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ABSTRACT

Two regional Occupational Program Planning Institutes were held to provide inservice education for persons involved in administering postsecondary occupational education programs. This report contains an edited compilation of reactor comments and discussion group deliberations for these major papers: (1) "Master Planning in Post-Secondary Occupational Education," by George W. Ebey, which discusses the need for and concerns of educational master planning and provides the elements and characteristics necessary in a planning system, (2) "Identifying New and Emerging Occupations," by Norman C. Harris, in which a sampling approach was utilized for identifying occupations and need in the areas of agriculture and natural resources, business, health and human services, industry, and science and engineering, and (3) "Student Recruitment and Selection for Post-Secondary Occupational Education Programs," by Robert M. Knoebel, which lists problem areas in recruitment and discusses possible solutions. (SB)

occupations & education

leaders in the field speak out

Occupations & Education

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OCCUPATIONAL EDUCATION PROGRAM DEVELOPMENT INSTITUTES FOR POST-SECONDARY INSTITUTIONS

Proceedings

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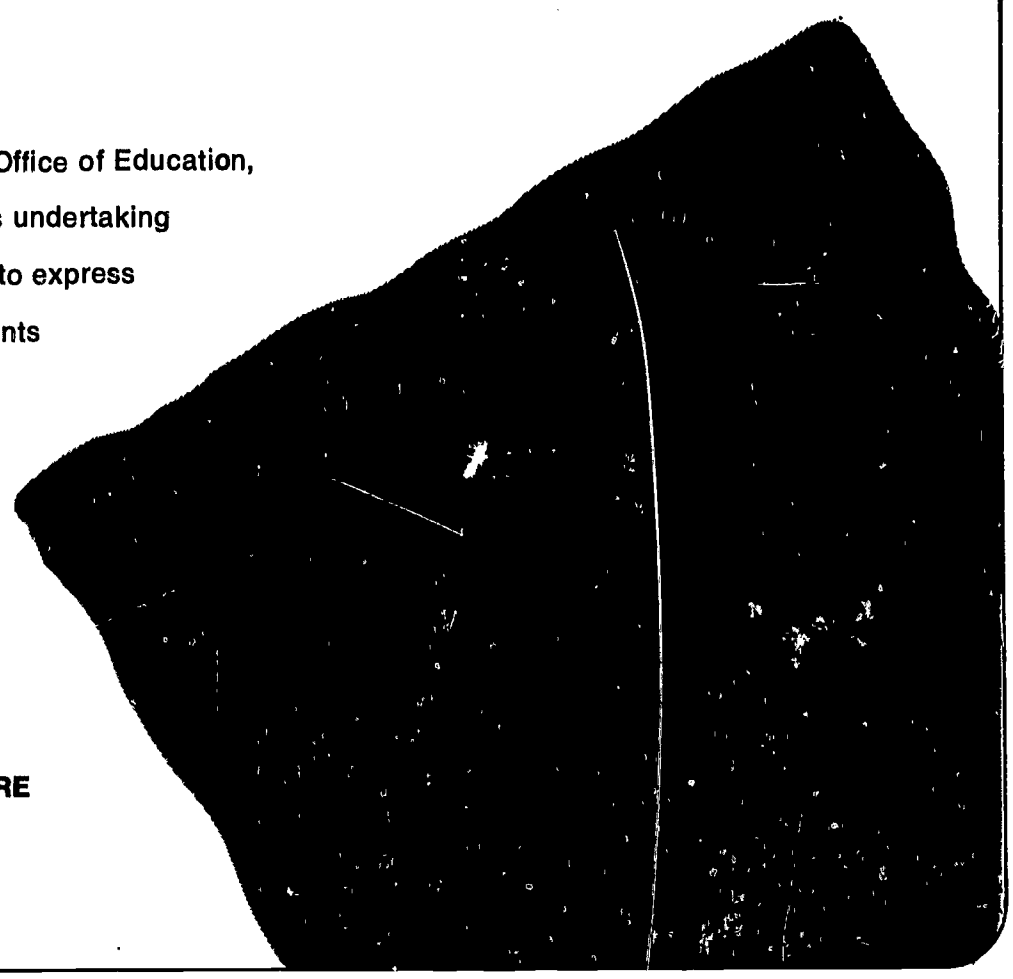

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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PREFACE

The Occupational Education Program Development Institutes for Post-Secondary Institutions were designed to provide in-service education for decision and policy makers and program planners in institutions offering planning programs in post-secondary occupational education. At the institutes the participants were able to: (1) identify the latest developments in occupational education; (2) identify critical problem areas in occupational education; and (3) identify and use principles and resources that might provide solutions to issues and problems facing occupational program administrators. Major topics discussed were:

1. Identifying new and emerging occupations

2. Master planning in post-secondary occupational education

3. Post-secondary occupational education student recruitment and selection.

These topics were selected as a result of responses to a national interest survey of post-secondary occupational educators during September, 1968.

