been

used as a combined teaching device, transition device, and productive device for thousands of years.

Below are some current examples from Ohio.

The Ohio State Council of Retail Merchants encourages its members to work through local associations and local Chambers of Commerce to cooperate with high school business education and distributive education teachers in arranging work stations for students in local retail stores. Most of the jobs available are for sales clerks. The council regards the work experience as very effective in giving students practical acquaintanceship with the realities of retailing.

The Occupational Work Awareness program enrolls about 7,000 14-15-year-olds in intensive work experience. Ohio child labor laws are waived so that students can take jobs. The program appeals particularly to students with extremely low academic interests and aptitudes. OWA coordinators must have had at least one year of full-time paid work experience in an occupation other than teaching in addition to having had classroom teaching experience. Training for coordinators is available in-service from Bowling Green, Kent State, and Ohio State universities.

Antioch College, Cincinnati Technical Institute, Cleveland State University, and the University of Cincinnati are only four of the Ohio two-year and four-year institutions that typically offer paid work experience as a significant part of their programs. Campus study is usually interspersed with work. The work may be either in fields related to a student's major academic concentration or in other fields that broaden his or her general base of experience.

It is customary for four-year colleges in Ohio to provide for an internship or practicum in the year prior to graduation in such professional fields as elementary and secondary teaching, public administration, social work, and so on. Students are placed in professional job sites under the periodic supervision of a college faculty member. The student first observes and then performs professional tasks. The experience is thought to be only somewhat effective, largely because the amount of time devoted to actual professional practice is limited, the experience comes late in the instructional program, and the work experience does not relate directly to campus courses taken before, during, or after the work experience.

The Career Dynamics Center at the University of Cincinnati is a central clearing house through which students in such professional schools as architecture, business administration, and engineering can obtain paid experience in their professional fields. The center is organized into two divisions: the Career Relations Division and the Professional Practice Division. The four full-time faculty members in the first provide guidance, counseling, and career information to students. (All students enrolling in the Cooperative Program must take at least one course in Early Career Planning.) The 10 full-time faculty members in the second division establish and maintain suitable work experience sites. They place students in jobs, review evaluation reports from employers, and meet with returning students for debriefing. The Cooperative Program dates from 1906. The program is said to be effective for students.

General Observations about Linkages in Ohio

We offer these general impressions about the linkages now in use and planned for the future in Ohio.

1. Cooperation among government agencies concerned with manpower supply and demand and with manpower training is evident.

2. The governor's concern for coordinated attempts to keep manpower supply and demand in balance is also evident.

3. The institutional accrediting boards created by the legislature are particularly effective in linking proprietary and highly specialized vocational training programs (such as nursing) to the requirements of the job market.

4. State-mandated linkages exert a strong influence on local practice.

5. Follow-up studies are not used for their full potential in feeding back data to institutional leaders to guide program modification.

6. Communications devices work better when the advice is directed to institutional leaders.

7. Communications devices work better when they are part of a larger machinery for translating their findings into program changes.

8. Some linkage systems are so well designed that it is possible to derive linkage principles by examining them closely.

9. Linking arrangements backed up by state authority seem particularly effective.

10. Proprietary schools are tightly, if narrowly, linked to job markets.

11. The advisory councils judged to be best in Ohio are those that not only give advice but actually execute that advice by helping operate the program.

12. Advisory councils for high school vocational programs have a symbiotic relationship with those programs which community college advisory councils lack.

13. Advisory councils for high school vocational programs help maintain a favorable political support environment for those programs at both local and state levels.

14. Many professional schools link themselves in one way or another to employers and try to provide their students with work experience. The experience is most effective when the work site is either hand-picked by the professional school or actually operated by the professional school, when it occupies a substantial portion of the student's program, when it begins early and parallels classroom instruction, and when it is closely related to classroom work.

15. Work experience is the ultimate education-to-occupation linkage inasmuch as it represents the ultimate integration of the education setting and the occupation setting.

16. Work experience is the most popular program linking device.

17. Advisory councils are the most popular communications device.

Chapter 4

SURVEY ANALYSIS AND INTERPRETATION

This section contains a somewhat more detached view of the state-by-state findings and the general observations reported in the previous section. Those findings and observations are here analyzed and interpreted and related to the conceptual framework for the study. The ideas presented in this section go beyond the survey findings, extending the thinking underlying the framework itself.

This section deals with four topics: (1) a mismatch between the focus of the survey and the way schools actually use linking devices, (2) institutional settings for linking devices, (3) a way of analyzing and profiling communications devices, and (4) a way of analyzing and profiling program linking devices.

Focus of Survey Did Not Match Focus of Schools

As explained earlier under "Survey of Current Linkages," the survey was designed on the assumption that links for institutions (point 7 in Chart 3) are addressed to the interface of the education system with the occupation system and are intended to adjust school exit requirements (point 3) to match job entry requirements (4). The findings did not bear out that assumption. Instead, the findings indicate that schools actually use communications devices to keep themselves informed about job entry requirements (4) and working conditions (5) in various occupations and then use program linking devices, which arrange the elements of the school (2) to resemble working conditions (5).

This pattern leads us to make two observations:

1. Schools bypass the problem of specifying school exit requirements in terms of what knowledge, skills, attitudes, and values graduates would need to have in order to enter jobs and succeed in them.

2. Instead, schools adopt some or all of the characteristics of the workplace as their means for producing the unspecified knowledge, skills, attitudes, and values.

School Exit Requirements Not Expressed As What Graduates Must Know, Do, and Feel. Schools do not customarily specify in any detail the knowledge, skills, attitudes, and values their students must have in order to graduate. Such attributes are usually described only in general terms, are hoped for rather than necessarily expected, and are intended rather than guaranteed. Graduation requirements are usually expressed instead in terms of the experiences students must undergo while they are in the institution--how long they must stay, what courses they must take, and so on. The merits and shortcomings of this choice have been fully and ardently debated by the advocates

and opponents of "performance-based" education.

Of course, the knowledge and skills and attitudes and values students possess are measured by their teachers in course after course, time and time again throughout their school careers. Nevertheless, most institutions do not require students to pass a comprehensive final examination or otherwise demonstrate that they can perform as intended before being given a certificate of graduation. Comprehensive examinations are more likely to be required for admission to school than for exit from school.

It has been widely observed that diplomas and degrees certify what students have experienced rather than what they have learned. It is true that some of the most interesting experimentation currently under way in schools and colleges takes the form of performance-based instruction and credit by examination rather than credit by experience. Nevertheless, even these experiments--there are many of them--are usually addressed to small segments of instruction such as a single course or a course segment. There are few if any performance-based curriculums extending over several years and requiring students to demonstrate a comprehensive performance as a condition of graduation. Moreover, we found that even when school personnel do make precise studies of job skill requirements, they are less likely to convert them into final examinations--reasonable though such a conversion would be--than they are to convert them into new instructional experiences and materials. That is, even when they begin with a good description of entry behaviors needed for the work place, they are less likely to match it with a good description of exit behaviors needed for the learning place than they are to write a description of how the school should operate to produce those (sometimes poorly specified) exit behaviors.

The same point can be expressed in different terms: schools seek and receive tax revenues, tuition income, and philanthropic gifts with the understanding that they will provide students with learning experiences, not with the understanding that they will guarantee learning as a result.

It should not be surprising that schools do not take what they learn about job entry requirements and convert them into matching graduation requirements. Even proprietary schools, many of which are proud rather than apologetic about the fact their instruction is not intended to be broadly educative but is instead focused directly on job entry requirements, do not either guarantee students that they will meet those requirements upon graduation or withhold graduation certificates from students who cannot meet them.

The fact that communications devices are used to collect information not only about job entry requirements but about general working conditions in the occupation system is yet another indication that schools need something more than a knowledge of job entry requirements. One reason for that--perhaps the main reason--is given below.

Making the School Place Resemble the Work Place. Once the schools have learned about job entry requirements and working conditions through communications devices, why do they so often try to prepare students for getting and keeping jobs by changing the elements of the school to resemble the elements of the work place? (The specific ways in which the elements

of the education system can be made to match the elements of the occupation system are explained and illustrated later.) We found so many cases in which schools offered job preparation by surrounding the student with the circumstances of the work place that the reasons--whatever they are--must be universal and compelling. While we do not know with any certainty what those reasons are, we offer the following alternative explanations.

1. Since school exit requirements are not clearly specified, designers of instructional programs do not have a clear target at which to aim. Beginning with unclear ends, they are unable to design clear means. They must instead adopt means that seem likely to produce those ends, even though the match cannot be precise.

2. Schools do not have a reliable set of means for producing learning. They do not know with certainty what instructional techniques will produce what results. Among the many techniques they use, one seems to work about as well as another. The uncertain relation between means and ends in education creates circumstances in which it does not help schools to have a precise definition of ends--they would not know exactly how to reach those ends.

3. Schools are reluctant to convert job entry requirements into school exit requirements for fear that such a tight match will lead to an undesirably narrow school program which, though it may produce employable graduates in the short run, will produce unemployable graduates in the long run as occupational characteristics and working conditions change.

4. Schools reason that since experience is, after all, the best teacher there is no better preparation for the student than to give him experience in what he must eventually do. Thus they arrange experience in the work place--or some simulation of it--as the best preparation for work as a career.

5. The standard structural components of the school environment are quite difficult to change, for a variety of reasons. The personnel and the methods and the materials and the facilities and the time for instruction are difficult to change--each one of them separately and certainly all of them together. By placing the student in the work place for at least part of his instruction, the school accomplishes a radical transformation of the instructional environment without having to change any of its structural components.

Institutional Settings for Communications Devices and Program Linking Devices

This part of the report supplies a way of classifying communications devices and program linking devices according to the institutional settings in which they appear. Inasmuch as the survey found that every type of institution preparing at least some of its students for immediate employment upon graduation used both communications devices and program linking devices, the following discussion emphasizes the reasons various types of institutions have for wanting to build better education-to-occupation linkages.

Communications devices are sponsored by and located in three distinct settings: educational institutions, independent institutions, and occupational

institutions. The term "independent institutions" deserves a special explanation. It was adopted in the conceptual framework to accommodate the large class of links for individuals that are located neither in schools nor in places of employment. Such an "independent" category is needed to contain the great number and variety of government-run employment services such as those operated by the U.S. Department of Labor and the similar number and variety of commercial employment agencies. These organizations are highly significant links for students. The use of the term "independent" is admittedly inconvenient when used to describe government-operated communications devices, inasmuch as virtually every such device found in the survey was being operated by a government agency (usually state but occasionally county) that was not "independent" of the institutions served by the device but had legal and financial power to control those institutions. Nevertheless, the term "independent" has been retained in the following discussion because of its value in classifying links for students, even though they were not included in this investigation. One additional point should be noted here: program linking devices in contrast to communications devices are located only in educational institutions, since program linking devices are by definition "an arrangement in the elements of an educational institution to enable graduates to meet job entry requirements . . ." The remaining discussion applies exclusively to such devices.

Program linking devices are used to connect several types of educational institutions to occupational settings: public institutions, private institutions, and proprietary institutions.

Finally, program linking devices are used to connect different levels of educational institutions to occupational settings. The levels used in the following discussion are: secondary, postsecondary undergraduate, and postsecondary graduate.

The following discussion deals with some of the reasons for the relationships between particular settings and particular linking arrangements.

Institutional Sponsors of Linking Devices. The sponsors of devices for connecting schools to employers are (1) educational institutions, (2) independent institutions (neither educational nor occupational), and (3) occupational institutions. The device tends to be located in the setting in which it was initiated or by which it is sponsored or from which it draws its financial support. It is evident from the survey that school officials, officials in other (independent) agencies and organizations, and employers all have an interest in creating and maintaining linking devices.

Educational institutions as sponsors. Officials in secondary and postsecondary educational institutions must take an interest in how their graduates will perform in their occupations because sooner or later the way the graduates perform will influence the support environment for their institutions. There are immediate effects and there are ultimate effects. There are actions by those who employ the alumni and there are actions by the alumni themselves. Employers' political activity on behalf of financial support for public institutions tends to be influenced

by the employers' experiences with the graduates of those institutions; employers' gifts to private institutions tend to be influenced by their experience with the graduates of those institutions; employers' willingness to advise and cooperate with proprietary institutions tends to be influenced by their experience with the graduates of those institutions. Similarly, alumni political activity on behalf of financial support for public institutions, alumni gifts to private institutions, and alumni willingness to help recruit students for proprietary institutions are but three examples of how alumni's satisfaction with their own job performance after graduation affects what they will do on behalf of their alma maters. Thus school officials are motivated to create and maintain linking devices.

Independent institutions as sponsors: The "independent" agencies that are most likely to have an interest in the relations between the education system and the occupation system are the agencies of government.

Agencies at federal, state, and local levels have a very strong interest in the operations of the education system (public, private, and proprietary) and the operations of the occupation system and in the mutual-support arrangements used by the two. There are many reasons for this. One is that education is a responsibility of state governments under all state constitutions. Another is that most educational institutions are financed by federal, state, and local governments. Another is that the occupation system supplies an appreciable proportion of government revenue through tax collections. Federal, state, and local governments depend upon these revenues to support education and other functions. Another is that government agencies recognize the symbiotic relationships that must exist between education and employment if schools are to be useful and companies are to be effective. Another is that private employers exert considerable pressure on the government to create and maintain good linkages between schools and employers. Another is that the government itself is a major employer. For all these reasons and for others as well, government agencies are likely to initiate and sponsor linking devices.

Occupational institutions as sponsors: Employers have many reasons for wanting strong education-to-occupation linkages. One is that if their entering workers are well trained, the employers will not have to spend money training them. Another is that if the workers are well motivated, they will be productive and make the company profitable. Another is that if they have already learned to operate the kinds of production equipment used by the company, and if they have already learned how to process the kinds of materials processed by the company, there will be less breakage and less waste. Another is that if they are already familiar with and sympathetic to the company's need to make profit in order to pay stockholders' dividends and have capital for reinvestments, they will be more reasonable in making wage and salary demands.

But beyond employers' specific concerns with the abilities of the beginning workers they employ, they must be interested in the external support environment for their institutions. They are concerned that the public and government officials--legislative, administrative, and judicial--pursue the public policies necessary for a good business environment. These include nonconfiscatory taxation, nonoppressive restrictions on competition and growth, nonburdensome requirements for record-keeping and data, reasonable protection from foreign competition, government-protected exclusive rights to company inventions, and so on.

What students are taught in schools has a great deal to do with the kinds of workers employers will be able to recruit and the kind of business climate the public in general and the government in particular will create. Thus employers are motivated to create and sponsor linking devices.

Types of Educational Institutions Being Linked. Program linking devices exist in three types of institutions: (1) public, (2) private, and (3) proprietary. As suggested earlier, officials in all three types of institutions must take an interest in how their graduates perform in their occupations after graduation because sooner or later the way the graduates perform will influence the support environment for all three kinds of institutions. This is reason enough for school officials to link their institutions to the occupation system, apart from other reasons they may have, such as the fact that they may have advertised themselves specifically as occupational preparation institutions.

Public institutions: Public educational institutions must come to terms with the fact that occupational preparation is a major objective for their parents and students. Occupational preparation has been a major purpose of public education for the two centuries of the nation's existence. It has been used again and again as a justification for expanding public education. It was used in the 1860s to justify the establishment of the land grant college system; it was used in the decade after 1910 to justify federal financial subsidies of secondary school vocational education; it was used in the 1940s to justify federal subsidies of educational benefits for returning veterans; it was used in the 1960s to justify public support of adult worker retraining as a means of reducing unemployment.

One indication of the current significance of occupational preparation as an objective of public education lies in the fact that of all the degrees granted in 1974 by the 19 campuses of the California State University system, 60 percent of the bachelor's degrees were in occupational fields such as business administration, education, and engineering, while 80 percent of the Master's Degrees were in such occupational fields.

Private institutions: Private educational institutions win support from their clients by claiming that their programs are superior to those of the public schools. The ultimate test of those claims of superiority lies in the performance of private school graduates either during their later stages of schooling or during their performance after graduation. Successful performance in paid employment is one way for private school graduates to demonstrate the superiority of their private education. Consequently, the job performance of their graduates is a natural concern to private school officials. While many private schools specialize in offering a superior general education program--either as preparation for the next level of general education or as preparation for unpaid career areas or as an underpinning for specific vocational training at the postsecondary graduate school level--some private institutions offer superior occupational preparation. The latter are especially likely to take steps to link themselves to places of employment as a way of assuring that their programs will be current and their graduates will be employable.

Proprietary institutions: Proprietary institutions often operate specifically for the purpose of preparing graduates for immediate

employment. Such institutions tend to be sensitive to the manpower market if not actually controlled by it. Their survival depends directly on their success in placing their graduates in the fields for which they have been trained. Any discrepancy between the exit requirements of these institutions and the entry requirements of employers can be regarded as superfluous and, worse, as cutting into profit margins by spending staff time teaching skills that employers do not require.

Because proprietary institutions frequently offer very short training sequences lasting a few weeks or a few months, the feedback loops through which they get information about manpower market conditions and about the employability of their graduates are quite short. They need not--and indeed must not--wait several years before determining whether their exit requirements match employers' job entry requirements. The devices they use to link themselves to employers can be understood as intended to create and maintain a near-perfect match between the two sets of requirements.

Levels of Educational Institutions Being Linked. We sought and found linking devices for three levels of institutions: (1) secondary, (2) postsecondary undergraduate, and (3) postsecondary graduate. Because institutions at each of these three levels prepare students for direct entry into occupations, officials in all three types of institutions must be concerned about how those graduates perform in their jobs. This is, of course, especially true for institutions that are wholly engaged in vocational preparation and have no other reason for existence. This is the case for certain secondary institutions, certain postsecondary undergraduate institutions, and certain postsecondary graduate institutions. Officials in such institutions can be expected to use initiative in creating and maintaining connections with employers.

Secondary institutions: Some 40 percent of the graduates of all secondary institutions do not pursue further education. Most of these graduates enter immediate employment. This has always been true for males; it is increasingly true for females.

Secondary schools respond to the occupational objectives of this large minority of their graduates by offering various forms of training for those occupational fields in which entry-level jobs are available for high school graduates. The schools use a number of arrangements for keeping their training programs attuned to manpower market requirements.

Postsecondary undergraduate institutions: A majority of college and university undergraduate programs prepare students with some vocational specialty. The case of the California State University and Colleges system was cited earlier as evidence that most undergraduate degrees are being granted in occupational fields today. If the trends in California higher education have as much predictive value in the future as they have had in the past, undergraduate programs across the nation are likely to remain heavily vocational in their objectives.

Traditionally, two-year postsecondary undergraduate institutions have, quite understandably, made their terminal curriculums specifically . . vocational. In contrast, four-year postsecondary undergraduate institutions

have tended to reserve specific occupational training for the third and fourth years, reserving the first two years for general education. However, there has been a trend over the past decade toward offering specific occupational training and/or field experiences at an earlier point in the four-year sequence in such institutions. Whenever a postsecondary undergraduate institution begins specific occupational preparation, it becomes interested in ways of connecting what is happening on campus with what is happening in the occupational system outside.

Postsecondary Graduate Institutions: Graduate schools have occupational preparation as their primary objective. One reason for this, of course, is that they are the terminal point in the schooling of even the best-educated people in the society. Most students enter paid employment upon graduation; thus they expect specific occupational preparation before they graduate. Even the graduate programs that may not appear upon first inspection to be vocational in nature--such as those in philosophy, for example--are actually preparing some of their graduates for paid employment in college and university careers as teachers and researchers.

Accordingly, it is not at all surprising to find that postsecondary graduate institutions show an interest in arrangements for connecting themselves to places of employment. Of course, the people who design and operate graduate programs are already thoroughly familiar with conditions of employment in one of the major kinds of institutions in which their graduates will find jobs: that is, in colleges and universities themselves.

Communications Devices

This part of the report supplies a way of analyzing and profiling the kinds of communications devices we found in the four states. It can also be used to generate new devices.

A communications device was defined earlier as a "mechanism, process, or product employed by the education system to determine job entry requirements and working conditions in the occupation system."

There may be two factors that determine the probability that a communications device will have an impact on the educational institution using it: (1) the persuasiveness of the information supplied by the device and (2) the level of authority associated with the device. Neither the design of this survey nor the data collected are adequate to confirm this supposition. However, there is sufficient evidence for it to justify a more systematic investigation.

Persuasiveness of Information Supplied by Communications Devices. The information supplied by a communications device can be differentiated both by the source from which it comes and the medium by which it is transmitted.

Source of transmission: The credibility and persuasiveness of information can range from low to high depending upon its source. We did not try to establish the relationship between source and persuasiveness, but the following scheme is one reasonable formulation.

Low: Information about job entry requirements and working conditions supplied by individuals who have not been recently employed in the occupational fields they are describing is likely to be of little if any influence.

Medium: Similar information supplied by currently employed workers or by their supervisors and administrators is likely to be more influential.

High: Information supplied by labor specialists on the basis of carefully designed field surveys conducted in a cross section of working sites is likely to be highly persuasive.

Medium of transmission: As in the relation between sources and persuasiveness, we did not attempt to establish the relationship between the medium of transmission and the persuasiveness of the information communicated. However, there was sufficient evidence to suggest that the information below has enough merit to warrant further investigation.

Low: Information transmitted through print and even through discussion with others may have little persuasive power (unless the source of the information is highly respected). Most of the manpower supply and demand information transmitted to schools comes in those forms, which may help explain why school faculties seem to be relatively unresponsive to it.

Medium: Direct personal observation is a more persuasive way of getting information than receiving it from secondary sources. Thus trips to job sites can influence faculty opinion.

High: What a person learns through his own experience is most likely to influence his perceptions and his behavior. There is little doubt that actual work experience has more persuasive power for school faculties than other ways of learning about working conditions.

Level of Authority Associated with Communications Device. The success of the communications device will be conditioned by the amount of authority--administrative, legal, economic, political, or whatever--associated with it. Since the device may be sponsored either by the institution itself or by outside institutions and since there are identifiable levels of authority in each, both internal and external authority appear to be influential.

Internal: The likelihood that the communications device will achieve its purpose will be increased if the insiders associated with it have sufficient authority of one kind or another to make the school respond. We did not try to establish the relationship between internal authority and the impact of the linking device on the school, but the following formulation seems reasonable.

Low: Communications devices operated by or connected to staff members with low authority in the institution are likely to be relatively uninfluential. For example, given the low institutional authority of most school guidance counselors, the devices they employ are not likely to have a major effect on the instructional program of the institution.

Medium: Faculty members who teach courses are fairly well situated

to modify those courses to bring about a better match between the skills of graduates and the skills wanted by employers. For this reason, their participation in communications devices can be expected to give those devices some power to influence the school.

High: Although authority patterns differ considerably between secondary and postsecondary institutions, the persons charged with administrative authority in any institution exert considerable influence. This appears to be particularly true in an occupational preparation program because the administrator is well situated to hear, translate, and champion the views of significant outside figures such as employers. Thus a communications device operated by or directly connected to administrators is likely to be highly influential.

External: If the authority of the external agency or group or individual associated with the communications device is high, the school is more likely to take the information seriously and do something about it. We did not attempt to establish a precise relationship between external authority and the influence of the device, but it was quite apparent that a device operated by outsiders in possession of high authority tended to produce the effect intended by that device.