Prior to the institutes, the participants received a major paper pertinent to each topic. Nationally recognized consultants reacted to these papers at the institutes to provide the stimulus for interaction in small discussion groups.

This report is an edited compilation of the major papers, reactor comments, and discussion group deliberations.

MASTER PLANNING IN POST-SECONDARY OCCUPATIONAL EDUCATION

George W. Ebey, *Vice President*
URS Research Company
Palo Alto, California

A chief question facing us as we chart our course for the future is: Will American education blow its opportunities again? Beginning with the Latin grammar school, we reportedly realistic and pragmatic Americans have shunned the relevant in our educational systems. Even Ben Franklin's Academy, designed to provide needed practical knowledge and skills in a new world, succumbed to the onslaught of academic respectability. It became the University of Pennsylvania and many of its contemporaries, such as Andover and Exeter, became distinguished college preparatory schools.

Despite the seven cardinal principles, written during World War I, and *The Purposes of Education in American Democracy* of the Educational Policies Commission, published prior to World War II, the comprehensive high school has never become truly comprehensive. Small wonder that the lay people of America are now turning to still another relatively new institution—the community college—in the search for relevance, in the hope that individual and community educational needs will, at long last, be met.

I'm not sure their hopes are justified, for among us notoriously white-collar, middle-class educators the pressure for academic respectability is indeed great. Certainly in some parts of the United States the community college is little more than a junior transfer institution, waiting with bated breath to join the ranks of Big Brother. When I was a fledgling working for my doctorate, my colleagues and I read with great delight Harold Benjamin's *Saber-tooth Curriculum,* an amusing, strong indictment of irrelevant education. Then all too many of us went out and followed the same pattern—teaching Latin and Greek as a basis for shooting tigers or at least speaking and writing the English language effectively.

We vigorously support the concept that education in our democracy should serve both the individual and society, that it is the essential ingredient for fullest individual self-realization, political freedom, and economic progress. We strongly propose that nothing should stay the most effective development of this system—nothing, that is, unless it requires serious modification of curriculum, organizational structure, geographical areas served, district relationships, personnel policies, or funding arrangements.

There are many who belong to the "don't rock the boat" school. They feel secure in their positions and see change as a threat to that security. They are like the master sergeant in the play *No Time for Sergeants,* who advised the raw recruit from the billy hills: "Look, the Army is like a lake. On it there are many canoes. You're in one canoe. I'm in another. The colonel is in still another. When you start rocking your canoe, it creates waves. These waves rock all the other canoes on the lake. So stop rocking your damned canoe."

I have news for the sergeant and those who think like him. There are already waves. They are likely to get bigger. They have not been created by the rocking of a single canoe. They result from the generally stormy conditions of the environment. It is an environment in which the decision makers have turned to private industry and private agencies, rather than school systems, to meet critical educational needs. The Jobs Corps programs and the National Alliance for Business JOBS programs are cases in point.

It is an environment of accelerating change requiring, more critically than ever before, responsive education and manpower systems, well-qualified personnel, and wise, courageous, and adaptive leadership. In this environment, post-secondary institutions, if they will, can make highly important contributions to American life through their effective planning of occupational education.

To avoid the definition crisis, let us at the outset agree on some definitions—or at least use them whether or not we agree. Occupational education, vocational-technical education, master plan, and post-secondary occupational education are used in this paper as follows:

- *Occupational education* is a program of instruction below the baccalaureate level, including elementary and secondary grades, designed to acquaint persons with and prepare them for the world of work. It encompasses but is not limited to vocational-technical education. Though for reasons related to federal funding and common parlance, occupational education as defined here excludes education leading to a baccalaureate degree, it is apparent that all aspects of education bridging man and his work, including baccalaureate and higher degree programs, logically could be considered parts of an occupational education system.
- *Vocational-technical education* is a program of instruction below the baccalaureate level which provides persons with skills and knowledge for specific employment.
- A *master plan* is an overall framework of guidelines and general planning factors designed to facilitate further planning and development on a systematic and well coordinated basis. Master planning is the process by which the master plan is achieved and revised in the light of new circumstances. In a sense, on the federal level, the recommendations and supporting concepts of the Advisory Council on Vocational Education constitute a master plan. At the other extreme, an architect prepares a master plan for an individual campus and, before he does so, requires educational programing factors on which to base his planning decisions. Thus master planning occurs at various levels and has different dimensions.
- *Post-secondary occupational education* is post-high school occupational education below the baccalaureate level.

The need for master planning at all levels of education is great. Many states need plans for the reorganization of education designed to consolidate and unify elementary and secondary schools; in the coordinating councils for higher education which have developed in recent years; and in the regional planning efforts in higher education, such as those in New England, the Southern region, and the Western states. It is evidenced also in the federally funded regional planning for economic development, in which education and manpower systems are essential ingredients.