Low: Communications devices that transmit information from low-authority external sources are not destined to have much influence on the school, because those sources can supply no rewards and exact no penalties for failure to use the information provided.

Medium: Some communications devices have external participants who, while they lack direct authority over the school program, can nevertheless exert influence because they are positioned to supply indirect rewards or apply indirect penalties over the long term. Employers are such a group. (In the case of proprietary schools, employers have a great deal of economic authority, which they can apply immediately and decisively.) Generally speaking, advisory councils seem to operate in the middle range of authority; while they cannot dictate how school programs will respond to their advice, neither can they be completely ignored.

High: Communications devices operated by external government agencies to which the school is ultimately responsible have a decisive effect on local programs.

Program Linking Devices

This part of the report supplies a way of analyzing and profiling the kinds of program linking devices we found in the four states. It can also be used to generate new devices.

A program linking device was defined earlier as "an arrangement in the elements of the educational institution to enable graduates to meet job entry requirements and to find success in the working conditions of an occupational system." The elements of an educational institution were defined for the purposes of this survey as the 10 identifiable components of a process by which (1) someone (2) for a purpose (3) deals with someone else (4) at a place (5) at a time (6) using a method and (7) equipment and

materials and (8) evaluates the outcomes (9) against criteria and (10) provides rewards. More specifically, the elements are the components by which (1) a teacher (2) in order to produce learning (3) instructs a student (4) at a school site (5) before work begins (6) using the method of instruction by the teacher accompanied by study by the student (7) using instructional equipment and materials and (8) evaluates the student's performance by using his or her judgment (9) in comparing it to the performance of other students and (10) provides rewards in the form of grades and graduation from school for the student. The 10 elements are listed in Figure 4.

If education is being used to prepare a student for a work career, then the specific purpose of education--element (2) in the definition--is to equip the student with the ability to produce goods and services. Education is not intended to produce goods and services, but rather to develop the ability to produce such goods and services.

A matching analysis of an occupational institution appears next.

The elements of an occupational institution were defined for the purposes of this survey as the 10 identifiable components of a process by which (1) someone (2) for a purpose (3) deals with someone else (4) at a place (5) at a time (6) using a method and (7) equipment and materials and (8) evaluates the outcomes (9) against criteria and (10) provides rewards. More specifically, work is a process by which (1) a supervisor (2) in order to produce goods and services (3) supervises a worker (4) at a work site (5) after school ends (6) using the method of supervision by the supervisor and labor by the worker (7) using production equipment and materials and (8) evaluates the worker's performance using his or her judgment (9) of the social utility to users of what the worker has produced and (10) provides economic benefits to the worker.

It is evident that in their most general form, the elements of education and work are identical.

Integrating Education and Work. Figure 5 displays the matched elements. It illustrates the condition that exists when the environment for learning and the environment for working are not separated. It is the condition of perfect integration. That condition has many precedents in history.

In very simple societies in which education is not conducted in separate institutions, the adults engaged in any career area--i.e., work, leisure, family, citizenship, health, ethics, or esthetics--educate beginners as they induct them into the activities of that particular career area. A beginner gains the ability to carry out an activity by engaging in it under the supervision of a person who already knows how to do it.

For example, in a very simple society learning to work and working are almost indistinguishable. They are guided by the same people for the same purposes and are performed by the same people at the same place and at the same time; the methods and the equipment and materials

Figure 4. The Ten Elements of Education and Work

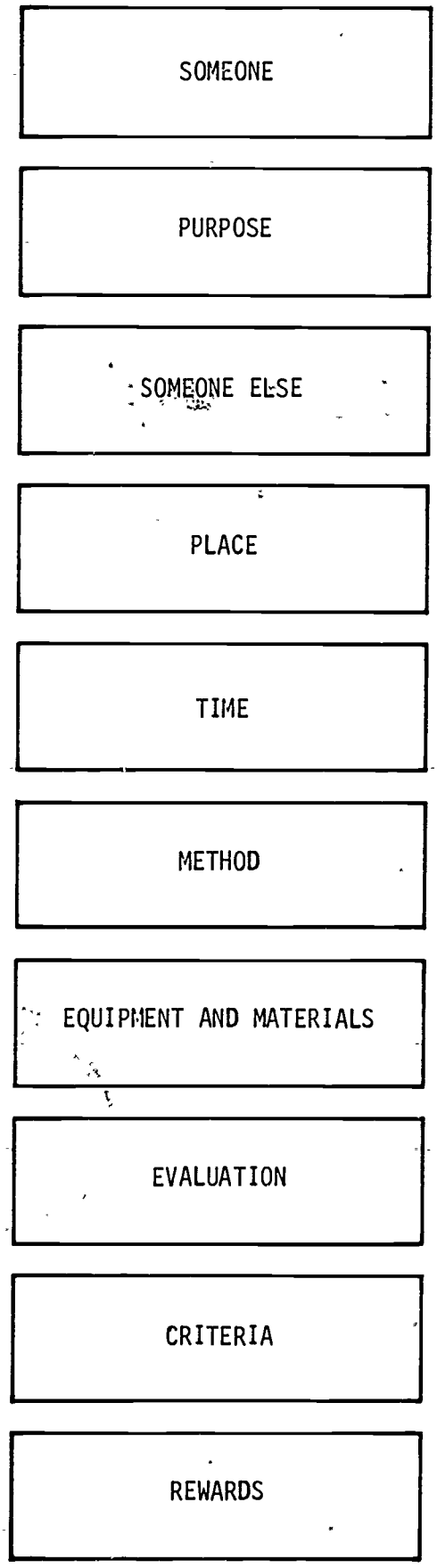
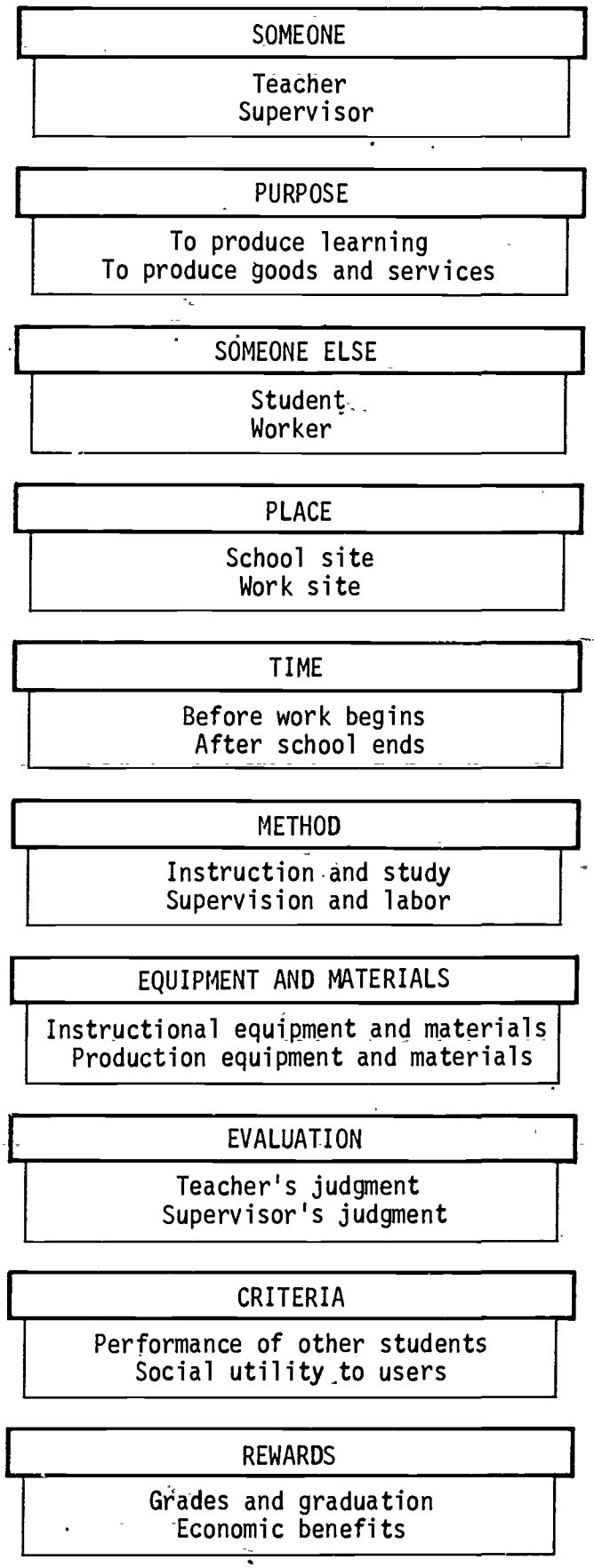


Figure 5. The Integration of Education and Work



used to accomplish them are the same; they are judged and rewarded in the same way.

That is, the teacher and the supervisor are the same person; learning to work and doing the work have the same purposes and the same outcomes (greater skills for the worker and useful goods and services for others); the student and the beginning worker are the same person; the place for learning and the place for working are identical; the time for learning and the time for working are identical; the methods used to produce learning are the same as those used to produce goods and services (namely, having the student/worker do the job while guided by the teacher/supervisor); the equipment and materials used for teaching and the equipment and materials used for producing goods and services are identical; the teacher/supervisor judges both successful learning and successful working; the criteria of successful learning and successful working are identical (social utility to the users); and the rewards for successful learning and successful working are identical (personal satisfaction and/or social recognition plus economic benefits).

There are many advantages to integrating the two activities. One is that the teacher stays in touch with job requirements since he is actually carrying out the job every day. Another is that the functions of learning and production are mutually supportive: learning effectively increases production and producing effectively increases learning. Another is that the student has no difficulty imagining what it will be like to be a worker since he already is one; he has no difficulty in understanding the relationship between what he is taught and what he needs to do the job since that relationship is obvious. The place and time of learning and working are conveniently combined. Instruction and supervision are simultaneous as are study and labor; moreover, each activity reinforces the other. The equipment and materials used for instruction are always completely up to date. The student's performance and the worker's performance are judged simultaneously (since they are identical) by the teacher and supervisor (since they are identical). The criteria of performance relative to other students and the utility of the product to other people are applied at the same time. Symbolic rewards are not necessary; the real rewards of personal satisfaction and/or social recognition plus economic benefits are available immediately.

Of course, there are many disadvantages to integrating the two activities. Teachers cannot be specifically trained for their work as teachers; teaching beginners will slow production while maintaining production will slow learning; the beginner will not be a fully productive worker; the work place may be noisy, dirty, dangerous, and inconvenient for learning; the time allowed for instruction may not be sufficient; a good worker may be a poor teacher; equipment and materials may not be sufficiently scaled down, simplified, or separable for effective study; supervisors may make unfair evaluations because of limited experience with comparable students; the rewards of producing goods and services alone may not be available to the beginning worker. Moreover, the student may learn an extremely narrow set of highly specific job skills that may soon grow obsolete; he may not get the broader education that would prepare him for other occupations; he may not get any guidance in occupational choices.

Separating Education and Work. Figure 6 illustrates the condition that exists when the environment for learning and the environment for work are completely separated, as is the norm in our society today.

In a complex society like ours, many social functions are differentiated, there is a division of labor, and special institutions are created. Preparation for activities in any career area--i.e., work, leisure, family, citizenship, health, ethics, or esthetics--is distinguished from actually engaging in those activities.

For example, in our society the function of education has been differentiated from other social functions, teachers are a distinguishable group of workers, and education is conducted in special institutions.

That is, the teacher and the supervisor are not the same person; the school setting does not have the same purpose as the work setting; the student and the beginning worker are often separated by differences in age; the place established for learning is quite different in almost every respect from the place established for working; the time for learning may precede the time for working by months or years; the methods used at the school are quite different from the methods used at the place of work; the equipment and materials used are seldom the same; judgments of performance are rendered by quite different kinds of judges using quite different criteria and supplying quite different rewards.

There are many social and economic advantages to conducting education in separate institutions. The reasons include convenience, efficiency, economy, and child safety among others. Teachers are specifically trained for their work as teachers; the purpose of the institution is clearly designated as producing learning; people specialize in being students; a special place is created, convenient for teachers and safe for students, ample time is set aside for giving instruction; teachers develop and use special methods of instruction; teachers develop and use special equipment and materials designed specifically to give instruction; teachers judge students' learning by comparing them to other students of comparable age and ability; special rewards in the form of grades and graduation to the next level of schooling are given to students and there are no economic penalties for poor performance.

Of course, there are many disadvantages to separating the two activities. One is that teachers may lose touch with job requirements since they do not do them regularly, in fact may not have done them for some years, and indeed may never have done them at all. Another is that the relationship between learning to produce goods and services and actually producing them cannot be convincingly demonstrated. Another is that students may have difficulty imagining what work settings will be like since they have not experienced them. They may not see the connection between what they are learning and what they will need at work. The school place is so different from the work place that it is scarcely possible to simulate the realities of work life. The separation of learning time from work time means that students lose the efficiency of learning by on-the-job experience and must wait months or years for the economic benefits of working. Another is that the methods of instruction used by

Figure 6. The Separation of Education and Work

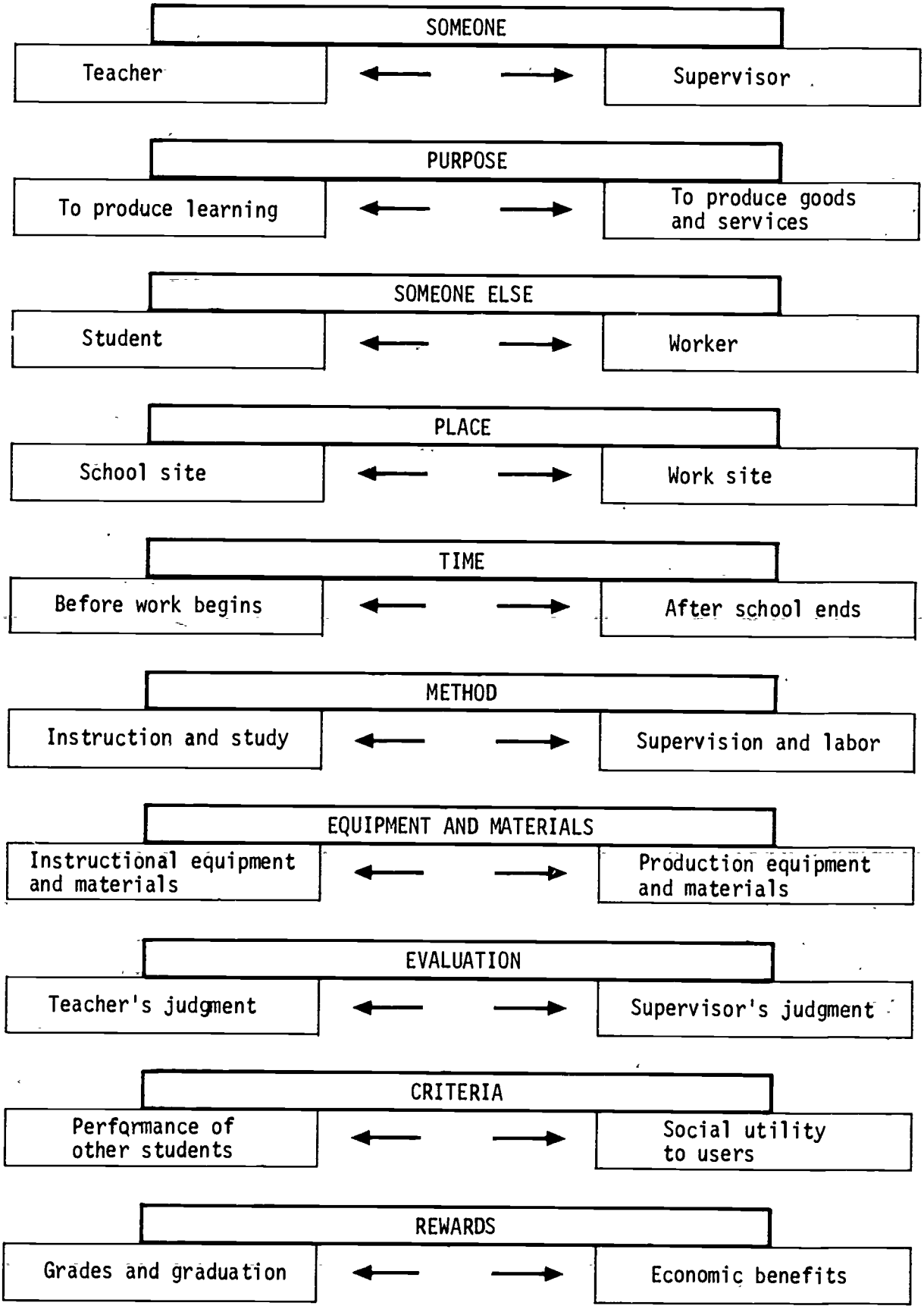
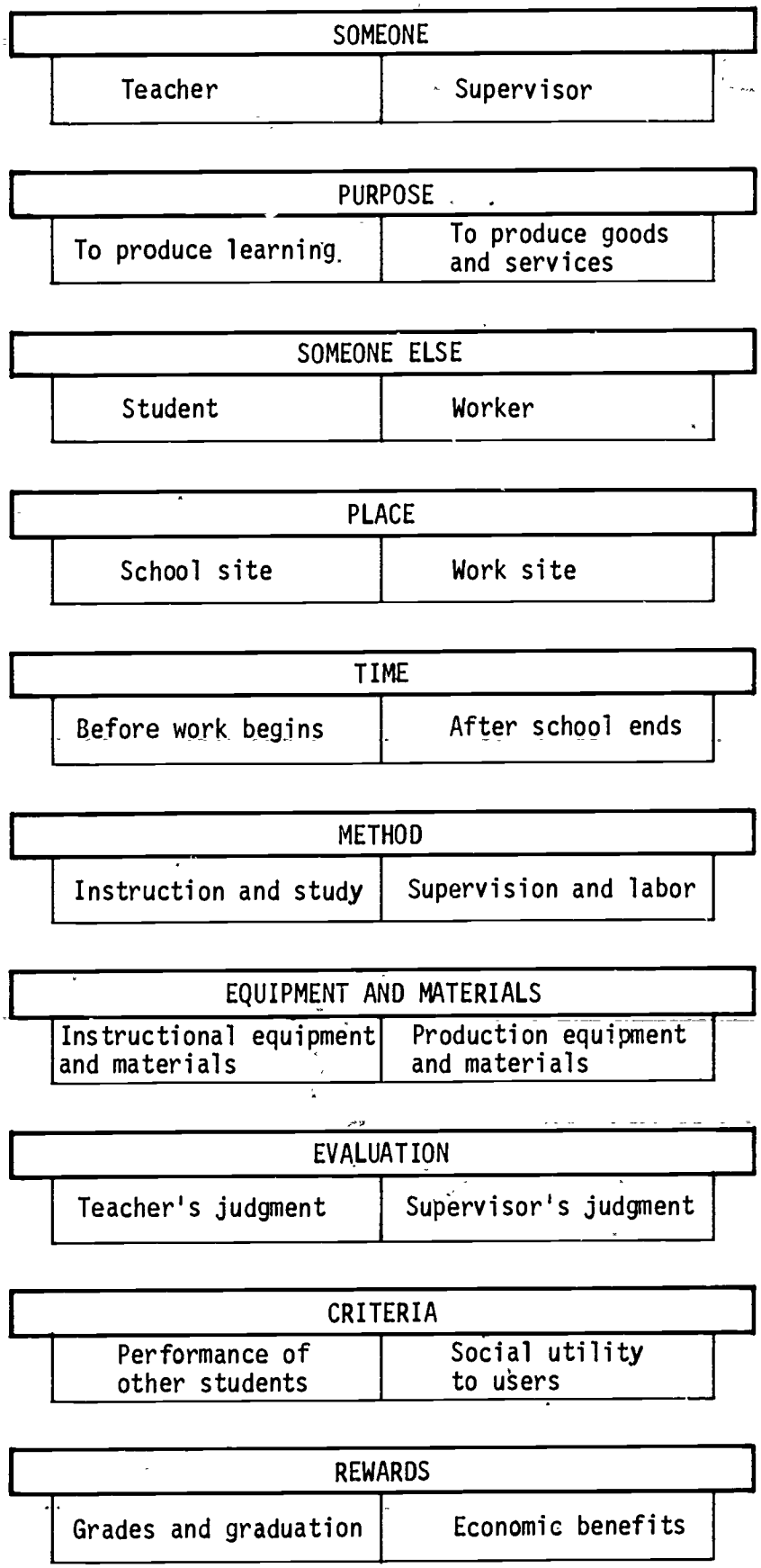


Figure 7. The Linking of Education and Work



teachers do not even approximate the methods of supervision used by supervisors; the same is true for the relationship between studying and actually producing goods and services. The school equipment and materials may be quite different from those used by employers. The judgments to which students are subject by teachers may deviate considerably from the judgments to which they will be subject by their supervisors at work. Students' performance is judged against criteria that may have little to do with the way their actual job performance will be judged. Finally, students must settle for partial and/or symbolic rewards since the customary rewards of personal satisfaction plus social recognition plus economic benefits for producing useful goods and services cannot all be theirs.

Linking Education and Work. Figure 7 illustrates the condition that exists when the environment for learning and the environment for work are linked. The condition shown is neither complete integration nor complete separation.

It is possible that if the education system and the occupation system can be properly linked, the advantages of a fully integrated system and fully separated system can be accomplished while at the same time avoiding the disadvantages of full integration and full separation.

The program linking devices we found during our survey can be understood as attempts to bring together the 10 identified elements of the education setting with the 10 identified elements of the occupation setting. It became clear during the survey that the educational setting could be linked to the occupation setting by creating a one-element linkage or by creating a multiple-element linkage ranging from two elements to 10 elements. The number of institutional elements involved in the linkage arrangement helps determine the extent to which the education environment and the occupation environment become similar. The extent of similarity is also determined by the degree to which each separate link is designed to make the elements of the two environments identical. The stages of linkage range from perfect separation of the two settings (no elements linked) to perfect integration (10 elements linked). The intermediate stages include those in which one or more elements of the environments are linked to a greater or lesser degree.

Number of elements linked: It is possible to bring together the place at which education and work occur (that is, to conduct education in work sites) or to bring together the equipment and materials used for instruction and used for work (as by using company production equipment to train students) or by bringing together both the place and the equipment and materials and, if desirable, the time and the methods and so on, linking element after element of the education setting and the occupation setting to achieve whatever stage of linkage thought desirable. If all 10 elements were to be linked, the linkage would presumably then be perfect.

Degree of linkage for each element: For any given element of the education setting and the occupation setting, various degrees of linkage can be achieved. Those degrees can be represented by words such as separation, communication, participation, substitution, and integration.

No one set of terms will suffice to label the points along the continuum from perfect separation to perfect integration for each element. This particular set is useful for envisioning the degree of linkage possible for the persons acting as teachers in the education setting and supervisors in the occupation setting. Imagine the teacher moving toward the supervisor. There may be a condition of complete separation. There may be a condition of communication in which the teacher is aware of the supervisor's daily activities and what these imply for the future worker being trained by the teacher. There may be a condition of participation, in which the teacher works jointly with the supervisor from time to time to deepen his familiarity with the work setting. There may be a condition of substitution, in which the teacher actually replaces the supervisor and does his or her job for a period of time. Finally, there may be a condition of integration, in which the teacher and the supervisor are one and the same person.

In the same fashion, there are such stepwise degrees of linkage for the purpose of the two settings, for the "someone else" (student or worker) of the two settings, for the place, for the time, and so on.