But much more remains to be done in educational master planning. In many respects we continue to be victims of our historic past. Because of our basically local beginnings, much variation exists in the organization, support, and adequacy of education within and among states. Inequality is found both in the ghettos of our cities and in the drift of population from rural to urban areas in search of opportunity. State lines, county lines, district lines, which at one point in our history served important purposes, in many instances have become outmoded in terms of the automobile and television, let alone aerospace and computer technology. The need for effective coordination of educational systems within and among states is great indeed.

A concern over ineffective planning was voiced by B. Lamar Johnson, of the junior college leadership program of the University of California at Los Angeles. After a three-month trip visiting community colleges throughout the United States about two years ago, he reported finding community colleges and area vocational schools developing simultaneously and reporting to separate authorities. He indicated that in many instances they appear to be lacking in coordination.

Whether willingly or unwillingly, educators will be required to plan more comprehensively and coordinate their efforts more effectively in the interest of adequacy, economy, and efficiency consistent with quality. This trend is obvious in the state plans now required for federal funding.

The trend is likely to continue, for a chief characteristic of our society in the foreseeable future will be increased concern for social and economic problems by state and federal governments. These problems, accentuated by the growing nucleations of population in metropolitan centers, will relate to health, housing, transportation, pollution, employment, and education as well as other areas pertinent to urban and regional development. With state and federal concern will come additional funding, but the scope of concerns will increase the competition for state and federal dollars.

As funds are requested for capital outlay or operating expenses or both, questions will be asked about goals to be achieved, alternate possibilities for achieving these goals, and evidence of effectiveness of approved plans. Objective evaluation of accomplishments will become standard procedure, with the evaluative design of new programs developed at their inception rather than after the fact. Program budgeting and evaluation will force greater attention to planning on all levels, including master planning and the revision of master plans.

Educators themselves should assume the leadership role in achieving more effective coordination of educational services. The starting point is master planning, not only of post-secondary occupational education, but of the total educational system within a state and, where applicable, among states.

In the master planning of post-secondary occupational education, full consideration should be given to education as a system. A master plan for one segment without consideration of the other segments would be no master plan at all, but an unrelated, compartmentalized structure, like an airport planned without landing strips or land transportation access.

While the precise patterns of education as a system within states and among states will vary, such a system might include: strong unified school districts through grade 12; community college administrative areas blanketing the entire state, with interstate arrangements where service areas cross state lines; colleges and universities, with extension centers, providing baccalaureate and graduate degrees; interinstitutional arrangements for specialized pro-

fessional programs and graduate research; cooperative arrangements with related systems such as public libraries, science and art museums, recreational agencies, and the performing arts; and regional centers for research and development and for continuing education.

Within this total system, the public community college system, properly conceived, has a particularly important role to play because of its tremendous potential in assuring educational opportunity, developing occupational competence, and enriching community life.

As a general rule, the diversified, separately organized public community college has potential advantages over other approaches to the provision of post-secondary occupational education: Over private or proprietary colleges because it is relatively low cost to the individual and, therefore, provides greater equality of opportunity; over more specialized schools because it has a broader curriculum, makes possible a richer mix of vocational-technical and general education, and allows the individual to adapt his program more readily in what is for many still an exploratory period. Moreover, in some instances, the diversified approach may be necessary to achieve an institution of sufficient size to be justifiable; over a division within a four-year college because of the latter's typically academic orientation and chief interest in baccalaureate and higher degree programs; over a segment in a unified school district because of the concern of such a district with the many problems of its various other segments.

Though the public community college system appears to have many advantages, in the master planning for post-secondary occupational education other approaches should not be overlooked. Under some circumstances, another approach may be a more effective one. A competent football coach will adapt his system to the resources he has available. In the final analysis the effectiveness of the system will depend upon the players. No public community college, however lofty its stated objectives, is likely to provide an effective occupational education program unless its chief administrator and his staff are fully committed to an education for employment system.

Within the total educational system, occupational education also must be construed as a system. It is a system which should begin in the elementary school with orientation to the world of work and phase through industrial arts and prevocational education to more specific vocational-technical education at the upper high school and community college levels. The central thrust of the 1968 Advisory Council on Vocational Education was toward such a unified system of occupational education. Within this occupational education system, the public community college also has a critically important role. Fourteen years of free public education is likely to become the rule rather than the exception. It has been proposed not only by the Advisory Council on Vocational Education but also by the National Commission on Technology, Automation, and Economic Progress. In the long term, postponement of specific vocational education until the post-secondary years will continue to constitute a strong trend.