Linkage as a continuum: It should be evident even from this brief discussion that many stages of linkage are possible, depending upon the particular configuration of elements linked and on the exact degree of linkage accomplished for each one. The diversity of links we found in this survey and the patterns in which they are used suggest that the possibilities are numerous indeed.

Chapter 5

ALTERNATIVE LINKAGE APPROACHES

"The important goal of education is process--the art of learning, the art of coping...." (College President)

"Parents, particularly minority parents, and legislatures are increasingly asking that schools--and soon, colleges--specify student outcomes. They want to know what the products of the system will be." (Minority Affairs Officer)

These two seemingly contradictory statements synthesize and exemplify the views and impressions of both project advisers and survey participants. Some, indeed the majority, see linking mechanisms as those devices that bring together more closely the processes of education and work. For example, work experience programs in one form or another are commonplace. And individuals from industry are being invited into classrooms and onto campuses to tell students about the world of work. Some communities have even established community resource banks that are filled with names of businessmen, labor leaders, governmental officials and the like who are willing to participate in school programs.

Only a few individuals with whom we talked focused on outcomes. These few identified linking mechanisms that address the interface between the education system and the occupation system and are designed to align education exit requirements and occupation entry requirements. Examples of those we did find include efforts to develop competency statements and measures for educational programs that will reflect more accurately the performance and task requirements for various occupations. State boards of the professions in some instances attempt to specify graduation requirements in terms that match occupational entry requirements, but for the most part they specify educational program characteristics, such as 30 hours of clinical work, three courses in drafting, or one semester of student teaching. The situation we found led us to the two observations made at the beginning of Chapter 4:

1. Schools and colleges bypass the problem of specifying exit requirements in terms of what knowledges, skills, attitudes, and values graduates would need to have in order to enter jobs and succeed in them.

2. Instead, schools and colleges adopt some or all of the characteristics of the workplace as their means for producing the unspecified knowledges, skills, attitudes, and values.

As we analyze the current situation in terms of needed linkages, we are convinced that alignment of requirements, though exceedingly difficult to bring about, offers the greatest long-term promise for smooth transition from education to occupation.

TWO LINKING APPROACHES

In this chapter we describe, analyze, and functionalize these two con-

ceptually distinct approaches to bringing the worlds of education and work closer together. The first approach is labeled PROCESS-INTENSIVE because its primary emphasis is on the processes of education and work and concentrates on developing ways that individuals in the education sector can participate more fully and more satisfactorily in the work sector. The second approach is labeled REQUIREMENTS-INTENSIVE because its primary emphasis is on the outcomes of the educational process and concentrates on developing ways to change education exit requirements (or characteristics), if necessary, to match more closely with work entry requirements, and vice versa. Figures 8 and 9 display the two approaches.

Process-Intensive Approach

Figure 8 shows that the process-intensive mechanism concentrates primarily on the school/college process and the work process. In this study our primary interest was in mechanisms that focus on making the educational process more like the work process, rather than on those that seek to make the work process similar to the educational process. In some instances a single mechanism might conduct activities that lead to modifications in both sectors. One example is a local industry-education council that has a "20-20 Club," the program of which consists of monthly luncheons with 20 school officials and 20 business leaders. The agenda is open, but the results indicate that each learns something from the other and seeks to incorporate that knowledge into the operation they supervise.

The solid lines outlining Education Process and Work Process indicate the important elements in the process-intensive approach to linkage. In this approach the respective sets of entry and exit requirements are of minor concern as indicated by the dotted lines, and changes occur indirectly. For example, if significant numbers of students participate in work internship programs, graduation requirements will soon be reflective of this trend, as will work entry requirements. Schools and colleges may well begin to look for ways to credit such programs (and measure their effectiveness and legitimate educational experiences), and the business world may begin to add to their job requirements such statements as "must have one year of hands-on experiences in retail merchandising" or "must have 30 hours of actual legislative staff experience." Such statements long have been a part of the requirements for certain professions, but the practice may spread.

Requirements-Intensive Approach

In Figure 9 the focus has switched to requirements. Note the solid lines. Linkages of this type concentrate on the knotty problem of aligning education exit and work entry requirements. In this figure each of the middle three sets of arrows is two-directional, implying that each box affects the other. For example, if a group of college placement officers and corporation personnel managers met to discuss the issue of alignment, and the results of the meeting led to modification of both sets of requirement standards, the two-directional arrows between the two requirements figures would be accurately reflecting the give and take. If on the other hand, one side prevailed and produced modification on the other, with the reverse not happening, the arrows should be one-directional in the direction of the side being modified. A state board of nursing, for example, might stipulate graduation requirements based on the requirements set up by hospitals for employing beginning nurses. As the entry requirements change, their stipulation of graduation requirements also change. However, no effort

Figure 8. Process-Intensive (P-I) Approach to Linking Education and Work

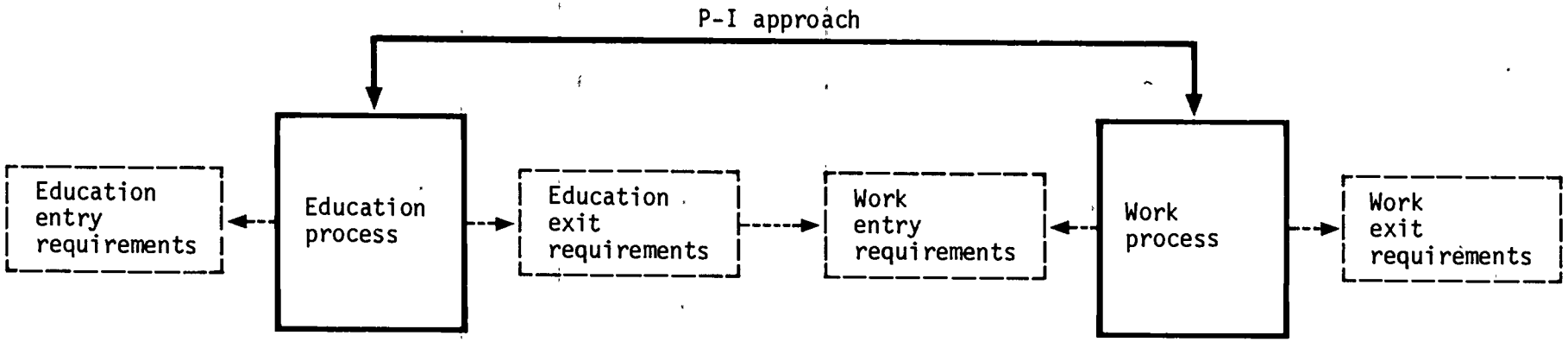
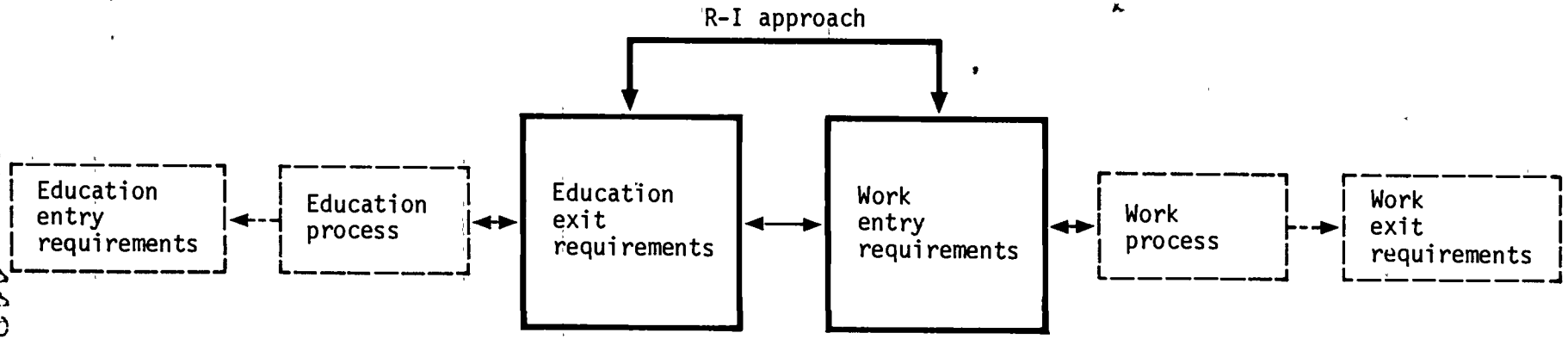


Figure 9. Requirements-Intensive (R-I) Approach to Linking Education and Work



(For a more detailed version of these figures, see Chart 2.)

is made to reverse the process and communicate to employing institutions that nursing education is changing and graduate nurses have skills and other competencies earlier graduates may not have had. Therefore, modifications in work entry requirements are not based on changes in the market pool (more or fewer nurses) or in the skills needed in the work process.

Clearly, requirements-intensive linkages that concentrate on modifying one or another set of requirements will also affect educational and/or work processes. If graduation requirements for teachers are stated in competency terms, competency-based training programs are certain to be organized. For example, if Wankel automobile engines were to become widely accepted in the United States and employers began requiring expertise in working with such engines, programs to train automobile mechanics would obviously be modified to include such instruction.

The difference between the process-intensive and the requirements-intensive approach to linkage, then, is essentially one of emphasis. One changes the educational system, including the exit requirements, by developing links between the education and work processes, while the other changes the system, including the educational process, by aligning education exit and work entry requirements. The former strategy is far more typical currently than the latter, although the distinctions made here in the two approaches for analytic purposes are often not maintained in actual practice. For example, a college may develop a new program in community law based largely on requirements established by the American Bar Association for working in that field. The linking is primarily between educational process and work entry requirements, on the assumption either that the program will lead to graduation requirements that match work entry requirements, or that it is unimportant that graduation requirements are aligned with the work entry requirements. Of course, the program could be developed by first specifying the graduation requirements and building the program on them.

DEGREES OF LINKAGE

Currently the educational and work systems for the most part exist as separate and distinct entities. As discussed in Chapter 4, this was not always so, nor is it universal today. Indeed, the numerous program linking devices and many of the communication devices uncovered in our survey are examples of efforts under way to bring these two systems closer together. The critical question, of course, is: How close should they be?

To restate the presentation in Chapter 4 of linkage as a continuum, the five major degrees of linkage that apply equally to the linking of process or requirements are:

1. Separation: No contact between education and work.

2. Communication: Those in education being informed about the nature of the work world through such devices as advisory councils, informational brochures, placement and follow-up studies, site visits, etc. The reverse --i.e., informing the work world about the nature of the education process-- also fits here.

3. Participation: Those in education actually engaging in activities in the work setting for some period of time through such devices as work-study programs, job simulation, and short-term work experience arrangements. At the planning level, participation linkages involve joint activity between those in education and work in curriculum development, program evaluation, and the like. Again, although the reference point in this project is the education sector, similar activities may be uncovered that have reference to the work setting.

4. Substitution: This degree of linkage is operative when students actually use the work setting and procedures as the primary avenue for their learning, with activities in the education setting secondary in both time and importance (e.g., cooperative education, long-term internships), and/or when workers/supervisors are used as part-time teachers in their areas of expertise. Once again, the reverse situation for those in the work world is possible.

5. Integration: This is characterized by one system performing the functions of both education and work. If the student/worker element were integrated, the individual would be simultaneously and continuously learning knowledge and skills (typically a function of the school) and producing goods and/or services (typically a function of the job). Thomas Edison College, an external degree institution, provides a good example.

In our survey we discovered examples of all five linkage stages. Many have been mentioned in Chapter 3. The supplemental report gives profiles of 26 mechanisms that represent all stages except separation.

In the past few years there has been a significant shift toward a more tightly linked education-work system as represented by the growth of activity in the latter linkage stages. College cooperative education programs, for example, have escalated sharply from 35 in 1960 to about 400 in 1974.[1] As mentioned earlier, work experience programs of one sort or another are mushrooming. Executive High School Internships of America, for example, began in 1971 as a project to serve students in New York City but is now national in scope. Colleges, in some instances, are incorporating "field experience" into all major programs. The U.S. Office of Education recently endorsed a "community-school" model for education, stating that "it would combine school and community resources to create a new environment for learning which would encompass and build on the strengths of both."[2]

APPROACH A: PROCESS-INTENSIVE

This approach is by far the more common of the two approaches to linking the worlds of education and work. In fact, in its most informal form, this approach is practically universal. In developing new academic programs

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1. K. Patricia Cross, "The Learning Society." College Board Review, No. 91, Spring 1974.

2. U.S. Office of Education, Toward a Third Environment. Washington, D.C.: Unpublished paper, 1974.

nearly every school and college takes note of the kinds of things its graduates might be doing and, therefore, what preparation they might need. They might even call in a panel of practitioners in the field to advise them or even to teach a course. So, while examples of process mechanisms abound, the majority cluster around communication. Advisory councils particularly seem to be omnipresent. One of the project advisers for this study noted that if all the advisory councils in his state capital were functioning, the number would exceed 100. Of course, not all do function, which is part of the problem with communication linking devices. The advice or information often is either not requested or not used, and often there is no mandate that will require it to be.

SERVICE FUNCTIONS

Process linkage mechanisms potentially could operate in a number of ways and at a number of levels. They could be public or private, created by legislation, or born of voluntary association of interested individuals. They could be given authority to inform, recommend, or even mandate. The structure and setting of the mechanisms would depend greatly on what they were expected to accomplish.

One way of framing the discussion of potential mechanisms is in terms of service functions. The following list, though not inclusive of all the possible functions that process linkage mechanisms could assume, is intended to provide a base for understanding essential areas of service. The seven areas are laid along an authority continuum; authority is operationally defined as "power to accomplish the function."

Service Functions	Necessary Level of Authority
1. Provide written information	Low
2. Bring constituents together	↑
3. Organize community resources	↑
4. Establish work-experience programs	↑
5. Develop alternating learning-earning programs	↑
6. Set program standards	↑
7. Develop single learning-earning program	High

To say that an agency, association, or individual needs little authority to distribute written information does not mean that one of them in high authority would not or could not engage in this function. Indeed, it is likely that a high-authority agency--e.g., a state department of education or postsecondary education--would produce a greater impact among the

recipients--e.g., school principals or college presidents--than a low-authority agency. What the list implies is that if the only linking function a state wishes to perform is the distribution of, for example, information on the duties of paramedics to colleges, it does not need the authority of a state agency to accomplish it. In fact, in this example, someone who has conducted a survey of paramedics might distribute his/her findings to any institution that is thinking about starting a paramedical program. Authority becomes more important going down the list.

Following are brief statements on each of the service function areas. The focus is still on modifications in the educational process, although one can easily see how a similar mechanism could aim at modifications in the work process. While the ideas for such mechanisms in the work world might be easy to develop, actual implementation would appear to be far more difficult because of the private character of the largest segment of the work system.

1. Provide Written Information. Individuals and agencies have developed extensive occupational information on "What it's like to be a ..." or "A day in the life of a...." Much of this information is aimed at the individual student, but some would be quite suitable for program planning. Information on new machines, apparatus, and techniques is also important.

2. Bring Constituents Together. Of more value than written information is the opportunity for business and labor officials to talk to educators about new developments and establish practices in the work world. They also meet to review plans and to give advice on existing curriculums and new educational program directions. These face-to-face encounters typically not only benefit educators but the industrial representatives as well. Both return to their respective institutions with a better understanding of what is taking place in the other. The key is to have individuals meeting together who have the authority to stimulate change.

3. Organize Community Resources. An increasingly common practice are the development of lists of people in industry willing to speak in the schools, the recruitment of businesses to make work exploration sites available, the development and operation of job-fair days at school, the development of a resource center of information on local industries, and even training of faculty to be aware of and use community resources.

4. Establish Work Experience Programs. It is somewhat more difficult to recruit businesses to make work sites available to long-term (minimum of one school term) hands-on work experiences. Those in charge need to work with faculty to obtain their acceptance of the work experience concept and to assist them in determining the academic benefits of the experience.

5. Develop Alternating Learning-Earning Programs. This is an extension of the previous function. The most common form of this alternating arrangement is called cooperative education and requires a major institutional commitment to this form of education as well as the discovery and maintenance of available work stations. These arrangements could be established for single individuals, but most often a significant segment of the student body is involved.

6. Set Program Standards. Whereas the previous two functions were concerned with developing work experience that would complement the academic program, the linking agency conducting this function has direct impact on the learning program. The standards it would set presumably would reflect an awareness of activities in the work sector. For example, if a practicing architect typically spends one-third of his/her working time preparing cost estimates, the linking agency--having determined that--would require significant learning activities in this area.

7. Develop Single Learning-Earning Program. Rather than simply set program standards, this linking agency would actually establish an integrated program. Obviously a very high level of authority is required to perform this function.

In the foregoing functional descriptions the focus was consistently on the educational process. While this is appropriate to the current study, we would be remiss if we ignored the concern expressed by several of our advisers that the work process needs to change as well as the education process. Businessmen with whom we talked seemed convinced that the educational system should change to be more attuned to the world of work, but that the latter should continue unchanged. Although we recognize the difficulty of effecting modifications in the world of work, we want to stress our conviction that unless changes take place to humanize the work process, the linkages that might be created will have little effect on improving the quality of life in this country. They may succeed in smoothing the transition from education to work, but individuals may become increasingly disenchanted with the transition and eventually might function outside it if socially acceptable alternatives can be found.

Chart 6 calls attention to the seven process-intensive functions as they relate to the five degrees of linkage. The examples used to display the working of the chart have been taken from the companion supplemental report, Bridging the Gap: A Selection of Education-to-Work Linkages. They are discussed at some length in that document and therefore will not be described here. The reader will note that in their degree of linkage the examples tend to fall generally along a line. This could be peculiar to the selection of the examples, but we suggest another explanation. We hypothesize that there is a correlation between the functions and the degree of linkage and that those establishing linking mechanisms will usually move only as far along the degree of linkage continuum as is necessary to accomplish the desired functions. For example, if someone desires to disseminate written information, he/she is highly unlikely to establish an elaborate agency or task force that has equal participation from the education and work communities. Rather the person is likely simply to distribute the information, with little organizational collaboration. Of course, if that same information is to be used in the setting of program standards, the linking device will have to be considerably stronger and more formal.

LOCAL INITIATIVE

One feature that distinguishes the process-intensive approach from the requirements-intensive approach is that it can be largely implemented

through local initiative. The local educational system can set up mechanisms to use community resources effectively. Indeed, examples abound of industry-education councils developed by industrial or educational officials and career education action councils developed through local chambers of commerce or other community agencies. Local education agencies and post-secondary institutions can and do develop student and faculty work-experience programs and can and do work with local bureaus of employment security to receive and use occupational information. They also are the ones most responsible for curriculum revision, and it is their task to see that career relevance is infused into the total curriculum. Educational program standards are often established by local school boards.

This is not to say that state initiatives that supported these linking activities would not be helpful. For example, one can imagine state legislation that requires all high school students to complete 500 hours of actual work experience before graduation or requiring that each school superintendent establish an education-work advisory council with representation from local industry, labor, and the general public. The state may also desire to establish guidelines for community councils that would operate with public institutions to insure that community resources are being used wisely and effectively and to assure that appropriate educational activities are conducted in the most suitable settings, in school or in some community agency.

STRENGTHS AND WEAKNESSES

The essential strength of the process-intensive approach is that it employs strategies familiar to most educators, that is, educators are accustomed to seeking advice from community representatives and to asking for help from the community whenever it seems to be needed.

For the most part, however, community participation has been limited to advisory roles. Full-fledged implementation of process mechanisms that effectively link the school and the workplace would require a much greater degree of participation and collaboration than is typical currently. If community participation is desired in setting program standards, it would probably mean that the advisory councils would assume greater program review and planning functions and not simply be called on for "wise counsel" when educators deemed it appropriate.

Another strength of this approach is that it may well lead to encouraging recurrent education. That is, if educators and business people are sincere in looking to each other for ideas to bring the worlds of education and work closer together it probably would not be too long before arrangements were made not only to send students into the workplace but to send workers back into the schools as learners. Although the theme of recurrent education is beyond the scope of this study, it is important to recognize that the kinds of linkages proposed in this report support rather than counter that movement.

A weakness of the process-intensive approach taken alone is that it may be difficult to evaluate its effectiveness. It assumes that certain outcomes

Chart 6. Process-Intensive Functions of Selected Linkages as related to Degree of Linkage
(See Supplemental Report for a Profile of Each Linkage Mechanism.)

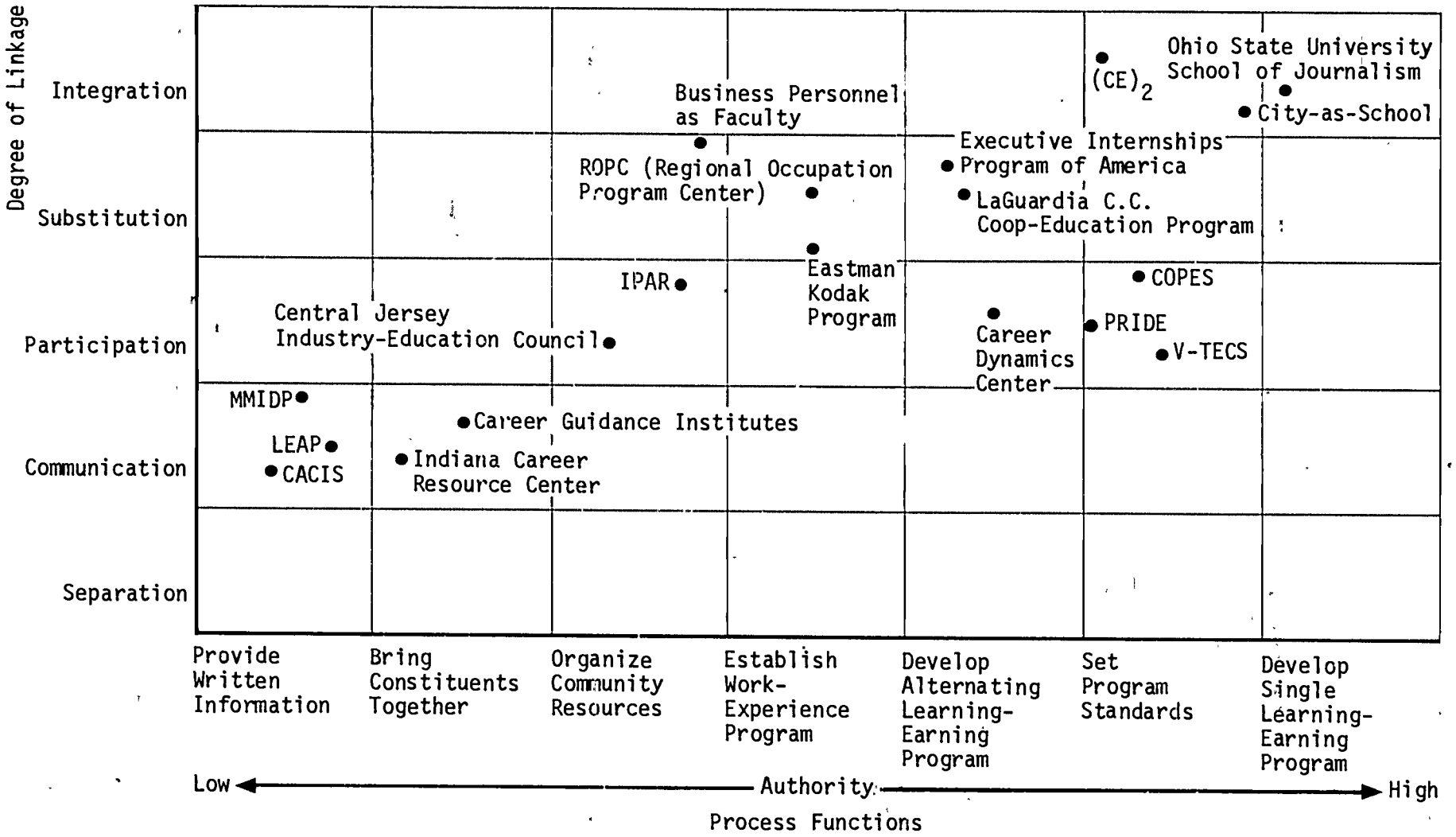
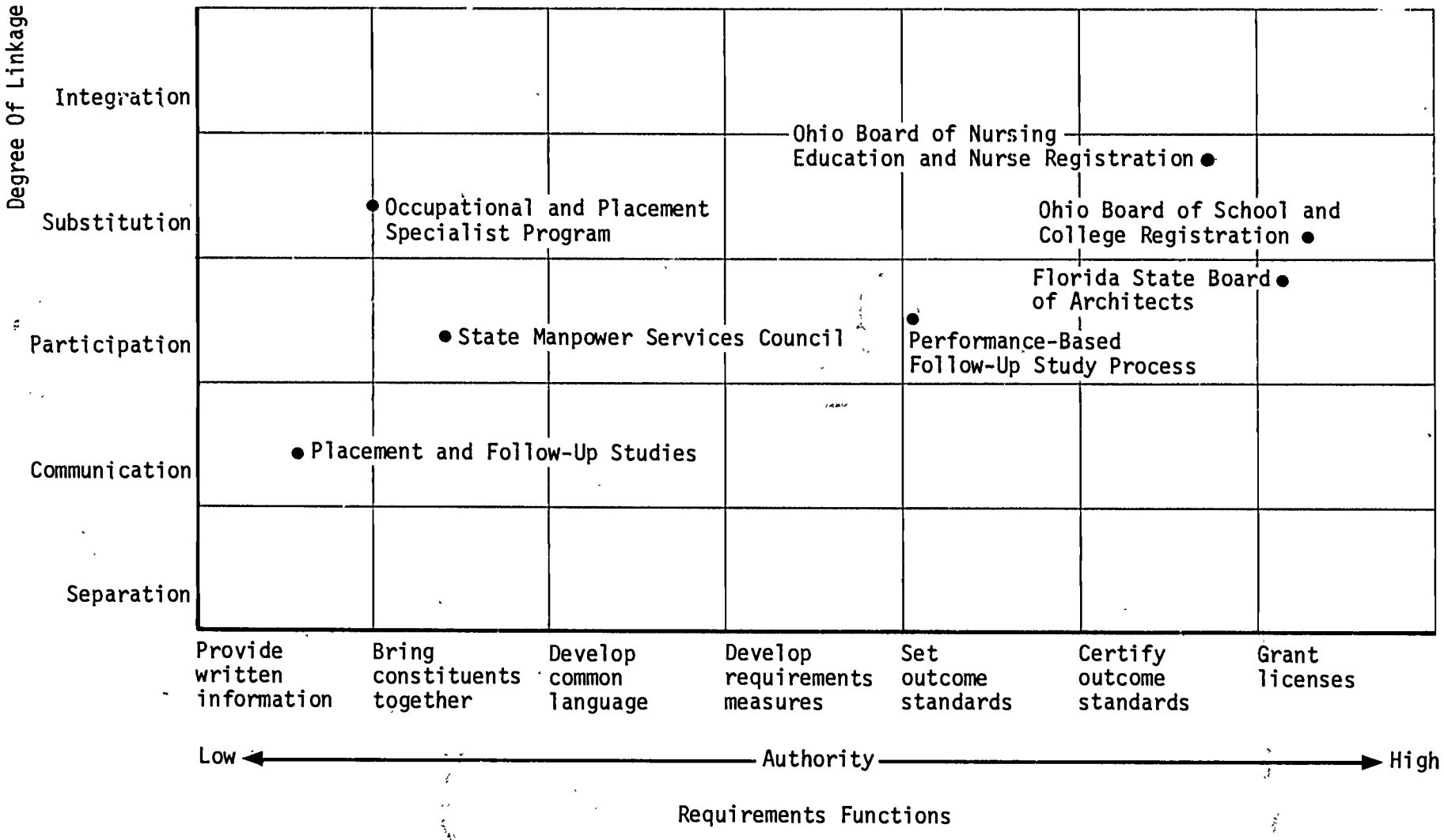


Chart 7. Requirements-Intensive Functions of Selected Linkages as Related to Degree of Linkage
(See Supplemental Report for a Profile of Each Linkage Mechanism.)



are generated by the very act of bringing the education and work processes together, but it does not assess these outcomes directly. That remains the province of the requirements-intensive approach. One can assume with good logic that students who spend time in actual work situations will obtain knowledge and skills that will make their eventual transition to work much smoother than it otherwise might have been. This is based on the further assumption that the kind of work experience selected by students will be legitimate learning opportunities and not primarily occasions to reap a short-term economic reward.

APPROACH B: REQUIREMENTS-INTENSIVE

The requirements-intensive approach is based on the key assumption that the most critical linking problem is the development of an alignment between education exit requirements and work entry requirements. The term "alignment" is used hereafter in preference to "match" because the former connotes a condition in which factors on both sides are continually subject to change while the latter connotes a condition in which the factors on at least one side are fixed. In reality, what it takes to graduate from school or college and what it takes to become employed are at this time, and will quite likely remain in the future, subjects of much discussion. On the education side, several states, Oregon being the most prominent, are either changing or considering changing high school graduation requirements to reflect educational outcomes more directly. In launching the California Commission for the Reform of Intermediate and Secondary Education in August 1974, State Superintendent of Public Instruction Wilson Riles urged the panel to "wipe the slate clean and to picture what competencies young people will need in the year 2000." At the same time, national and institutional studies are going on in an attempt to describe what the Bachelor of Arts degree should mean (e.g., Jonathan Warren of Educational Testing Service is completing a year-long "bachelor degree study" involving 90 colleges and universities).

At the college level, the most pervasive current innovation is the development of competency-based education and competency-based credentials. This theme is also a major focus of the Fund for the Improvement of Postsecondary Education for 1975-76.

Teacher-training programs are slowly being revised to reflect a competency orientation, although not without resistance. In New York State, for example, the State Department of Education has ordered that the more than 80 public and private institutions offering teacher-training programs rebuild their curriculums to enable students to demonstrate mastery of specified skills in actual and simulated teaching situations. As could be expected, there are a host of critics to the change. As reported in The New York Times on April 7, 1975, some fear that personal relations with pupils will be de-emphasized in favor of "narrow behavioral objectives of dubious value." Others, such as David Fox, Director of Graduate Studies in the School of Education at CUNY's City College, maintain that "we've never coped in teacher education with the basic problem of how to measure human functioning. We don't know what to measure, and even if we did we couldn't do it."

Other assumptions on which the requirements approach is based are:

Serious misalignment between the two sets of requirements currently exists or can come into being.

The transition of individuals from education to work at any time will be greatly facilitated by alignment between education exit requirements and work entry requirements.

Formal mechanisms of some sort are required to effect this alignment.

The process of aligning education exit requirements and work entry requirements will also lead to changes in the processes of education and work.

We have chosen the word "alignment" at this stage of the report after using "match" consistently throughout the survey sections and earlier in this chapter. As we undertook the survey we realized that within the economic and time constraints of the project we could not conduct a survey over terrain that was too broad and still generate useful findings. Furthermore, we recognized that our contractor, the National Institute of Education, was responsible for and of greatest influence in the government education research sector; therefore, findings that emerged out of that sector would be of primary value in their program planning. Because of these two considerations, the survey and the process approach to linkage earlier described were circumscribed by the parameters of formal secondary and post-secondary education. The characteristics of work entry and the work process were treated essentially as givens, and those in education were regarded as the variables. Thus it apparently makes sense to think of changing the education process and exit requirements to "match" the work process and entry requirements. Success would indeed be a perfect linkage. But the results might be less desirable than two totally unlinked systems.

From the outset of the project our advisers maintained that useful linkages would have to take into account and influence the world of work as well as the world of education. Both worlds needed to be regarded as continually shifting variables. Hence, the concept of alignment.

We feel that maintenance of the dynamic tension between the two worlds is the key to obtaining results that will be of long-range benefit to both society and the individual. The domination of one sector over the other will produce a condition ultimately detrimental to both. For example, if the purpose of education were simply to train individuals with certain skills and attitudes that would enable them to meet a given set of work entry requirements, or to fit into a particular slot, education would be the lackey of the work world and would be forced, either voluntarily or by governmental edict, to suppress programs or activities seen as tangential or contrary to job training. If, on the other hand, the work world continually adjusted its entry requirements to correspond to the characteristics of students emerging from educational institutions, it would either jeopardize its ability to produce goods and services profitably or be forced to initiate ever more massive job training programs of its own.

In the current situation the worlds of education and work alternately assume the dominant position, largely as a result of economic conditions. As the supply of manpower exceeds the available job opportunities, educational institutions begin to turn their curriculums more toward the work sector in order that their graduates will stand the best chance at employment. And one can certainly expect parents in large numbers to support such a shift. Businesses, in turn, tighten their entry requirements, hoping to improve their chances of hiring a productive individual. On the other hand, when labor demand exceeds supply, educational institutions foster programs seen by the work sector as bearing little relationship to what is required in the work world.

But why should our society be concerned about the alignment of education exit-work entry requirements when underemployment is to be the norm, or if not the norm, at least a widespread and long-term phenomenon? In launching a new series on "The American Future" in the May 1975 issue, the editor of Change magazine suggests:

"The new phenomenon of underemployment may now become a permanent fixture of national life, and the shock waves should not be long in coming. And if the American job cornucopia has been depleted in relative terms, the implications for education are absolutely immense. They are only now beginning to be talked about. People in education, as elsewhere, still largely view the present recession as a cyclical and temporary phenomenon. But ... a new vision of a postindustrial society, highly educated and habitually underemployed, now emerges as a likely permanent facet of our age."

Would such a situation make efforts to align requirements irrelevant? Quite the contrary. If personal frustration is born from unrealized expectations and if information about oneself and the world context would provide a corrective to unrealistic expectations, knowledge of one's competencies and of the competencies required by various fields of employment should temper one's expectations. This is not to say that a person would or should gain no more skills than can be used in the marketplace, but at least he/she would have some understanding of the probability that such skills would be "salable" at a given time.

As complex as it is to develop competency-based education exit requirements, to say nothing of measures of those competencies, the truly difficult problem is to develop reasonable, realistic work entry competencies. Efforts are currently under way to conduct task analyses in a number of occupational areas and these analyses may point out clearly the kinds of manual skills required in a given area. But how do we know these are the important ones? Perhaps in actual practice it is more important that Joan is punctual and acquiescent than that she can "run a bead" or calculate percentages. Or toleration for ambiguity may be more critical than willingness to stand all day. It would be foolhardy to try to reduce all work to narrowly defined, neatly measured "bags of competencies." Much in work, as in education, is individualistic and likely would remain so, despite the most fervent efforts of measurement specialists.

What does seem needed at the minimum, however, is a common requirements language that is agreed to and utilized by those in the education sector and those in the work sector. This language may take the form of competency statements, but the number and specificity of such statements is very much open to question. Those involved in the process will have the challenge of developing statements--and subsequently measures--that enable discrimination among individuals without destroying humaneness.

SERVICE FUNCTIONS

Requirements linkage mechanisms could potentially operate in a number of ways and at a number of levels. They could be public or private, created by legislation or born of voluntary association of interested individuals. They could be given authority to inform, recommend, or even mandate. The structure and setting of various mechanisms would depend greatly on what they were expected to accomplish.

One way of framing the discussion of potential mechanisms is in terms of service functions. The following list, though not inclusive of all possible functions requirements linkage mechanisms could assume, is intended to provide a base for understanding areas of influence or power. The seven areas are laid along an authority continuum, with authority being operationally defined as "power to accomplish the function." Further, the seven areas are cumulative--that is, a mechanism with very low authority may be able to assume only function 1, while one with high authority may assume all seven areas. Naturally, the more functions one decides a linkage mechanism should assume the greater the likelihood that the mechanism will either be a public agency or have the authority of a public agency behind it. For example, an accreditation agency may be a voluntary, private agency, but it derives considerable authority from the stipulation that only accredited educational institutions (with certain specific exceptions) are eligible for federal aid.

In terms of the setting for the linkage mechanisms, most strong mechanisms uncovered in the four-state survey appear to be located in independent settings as opposed to either educational or work institutions. They evidently have been lodged there for sound reasons, and we suggest that new mechanisms should be developed in independent settings, even though the initiative may come from individuals in one of the other two settings.

Service Functions	Necessary Level of Authority
1. Provide written information	Low
2. Bring constituents together	
3. Develop common language	
4. Develop requirements measures	
5. Set standards	
6. Certify standards	
7. Grant licenses	High

To say that an agency, association, or individual needs little authority to distribute written information does not mean that one of them in high authority would not engage in this function. Indeed, it is likely that a high-authority agency--e.g., a state department of education or postsecondary education--would produce a greater impact among the recipients of information--e.g., school principals or college presidents--than a low-authority agency. What the list implies is that if the only linking function a state wishes to perform is, for example, the distribution of up-to-date information on hiring policies of major corporations to schools and colleges, it does not need the authority of a state agency to accomplish it. In fact, a private citizen could perform that function quite satisfactorily. Authority becomes more important going down the list.

Following are brief statements on each of the functional areas.

1. Provide Written Information. To some degree work institutions would profit from more extensive information on what graduates are like, particularly those who will be working for them. And likewise, educational institutions would profit from knowing more about work entry requirements as they now exist.

2. Bring Constituents Together. Of more value than written information is the opportunity for business and labor officials to talk with educators about the misalignment problem. Testimony comes from all quarters to the benefit of these face-to-face encounters. The key is to have individuals meeting together who can stimulate change in their respective institutions.

3. Develop a Common Language. So long as work entry requirements are couched in terms of age, degrees, and job experience, educational systems are engaged in an interesting but perhaps frivolous activity by undertaking to state exit requirements in terms of competency. The current fervor attached to competency-based education and degree requirements is not without considerable merit, of course, because the results will: (1) lead to a more solid index of educational productivity and therefore will respond to the call for accountability, and (2) represent groundwork in the education sector that should speed progress toward alignment. Without development of a common language, however, actual alignment may never occur. Project advisers stressed the importance of this function.

The nature and format of a common language evolving from these separate dialects would have to be determined by those coming together, but one might speculate that some combination of competencies, personal characteristics (e.g., age, appearance, integrity, punctuality, attitude toward work), and credentials would provide a basic grammar.

4. Develop Requirements Measures. Once a common language is determined, the problem changes to one of measurement. The complexity of the task is largely dependent upon the language chosen. To date most efforts at new education exit measures (and there are many) have been developed with less than full participation from the work sector.

5. Set Standards. At this point the linking mechanism moves into the area of control, making policy for aligned exit-entry requirements. To carry out this and succeeding functions the mechanism would appear to have to be either a public agency or a powerful private one.

6. Certify Standards. A linking agency performing this function moves beyond simply policy-making to regulation. It assumes responsibility for seeing that standards it has set for exit-entry requirements are maintained in both worlds. The agency would have the authority to determine which educational institutions and programs and which work institutions were operating in accordance with established standards and the power to cite institutions for noncompliance.

7. Grant Licenses. The agency would have the authority to grant operating licenses to both educational and work institutions and to bring legal action against unlicensed institutions and corporations.

Chart 7 displays the seven requirements-intensive functions in relation to the five degrees of linkage. Only a few examples are given, because we found few mechanisms that expressly focused on aligning requirements. Most related more to process.

As with the process-intensive chart, we hypothesize a relation between functions and degree of linkage. For example, if a chief state school officer desires to implement a school-community model with emphasis on competencies, he/she will not only need to call individuals from the respective worlds to meet together, but will also need to charge them with the task of developing a common language and measures in that language that are suitable both to the educator and the employer.

STATE INITIATIVE

Unlike the process approach, implementation of the requirements approach depends largely on state initiative, particularly beyond the first three functions. There are already state agencies concerned with standards and licenses, and the need is clearly not for competing agencies but for a revamping of those in existence to make them more effective vehicles for helping people make the transition from school or college to work. This project did not assume the extremely cumbersome, though important, assignment of looking intensively at the licensing and credentialing problem. Though several of our advisers attested to the desperate need for doing so, such an investigation is a major undertaking, and in fact it is being done by others at the state and national levels. In Chapter 6, however, we do touch on some of the problems associated with this topic and tender two general proposals.

STRENGTHS AND WEAKNESSES

The essential strength of the requirements-intensive approach to linkage is that if it is accomplished it presents a well-articulated system in which transition from education to work should be almost automatic. It is, in short, a potent approach to linkage but as such is difficult to implement. First, it assumes that industry is not only willing to cooperate but will participate in an effort to state work entry requirements in terms of actual job performances and will apply these indices to its hiring practices. Businesses may ignore statements of requirements based on some array of competencies and cling instead to the old--e.g., a master's degree in business administration plus four years' experience.

Acceptance of the requirements-intensive approach also assumes that the task is possible, that clusters of skill competencies and attitude characteristics can be identified and measured. No doubt the process will be costly, but if the assumption that it can be done is correct, it leads to another important strength of the requirements approach. If jobs are stated in competency terms and individuals' qualifications are stated in competency terms, not only should the initial job fit be better but as jobs are phased out and new ones developed individual mobility and transferability should be enhanced.

INCENTIVES FOR PARTICIPATION IN LINKAGE

Why should either educational or work institutions desire to participate in building linkages one to another? What incentives do they have?

At the present time in the United States educational institutions are being asked by the public to give an accounting for their use of revenues. The response has been in many cases to develop ways of describing output, or to restructure the exit requirements to demonstrate more accurately what an individual has obtained through learning. Interestingly enough, however, this process has been one-sided with respect to the world of work. Although community representatives may have been involved in the determination of program objectives or graduation requirements, in the majority of instances (except among professional licensing and regulatory boards) no formal attempt has been made to change work entry requirements. Therefore, while schools and colleges may be able to display the fruits of their labors to the public attractively, students may not necessarily be in an improved position with respect to work entry. And it is not likely to be long before the public clamors for evidence of the latter. Indeed, the new emphasis on follow-up studies in such states as Florida and Michigan is evidence of a move in this direction.

The incentives for the work world are more complex, but they too revolve around the issue of human development. Industrial psychologists, such as Rensis Likert of the University of Michigan, claim that insufficient attention is given to the human organization in corporations, either public or private, and the part that such an organization plays in profit-making. Full understanding of this issue looms as perhaps the most significant noncoercive incentive there could be. Certainly it will be more effective than an appeal to social consciousness alone.

In his book, The Human Organization (1967), Likert advances the position that estimates of the current value of the human resources in an organization and of customer goodwill should be included in all financial reports of a firm. He states that one way of estimating the magnitude of the investment in the human organization is: "...to obtain data on the costs of hiring and training personnel for each of the many different kinds of positions in the company. The sum of these costs for every person in the firm usually will be substantial. It underestimates, however, the true investment in the human side of the enterprise, since it does not reflect the additional investment made during the period when the members of the firm were establishing effective cooperative working relationships with one another."

If this kind of human asset accounting is accepted on a wide scale, and if the alignment of exit and entry requirements can be demonstrated to reduce costs to the corporation, a powerful incentive will be in place. Public corporations especially would be subject to closer taxpayer scrutiny on these grounds.

It would be unfair to ignore the desire by both educational and work institutions to smooth the transition process for graduates for the purpose of meeting a critical societal need. Certainly this incentive does exist, but it cannot be relied upon as the sole force for removing the obstacles and bridging the gap.

In the next chapter we turn from theoretical considerations to real barriers and proposals for reducing them. The theoretical base contained in the preceding two chapters has been used to frame the proposals and provide the necessary rationale.

Chapter 6

BARRIERS AND PROPOSALS

In the previous chapter we took care to separate process from requirements and to display the distinct functions that would be accomplished by linkages operating according to one approach or the other. We felt this was necessary for analytic purposes so that the array of options could be understood. At this point, however, we heed the advice of one of the project advisers, a former college president, who maintained that "breaking problems down is fine when thinking things through, but you have to put the pieces back together if you want to change human behavior."

Accordingly, in this chapter we have attempted to look through the eyes of the practitioner to view what he/she sees as real problems or barriers that hinder the transition from education to work. During the course of this project we have talked with representatives from a variety of fields--education, business, labor, government--and have been impressed with the extent to which practitioners think in terms of problems or barriers and can articulate them. They know the areas that give them difficulty, because they face them daily.

Rather than deal with each of the frustrations, obstacles, and missing links that appear to hinder the transition from education to work, we have grouped them into four categories: fluctuating requirements, development and use of manpower information, credentialing, certification and licensing, and control and authority. No attempt has been made to develop categories around a common theme; each stands individually. After preparing an early draft of this chapter we met with our project External Consortium and about 30 additional advisers (see Appendix D) to discuss its contents and validate our perceptions. Although modifications were suggested to the proposals proffered to reduce the barriers, there was general agreement that these four categories of barriers did represent areas of real concern. We repeatedly requested additional categories,but none were forthcoming.

The proposals offered at the conclusion of the discussion of each barrier should not be regarded as firm recommendations for public policy but, in keeping with a project conducted on behalf of a national educational research and development agency, as ideas for pilot testing that can be expanded into policy changes contingent upon an evaluation of their operational efforts. In fact, certain proposals are presented as alternatives, recognizing that political realities produce differing organizational and functional configurations from one state or local situation to another. In Chapter 7, which is directed specifically to the National Institute of Education, we highlight and enlarge certain proposals and we offer recommendations that we believe to be particularly worthy of NIE support.

CATEGORIES OF BARRIERS

The rest of this chapter describes the four categories of barriers and offers proposals for their reduction. Some proposals are requirements-intensive, some are process-intensive, and some combine the two.

BARRIER CATEGORY 1: FLUCTUATING REQUIREMENTS

Many of the nation's citizens, including President Ford, have advocated bringing work and school closer together. The goal, as enunciated in a 1974 presidential address at Ohio State University, is to make individuals happy in their jobs and employers happy with their employees. This vision of "closeness" sees the world of school and the world of work as two separate entities moving on separate tracks, much like two trains in a terminal. One train opens its doors discharging passengers, and the other opens on a different platform to accept those passengers. (Because this project focuses on just one transition, the receiving train is empty. In reality, of course, both trains are discharging and receiving passengers.) The goal is apparently to have the trains stop on the same platform, one discharging its passengers directly into the other.

The vision this analogy raises is that a set of competencies are to be delivered to an individual by the institution known as school or college to enable him or her to move smoothly to another institution known as work without missing a step. Moreover, it normally assumes that work entry requirements constitute an unmovable standard, a given, whereas school exit requirements can continually be altered to facilitate an individual's transit to the fixed world of work. In reality, the worlds of work and school are both constantly shifting: the entry requirements for jobs and careers are as vague and evasive as the exit requirements for school and college completion.