Then, as now, any community college worthy of its name will also be an area vocational school developing marketable skills in a broad spectrum of occupational fields. In this role the community college must be interested not only in the quality of its own educational offerings but also in the orientation to employment, prevocational education, and counseling and guidance provided in preceding grades, so that the post-secondary offerings will be part of a well-articulated occupational education continuum. The community college must be a chief protagonist for the upside-down college curriculum, which enables a qualified student to develop marketable skills in the lower division and subsequently to work for a college degree with little or no loss of credit.

Typically, a public community college will be part of a statewide system of post-secondary occupational education. This relationship could be of substantial value in enriching occupational education offerings among the colleges through provision for low enrollment vocational-technical programs in one or more but not all colleges. In states where applicable, such a statewide system would also encompass proprietary schools, private junior colleges with occupational programs, nonbaccalaureate technical institutes, and vocational-technical education programs administered by four-year colleges and universities.

Thus post-secondary occupational education is a system within systems and is likely to achieve its fullest potential only through careful master planning.

Common sense, as well as research findings, clearly indicates that small colleges are more costly per student than larger institutions, that small colleges cannot provide the diversified offerings of larger institutions, that educational deprivation exists not only in our urban ghettos because of an inadequate philosophy of what our schools should do but also in sparsely settled areas because of lack of imagination and archaic practices with respect to service areas. The more specialized the program, the larger the service area population required to maintain the program on an economically feasible basis. An institution may have different service areas for different programs, as in the case of an interdistrict arrangement for a vocational-technical program offered by one or more but not all colleges.

In the master planning of post-secondary occupational education, it is suggested that comprehensive community colleges be planned to serve enrollments of no fewer than 1,000 day students and preferably 3,500 or more students. Community colleges are typically commuter institutions; for this reason it is further suggested that maximum service areas be no more than a radius of thirty to forty miles from the attendance center or, depending upon driving conditions, no more than forty-five minutes' to an hour's drive one way. This stipulation does not preclude the possibility of residential facilities to serve students outside commuter range.

Many community colleges in the United States have total enrollments of fewer than 1,000 students. A high proportion of them have fewer than 600 students. It is apparent that the levels of service in such institutions cannot be very broad, that it would be difficult for them to offer much post-secondary occupational education and virtually impossible for some of them to qualify as area vocational schools under the provisions of federal law.

The further growth of such institutions as separate colleges should be discouraged. A chief danger to the development of community colleges is a rash of small colleges which cannot offer substantial vocational-technical programs, which become staffed with academically oriented personnel, and which resist (like many of our nation's high schools) the development of balanced offerings, or levels of service. Because occupational education is a critical ingredient in a community college, a vocationally-oriented school or college normally would be a much better starting point for a community college than would an academic institution.

Discouraging the growth of small colleges does not imply discrimination against sparsely settled areas. It does mean that more systematic, coordinated, innovative planning will be required. In areas which do not have sufficient population for a college but which can provide community college enrollments of 300 or more full-time-equivalent day students, the community college center idea appears to have merit. Such a center or centers could be affiliated with a community college as part of the same community college administrative area. This administrative area could even cross state lines, a logical arrangement where parts of two or more states form a natural socioeconomic area.

Master planning occurs at various levels and has different dimensions, as indicated earlier. The closer one is to the operational level, the more specific he may become in his master planning. Like all legitimate planning, master planning should be goal oriented and action based. In simplest terms, the master planning process requires people, a research orientation, organization, and funds. Hopefully, the people will have initiative, imagination, resourcefulness, planning skill, and time for planning.

With respect to the master plan itself, the following elements should be included:

1. Goals or objectives—The Advisory Council on Vocational Education has stated: "Some formal post-secondary education for all should be a goal for the near future." And one might add, "Related to the immediate and long-term needs and interests of the individual and responsive to current and future manpower requirements."

2. The geographical boundaries of the master plan—such as a region, a state, or an administrative area within a state.

3. A time frame—preferably looking into the future as far as the eye can see, and a set of assumptions regarding what might occur in that time frame. For post-secondary education, one should be able to plan in general terms eighteen years into the future, for the entering freshmen already have been born.

4. Demographic and environmental data essential to program planning—such as student population forecasts, labor force projections, emerging manpower requirements, and the impact of technology upon occupational education needs.

5. Programs and resources essential to meet long-range and short-term needs—including the occupational resources of the community.

6. An action plan—with guidelines, general planning factors, priorities, and time lines relating to program and facility development, organization and organizational relationships, staffing, and funding.