Most vocational education literature supports the idea that students can be "trained" for careers and jobs with a fair degree of specificity.

Yet our study leads us to suspect that, with minor exceptions for fairly specific trades, the job requirements for most professions and occupations are no more specific in reality than the competencies required for receipt of a high school diploma or college degree.

What we have come to understand during this project is that the process of bringing school and work closer together is difficult primarily because there are no fixed parameters to what constitutes school exit or work entry. Making this problem even more complex is the fact that a large portion of an individual's education takes place outside school, and industry has instituted large-scale education and training enterprises for its employees. Career educators are increasingly aware that schools should not attempt to bring an individual to a particular fixed point, but rather should prepare the individual for movement into and through a series of assessments of his personal, physical, and mental abilities.

Additionally, a growing body of literature (perhaps best exemplified by O'Toole's controversial Work in America) describes the changes required in the world of work if it is to meet the new expectations, requirements, and demands of individuals produced by a liberalized school system and society. A workplace oriented for profit, rationalized and bureaucratized to achieve maximum efficiency, has inherent the great risk of creating an increasing number of dissatisfied employees. The primary requirement of many jobs is the complacent acceptance of routinized tasks plus an outstanding attendance and time record in the face of debilitating work assignments. As the literature reveals, many individuals find it difficult to cope with this kind of environment, and they may often retaliate by using sick leave and vacations to the utmost, by performing at lower levels of ability--or even, as in certain auto plants, by sabotaging the total operation.

An important factor in aligning the worlds of education and work, then, is a thorough examination of work processes, techniques, and motives and a rearrangement of these factors to better suit the needs of employees and prospective employees. If successful linking is to occur, it will not be sufficient for schools and colleges alone to examine their processes and exit requirements; the work sector must likewise examine itself and its requirements for manpower in light of what is being produced by the schools. And this becomes more rather than less important as the United States enters an era of chronic underemployment. Large numbers of individuals will be employed in situations they find discomforting at best and intolerable at worst, and unless business and educational leaders take note, the era may become explosive.

Proposal 1: *Opportunities for unpaid work experience should be provided for all students in all major programs at both the secondary and postsecondary levels.*

There is seemingly endless variation in potential work experiences students can have. We assume that these are compatible with student goals and interests and would not presume to constrict the range of possibilities. We would be concerned that the experience be of sufficient length and complexity to be rewarding to both the participant and the participating institution. If the experience is not rewarding to the student an important learning opportunity will have been lost, and if it is not rewarding to the corporation, though perhaps not always in economic terms, it is unlikely that the corporation involved will sustain its commitment. Furthermore, meaningful contribution to the production of goods or services is an important ingredient in the learning process.

The word "unpaid" in the proposal is not intended to rule out the possibility of some students being compensated for their work experience, particularly at the postsecondary level, but is intended rather to recognize that unpaid experiences would be the norm and that considerable value can result from such activity.

Work experience as a practice has been extant for years, even centuries. But in this century in this country it has been used primarily to achieve specialized purposes and thus has been directed to particular audiences. Most frequently its objectives have been to provide specific occupational and skill training, income for needy students, and encouragement to dropout-prone students to remain in school longer. Only recently have educators and others thought of work experience as contributing to broader educational objectives, and, therefore, as suitable for all students.

Colleges have made use of the internship form of work experience as integral parts of particular educational programs. In fact, in fields like medicine, social work, and teaching, internships of one sort or another are required before credentialing. Such requirements appear most commonly at the graduate level, although there are many signs that undergraduate schools are turning to internships, cooperative education, and other forms of work experience in unprecedented number. The phenomenal growth of cooperative education in the past 15 years has already been recorded (see Chapter 5). Other institutions are trying other models. For example, one college recently introduced LIFE (Learning in Field Experience) as a part of every student's program. LIFE consists of one semester spent off-campus in an approved work setting engaged in paid or unpaid employment.

If work experience is to become a reality in the educational life of all students, numerous structural and organizational changes will need to take place within academe. And changes are occurring. In a draft chapter on work experience from a forthcoming book on education and manpower, the National Manpower Institute reviews several supportive trends which, it claims, "have implications for the possible expansion of work experience opportunities." Among the trends cited are: the year-round school, flexible modular scheduling, revisions in average daily attendance regulations, revised educational objectives, the educational voucher concept, credit for experiential learning, and external degree options.

In an era of economic stringency such as the present one, the question of the impact of work experience on the economy and vice versa needs to be considered. Will labor unions object to this proposal of work experience for all on the grounds that it would take jobs away from adult workers, particularly the marginally employed? We believe this to be a legitimate concern and one that would need to be guarded against through appropriate legislative provision. In most corporations we suspect it is not a matter of having insufficient meaningful work in which students could engage, but rather of whether the corporation can or is willing to bear the economic costs of training an individual who will work for a short term, even one who is unpaid, and of sustaining that individual through an educational process. Perhaps some form of remuneration should be given to corporations to encourage participation and offset their costs. Presumably, such remuneration, whether it is in the form of tax credits, direct payments, or whatever, would not require major additional public expenditures but rather reallocation of funds heretofore budgeted for school operations. If educational institutions

are going to have fewer students and, in fact, to provide fewer educational services, it seems logical that their funds could be tapped to defray the costs at least partially. Logical, perhaps, but not without objection, as teachers' unions would no doubt make abundantly clear.

Obviously, the issue is complex and is wrapped in questions of revised formulas for school and college funding. But we feel that the benefits to be derived by the individual and society from an intermingling of education and work would be worth the effort.

Proposal 2: *Secondary and postsecondary graduation requirements should reflect the importance of work experience for all students.*

This second proposal is intended to put teeth into the first one. So long as work experience remains an option or is viewed as being for just certain students, its potential as an educational tool will never be fully realized. Making work experience a graduation requirement assures that all students participate, as they do in English or physical education. Of course, as is also true in the case of physical education, exceptions may need to be made. The consensus among the project advisers was that actual work experience is as important for the aspiring hospital administrator as it is for the ecologist-to-be as it is for the automobile mechanic trainee. We have not proposed a specific allotment of time, such as a requirement of an average of one day a week, for two reasons. First, work experience was only one, albeit a significant one, of many linkages discovered in our study, and we have not been able to devote sufficient attention to the details of the concept to provide considered judgment regarding the amount of work experience that would be desirable. Second, our study subsumed all secondary and postsecondary students. We deliberately did not look at subgroups separately. Yet clearly the amount and nature of the work experience will vary according to such factors as level of schooling, student plans, and academic program.

Perhaps if graduation requirements become completely competency-based, this requirement would be dropped as irrelevant. But such changes are not likely to happen soon in most states. Therefore, the work-experience graduation requirement would serve an important purpose. The technology to assess such experiential learning is slowly coming into place, so the timing is right from that standpoint.

The issue of assessment of experiential learning is imbedded in these first two proposals, and although we have not presented this topic as a separate proposal, we urge expanded support for this development from state, federal, and private foundation sources. In so doing, we simply second the recommendation of numerous commissions and individuals that secondary and postsecondary schools should establish mechanisms to award academic credit for accomplishment off-campus and for learning that occurs in the work setting, whether the activities to be credited are undertaken for pay, for love, or for their own sake.

Proposal 3: *Follow-up studies of secondary and postsecondary school graduates and dropouts who did not immediately continue their education should be conducted annually to discern the extent and nature of misalignment between education exit requirements and work entry requirements.*

The results of these studies should be used to improve the alignment of the two sets of requirements and as a part of the curriculum revision process. In fact, those responsible for collecting and analyzing this information should be represented on committees reviewing curriculums and adjusting graduation requirements.

Much of the follow-up work currently undertaken is conducted only with graduates of certain programs. It appears to be too imprecise to provide significant program-planning assistance, and possibly because of this it is often not given serious attention in curriculum and program review. Some states, including Florida, are making strides toward mandating the collection of such information at the secondary and postsecondary levels and improving its quality and utility. A copy of the Florida guidelines for community college follow-up studies is attached as Appendix E.

Proposal 4: *Community Education and Work Councils, comprised of educational, business, labor, government, and other community leaders, should be established. Sponsorship may come from the educational sector, the work sector, or the community sector--whichever is willing to assume the initiative.*

Ideally, we believe that Community Education and Work Councils should spring from the community at large, and in some communities this is happening. In one city the council may stem from mayoral edict, in another from a disorganized but concerned citizenry. Advantages and disadvantages attend each. In the first case, the council may obtain early legitimacy and stable funding, but at the cost of potential involvement in local political processes. In the second, the council may be free from political pressure, but it also may be without a power base and subject to continual scratching for operational funds.

Other patterns, such as being under the authority of local school or college boards or under business sponsorship, also carry advantages and disadvantages. In other words, there does not yet appear to be a universal model that is without flaw, but no doubt certain communities will find one more suitable to their structure and operating style.

However organized, the councils should have delegated authority and responsibility to organize community resources to be of maximum benefit to schools and colleges and to design and implement a system for placing students in work sites consistent with their interests and long-range planning. These councils should also provide a forum for the open sharing and resolution of problems and concerns associated with large-scale student involvement in corporate life. As the work experience model is implemented, there are sure to be frustrations, misunderstandings, and conflicts over such items as work assignments, the role of the student

in the corporation, the school's and college's expectations of the work supervisor, irregular attendance, child labor laws and practices, the educational value of the experience, and the benefit of work experience to the "college prep" student or college liberal arts major.

It is easy to identify potential problem areas, and without the existence of some mechanism not only to take a strong advocacy position but also to express a willingness and capability for responding effectively to the problems, they are certain to pile high enough in a given community to bury the effort.

The director of each council should be employed full time. There is little hope that a council could be adequate as a linking mechanism if the director gives it less than full-time attention. In fact, depending on the size of the community the staff of the council may need to include several people. The IPAR-Metropolitan Schools Pilot Project (see the supplemental report for a description of this project) is a partial mode of this proposal. It operates in Portland, Oregon with a full-time director, a full-time staff of five, and a part-time staff of two or three.

A dominant theme of this study has been the need for a common requirements language, and the disposition of the project staff and advisers is that this language should be in large part competency-based. Therefore, the following recommended qualifications for the council staff director are given as general competency statements. These are minimum requirements and would obviously need to be refined and expanded according to specific local situations. The director should: (1) demonstrate proficiency in communicating persuasively to both educational administrators and faculty, (2) demonstrate proficiency in communicating persuasively to leaders in the business and labor communities, (3) demonstrate skill in organizing and administering a highly complex system, (4) demonstrate knowledge of the goals of the local educational system, (5) demonstrate knowledge of the goals of the private and public enterprise systems, (6) demonstrate knowledge of the role and functions of organized labor in industry, (7) demonstrate skill in harmonizing diverse human and organizational interests, (8) demonstrate skill in curriculum development processes.

A more traditional set of minimum qualifications might be couched in these terms: The director should be a certified educational professional with at least two years of actual work experience. Presumably, the first qualification indicates a knowledge of the educational system and the ability to communicate to its members as one who is "one of us," and the second qualification indicates a knowledge of the work system and the ability to communicate to its members as one who is "one of us." Two years was selected arbitrarily. We know that Florida has recently initiated an Occupational Specialists Program in the high schools throughout the state (see the supplemental report for description of this program) and established two years of work experience as a qualification.

Proposal 5: *The state legislature or Governor should establish a state-level interagency Career Competency Assessment Board that would report to the highest levels of state educational and labor government.*

This board would bring educational, business, labor, and government leaders together for the primary purpose of gaining commitment from their respective institutions to participate in the process of articulating a common language that would be used by their institutions in describing education exit requirements and job entry requirements. Agreement may come on some sort of competency-based language or simply on a reaffirmation of particular course requirements or even determination of a set of attitude or other personal characteristics, or conceivably on some combination. This process of developing a common language is certain to be difficult, but if open dialogue between interested parties can get under way, it will be an encouraging and valuable first step.

The board would also assume a public relations role; its staff would distribute written material on related developments in other states and nations and would speak to industry, education, and civic groups on the importance of alignment. It would also inform schools and colleges of competencies required by different occupations within the state (in some cases, particularly in professional fields, national standards would be more important).

Through project funding the board could also assist educational institutions in developing desired exit competencies for their graduates and in revising the teaching process accordingly. Proposals funded by the board should include plans for active participation by business/industry representatives in the development of competency statements.

The board could also fund projects in specific occupational areas. For example, the state board of actuaries might be interested in conducting a three-part project to (1) change the actuarial examinations to become more competency-based, (2) get the early actuarial examinations accepted as a key part of the graduation requirements for individuals planning to enter the field and, (3) get the entrance requirements for actuaries modified to be more reflective of current educational programs.

The assessment of employment competencies would undoubtedly reveal the artificiality of job entry requirements that are based on degrees or years of experience and, most important, would display the commonality of competencies among different occupational clusters. For example, a recent study indicated that basic writing skills, communications ability, and mathematical proficiency serve as a basic and foundation competency for most career areas. The board would enable the world of work to adjust its entry competencies continually to the true performance needs of jobs and encourage flexible shifting of job entry requirements to meet personal and skill needs and abilities of school and college graduates more readily.

The board could function as an advocate and stimulus for competency-based measurement and programs through its information dissemination, research activities, funding activities, and the like.

The board should include at a minimum members of the state departments of education and postsecondary education, labor, and commerce, labor unions, and the public community at large. It should have a permanent staff that coordinates activities and prepares policy papers on which the board could act. Recognizing the political realities of implementing such a proposal, we assume that the board would probably need to be constituted as an advisory body rather than as a policy-making one. We would hope, however, that it could be in a position to make itself heard by the top educational, labor, and other governmental policy-makers in the state. To be effective, such a board would have to establish credibility not only in the educational world but also in the work world; therefore, the structuring of the board in the governmental system is critical.

The board should coordinate activites with the long-established state advisory council on vocational education, and the experience of the latter should be drawn upon in designing the board. However, the two have charges that are really quite different. We feel that both are important, and we would argue that they should be separate entities.

BARRIER CATEGORY 2: DEVELOPMENT AND USE OF MANPOWER AND JOB REQUIREMENTS INFORMATION

The collection and dissemination of data and information about jobs for use by educators and students is an area of confusion and mistrust. Although information on job requirements and job vacancies appears to be available, it is often not believed or, if believed, not acted upon. In most cases, the state department of labor or private organizations of businessmen collect data regarding job availability and job entry experience and educational requirements. These data are frequently mistrusted in the academic world because of (1) differences in definitions of terms, (2) a different world outlook, and (3) an ignorance of the degree of sophistication of available data and collection and dissemination procedures.

As a specific illustration of the first problem, in one state we visited, the director of research for the department of labor had demonstrated year in and year out that there had been, was, and will continue to be a decline in the need for individuals involved in agriculture. However, he lamented that although he served on the statewide vocational advisory committee and delivered his data to the total membership year after year, neither the advisory body nor the educational institutions in the state acted to delimit the number enrolled in agricultural curriculums. An industry member of the statewide advisory committee expressed a different viewpoint, seeing agriculture as "agribusiness," which he defined as any application of industry to the world of farming--e.g., the construction of farm equipment, the processing of farm produce, the marketing of farm goods, etc. Using this definition, he believed that the preparation of students for careers in agriculture not only

continued to be appropriate but was necessary to meet a growing industrial need.

A second problem exists in the long-range view of educators and the short-range view of businessmen vis-a-vis manpower forecasting. A February 3, 1975 article in The Chronicle of Higher Education entitled "Manpower, Clouded Forecasts" indicated that labor projections, particularly for the better educated members of society, will always remain uncertain. The writer advised that "reliance on such forecasts for policy purposes would be foolhardy. Maintaining a strong and flexible educational system will always be our best form of insurance." Educators believe that a well-rounded, well-educated person will always be employable in our society and will adapt to the changing work scene. Businessmen, on the other hand, feel they are forced to assume the training of individuals who fail to meet their immediate job needs because the schools and colleges refuse to act on information transmitted to them regarding these needs.

Perhaps one of the crucial breakdowns in communication between educators and business people is caused by the latter's misconception of the academic curriculum as flexible without limit and capable of rapid change and alteration. There is the underlying assumption that with an adequate communication link and a continuous flow of data, schools and colleges are able to adjust the curriculum to meet the ever fluctuating needs of business. On their side, educators hold that portions of the curriculum arise out of an academic tradition that stretches at least to the twelfth-century universities at Paris and Oxford and perhaps even to Aristotle and the Biblical scholars. To alter curricular content in these areas because of the dictates of job data that would improve the employability of students would be, from their viewpoint, inappropriate and a betrayal of their profession. The curriculum is defended as having integrity in and of itself. Accordingly, changes are slow in such areas as the liberal arts, humanities, and the social and physical sciences. When changes are made, they are made with due deliberation and respect.

As one means of reducing a third problem, that of ignorance on the part of educators of the degree of sophistication of available data and collection and dissemination procedures, we quote at length from a recent article on U.S. Department of Labor initiatives to provide more useful occupational information. The article cites a three-pronged cooperative federal-state venture labeled the Occupational Employment Statistics Program.

"[The first prong is] the Occupational Employment Statistics Survey, which now involves the cooperative effort of 28 States and the District of Columbia and is designed to produce estimates of occupational employment by industry for the entire Nation....

"Thus it is possible through the survey to secure employment estimates for more than 2,000 individual occupations covering the entire spectrum of skills. Survey data also open the possibility of studying the effect of public and private training programs on the supply of trained workers.

"[The second prong is] the National/State Industry-Occupational Matrix System, which has served for over a decade as a principal tool for preparing national projections of occupational employment. The present national matrix shows employment in 420 detailed occupational categories, cross-classified by 201 detailed industry sectors and six 'class-of-work' categories. Both occupational categories and industrial sectors are exhaustive, so the matrix is comprehensive of all employment.

"The matrix illustrates the occupational profile, or percentage distribution, of employment in each industry sector. Perhaps more importantly, it permits projections of total employment by industry and so provides projections of occupational employment for a given target year.

"[The third prong is] the State and Area Occupation Manpower Projections Research Program [which] affords consulting and technical assistance services by the Bureau of Labor Statistics to State employment security agencies in order to produce State and area occupational manpower projections. In addition to helping to develop and improve methods of preparing State and local manpower projections, the program creates and maintains technical manuals, guidelines, and other materials related to the projections process....

"Ancillary to this effort ... is an Occupational Information Systems Grants Program [which was launched in September 1974 to capitalize]...on the capacities of States and localities to deliver relevant occupational data in forms useful and in terms understandable to young people....

"The kind of information expected to come out of these systems includes such matters as the nature of the duties in an occupation; the personal, educational, experiential, and legal requirements for entry; wages and fringe benefits; current employment; employment outlook; industries which utilize the occupation; and descriptions of educational or training programs requisite to entry into the occupation."

From the foregoing account and from our discussions with those acquainted with manpower information, it is evident that there is no dearth of data. The critical questions, then, revolve around (1) appropriate use of this information for educational planning and (2) the existence of information on occupation requirements in a language translatable into education exit requirements. Following are two proposals that seek to be responsive to these needs.

Proposals

Proposal 6: *The governor's office should create a statewide interagency task force to coordinate and stimulate the production and utilization of manpower demand and supply data.*

This task force should also establish formulas for program need and should seek to disseminate information in ways that will assure its consideration in program planning. It should have participation from all major agencies responsible for gathering manpower information. It should

include but not necessarily be limited to consumer and legislative staff representatives and officials from the departments of education, higher education and labor. This task force should have statutory authority to collect relevant data, and at least some members should have comembership on other statewide planning and policy-making bodies.

The existence of an interagency committee of this type would enable all parties concerned about manpower information and its use in educational planning to share a common forum by having representatives from a variety of agencies and institutions. It should help overcome the problems of ignorance of information and bias against its use.

Proposal 7: *The U.S. Department of Labor in its work on the fourth edition of the Dictionary of Occupational Titles should reorganize into competency statements the "Worker Requirements" section of its 114 Worker-Trait group descriptions and, insofar as possible, the definitions for the 22,000 separate occupations.*

Proposal 8: *The fourth edition of the Dictionary of Occupational Titles should include a classification system organized around personal competency areas and a cross-referencing system whereby an individual with known competencies will be able to find occupations, possibly quite unrelated to each other, that require similar competencies.*

The U.S. Department of Labor has developed a wealth of material on thousands of jobs through extensive research. According to the 1966 Dictionary of Occupational Titles (third edition), over 45,000 individual job studies were made to verify the content of the job definitions. Many, perhaps the majority, of the definitions are written in quasi-competency terms, and the first task that needs to be done is verification of the information and restatement of the definitions in clear competency terms. This should provide immeasurable help for those involved in occupational training programs and could provide an important stimulus to the competency movement in education.

Also, extensive analysis of required worker traits was undertaken in preparation for the third edition, and the results are displayed in the DOT according to 114 specific worker-trait groups, such as ART: Photography and Motion Picture Camera Work; and INVESTIGATING, INSPECTING, AND TESTING: Transporting and Testing Work. Each of the 114 worker-trait groups includes a statement on Worker Requirements and a Qualifications Profile, as well as other information. The Qualifications Profile gives an indication of general educational development, specific vocational preparation, aptitudes, interests, temperaments, and physical demands. Much of this information already relates to competencies, and it should not be difficult to rework the material in order to display clear competency requirements for each worker-trait group.

A common concern among people engaged in vocational training is that people will be trained for jobs that will go out of existence shortly after the training is completed, or jobs that are dead-end, and that the training will have been so narrow that individuals will have low transferability potential. In this report we endorse the view that there is a reasonably finite set of major competencies cut across virtually all jobs, and that if these competencies were known, the potential for successful job change would be enhanced. A person knowing his/her own competencies should be greatly helped in job seeking by having access to an information source that references jobs according to competencies required. Any person with a known cluster of competencies should have some means of discovering jobs that, though unrelated themselves, require similar competencies. This seems to call for a new cross-referencing system in the DOT.

BARRIER CATEGORY 3: CREDENTIALING, LICENSING, AND CERTIFICATION PROCEDURES AND EXAMINATIONS

The most formidable barrier consciously erected in the education-to-work transition is that of licensing and certification. The increasing complexity of modern society requires that private and public agencies establish norms and regulations governing the skills and capabilities of individuals in delivering a product or a service. We wish to maintain a certain degree of confidence in the ability of a physician to deal with our bodily ills, a pilot to transport us safely, or an engineer to deal with the complexities of a heating system. This is a natural inclination in a technological society, and federal, state, and local legislation mandates various certification examinations (e.g., teaching, nursing) or allocates funds to appropriately accredited institutions (e.g., federal funding of institutions accredited by a recognized association or state support of private colleges approved by the state board of higher education).

We have, therefore, evolved a system that is by its nature closed and limiting. The certification and licensing requirements for individuals and institutions prescribe the type of examination or criteria to be applied, respectively, to the individual and institution and thereby delimit the number and type of individuals and institutions who compete for certification. There is either a real or artificially created shortage of jobs at the end of the licensing process and, as in the medieval guild system, individuals with established roles in a particular trade or profession soon come to control the licensing or certification process. Since they have, in most cases, a vested interest in maintaining a strong demand for their skills, their natural inclination is to raise the standards for certification and maintain a tight control over the number of licensed practitioners of their trade. They function under the umbrella of governmental protection and are generally thought to be acting in the interest of the public and the consumer.

The result is an obstacle course to the individual completing schooling and wishing to enter a profession or trade. He/she believes that he/she can perform at a particular skill level but nevertheless must undergo a series of examinations that will permit him/her to practice a particular trade or profession. In our site visits we encountered a variety of specific complaints about this procedure.

1. The licensing procedures in most states are typically not based on competencies required for the practice of the profession or trade but are, rather, artificial restrictions on the supply of certified practitioners. We encountered one individual who despaired of obtaining a plumber's license because the procedures called for 10 years of assisting a licensee before permission to take the licensing examination would be granted. Furthermore, permission apparently was based more on character traits than job skills. Fortunately, such procedures are no longer universal, and there are numerous signs of movement toward a more equitable approach to licensing.

2. Schools and colleges often disagree on the need for particular courses or competencies, and the individual has either to take additional, albeit similar, courses at different levels of training or, conversely, finds that his/her education has been completed without training in a necessary and required skill area.

3. Numerous individuals believe they "can do the job" but are unable to pass the required licensing examination, which they feel to be arbitrary and unrelated to the work situation.

4. A variety of examinations require different demonstrations in similar competencies. For example, a local civil service agency may require one display of skills whereas a labor union may require a different display of abilities for the same job. As a result, an individual wishing to enter a trade or profession is confused about which certification path to pursue.

5. The lack of a consistent mechanism whereby individuals could display the abilities they had obtained from work and nontraditional educational enterprises was often cited.

6. Minorities have been particularly affected by this barrier. Test content and procedures have often been constructed either consciously or unconsciously with a cultural bias.

The general recommendation we would make with regard to removing the barrier of credentialing, licensing, and certification procedures and examinations is that this be handled at the state (rather than the federal or local) level, and that the following three requirements-intensive proposals (Proposals 8, 9, 10) appear most desirable.

Proposal 9: *State legislatures should take appropriate action to require licensing boards to broaden their membership to include two new groups: those outside the trade or profession who can act as representatives of the public interest, and educational professionals who can represent those with responsibility for training in the respective areas.*

Just as the move toward licensing one group of practitioners after another can be labeled consumer protection so, we believe, can a proposal that licensing boards include among their members appropriate educators and individuals outside the profession or trade. While some licensing groups have already moved to such representation, many have not. Yet without the inclusion of outside interests, available means of checking the policies and procedures of licensing bodies are limited. Although outside members obviously would lack the expertise of those in the field, their detached viewpoint should prove healthy and helpful, and their membership should help make the trade or profession more responsive to public needs and demands and to improvements in the training process.

California now requires at least two public members on all licensing boards, and apparently reactions to their effectiveness are mixed. Some regard these new members as useless, others report them to be "a fresh breeze." No doubt the key to the effectiveness of such individuals lies in the degree of representation they bring. An individual speaking on behalf of some interested consumer group is likely to have more impact and be more knowledgeable than one who, though articulate, is representing only himself/herself.

Proposal 10: *Federal encouragement and support should be given to efforts to organize state educational licensing and certification agencies into a more cohesive system in order to improve and regulate more effectively the procedures by which certification and licensure are awarded.*

Currently most licensing agencies operate with almost total independence, setting standards, developing and administering examinations, determining other access criteria, etc. No doubt this system works well in many cases, but in many others considerable consumer dissatisfaction is evident. People complain of unreasonable licensing procedures, impractical licensing and certification requirements, and undesirable access restrictions, problems that vary from one board to another.

Another problem is the cleavage that often exists between licensing and certification boards and institutions that are responsible for training individuals to meet certain certification requirements. Proposal 9 offers one way to bring these two entities closer together, by having representation from the training institutions on the licensing board.

An alternate or additional possibility is that of bringing licensing boards under the authority of the state board of education, the state board of postsecondary education, or some joint committee of the two. Under such a system the discrepancy of an individual's being educated and

yet failing to pass appropriate licensure examinations would become immediately apparent. One solution for improving the education of students would be available through the accreditation and curriculum review of schools. Certification requirements similarly would be reviewed within this same organization. The staff responsible for certification requirements and for certifying students who have met these requirements would be in the same agency as the staff responsible for coordinating the educational programs developed in accordance with certification requirements. This juxtaposition should foster more direct communication and interaction between the two groups. And both would be held responsible for the certification of students who have successfully completed the prescribed courses or curriculums.

Another important function of this agency (or the larger agency of which this is a part) should be to require, as part of an institution's operational plan, a series of procedures for determining the need for a particular educational program, not only in terms of manpower demands, but also in terms of work entry requirements. That is, any institution desiring to start a program would need to display an understanding of the work entry requirements in those fields for which students would be prepared and make a complementary statement of education exit requirements around which the educational program would be built. Obviously, there would need to be congruence between the two sets of requirements before permission would be granted.

Consolidation of license examinations under a single state agency would reduce the number of special interest groups entering the licensure process, since they would not be able to isolate a particular agency or test maker for attention. All interest groups would be required to compete for attention at a single agency thus diminishing the pressure a single interest group could put on an agency administering a single licensing examination. Also, a single agency could move more comprehensively in the direction of competency licensing than the current fragmented system would allow.

At present 25 states are operating "umbrella" agencies to coordinate licensing activities, but at present most have not been able to curtail the independent action of the licensing boards over which they are responsible, nor do they exert much impact over school or college operations. New York State is an exception. The Board of Regents is the umbrella agency, and it has complete policy-making authority. Licensing boards in New York in effect make recommendations to the Board of Regents, and the latter determines what action will be taken.

Although at this time we are not recommending the New York model as the most effective way for all states to go, we are proposing that appropriate federal agencies, among them NIE, the U.S. Office of Education, the Department of Labor, and the Department of Commerce, continue and expand their efforts to unravel the present licensing dilemma and to stimulate creation of effective coordinating mechanisms that will overarch the training and the certification and licensing processes. A sample of actions that might be taken include incentive funding to stimulate

strengthening of existing umbrella agencies in those states where they now exist or to stimulate creation of such agencies in states where they do not now exist, expanded support for conferences and workshops to improve intrastate and interstate dialogue and understanding of the problems and possible solutions, research into the effectiveness of existing state certification coordination/control models, and support for the development of model state legislation.

Proposal 11: *The National Institute of Education should stimulate the development of model competency-based examinations and certification procedures in a number of occupational fields ranging from skilled crafts through the professions.*

This stimulation could take one of two forms. Either it could be a series of grants to selected occupational associations, such as the state craftsmen association and the state board of architects; or it could be a grant or series of grants to a state agency, such as a state educational licensing board or the legislative committee on education, which would coordinate the development of competency examinations and procedures in multiple-occupational fields.

Under the first option NIE would be stimulating modifications of the current examinations; under the second it would be encouraging the establishment of an alternative system. The first might be more feasible politically, the second more desirable socially. That is, in the first instance associations would be encouraged to alter their own procedures. To what extent they would be altered and what effect such alternations would have on the access of individuals to the trade or profession are subject to question. In the second instance, NIE in effect would bypass the associations and go to a centralized state agency with legal authority to modify the system. Obviously, however, competency examinations could not be developed in either case without full cooperation from members of the trade or profession.

If the second option is pursued, there would eventually exist two routes to certification, the traditional examination and the competency examination. The traditional examination is largely tied to a system of specific courses and experiences; presumably the second would permit more freedom in the mode of preparation. The important factor would be what is known and can be demonstrated, not how a person came to know it. Men and women who believe they have the requisite competencies to perform a particular job or to practice a particular profession would be able to display this competency objectively and, if successful, receive the same certification as individuals who passed through the more traditional education and test-taking route.

The existence of competency-based examinations offers no assurance that the trade or profession will be more accessible to those traditionally denied entrance. So long as occupational associations control the entrance requirements for certification, individuals may still be excluded on arbitrary grounds. We certainly need to be protected from having unqualified technicians operate on our picture tubes or unqualified doctors operate on our hearts, but we suffer economically and socially by

denying opportunities to individuals who may already have the requisite skills or who might acquire them in nontraditional ways.

It is because of this concern for denial of opportunity to potentially qualified men and women that we suggest not only that competency examinations be developed by an agency other than the occupational association (recognizing, however, the necessity for their cooperation) but also that administration of those examinations be conducted by a state agency, most logically the state department of education or postsecondary education or a board representing each. Examinations could then be open to whoever desired to take them, with certification assured upon satisfactory completion.

Considerable pilot testing and research will be necessary to be sure that the competency procedure is as rigorous as existing procedures and individuals who qualify in that way are fully as competent as those currently working in the occupation. Nothing could be more harmful for the competency movement and for our society than to process people through this new system who are unable to perform satisfactorily once they are on the job.

BARRIER CATEGORY 4: CONTROL AND AUTHORITY

Almost universally, educators and businessmen feel frustration at being unable to control many of the activities that have influence on the metamorphosis from student to employee. Guidance counselors accuse faculty curriculum committees of a parochial outlook that inhibits curricular change. School principals and college presidents place responsibility for the imperfect state of school-to-work transitions on the variety of constituencies to which they must answer in this process--e.g., funding authorities who must be placated, accrediting agencies that control their institutional destinies and the standing of their students, etc. Business and industry leaders react with some frustration when asked about their impact on school and college career education. They claim that while they do sit on various education advisory committees, for the most part they neither speak the same language as educators nor wish to intrude on their authority with advice and requirements.

In the worlds of education and work there seem to be a number of compartmentalized units operating in isolation from each other. Funding sources are insulated from accrediting agencies, which in turn are separated from curriculum development groups, who in turn are isolated from the committees and boards that organize and rationalize jobs and work. A sense of insularity marks each process; individuals appear to operate in tightly knit units and make contact with each other only at the periphery of each of the groups. The separate rules and recognition factors within each of the groups affect students moving from school to work in different ways and with differing expectations.

What appears to be required is a process that will legitimize those individuals who traverse the different spheres of school and work. This

process will require the acceptance of individuals with different credentials and experiences for participation in program decision-making. For example, curriculum review has traditionally been the prerogative of the teachers within a particular subject area or discipline. Linking mechanisms between education and work should ensure that curricular decisions are shared by the faculty with both guidance counselors and business representatives. On the one hand, counselors make contact with a variety of educational and work groups as part of their function within schools and colleges. On the other, business representatives, such as personnel directors and plant foremen, have current knowledge of what is required in the way of work competencies. In an analogous manner, the world of work should share the decision-making authority with regard to the organization of the workplace. Boards that control factories and plants and are concerned with the organization of work and personnel assignments should provide for the inclusion of teachers and school administrators in their decision-making processes if the workplace is to be better prepared to accept and use the product of the learning place. We recognize that this latter idea is anathema to large numbers of business and industry leaders, and that it is not likely to be accorded gracious acceptance.

During our interviews we visited a vice-president of a large international manufacturing corporation who expressed what may be an all-too-typical opinion: "The goal of industry is to eliminate jobs -- to cut out people.... It is not the aim of business to make work exciting or enjoyable; many jobs will never become meaningful. The best we can do is give the worker enough pay so he can get his kicks after working hours." This same individual views education's primary purpose as preparing people to work in such settings and is very active in "helping the schools with better information on what we in industry need and expect."

There are a number of corporations in the United States and abroad that are taking the problems of worker alienation and dissatisfaction seriously and attempting to provide creative solutions that often include job restructuring. The Ford Foundation, despite recent setbacks in its funding capabilities, is allocating funds for several projects aimed at improving the quality of working life. One of Ford's projects will be the formation of a "Work in America Institute" to provide research, publications, and technical assistance to industry. A second is to conduct action research on the sociotechnical approach to job design. And a third is to investigate labor-management cooperatives.

With respect to changes in education exit and work entry requirements, little has been done so far in the work sector. Within the education sector, however, schools and colleges are being asked by the public to give an accounting for their use of revenues. In many cases, particularly at the secondary level, the response has been to develop ways of describing output to reflect more accurately what an individual knows.

Business, labor, and industrial representatives frequently have not been fully involved in the determination of program objectives or graduation requirements. In Oregon, for example, competency-based graduation

requirements were developed with minimal business/labor/industry input, except in a few areas such as personal finance. Even when there is outside involvement, often there is no formal attempt to make an impact on work entry requirements. Therefore, while schools and colleges may be able to display the fruits of labors to the public more attractively, the graduate may not necessarily be in an improved position with respect to work entry.

Proposal 12: *States should consider some organizational mechanism for bringing together under one roof the myriad planning and funding arrangements aimed at human development. Possible alternatives include a governor's state council on education and work, a legislative committee on education and work, a joint executive-legislative lay council on education and work, state and regional human development planning councils, and a state department of human development.*

Currently in many states the administration of education is fragmented into units dealing with elementary and secondary schools, community colleges, adults, universities, proprietary institutions, and so forth. Then, in the noneducational sector there are manpower training, apprenticeships, corporate training activities, and the like. Money flows from separate agencies in a manner that frequently results in disconcerting duplication or frustrating gaps.

We recommend that states take the initiative in dealing with this fragmented condition. We realize, however, that each state has a different political climate and organizational structure, and it would be foolish to imagine a single pattern that would be acceptable and useful in all 150 states. Therefore, we submit five alternatives in the hope that one or another will be acceptable as at least a partial solution to any state eager to deal with its internal disarray. Each alternative would assume somewhat different functions, because each would enter the state system at a different organizational point.

Though the functions might differ, the primary purpose of each of the alternatives is the same: to remove the procedural and perceptual barriers between education and work and, thereby, harmonize the operations of these two societal institutions to create a more compatible environment conducive to a lifetime of earning and learning. Operating at this level, each would subsume process and requirements linking functions, although the adoption of one or another alternative in no way diminishes the need for implementing the earlier proposals.

Under any of the alternatives a mechanism would be established for considering the individual throughout his or her entire life, not merely as belonging in a series of compartments labeled "age cohort" or "role segment." That is, an individual would not be seen only as "under 18" because that age group has funds and activities for "going to school," or as "between 18 and 22" with a differing set of expectations (going to college) and funds granted for that purpose, or as "over 22" with

different benefits and programs (unemployment insurance, manpower training, etc.) to suit this individual's need to "work" or be "trained" because he has passed the age of schooling. Instead, the funding of an educational program, the development of accrediting and certification processes, the utilization of teachers, educators, foremen, and businessmen, and the impact of legislation would all be reviewed, analyzed, and assessed in a total cost-benefit process to maximize the growth of an individual throughout his or her lifetime.

Alternative A: State Council on Education and Work. As we envisage this council, it would be created through executive order of the governor and would operate essentially as a recommending body to various state boards and agencies. Membership on the council would include representatives from the departments of education, higher education, labor, commerce, community development, and any other department that has functions in the education, training, or work areas. Other members would also be appointed from organized labor, business, and industry, the general public, and relevant community-based organizations. Although the council would not have decision-making authority, its impact on policy and practice could be significant, particularly if the governor chairs the council.

The primary functions of this council would be to bring informed opinion from diverse quarters to bear on critical issues relating to human development. It would in essence be a sensing device for the governor and would be able both to initiate and to react to ideas on ways in which our education and work systems might be reformed. It should have the responsibility not only to provide counsel, but also to review major program plans from the various state agencies engaged in activities related directly to education and work. The council also should be given the staff support to poll constituencies on issues of major importance.

Emerging state groups, such as the newly developed California Industry-Education Council (see Chapter 3), appear to be moving in this direction, although currently their charges typically differ from what is proposed here, and their memberships are not so broad-based. Nevertheless, their existence and activity should be quite helpful in dealing with many aspects of the barriers cited earlier.

Alternative B: Legislative Committee on Education and Work. Some states have the tradition of a strong legislative branch of government, and in such states this second alternative may be both more attractive and effective. In many states, legislatures are taking an increasingly active interest in the affairs of education, so much so that one of our project advisers was prompted to comment that "legislatures are becoming the real state boards of education." Under this model a state legislature could create either a standing or a select committee to look comprehensively at the problems and discontinuities within and across education and work and, where appropriate, to draft legislation to deal with them. The committee could also recommend to the total legislature a package of incentive funding to local or state agencies to encourage movement on the misalignment of education exit and work entry requirements. The committee might also take the lead in the creation and funding of the

statewide career competency assessment council and state educational licensing board discussed earlier in this chapter.

Alternative C: Joint Executive-Legislative Lay Council on Education and Work. This alternative is intended to balance alternatives A and B and take the council activity out of the political arena insofar as possible. The functions performed by this council would be similar to those already described in A and B, but its place in the state system, and therefore the activities it would undertake and the way it would operate, would be different from either A or B. Most logically, the council might be authorized by the state legislature and appointed by the governor.

Alternative D: State and Regional Human Development Planning Councils. Even with collaboration at the state level many states see the need for regional planning and coordination. Florida, for example, has embraced this model with respect to manpower planning. Florida has a state council and 10 regional planning boards (see description in the supplemental report). One of the benefits of regional subdivision is to bring some order to the current irregularity that attends fragmented planning across and within state agencies. For example, in California there are elementary and secondary school districts, community college districts, vocational education districts, adult education districts, and career guidance districts. For the most part, the territorial boundaries for each are distinct, which must necessarily have a detrimental effect on the delivery of educational services.

In this model the state council would work with state agencies in much the same way as described under Alternative A but would assume more substantive planning functions than was implied in A. Under this model the regional councils, which would also have broad representation from the education, work, and public communities, would also develop substantive plans. These plans would be forwarded to the state council for review and integration.

Alternative E: Department of Human Development. This department would have under its jurisdiction the many state boards and agencies now concerned with both the education and the work worlds. Its very structure would provide and harness the dynamic tension between the two sectors. This department could monitor and regulate program development and human development as necessary, but it would be equally critical for it to provide a vehicle for stimulating the work community to consider the social implications of its human organization. The department of human development might also foster development of a career competency assessment council or would at least need to work in concert with such an agency or organization.

A department of human development would, through its ability to allocate money and, therefore, status and authority, cause a restructuring of the fairly tight groupings in our schools and workplaces that currently control what and how people learn and where and how they work. Over a period of time, educators would shift to the workplace, following both funds and concern, to train and educate individuals while they are participating in work. This would tend to bring different perspectives

and outlooks to the world of work. Similarly, as education and training become a lifelong concern of people at work, businessmen and industrial employers would exercise much greater concern over the learning process and the content of curriculum. The school would cease to be the private enclave of educators and would require a broader constituency. One can argue the merits of educators' involvement in decisions regarding the organization of work, or businessmen's involvement in the learning process, but for our concern--the easy transition of individuals between school and jobs--greater interpenetration of both worlds facilitates the transfer of students and workers between the two worlds.

No doubt some states will be able to implement a given alternative on their own either by consolidating the operations of existing agencies or councils or by revising the charge to an existing state body. Other states, however, are certain to need outside funding to move toward considering education and work in a more integrated fashion. Therefore, we urge NIE to unite with the U.S. Department of Labor in making funds available to states that wish to pilot test one or another of the five alternatives (or of a sixth, if it seems appropriate). Further, we urge that NIE take the initiative in contacting the Department of Labor and that the two federal agencies then seek to elicit interest from the states.

SUMMARY

In this chapter we have submitted 12 proposals for action that taken together we believe would make significant progress toward bringing the worlds of education and work closer together, the result of which would be to smooth the transition from education to work. In this study the focus has been on that one-way transition, although we hasten to add that it should not be viewed as applying only to the first transition an individual makes from education to work, but to whenever and as often as this particular transition occurs. If a person leaves high school for a job at age 18, that transition was relevant to this study. If the same person returns to college full time at age 25 and leaves college for a job at age 30, that transition to a job was also relevant to this study. If that same person repeats the pattern several times, each transition to a job was relevant to this study.

Although we paid particular attention to the full-time student, many of the proposals would apply to the part-time student as well. The number of part-time students in postsecondary education is growing rapidly, and their needs and problems oftentimes are even more complex than those of full-time students. We recognize the critical nature of these needs and problems, though they have not been a focus of this study.

In this chapter we discussed four categories of barriers that obstruct smooth education-to-work transitions: (1) fluctuating education exit and work entry requirements, (2) development and use of manpower and job requirements information, (3) credentialing, licensing, and certification procedures and examinations, and (4) control and authority. Underlying

all these barriers is the recognition that the goals of education and work are now and (we hope) will continue to be dissimilar. While this dissimilarity may be desirable to some extent, it contributes to the lack of a smooth transition from one to the other.

The proposals offered in response to these barriers range in scope from annual follow-up studies to state coordination of the education and work systems, in governmental jurisdiction from local community councils to federal developmental initiative and publication revision, and in content from manpower information to competency-based certification. The majority of proposals might be classified, using the terminology of Chapter 5, as requirements-intensive rather than process-intensive--that is, concerned primarily with the alignment of education exit and work entry requirements rather than with ways of bringing the learning and earning processes closer together. A primary reason for this emphasis is the conclusion that currently considerable attention is being devoted to blending process elements but insufficient attention to alignment of requirements. Yet both are important.

The NIE Request for Proposal stipulated that the contractor should consider whether a single ideal career education system could be proposed or whether a modular system would be more logical and feasible. Our investigation has led us to conclude that because of the wide range of education-work linkage needs and the several different governmental levels that necessarily must be involved in providing these linkages, a modular system makes far more sense and has a far greater chance for success than a single multi-bureaucratic integrated system. Yet, taken together the 12 proposals do represent a comprehensive approach to the problems of smooth education-to-work transition, and we are convinced that if all, or even several, were implemented, the impact on education and work in the United States would be immense.

Chapter 7

RECOMMENDATIONS FOR FURTHER RESEARCH AND DEVELOPMENT

FOR THE NATIONAL INSTITUTE OF EDUCATION

The Request for Proposals to which this report is a response calls for the contractor to "develop a strategy(s) for NIE to consider what further research and development will allow for maximum benefit to the field, maximum building on what is already in place, and maximum assessment of outcomes, in as many different environments as possible, and with as many participants as is reasonable within the limit of targeted research and development funds."

The two previous chapters have posited the thesis that education-to-work linkages may be viewed in two categories--as process-intensive linkages and requirements-intensive linkages. Process-intensive linkages are those which primarily attempt to blend the "processes" of education and work; requirements-intensive linkages are those which primarily attempt to align school or college exit requirements with occupation entry requirements. In our recommendations for further research and development we have addressed the need for NIE's attention to both areas.

We were also mindful of the statement in the RFP that calls for recommendations for future funding to be "built on what is already under way and succeeding" so that "both durability after R & D support is phased out and 'ripple effects' of the study are maximized." In light of that statement, we recommend two evaluation research activities of process-intensive linkage models and three developmental activities of requirements-intensive linkages. We have selected these activities from among the larger group of possibilities that were brought to light over the course of the study because they are in line with NIE's expressed priorities. Moreover, the evaluation research activities need doing to clear away some myths, and the developmental activities provide "products" that can be disseminated widely, thereby enjoying a "ripple effect." By highlighting this particular set of activities we do not mean to preclude NIE involvement in sponsoring activity implied or stated in other proposals.

We realize that NIE, in asking for "descriptive model career education delivery systems" desired a plan for state or local departments of education that would rationalize the delivery of educational and occupational services. However, our study has made clear to us that placing responsibility for linking education and work on only one of the partners in the process is futile. If our society is to move to a new relationship between education and work, then new relationships and mechanisms are required. Quite possibly, these should be outside the education and work worlds. In recommendation 2 below some councils will be community-based, and in recommendation 5 the authority in one strategy is lodged in state government.

RESEARCH AND DEVELOPMENT RECOMMENDATIONS

The five recommendations are the following.