7. A plan for updating the master plan—based upon experience and changing circumstances.

In master plans for post-secondary occupational education, great variations will exist among the states and regions because circumstances differ. There are, however, general characteristics which should be applicable to all plans. These characteristics might be used for judging a present system, as well as serving as a basis for periodic evaluation and possible modification of a master plan as it is implemented. The following general criteria are suggested as guidelines. The post-secondary occupational education system should:

1. Have clearly defined goals and a current plan of action for achieving them

2. Be responsibe to individual needs and interests and to current and future manpower requirements

3. Afford learners pertinent, readily accessible counseling, guidance, and employment services

4. Provide for equality of educational opportunity in specific, readily measurable terms, not only through scholarships and loans, but also through transportation and subsistence allowances and in some instances paying students to go to school

5. Be effectively coordinated and well financed

6. Be realistically innovative and creative—responsive to changed methods and procedures, and willing to experiment to improve levels and quality of service

7. Seek positive solutions to problems and avoid the inhibitions imposed by the persistence of outmoded practice

8. Use occupational resources fully for work experience and employment, for the purpose of making education relevant, and for furnishing exploratory opportunities to learners

9. Coordinate its efforts with and provide support to other systems and institutions with compatible objectives

10. Be staffed with well-qualified personnel aware of occupational needs, and particularly with imaginative, resourceful, and courageous leadership fully committed to an education for employment system

11. Assure effective two-way communication both internally for students and various staff levels and externally between educational personnel and the people of the area served

12. Emphasize quality of service but at the same time encourage economy and efficiency consistent with quality

13. Provide for systematic and continuous evaluation through gathering objective information pertinent to goals.

All too frequently these general criteria are not met for a variety of reasons—not the least of which are the people responsible for planning and implementing plans, ineffective organization, and funding.

Vocational-technical education has been defined as education for specific employment. However, in a changing technological society, a post-secondary institution cannot offer much that is specific beyond entry level skills. Moreover, the employment itself often is in a much better position to provide specific training opportunities than a community college or other post-secondary institution. It is important that in these institutions emphasis be placed not only upon entry-level skills but also upon attitudes, habits, and skills that have general application, so that the individual is able to adapt readily as he moves vertically to higher-level positions or horizontally as manpower requirements shift.

Post-secondary occupational education should be looked upon as a partnership between the community college (and its counterparts) and the employment world, with the college assuming the function of developing an individual for initial employment, assisting him in finding employment, and providing him with continuing education as he seeks to upgrade himself in his chosen occupational field. This concept rejects the idea that the A.A. degree should be the immediate or even the ultimate educational objective for all. It connotes a career-ladder pattern of education, an upside-down curriculum for some in the community college, flexible scheduling, occupational programs of short-term duration, part-time employment/part-time education opportunities, and a counseling program that extends over a long period of time for an individual. It also connotes an educational program which is relevant and motivating to the individual.

Throughout this paper, it has been stated and implied that the key concerns in master planning of post-secondary occupational education are, first, the needs and interests of individuals and, second, the manpower requirements of society. These are not mutually exclusive, discrete categories. The opportunities in the world of work are relevant to the individual, and society prospers best when its potential labor force is fully employed, competent, and highly motivated. These two factors and other elements in the planning process are identified below. The purpose of the master planning process is the design of a viable master plan which can be adapted in the light of new knowledge and changing circumstances. The elements in the process are:

1. A forecast of student populations likely to be enrolled in post-secondary occupational education during the master-planning time frame—with as much pertinent demographic data relating to them as possible, such as number, sex, socioeconomic background, persistence in school, and county of residence

2. A projection of manpower requirements during the master-planning time frame, with national, state, and, to the extent possible, area future manpower requirements. Ideally these projections should be both by industry and by significant occupational category

3. An inventory of current manpower, to serve as a starting point for evaluating future manpower needs

4. A survey of current post-secondary education and training programs and related resources, such as institutions, students enrolled, enrollment by occupational program, teachers, teacher-education programs, facilities, and sources of funding

5. A projection of the post-secondary occupational education and training programs and related resources needed to meet future manpower requirements.

6. An evaluation of the alternative methods by which these programs and related resources might be provided, with full consideration for program quality, flexibility, and cost

7. Development of an approved post-secondary occupational education and training master plan to meet forecast student populations (and to the degree possible, their interests and needs) and projected manpower requirements, including resources to implement the plan and a priority schedule

8. Establishment and conduct of demonstration and experimental projects, with evaluation feedback into the master plan.

An inseparable relationship should occur between effective planning and action-oriented research: Analysis, projections, alternative plans, and evaluations lead to a flexible educational master plan which may be modified on the basis of further experimentation and evaluation.

In the projection of manpower requirements, the information should be presented in such a way that it can readily be translated into education and training programs with respect to (1) level of education, so that post-secondary occupational education requirements can be identified, and (2) content of the education and training, e.g., registered nurse, electronics technician.

Master planning is a function which requires experience, judgment, and objectivity. It can be accomplished by an in-house staff with the time for and competence in planning, by outside sources on a contractual basis, or by a combination of the two. Regardless of the course of action chosen, full advantage should be taken of available authoritative information. The concern over education for employment has been with us for many years, and excellent sources of data exist, though the data often require adaptation to the new purpose. Good starting points would be the American Association of Junior Colleges, with its leadership capability in occupational education; the Center for Vocational and Technical Education at Ohio State University, with its significant resources, including the national ERIC facility for occupational education; and the

junior college leadership program at the University of California at Los Angeles, with its strong interest in occupational education and its junior college ERIC facility.

A high degree of sophistication in data collection exists at the federal level and at some state levels. Excellent usable information frequently can be obtained from the U.S. Department of Commerce, the U.S. Department of Labor, and the National Center for Educational Statistics of the U.S. Office of Education. On the state level, pertinent data normally are available from the state planning organizations and from the departments of education, employment or employment security, labor or industrial relations, and commerce and economic development, as well as agencies interested in special fields such as health. In many states, universities provide technical assistance to business, industry, and community planners and will have relevant information for master planning post-secondary occupational education.

Among other possible sources are professional and trade associations, chambers of commerce, state coordinating councils for higher education, and other organizations active in the field such as the New England Regional Board of Higher Education, the Southern Regional Education Board, the Center for Southern Education Studies at George Peabody College for Teachers, the Public Affairs Research Council of Louisiana, and the Western Interstate Commission on Higher Education.

On local levels exploration should be made of the organizations likely to require objective data for their planning efforts, such as county offices of education, industrial development commissions, and utility companies. In some instances a major bank will have a research department active in the collection and development of demographic and economic data.

No realistic master plans will develop, nor will the best of plans be implemented, without effective leadership. This leadership should come from both the education profession and from other groups. All too frequently the other groups become more excited over education for employment than do those in the education profession per se. From the viewpoint of master planning an effective program of occupational education, excellent state leadership is crucial. In addition to its normal planning activities, every state should develop a statewide master plan for post-secondary occupational education and should encourage the appropriate political subdivisions to prepare related and more detailed master plans for the future. It is further suggested that educational leadership in states with common boundaries explore the possibilities of interstate planning.

Whether master planning is for the regional, state, or local level, involvement of appropriate local educational leaders is extremely important. They provide grass roots realism to the planning.

At the outset the question was posed: Will American education blow its opportunities again? I am convinced that, though systems of formal education may, American education broadly defined will not. The need for relevant education for employment is too great, and the people of our nation too ingenious not to face reality and provide for it. Functions may be shifted to private enterprise or, on federal and state levels, to other agencies less reverent of academic respectability than traditional offices of education. Or still other forms of institutions may emerge in our already fragmented total educational system. But the needs will be met.

I have great hopes for the community college, which with resourceful, innovative, and courageous leadership and proper financing, has great potential. But I am not sure these hopes will be realized. The smell of ivy is in the air.

CONSULTANT REACTIONS

Charles A. Bucher, Education Director
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Department of Community Colleges
State Board of Education
Raleigh, North Carolina

Gerald B. James, President
Rockingham College
Wentworth, North Carolina

Jimmie C. Styles, Vice-President
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Tarrant County Junior College District
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. . . I am sure that most of us will agree that in the past many of our educational institutions have shunned the relevant in our educational systems. It does appear that the community college is our best hope for meeting the individual and community educational needs; that is, if these institutions are able to resist the pressure for academic respectability.

. . . We should begin by examining some present views of what a community college ought to be. Our models come to us from a period of history when higher education was meant to prepare young men for lives of creative leisure. That was the chief aim of the liberal arts. Now it is claimed that the chief value of the liberal arts lies in the humanizing effects that they have upon those who pursue them. Whatever they may be, liberal arts are not specifically occupational in orientation, unless one wishes to become an instructor of the arts.

. . . It might be well for community college educators to seek answers to the following questions. Is the role to emphasize humanities or occupational training? If it is both, how can two rather divergent goals be achieved through the same curriculum? What per cent of the curriculum should be humanistic? What per cent should be specifically occupational? On the basis of the questions that have been posed one can readily see how this confusion affects us in the community colleges: We have accepted the responsibility of providing the first two years of college parallel work for those who intend to achieve a baccalaureate degree; at the same time we have also accepted the responsibility to provide for those who wish terminal training in the technical or vocational areas. We have recognized the fact that it is more difficult to recruit students for many of the occupational programs than it is for the college parallel programs. We would also have to admit that the transition from industrial education center and technical institute status to community college status has not always been as smooth as we had hoped it would be, and time is required before the transition can be called a success or a failure.

. . . The period of 1943 to the present represents development of the community college concept in the junior college movement. The drop in regular enrollments and the need for training defense workers during World War II stimulated junior colleges to open their doors to the community, especially during the evening. The result was a new appreciation of the public junior college by the local population and an increased willingness to support it as a locally controlled institution. Many of the community colleges during this period lacked the comprehensiveness of our present day multipurpose institutions.