RESEARCH

1. *NIE should support evaluation studies of the effectiveness of alternate forms of work-experience activity at the secondary and postsecondary levels.*

2. *NIE should support an evaluation study of the effectiveness of alternate forms of community education and work councils (this generic title applies to industry-education councils, career education councils, community career councils, and others whose primary mission is to provide a bridge between schools and the workplace.*

DEVELOPMENT

3. *NIE should expand its support of the competency-based education movement and should stimulate development of model competency-based examinations and certification procedures in a number of occupational fields ranging from skilled crafts through the professions.*

4. *NIE should support the development of issues papers and the subsequent drafting of model legislation to expand the membership of licensing boards to include representatives of the public interest and of relevant educational institutions.*

5. *NIE should support a series of working conferences in several states at which policy makers interested in improving the education-to-work transition process in their states would gather to consider ways to begin implementation of the proposals outlined in this report and/or of other proposals that have been or might be offered by different groups.*

RESEARCH ACTIVITIES

1. *NIE should support evaluation studies of the effectiveness of alternate forms of work-experience activity at the secondary and postsecondary levels.*

In Chapter 6 we recommended that work-experience opportunities should be provided to all students at the secondary and postsecondary levels and that such experience should become a part of a school's graduation requirements. The first question is: What is work experience? In one form or another, work experience has been around a long time and has taken many forms. The thrust of this recommendation is that the recommended research studies analyze and evaluate existing forms (e.g., internships, cooperative education work-study, career exploration) in an attempt to compare the educational effectiveness and economic impact of them. In the course of this investigation a number of questions should be addressed, such as:

•Why do people participate in the various forms of work experience?

•How do the purposes of the various programs differ?

•What are the major characteristic differences among individuals participating in the various programs?

•What effect do different kinds of work experience have on individual career choice, educational plans, academic success, employment earnings, etc.?

•Is pay an important consideration? When? For whom?

•Is work experience more or less profitable for individual career choice and academic success when taken early in the high school years as opposed to later in high school or in college? How does that vary across groups of people?

This research activity will constitute a large and expensive undertaking and no doubt will involve several individual studies, some of which need to be longitudinal. But activity in this area is critically important in light of increased interest in work experience as an educational alternative.

Some evaluation work has been done in this area (e.g., assessment of school-supervised work education programs by Systems Development Corporation in September 1973 and numerous studies evaluating cooperative education and other individual types of work experience), but considerably more work needs to be done before work experience is adopted as a formal educational initiative.

Most work experience is undertaken by individuals who are primarily still on the "education" side of the education-to-occupation transition, but there is increasing discussion of the need to examine the problems of individuals in the transition period itself. According to a survey of college and noncollege youth conducted by Yankelovich and Clark,[1] the current generation of young people "are growing increasingly restless with the options presently available to them when they graduate from high school--either going to work or continuing on to college." While few options exist, many may be imagined. Yankelovich and Clark offer five different plans, one of which is a career-planning year during which an individual would be exposed to many different fields and job opportunities and would participate in new forms of career counseling.

We urge NIE to consider this need to examine the transition period in developing Requests for Proposals for evaluation of work-experience alternatives. One study might even focus on an assessment of the need for some "career-planning year" type of experience for students. A

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1. Daniel Yankelovich and Ruth Clark, "College and Noncollege Youth Values." Change, Vol. 6, No. 7, September 1974.

later study, if warranted, might include the establishment and evaluation of various alternatives that would be designed to respond to the needs identified.

Critical to the success of work experience as an educational or transitional strategy is the resolution of questions of costs and funding. What are the real costs of various work-experience alternatives? How can they be funded? Should funds come from state or federal treasuries? Or both? In what forms? What economic incentives can and should be provided to business to increase available work stations to make realistic the proposal of some paid or unpaid work experience for all secondary and postsecondary students? How extensive and expensive would be the training process through which educational and business personnel would have to go? The list of critical questions is long, but they must be addressed.

We therefore recommend that NIE invest heavily and immediately in search of reasonable answers. For until the answers are forthcoming, the rhetoric will flow but large-scale action is not likely to follow.

2. *NIE should support an evaluation study of the effectiveness of alternate forms of "community education and work councils" (this generic title applies to industry-education councils, career education councils, community career councils, and others whose primary mission is to provide a bridge between schools and the workplace).*

In the past few years a number of local education and work councils have been developed, with initiative coming from many quarters (e.g., chambers of commerce, local industry, local boards of education). Although many communities have yet to organize a council of this type, there are enough operating so that their evaluation should precede any NIE sponsorship of new councils. Yet there is much talk about the need for community councils from government officials, like Terrel Bell and Willard Wirtz, and NIE may feel the need to be responsive. If so, we urge that NIE sponsor several councils of distinctly different types under different authorities and, in the process, establish mechanisms for comparative evaluations.

The goal under either NIE strategy should be to develop guidelines for local communities that desire to establish their own councils. Some of the questions that need to be addressed are:

How does council sponsorship affect its operation? Its image in the schools? Community? Business?

What functions do community councils perform? Do they get involved in requirements functions, such as seeking to develop a common requirements language between education and work, or are they exclusively engaged in process functions, such as bringing interested parties together and organizing community resources?

Are certain council patterns more appropriate at one level of education than at another?

What effects do the councils have on the operation of the schools and on the operation of work institutions? In other words, is their impact felt primarily in the education sector or is it also felt in the work sector?

What authority do councils have to affect changes in school and/or work operations?

What is the staffing pattern of the councils?

Again, these are just a sample of the questions that need to be asked, but it seems that a one-year evaluation study would provide information vital to NIE's further developmental efforts in this area. If NIE chose to sponsor the development of the councils as well as their evaluation, the effort would probably have to be of three-years' duration.

DEVELOPMENTAL ACTIVITIES

3. *NIE should expand its support of the competency-based education movement and should stimulate development of model competency-based examinations and certification procedures in a number of occupational fields ranging from skilled crafts through the professions.*

The movement toward competency-based education and assessment is strong at the current time and national in scope. NIE's participation in this field has been welcome, and continued support is recommended.

For readers not familiar with the nature of NIE's involvement in this area, we are listing below the postsecondary activities proposed in the NIE fiscal-year 1976 budget, as reported at an American Council on Education seminar on June 5, 1975.

DESCRIPTION	PROPOSED FUNDING LEVEL
1. Initiate policy studies on the life-long learning process including the availability of resources, how they are used, the possibility of alternative financial systems, and the relative value of competency-based vs. traditional academic credentials.	$500,000
2. Identify transfer problems between competency-based high school programs and postsecondary institutions.	$100,000

DESCRIPTION	PROPOSED FUNDING LEVEL
3. Identify transfer problems between competency-based postsecondary level programs and other post-secondary programs and institutions.	$150,000
4. Identify the competency-based activities currently existing in professional areas.	$250,000
5 Identify issues in the ongoing Oregon effort relative to teaching, learning, resource utilization, and school-community linkage for feasibility of adaptation elsewhere.	$200,000
6. Continue support of the competency-based program at the College for Human Services as a case study to derive implications for post-secondary education in general.	$300,000

We recommend that NIE continue its research work in this area but expand its developmental activities. Specifically, we recommend that NIE should stimulate development of competency-based examinations and certification procedures. Although we have not specified a minimum number of fields, we strongly recommend that they cover the occupational range, from skilled crafts through the professions.

To use the terms of the RFP, such examinations would be major "facilitative mechanisms" in that they would foster the development of strong linkages between exit requirements and the workplace. The preparation of competency examinations would require an in-depth analysis of work performance and translation of this performance into clear and practical assessment measures. Examinations would clarify and rationalize much of what is expected in the workplace, state these in manageable competency standards, and affect school/college exit requirements and the education process. They would also enable the nontraditional educational processes being developed to offer skill and occupational training through alternative methods and have their students openly evaluated and accredited.

What we recommend is a Request for Proposals directed at agencies at the state level. Possible respondents might include the governor's office, the education committee of the legislature, the office of the state budget director, or where operational, the state coordinating board for educational licensing. Obviously, any interested office would need to form a qualified staff to coordinate the activity. The RFP would call for a three-year program of development, administration, and

assessment of a series of competency-based examinations in a range of occupational areas. It would be required that the occupational areas selected range from skilled crafts (stationary engineer, electrician, etc.) through paraprofessional (inhalation therapist, teacher aide, etc.) and on to professional (psychologist, architect, etc.). Naturally, certain occupations at each level are more amenable to competency testing and are more likely to have people trained in nontraditional ways. These are the occupations that ought to be considered first.

Any state agency desiring to bid on this proposal also would need to develop an appropriate consortium of representatives from each occupation for which a competency-based examination is to be developed. This would balance the political process involved in certification with the need of consumers to have an adequate supply of practitioners. It would also increase the likelihood that such examinations are publicized and used and that equitable procedures are established.

The project would have a three-year life span broken down generally as follows.

First year. The contractor would convene the appropriate representatives of the profession with representatives of the public interest and a small cadre of experts in the area of competency-based assessment. The groups should meet separately from one another, although the test and measurement cadre may be used for different groups. The first-year goal would be: to develop competency-based examinations in at least three to five occupations for which the state administers a traditional certification or licensure examination, to gain initial determination of the cost implications of the process, and to establish procedural mechanisms for administering and accrediting the examinations.

This process is likely to prove more difficult politically than technically. That is, the state of the art of competency and performance assessment is such as to permit, with a fair degree of speed and integrity, the development of competency-based instruments. However, because this process implies a diminution of control by the professionals within an occupation and by institutions preparing individuals for the profession, it will require delicate and skillful political management. It might, therefore work most effectively if NIE could have as the contractor a standing legislative committee, either the education or the labor committee within the state. In addition to sponsoring the effort, they no doubt would need to prepare legislation to change certain existing laws governing certification and licensure.

Second year. The development of three to five additional competency-based examinations would be initiated, but it would be most important that the three to five examinations prepared previously be refined and administered at least once during the year to a group of applicants. This would entail broad advertising of the availability of competency-based examinations in the various occupational areas, examinations that would require no specific educational or experiential attainment, but rather the display of the competencies required in a particular occupational area. The resultant certification would be similar in type and kind to

that awarded through the traditional examination process, and the successful examinee would be able to practice the profession on an equal basis. By the end of the second year research evidence of the cost implications and procedural problems should be available, and the feasibility of large-scale use of competency processes should be determined.

Third year. Dependent on the research evidence from the second year, development would be initiated for three to five additional competency-based examinations, and the examinations developed during the second year would be advertised and administered. In addition, an assessment of test takers would be undertaken, based on data that would have been gathered during the previous years' administration of the traditional and competency-based examinations. This assessment would be concerned primarily with the background, education, and experience of individuals participating in both licensure processes--and would examine such areas as the socioeconomic status, minority group identification, educational level, age, work experience, etc., of the two test-taking groups. An examination of the success and failure ratio of those taking the examination with regard to the factors noted above would prove crucial for the assessment of the competency-based examinations.

The assessment would attempt to validate whether nontraditional individuals--e.g., those with less education but greater work experience, minorities, women, etc.--registered for the examinations in greater numbers and whether they performed comparatively better or worse on them.

An alternative path for NIE to take if it desires to act on this recommendation would be to prepare separate RFPs to be bid on by state or national boards responsible for each occupational area. Many already are moving to modify their existing examinations in the direction of making them competency-based. Rather than providing an individual with alternate routes to the license (a possibility under the first strategy), he/she would have just one route, as now, but presumably it would be open to individuals who may have acquired their knowledge and skill outside school settings. Presumably, but not necessarily.

The major disadvantage of this strategy is that it does little to counter the tight control exerted by many occupational associations over entry into the field. The major advantage is that it is far more digestible politically and would almost certainly stand a greater chance of implementation.

If this decentralized alternative were implemented, the evaluation research effort should focus on comparisons of the characteristics of the candidate pools in a particular field over a three-year period. The basic research question would be: As the competency examination became available and known, did more minorities, women, etc. register, and how did they compare with the more traditional registrants in performance?

Another worthy research issue might focus on the strategies used by different occupational associations or boards in developing their competency-based examinations. Are there certain strategies that may be

more effective yet less expensive than others? If these could be documented, it would assist boards in other states who did not want to accept another state's examination but would like to profit from knowledge of the developmental process.

4. *NIE should support the development of issues papers and the subsequent drafting of model legislation to expand the membership of licensing boards to include representatives of the public interest and of relevant educational institutions.*

This recommendation also follows a proposal outlined in the previous chapter (proposal number 9). The primary purpose of licensing boards is to certify that individuals are competent to perform a service to the public. We believe such consumer protection is necessary, but we feel that those who are recipients of such goods or services and those who are responsible for seeing that an individual is qualified should be represented on the membership of these boards. We wish that licensing boards would voluntarily propose the expansion of their membership in these directions, but we have little evidence to make us think they would. Therefore, government initiatives seem necessary, and state legislation seems the most appropriate initiative.

We recommend a two-stage activity. First, NIE should have experts in this area prepare a series of papers that outline the critical issues, and on the basis of these papers NIE should prepare a Request for Proposal from individuals or agencies to draft such model legislation. Legislation would need to take into account the differences among licensing boards and could build on material already developed by licensing boards that have moved to such representation. As stated in Chapter 6, the nature of the public representation is the key to its effectiveness. Selected individuals are likely to have more impact if they represent recognized consumer groups rather than just themselves.

5. *NIE should support a series of working conferences in several states at which policy makers interested in improving the education-to-work transition process in their states would gather to consider ways to begin implementation of the proposals outlined in this report and/or of other proposals that have been or might be offered by different groups.*

While some proposals stipulate the need for direct federal involvement, others do not. Several can be at least partially implemented through state or local initiative. Yet the problem of getting things going always exists, and the problem of communicating with individuals through written information always exists. In fact, the reader will recall from Chapters 4 and 5 the conclusion that dissemination of written information is the weakest type of linkage we found. A stronger linkage is actually bringing people together to act on the written material, and this is what we recommend here.

We urge NIE to act as catalyst for initiating implementation, not only by adopting and acting on the other recommendations of this chapter

but also by providing the support for working conferences of state and local policy makers. The composition and structure of the conferences must be determined; it might even be desirable to have small groups focusing on different barriers or problem areas.

FINAL CAUTION

Will creating better linkages between education settings and work settings be an unmixed blessing? One of the reasons for separating the two settings is that education is not intended to enable a person to progress in the career area of work alone. Instead, education is intended to enable a person to progress in all career areas--e.g., work, leisure, family, citizenship, health, ethics, and esthetics. Linking education settings to work settings, to whatever degree, carries with it the risk that education will be placed disproportionately in the service of the work career. That is, the better the linkages between education and work, the greater the risk that linkages between education and other career areas will be weakened.

It seems possible that the effect of building education-to-occupation linkages will be to create support for those aspects of the school or college program that have utility in the workplace and at the same time lead to neglect (or possibly opposition) of those aspects that have low utility or no utility in the workplace.

On the other hand, such pressures will be most directly and most effectively applied to just those areas of the educational program that purport to prepare students for work. That is, if the school justifies something it is teaching as being useful to future workers, that claim will be energetically tested as linkages between education and work are created. Aspects of the educational program that do not claim to prepare students for work may simply escape the attention of those concerned about work preparation.

Nevertheless, if NIE does move to strengthen education-to-work linkages, there is an irreducible amount of risk to those areas of the educational program that prepare a person for careers other than work. But if NIE does not promote education-to-work linkages, it will allow various degrees of obsolescence to continue and perhaps to grow in the education system. Any obsolescence in the schools is a problem in rapidly changing societies like ours, in which conditions in work settings can change appreciably within a very short span of years.

Clearly, the dangers of an education-work system that is too tightly linked are real, and those responsible for overall improvement in both worlds--education and work--must weigh the issues carefully.

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The following bibliography includes a wider range of references that represents writing not only on the topic of the relationship of education and work but also on the conceptually broader topic of career education. Although the bibliography is not an exhaustive guide to either topic, we trust that the reader finds it of use in getting an idea of the literature that has come to the fore. To improve the usability of the bibliography, references have been grouped into five primary categories and 18 sub-categories, as follows:

Planning

- Overviews
- Definitions
- National Policies
- Implementation Strategies
- Discrimination and Equality

Curriculum

- Curriculum Development
- Community Utilization

Guidance

- Career Development
- The Decision Process
- Guidance Procedures
- Guides and Directories
- Computerized Guidance Systems

Manpower Utilization

- Manpower Resources
- Education and Work
- Transition to Work

Evaluation

- Evaluation Issues and Programs
- Follow-Up Studies
- Career Planning Measures

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APPENDIX A. CONSORTIUM MEMBERS

Members of the Internal Consortium

Representing the College Board:

Jack N. Arbolino, Program Services Officer
T. Anne Cleary, Vice President, Program Planning and Research
Douglas D. Dillenbeck, Executive Director, Publications
George H. Hanford, Senior Vice President, Operations
Linda Keilholtz, Program Planning Officer
Sidney P. Marland, Jr., President
Gordon P. Miller, Program Services Officer
James E. Nelson, Vice President
Lois D. Rice, Vice President
Robert E. Stoltz, Vice President, Special Field Services (On April 1, 1975 he became Vice President for Academic Affairs at Western Carolina University.)

Representing the Educational Testing Service:

James L. Bowman, Director, Financial Aid Studies and Programs, CEEB Programs
Martin R. Katz, Senior Research Psychologist
Benjamin Shimberg, Director of Program Development, COPA
John R. Valley, Director, College Level Placement and Equivalency Program, CEEB Programs
Raymond G. Wasdyke, Associate Examiner, Voc-Tech, Test Development, ESSP
Warren W. Willingham, Executive Director for Program Research

Members of the External Consortium

June Bienstock, Department of English, Bayside High School, New York
Fred Burke, Commissioner of Education, New Jersey State Department of Education
Carl Burton, Administrative Coordinator, University Program of General and Continuing Education in the Humanities, Columbia University
Niel Carey, Specialist in Vocational Guidance, Maryland State Department of Education
Howard B. Casmey, Commissioner of Education, Minnesota State Department of Education
Russell S. Clark, Assistant State Superintendent for Adult Vocational Education, Georgia State Department of Education
Douglas Cochennour, Director, Office of Personnel Administration, U.S. Department of Labor
Thelma Daley, Director of Counseling, Overlea High School, Baltimore, Maryland
Lawrence DeVeau, Chief of Evaluation for the Technical Training Command, Naval Air Station in Millington, Tennessee

Martin W. Essex, Superintendent of Public Instruction, Ohio State Department of Education
Jack D. Ford, Assistant Director of Vocational Education, Ohio State Department of Education
Nannell Grube, Career Education Counselor, Anne Arundel County Public Schools, Maryland
Josephine Guzman, Student, Queens College, New York
Carl Hassel, Superintendent of Schools, Prince George's County Public Schools, Maryland
Catherine Havrilesky, Deputy Assistant Commissioner of Research, Planning Evaluation/Field Services, New Jersey State Department of Education
Floyd Keller, Director of Instruction, Minnesota State Department of Education
Howard Marshall, Manager, Human Relations, McCormick & Company, Baltimore, Maryland
Lois Marshall, Dean of Community Services, Bergen Community College, New Jersey
Peter Martin, Assistant Dean of Student Services, Hostos Community College, New York
Louis J. Michot, Superintendent of Education, Louisiana State Department of Education
Richard Millard, Director, Higher Education Services, Education Commission of the States, Colorado
Jack P. Nix, State Superintendent of Schools, Georgia State Department of Education
Bernard Rifkind, Director, Cultural and Retiree Affairs, American Federation of State, County and Municipal Employees, AFL-CIO, New York
Harold R. Seltzer, Associate State Director, Division of Vocational Education, New Jersey State Department of Education
James A. Sensenbaugh, Superintendent of Schools, Maryland State Department of Education
Edward Sutton, Assistant Vice President, Human Resources Development, New York Telephone Company
Bobby Wicker, Director of Career Education, Louisiana State Department of Education

APPENDIX B. SURVEY PARTICIPANTS

CALIFORNIA

Samuel L. Barrett
Assistant Superintendent of Public Instruction
State Director of Vocational Education
State Department of Education

Edward Bispo
Secondary Education
State Department of Education

Thomas M. Bogetich
Executive Director
California Advisory Council on Vocational
Education and Technical Training

Dwayne L. Brubaker
Supervisor
Work Experience Education
Career Education Services Unit
Los Angeles City Unified School District

Richard Camelli
Director
State Employment Development Department

Frank J. Connors
Director
Education Department
California State Chamber of Commerce

Gerald D. Creci
Dean of Occupational Program Planning
Division of Occupational Information
California Community Colleges

H. Glenn Davis
Associate Superintendent of Public Instruction
Early Childhood Education
State Department of Education

Odessa Dubinsky
Southern California Manpower Analyst
State Department of Human Resources Development

Margaret A. Ferguson
Career Education Services Unit
Los Angeles City Unified School District

Ray Fleming
Manager
Labor Market Analysis Section
Employment Data and Research Division
State Employment Development Department

Rex C. Fortune, Jr.
Associate Superintendent of Public Instruction
Secondary Education
State Department of Education

Gary Levine
Assistant in Academic Affairs
California State University and Colleges

Robert Little
Planning and Project Implementation Section
Program Branch
State Employment Development Department

June Marchand
Employment Supervisor
Pacific Telephone Company

Anthony Moye
State University Dean of Educational Programs and Resources
California State University and Colleges

Paul N. Peters
Manager
Career Education Task Force
State Department of Education

Anthony J. Pitale
Associate Director
California Advisory Council on Vocational Education
and Technical Training

Francisco Ramirez
Director
Office of Education/Training Liaison
State Employment Development Department

Donald F. Reynolds
Director
Career Education Services Unit
Los Angeles City Unified School District

Fred A. Ricci
Manager
Division of Business and Industry Development
State Department of Commerce

George Roberts
Training Department
Wells Fargo Bank

Alex Sheriffs
Vice Chancellor
Academic Affairs
California State University and Colleges

Elmo C. Smith
Principal
Regional Occupational Program Center
Division of Career and Continuing Education
Los Angeles City Unified School District

George Trieste
Southern Pacific Transportation Company

Clara J. Walsh
Employment Manager
Pacific Telephone Company

William E. Webster
Deputy Superintendent for Programs
State Department of Education

Hank Weiss
Director
California Industry-Education Council

FLORIDA

Thurman Bailey
Assistant Chief
Bureau of Vocational and Adult Programs
Division of Vocational Education
State Department of Education

Paul Bell
Executive Director
Division of Elementary and Secondary Education
Dade County Public Schools

Myron R. Blee
Bureau Chief
Program Support and Services
Division of Community Colleges
State Department of Education

Shelley S. Boone
Deputy Commissioner of Education
State Department of Education

Rodney Duggar
Assistant Administrator
Bureau of Vocational Program Services
Division of Vocational Education
State Department of Education

James Eikland
Assistant Administrator of Career Education,
Student Services and Community Education
State Department of Education

E. A. Emmelhainz
Assistant Division Director
Division of Vocational Education
State Department of Education

Margaret Ferqueron
State Consultant on Career Education
Division of Vocational Education
State Department of Education

C. Wayne Freeberg
Executive Director
State Board of Independent Colleges and Universities
State Department of Education

Thomas Furlong
State Senate Education Committee

William C. Golden
Associate Commissioner
State Department of Education

L. J. Gross
Director
Pupil Personnel Services
Division of Elementary and Secondary Education
Dade County Public Schools

Katherine Hunter
Coordinator of Student Personnel Services
Division of Community Colleges
State Department of Education

C. M. Lawrence
Chief
Bureau of Vocational and Adult Programs
Division of Vocational Education
State Department of Education

Jack Leppert
State Senator Education Committee

Aaron Lucas
Director of Cooperative Education Projects
for the State University System
Board of Regents

Bruce Mitchell
Director for Special Studies
Board of Regents

Paul Parker
Director of University-Wide Programs
Board of Regents

Gary Peterson
Curriculum Attainments Project
Center for Educational Design
Division of Educational Services
Florida State University

Robert Reardon
Academic and Career Advising Services
Florida State University

Olin T. Richards
Administrative Assistant
Florida State Board of Architects

Martin Rubenstein
Director of Support Programs
Dade County Public Schools

Joseph Sherron
Director
Placement and Follow-Up Services
Dade County Public Schools

Harry Snyder
Student Placement Services
Miami Dade Community Colleges

John F. Standridge
Director
Division of Vocational and Adult Education
Dade County Public Schools

Lawrence Tanzi
Director for Humanities and Fine Arts
Board of Regents

Emerson Tulley
Director of Educational Research
Board of Regents

Ernest Upthegrove
Assistant Director
Vocational and Adult Education Division
Dade County Public Schools

Walter Wray
Chief
Bureau of Vocational Program Service
Division of Vocational Education
State Department of Education

NEW JERSEY

Robert H. Arents
Supervising Consultant
School-Industry Cooperation and Career Education
Division of Curriculum and Instruction
State Department of Education

I. Don Bell
Director
Office of Master Planning
State Department of Higher Education

Gregory A. Buontempo
Director
County Career Education Coordination
Division of Vocational Education
State Department of Education

Fred G. Burke
Commissioner of Education
State Department of Education

Patrick Doherty
Director
Career Development
Division of Vocational Education
State Department of Education

Catherine Havrileski
Acting Assistant Commissioner for Research, Evaluation,
Planning and Field Services
State Department of Education

Robert Holmes
Title Administrator
Office of Special Programs
State Department of Higher Education

Adolph Katz
Director
Office of Research
State Department of Higher Education

Joseph F. Kelley
Director
Bureau of Occupational Research Development
Division of Vocational Education
State Department of Education

Gary King
Division of Planning and Research
State Department of Labor

Po-yen Koo
Director
Vocational Data Collection and Evaluation
Division of Vocational Education
State Department of Education

Lois Marshall
Dean of Community Services
Bergen Community College

Thomas F. McNulty
Director
Bureau of Special Needs and Cooperative Industrial Education
Division of Vocational Education
State Department of Education

Charles T. Morgan
Assistant to the Dean of Community Services
Bergen Community College

William Payne
Director of Education and Public Affairs
New Jersey State Chamber of Commerce

Stephen Poliacik
Assistant Commissioner of Education
State Director of Vocational Education
State Department of Education

Haskell Rhett
Assistant Chancellor
Student Assistance and Special Programs
State Department of Higher Education

Harold R. Seltzer
Associate State Director of Vocational-Technical Education
Division of Vocational Education
State Department of Education

Barry Semple
Director of Community Education
State Department of Education

Thomas Seraydarian
Director
Adult Education Office
State Department of Education

Robert Woodford
Education Committee
New Jersey Manufacturers Association

Kenneth Wright
Director
Office of Community Colleges
State Department of Higher Education

OHIO

Frank Albanese
Executive Secretary
State Board of School and College Registration

James M. Alexander
Acting Dean
College of Design, Architecture and Art
University of Cincinnati

Robert D. Balthaser
Division of Vocational Education
State Department of Education

Marlyn Bray
Director
Career Education Project
Grades K-10
Cincinnati Public Schools

James R. Decker
Director
Career Counseling and Placement Office
College of Administrative Science
Ohio State University

Stanley Fox
Assistant Director
North Central Association
Division of Elementary and Secondary Education
State Department of Education

William Hall
Dean
College of Journalism
Ohio State University

Theodore Herklotz
Coordinator
Vocational Education
Cincinnati Public Schools

Karl Kahler
Vice President
Ohio State Council of Retail Merchants

G. Louise Kline
Assistant Executive Secretary
Ohio State Board of Nursing Education and Nurse Registration

Robert H. Koon
Assistant Director
Division of Vocational Education
State Department of Education

Max J. Lerner
Vice Chancellor
Two-Year Campuses
Ohio Board of Regents

Dean Moore
Instructional Consultant
Social Studies
Secondary Level
Cincinnati Public Schools

James A. Norton
Chancellor
Ohio Board of Regents

John H. Owen
Associate Coordinator
Vocational Education
Cincinnati Public Schools

William B. Papier
Director
Research and Statistics
State Bureau of Employment Services

Marvin Rammelsberg
Coordinator
Guidance Services
Cincinnati Public Schools

Kenneth W. Richards
Director
Division of Guidance and Testing
State Department of Education

John Shannon
Executive Director
Ohio Advisory Council for Vocational Education

Ralph Shauck
Coordinator
Instructional Services
Secondary Level
Cincinnati Public Schools

Byrl Shoemaker
Director
Division of Vocational Education
State Department of Education

Dean Simeral
Director of State Activities
Public Affairs
Ohio Farm Bureau Federation

Franklin B. Walter
Deputy Superintendent
State Department of Education

Lofell Williams
Principal
Hughes High School
Cincinnati Public Schools

APPENDIX C. SURVEY GUIDE AND RELATED INSTRUMENTS

A. Explain the interest now being expressed by President Ford in creating better linkages between education and the labor market. His key concern is that what it takes to graduate from school may not exactly match what it takes to get a job. (Refer, for example, to his Commencement address at Ohio State University in August, 1974.)

Explain that President Ford has asked the Secretary of HEW and the Secretary of Commerce, and the Secretary of Labor to work together to develop ideas for creating better linkages.

B. Describe the interest of the National Institute of Education in contributing to better linkages by contracting with the College Entrance Examination Board for a study.

Describe the four major transition areas for a person during his or her education and his or her occupation(s): education-to-education, education-to-occupation, occupation-to-education, and occupation-to-occupation.

Explain why the education-to-occupation transition has been selected for study.

Distinguish between links for individuals and links for institutions. Explain that we are studying only links for institutions.

Describe the larger study of which this study of existing education-to-occupation linkages is a part.

Describe this initial study of existing education-to-occupation linkages and explain how it will contribute to the model-building and perhaps to the strategy-development phases of the larger study.

Say that the eventual outcome of the study will hopefully lead toward an adequate supply of qualified workers.

C. "What we would like your help with is inventorying the existing linkages between education and the labor market in this state. We would also like your ideas on desirable new linkages you would like to see created."

Refer to Examples of Linking Devices on pages 5-6 of the handout.

Show one or more fully-developed Linkstate examples.

D. What linking mechanisms, processes, or products are used by (schools) (high schools) (vocational schools) (proprietary schools) (two-year community or junior colleges) (four-year colleges) (graduate schools) (professional schools) in this state to make sure that they graduate the right number of students with the right qualifications for the current and future labor market?

QUESTIONS ABOUT LINKS

Ask the following set of questions about each linkage mechanism, process, or product:

1. Name of Respondent

(Collect the following information for any new respondent not listed on the agenda:)

2. Title
3. Department
4. Division
5. Organization
6. City
7. State and ZIP Code
8. Telephone

(Collect the following information for all linkage devices:)

9. For what level or type of school is the link used?
10. For what occupational field is it used?
11. Describe the link.
12. When, how, and why did the link originate?
13. What organizations are involved?
14. How is it financed?
15. How does it influence the quantity of graduates?
16. How does it influence the quality of graduates?
17. How extensively used is that arrangement (linking mechanism) (linking process) (linking product)? Does every (school) (high school) (vocational school) (proprietary school) (two-year community or junior college) (four-year college) (graduate school) (professional school) in this state use it?

All or almost all	About three fourths	About half	About one fourth	Very few

18. What explains that?

19. How effective would you judge this arrangement to be?

Very effective	Somewhat effective	Not effective

20. What explains that?

QUESTIONS ABOUT POTENTIAL LINKS

21. Describe links which are not currently used by (schools) (high schools) (vocational schools) (proprietary schools) (two-year community or junior colleges) (four-year colleges) (graduate schools) (professional schools) but which you imagine or judge could be potentially effective in the interface between the education system and the occupation system.

22. Is there anyone else (agency) (department) (bureau) (division) (organization) whom we should see for additional examples of linkages?

Example of Education-to-Occupation Linkage

The BEST Link

The Linkstate Chamber of Commerce Education Committee operates the BEST service for adjusting high school business education curricula to the real needs of the labor market. BEST (Business/Education Seminar/Tour) brings together five local businessmen and five local high school business education teachers for five days.

The businessmen tour one teacher's classes each morning, examine equipment, thumb through materials and talk with students. At a luncheon seminar, the teacher explains course objectives and teaching techniques. The teachers tour one business each afternoon, examine equipment, thumb through materials workers produce and talk with workers. At a dinner seminar, the businessman explains company objectives and office procedures.

At a final Saturday seminar, the ten meet with the high school principal and the superintendent to write recommendations the businessmen and the administrators will present to the local board of education.

The Guide to Recommendations supplied by the Chamber Education Committee touches on needed in-service training and work experience for the teachers, modified course content and work experience for the students, up-dated equipment and materials for the classrooms.

Example of Education-to-Occupation Linkage

A Technical Manpower Link

The Linkstate Board of Regents maintains a Technical Manpower Research Office with a three-man staff to collect labor market data for the state and the nearby metropolitan areas in other states. The Research Office concentrates on supply and demand figures for persons with two-year Associate Degrees in major professional fields such as medicine, engineering, and architecture.

Whenever a public community college files a New Professional Program Application with the Board of Regents the Research Office puts together a Technical Manpower Assessment Report. Both the Application and the Report go to the Program Approval Council, which examines the Application for substantive quality and institutional capability and the Report for hard data on job prospects.

When Empire Community College filed an application in 1973 for a new two-year Legal Aide Program, the Research Office ran a telephone survey of job prospects for Legal Aides in a sample of 39 major law firms, large company legal departments, and government agencies in the state and nearby cities. The results persuaded the Council to turn down the Empire proposal. Although substantively good, the program would have turned out Legal Aides for non-existent jobs.

Example of Education-to-Occupation Linkage

A Graduate Professional School Link

Linkstate University has seven graduate professional schools: Architecture, Business Administration, Dentistry, Education, Journalism, Law, and Medicine. For many years the Board of Trustees has had a firm policy requiring each graduate school to maintain a Program Review Panel consisting of no fewer than eight and no more than sixteen members, balanced equally between alumni and non-alumni in the specific professional field, serving for overlapping terms not to exceed five years in length, meeting no less than annually, and filing an annual report with the Trustees.

The panels operate somewhat differently in each professional school, but there is a general pattern. They review course sequences, talk with a sample of students, interview representative faculty members and the Dean, and examine placement records for the previous graduating class. The Trustees require the graduate school Deans to report the disposition of Panel recommendations within six months.

The School of Journalism Panel is most active. Members drop in on campus lectures and seminars occasionally, encourage alumni to sponsor paid summer internships in their companies (required of all students), arrange faculty/editor exchanges up to a semester in length, and plan the annual fall Journalism Opportunities Banquet for entering students and all faculty.

Example of Education-to-Occupation Linkage

A Labor/Education Link

The Linkstate Department of Labor will publish for the first time in January, 1975 an up-to-date computer-generated listing and analysis of job opportunities and required qualifications for all occupations employing at least 100 state residents.

The publication, tentatively titled JOBSCOPE, will sell for $3.00 per copy to individuals but is free in limited quantities to any high school, college, or proprietary school on request. It will identify labor surplus and labor shortage occupations, cross-reference closely-related fields where transfers are relatively easy, display job hierarchies, and spell out additional training and experience requirements for moving up each level in each hierarchy.

The Linkstate Department of Education has worked over the past six months to prepare EDUSCOPE, a companion volume to JOBSCOPE also to be published in January, 1975. EDUSCOPE catalogues public, private, and proprietary training programs in the state that qualify students for job entry or job promotion in the occupations listed in JOBSCOPE. EDUSCOPE will be distributed to individuals and the schools on the same basis as JOBSCOPE.

The two departments hope to inaugurate JOBSCAN and EDUSCAN by late 1976. These are to be computer terminals installed in all accredited postsecondary institutions to give faculty and the students instant access to the latest data in the computer.

APPENDIX D. ACTION PROPOSALS REVIEWERS

George Angell, Former President, SUNY-Plattsburg, presently Consultant to N.Y. State Senator Ronald Stafford

Carol Aslanian, Associate Project Director, Policy Studies in Education

Paul Barton, Staff Director, National Manpower Institute

Ronald Berg, Director of Career Education and Vocational Guidance, Coordinating Council for Occupational Education

Henry Brickell, Director, Policy Studies in Education

J. Arnold Bricker, Staff Director, Washington State Senate Research Staff

Gene Dight, Manager of Learning Center Operations, Boeing Aero-Space Center

Donald Gilles, Personnel Development Coordinator, Oregon State Department of Education

Ross E. Hamilton, Executive Director, Developmental Services Division, Orion Industries

Andrew Jacobs, Executive Director, IPAR

David Jesser, Director, Career Education Programs, Council of Chief State School Officers

Dean Killian, Education Director, AFL-CIO

Richard Lutz, Director of Career Education, Washington State Department of Education

Ken McDonald, Vocational Education Consultant, Shoreline School District No. 412, Seattle Public Schools

Gene McIntyre, Director, Oregon Advisory Council on Vocational Education

Barbara Mitchell, Administrative Secretary, Senate Education Committee

William Moshofsky, Vice President, Georgia Pacific

Monty Multanen, Director of Career Education, Oregon State Department of Education

Wilmur Nance, Director of High School Graduation Competencies
Oregon State Department of Education

Robert Peck, Assistant Director, Oregon Education Coordinating
Council

Marvin Rasmussen, Director of Career Education, Portland Public
Schools

William J. Schill, Assistant Professor of Higher Education,
University of Washington

Edwin Schneider, Superintendent for Instructional Programs,
Portland Public Schools

Michael Tenore, Intermediate School District #110, Seattle Public
Schools

John Torphy, Miller, Hansen and Torphy, Inc.

Robert Ullery, Industry-Education Coordinator, New York State
Department of Education

Frank H. Wimer, Deputy Director, Coordinating Council for Occupational
Education

Kristi York, Coordinator of Career Education,Seattle Public Schools

Ben Yormark, Director of Career Education, Highline School District,
Seattle Public Schools

R.A. Youngs, School Relations Supervisor, Pacific Northwest Bell

APPENDIX E. FLORIDA FOLLOW-UP POLICY GUIDELINES FOR COMMUNITY COLLEGES

Florida Statutes, §§230.7651 and Regulations of the State Board of Education, 6A-8.581 (4) require that the community colleges evaluate the performance of former students in the activities for which they were prepared by the college. The colleges are required to review their programs in the lights of information developed in the follow-up evaluations. These guidelines are issued in compliance with SBE Regulations for use by the community colleges.

Follow-up Evaluations Defined

Follow-up evaluations consist of the steps taken by colleges to assess the performance of their former students against the particular performance goals and objectives established for the respective instructional programs through which the students were prepared. The assessments shall be designed to answer the following questions:

1. How well is the attainment of the goals and objectives of instructional programs reflected in the performance of former students?

2. Do the requirements of the activities in which former students are engaging extend beyond the program goals and objectives?

Follow-up Evaluation Outcomes

As an outcome of the follow-up evaluations, a college should be able to evaluate the adequacy of its program goals and objectives as well as the effectiveness of its programs in meeting goals and objectives. Such determinations along with results of other evaluative activities are to be used to make any needed changes in program objectives and in the program, including components from instructional support programs of the college.

Procedures

For each degree, certificate, diploma, and other instructional program offered by a community college the following steps are to be taken:

1. Identify program goals and objectives.

2. Devise instruments and procedures for assessing:

   (a) the performance of former students against the objectives, and

   (b) the adequacy of the goals and objectives against the requirements of the activities in which former students are engaging.

3. Utilize the instruments and procedures for making the above assessments of former students.

4. Draw conclusions relative to the adequacy of program goals and objectives and make such changes as are appropriate.

5. Draw conclusions relative to the effectiveness of the several components of the programs, including support programs, in meeting goals and objectives and make such changes as are appropriate.

Population to be Evaluated

Follow-up evaluations are to be made for all or such percentage of former students as will constitute a representative sample of such students. Follow-up evaluations are to be limited to those former students who have completed programs to the extent that they can enter into activities for which the programs provide preparation. Students who withdraw from college too early to qualify for follow-up evaluation are to be subjects for dropout studies.

For programs which prepare students for employment, follow-up evaluations need not extend to former students employed in other states and will normally be limited to those in the service area of the college.

For students who complete programs leading to further formal education, follow-up evaluations need not extend to former students in out-of-state institutions and will normally be limited to the three institutions enrolling the largest number of former students.

Time for the Evaluation

The performance of former students is to be evaluated within the period from four to fifteen months from the time the student leaves the college. The college may establish a second round of evaluations for programs in which replication appears to be warranted.

Responsibility for Evaluation

Each college shall designate an officer who shall be responsible for the organization and management of follow-up evaluations. Personnel who have responsibility for the design and implementation of the respective instructional programs shall design and use the follow-up evaluation instruments and procedures under the guidance of the officer with institution-wide responsibility.

Institutional procedures for follow-up evaluation should provide for the participation of the following:

1. college personnel who have responsibility for the design and implementation of the instructional program,

2. personnel from the establishment in which the former student is enrolled or employed, and

3. the former student.

Reports to the Board of Trustees

Each district board of trustees shall be provided each year with appropriate reports relative to the follow-up evaluations of the performance of former students, including information relative to the use being made of findings toward the improvement of instructional and instructional support programs.

Reports to the Division of Community Colleges

On or before a designated date each year each college shall file reports of follow-up evaluations made during the preceding fiscal year and of the use made of follow-up findings. The reports shall be made for each degree, certificate, diploma, and other instructional program offered by the college, and they are to be made on forms provided by the Division of Community Colleges.

It is not expected that the evaluations included in the annual report will be limited to students who completed program requirements during the reporting period; nor is it expected that students who completed programs throughout the reporting period be evaluated in time for inclusion in the report immediately following their completion.

The reports shall include:

1. The number of students completing the program during the previous fiscal year.

2. The number of evaluations.

   (a) The number of first round evaluations.
   (b) The number of second round evaluations.

3. Summary of findings.

4. Description of changes in

   (a) Goals and objectives.
   (b) Program content and/or procedure.

5. A copy of the instruments and/or procedures used in the evaluation.

6. Suggestions for changes in regulations and/or procedures external to the institution and its board of trustees.

GLOSSARY
OF KEY TERMS SPECIFICALLY FOR USE IN THIS STUDY

Career -- lifelong succession of activities organized around a set of interrelated goals

Career area -- an aspect of life in which a distinctive set of activities can be conducted around a set of interrelated goals, e.g.:

*work
*leisure
*family
*citizenship
*health
*ethics
*esthetics

Education -- generally: a set of preparatory activities to enable an individual to succeed in one or more career areas

-- specifically for this study: education is a process by which someone teaches something to someone else at a place at a time with a method for a purpose. The choices among the alternatives within that definition are those indicated by each of the following terms:

*one's self or a teacher
*teaches knowledge, skills, attitudes and values
*through an academic, vocational, or general curriculum
*for academic credit or certificate of recognition
*to male or female students
*of any age
*of any racial, ethnic, economic, social, religious background
*of any ability
*in a government civilian, federal, state, or local
*or a non-government private or proprietary
*educational institution or individual
*in which the primary function is instruction
*at the secondary or postsecondary level
*on a full-time
*long-term (40 successive week days or more) basis
*using a formal
*method of instruction
*to enable progress in work

Work -- generally: productive activity

-- specifically for this study: work is the process by which someone produces something for someone else at a place at a time with a method for a purpose. The choices among the alternatives within that definition are those indicated by each of the following terms:

*a male or female
*of any racial, ethnic, economic, social, religious background
*of any ability
*is employed
*in any occupational classification used by the U.S. Bureau of the Census
*in any occupational cluster in the Dictionary of Occupational Titles
*by a government civilian
*or non-government
*institution
*at any location in U.S.
*during entry into, or promotion to
*any full-time (35 hours or more per week)
*permanent job (30 work days or more per quarter year)
*using any method
*for pay

Occupation -- a specific class of work encompassing a cluster of related jobs

Job -- a specific subdivision of an occupation encompassing a cluster of related tasks

Task -- a specific subdivision of a job

Link -- generally: a device for connecting two entities without changing their characteristics

Examples: a real estate broker connects a buyer and a seller without changing either. So does a stock broker. Any "market" device connecting a buyer and a seller does the same. Any form of advertising does the same.

-- specifically for this study:

(7a) (7b) Education to Education Institutional Link

"a mechanism, process, or product for bringing the segments of the education system into harmony."

Examples: curriculum planning committees; open admissions

(7a) (7b) (7c) Education to Occupation Institutional Link

"a mechanism, process, or product for bringing the education system into harmony with the occupation system."

Examples: advisory councils of employers and workers; internships

(7a) (7b) (7c) Occupation to Education Institutional Link

"a mechanism, process, or product for bringing the occupation system into harmony with the education system."

Examples: company accreditation of schools; training in company facilities

(7b) (7c) Occupation to Occupation Institutional Link

"a mechanism, process, or product for bringing the segments of the occupation system into harmony."

Examples: executive development programs; professional licensing reciprocity

(8a) (8b) Education to Education Individual Link

"a mechanism, process, or product providing information to a student relating his present educational experience to his future educational opportunities without changing 1) his present educational experiences; 2) his future educational opportunities; or 3) his educational qualifications."

Examples: academic counselors; college catalogs

(8a) (8b) (8c) Education to Occupation Individual Link

"a mechanism, process, or product providing information to a student relating his present educational experiences to his future occupational opportunities without changing 1) his present educational experiences; 2) his future occupational opportunities; or 3) his occupational qualifications."

Examples: university placement offices; "help wanted" advertisements

(8a) (8b) (8c) Occupation to Education Individual Link

"a mechanism, process, or product providing information to a worker relating his present occupational experiences to his future educational opportunities without changing 1) his present occupational experiences; 2) his future educational opportunities; or 3) his educational qualifications."

Examples: company announcements of training for supervisory positions; announcements of research fellowships for USFDA chemists

(8b) (8c) Occupation to Occupation Individual Link

"a mechanism, process or product providing information to a worker relating his present occupational experiences to his future occupational opportunities without changing 1) his present occupational experiences; 2) his future occupational opportunities; or 3) his occupational qualifications."

Examples: commercial employment agency; company personnel office

Gap -- missing link

Instruction -- arranging for learning

Learning -- engaging in new behavior so as to remember it for later repetition

Institutional setting -- one of three kinds of institutional sponsors for a link:

1) Educational institution

   a) government
      example: New Trier High School

   b) Non-government
      example: Stanford University

2) employing institution

   a) government
      example: New York City Sanitation Department

   b) non-government
      example: General Motors

3) independent institution

   a) government
      example: U.S. Employment Service

   b) non-government
      example: Acme Employment Agency