. . . Those of us who have been associated with the community college movement for a number of years might wish to pose this question. Why wasn't the master planning concept stressed during the early development of state systems of community colleges? There may be several answers to this question. One is that we may have been so busy counting our new institutions, increased enrollments, and developing stop-gap procedures that we neglected to do

the necessary long-range planning. Federal acts such as the Vocational Act of 1963, the Appalachian Act and others may have provided the stimulus for the development of state and regional master plans. As an example our state department recently developed a master plan for the 23 two-year institutions in the North Carolina coastal region. This plan covers a period of ten or more years.

. . . We have looked critically at the major universities and Land Grant colleges as they have limited enrollments to the top 5 per cent of the population. Yet, we have seen a new system of community colleges arise which may be merely taking the next 7-10 per cent. What about the other 85 per cent of the population? Herein lie the masses of our citizens. They are our greatest hope for raising level of living, increasing per capita income, and improving citizenship in general. We say we live in a democracy based upon an educated citizenship and a participating citizenship. Perhaps we are for those whose educational needs are for a beautifully packaged two-year program transferable to a four-year college, or from which one enters employment, and for those whose educational needs are prepackaged in a one-year bundle. But what about those whose needs are for one course, three courses, six weeks, three months, or other less popular-sized packages? And what about those who don't appear on registration day because they haven't been tuned in to our channel of information spreading, either for social, economic, or educational reasons?

. . . In a section dealing with basic factors in master planning, Ebey included service area, which deals with the geographical boundaries from which clientele come. He suggested that comprehensive community colleges be planned to serve enrollments of no fewer than 1,000 day students and probably 3,500 or more total enrollees; coming from a 30 to 40 mile radius or a 45 to 60 minutes traveling time. He was quick to state that this does not rule out dormitories. However, the addition of dormitories increases the cost sharply, making further education prohibitive to many areas. Most community colleges in the United States have total enrollments of fewer than 1,000. Many, especially those in less populous areas, will not be able to excel 1,000 unless they shift to dormitories, or, as I suggested earlier, we really seek to serve the community of educational needs of the citizens of the geographical community—the 85 per cent—not just a select few whose educational needs fit the predetermined package we have developed because we like it, because it is easy to package, or because we traditionally have packaged it in a certain way.

. . . Ebey suggested that one approach to securing adequate enrollment in sparsely settled areas is the development of community college centers, or extension units of the central campus. He suggested emphasis on occupational education at the post-high school and adult levels in such centers. North Carolina followed this approach; in 1966 we had approximately 20 centers in operation. Some colleges had no extension centers, while others had several. We thought it was a good idea and thought it was working well, but we, through our own professional agency, the Southern Association of Colleges and Schools, struck a death blow to the centers. The accrediting agency, in essence, told the parent institutions that they could not be accredited until they severed ties with the centers. What would you have done? Probably the same thing the institutions in North Carolina did: they severed ties with the centers. Obviously, the accrediting agency had fear that courses taught in the centers without adequate libraries, in some cases with inadequately prepared faculty, and with inadequate supporting personnel and facilities would not measure up to the standards of the main campus. I am not being critical of Mr. Ebey's idea of centers, but rather indicating that there are many problems inherent in the implementation of the idea, including the problems of meeting the educational needs of citizens and at the same time maintaining acceptable standards. At this point, if time allowed, I would be critical of the Southern Association of Colleges and Schools for their arbitrary attitude, and would be critical of a number of institutions in North Carolina for backing away from the educational needs of many citizens. At the risk of appearing cynical, I would say that I hope we will be more concerned with meeting the educational needs of our citizens than concerned with whether it is college level. I am also concerned that our focal point be on educational needs of our citizens than on accreditation.

. . . For years educational institutions have been accused of being theoretical rather than practical. From our past experiences in occupational education, we are well aware that the theoretical concepts promulgated from an institution are to be used as a basis for departure—a foundation on which practical application may be built. The burdens of today created by the trials of yesterday often prevent each of us from planning for tomorrow. However, we must bear in mind, we are training tomorrow's leaders. This makes it a necessity to include educational experiences which will meet the personal needs of the students as consumers and citizens. Along with this, we must build in courses of a technical nature to equip those students who desire jobs in our businesses and industry.

. . . Education for tomorrow's leadership is of such importance that local opportunism—the causes of wasteful competition and rivalry between institutions should be nonexistent. If a genuine attempt is made to bring all educational agencies together, I am sure they will find that after proper identification of area needs, the job which needs to be done is one which requires more financial resources and allocation of personnel than is available.

. . . While the development of a master plan can be a traumatic experience, the implementation of this plan is a monumental task. Some of the things which must be accomplished are:

1. Buildings must be planned and constructed. Equipment must be purchased. Along with the best of the traditional, the most promising of the new must be provided. Educational television, computer-assisted instruc-

tion, team teaching, and programmed instruction all have places in the planning of occupational education.

2. A faculty must be selected with each member being highly competent in his field, skilled in teaching ability, and actively subscribing to occupational education philosophy.

3. The faculty and staff must be organized into a smooth-functioning, efficient team dedicated to the purposes of the programs and to striving for excellence.

4. The financial resources of occupational education must be budgeted to provide for the current needs and permit healthy growth in the future.

5. An educational climate must be created in which students and faculty may receive the greatest benefit from the investment of money, time, space, and human resources.

Once the above are attained, it is necessary to involve all staff members in planning.

. . . One very important aspect of master planning is site selection and the factors to be considered in determining what is needed. The determination of needs should include: enrollment, educational programs, location, accessibility, and size of site. The purpose of master planning is to ascertain future needs. Therefore, the acquisition of properties in advance of need is very important. The anticipation of needed occupational programs and their location make thorough analysis a must.

. . . Dr. Ebey's example of aspirations while in a doctoral program and implementation after entering the world of work is conclusive evidence that higher education as initially conceived and historically implemented is not designed to meet the needs of occupationally oriented students. A more realistic approach to the promotion of education for work may be a partial solution to this problem. There is more needed than philosophical lip service. Lip service without positive action will create many more problems in our society than can be solved.

. . . The actual needs of a community can be quite different from those envisioned by educators who hold to the concept that occupational education must fit into the educational mold handed down through the years. Until occupational programs are recognized as important and the urgency is felt throughout education, these programs will experience difficulty.

. . . Vocational-technical education master planning is and will be an essential element in determining the eventual success of occupational training in general. Such planning has not yet become an accepted concern nor assumed responsibility of most administrators in this area of education. In spite of the problems which are hindering occupational educational planning on a local level or broader dimension, it is agreed that the vocational-technical type administrators must find a way to take the initiative and make master planning a reality. Otherwise, they will be faced with the consequences of being subordinate to those who will do master planning and who might not look favorably on occupational education concerns.

10

IDENTIFYING NEW AND EMERGING OCCUPATIONS

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In confining the discussion to new and emerging occupations, there is no implication that all of the present meat-and-potatoes occupations are going to disappear. Despite a gradual evolution in the occupational structure and the appearance of many new jobs unknown in the 1960's, the end of the next decade will find us with a work force whose structure will not be surprisingly different from that of today. We will still need toolmakers, welders, secretaries, assembly line workers, cosmetologists, cooks, gardeners, and mechanics, as well as needing hundreds of thousands of new workers in the new and emerging jobs to be discussed in the sections to follow.

Though the decade ahead will bring shifts in the occupational structure, the changing demands within each job family will not be cataclysmic in the sense that they will render millions of workers obsolete. New demands will appear gradually enough that on-the-job training will provide the "mobility" most older workers need and new programs of education and training can be instituted in two-year colleges on a schedule which will prepare youth for the new careers of the 1970's and beyond. Formal retraining programs in community colleges, technical institutes, and adult schools will assist those whose jobs do, in fact, become victims of technological change.

In identifying new and emerging occupations, a sampling approach in several fields of endeavor will be adopted. The following categories will serve as centers of discussion:

1. Occupations in agriculture and natural resources development
2. Occupations in business fields
3. Occupations in health and human services
4. Occupations in industry
5. Occupations related to science and engineering.

Agriculture and natural resources: In the United States the trend toward mechanization and corporate farming will undoubtedly continue. Not only are large scale mechanized operations more efficient, but current drives to bring farm laborers into collective bargaining agreements and to bring about a guaranteed annual wage for farm workers will inexorably force out the small farmer and encourage further mechanization of corporate farms. Consequently the total number of jobs in agricultural production will continue to decline, and the new jobs as might develop will have their basis in agricultural science research, soils research, plant pathology, hybridization, harvest methods research, agricultural logistics, and hydroponics; and in the design, sale, and maintenance of agricultural equipment and machinery.

Some of the jobs with these new emphases are already quite common, coming under such headings as agribusiness and agriculture technology. The new jobs which may emerge will be for the most part at midmanagement and technician levels, and they will require training programs with strong theoretical inputs from science, engineering, economics, and business. A few job titles which may be well recognized by 1980 include: hydroponics farm manager, agricultural methods analyst, plant pathology technician, and veterinary technician. And, certain emerging occupations like soils technician, urban horticulture technician, and ag-chem technician will continue to grow.

The important problems of ecology and natural resources development are already beginning to demand persons with special training at middle manpower levels. Game and fish management, forestry, conservation, recreation, oceanography, and meteorology are all fields in which technical-level jobs have been identified within the past decade. New and emerging jobs for which technician training will be required during the 1970's may include: forestry aide, wildlife management assistant, ecological research technician, hydrographic technician, mariculture technician, and desalinization plant technician. One of the critical manpower problems inhibiting the rapid develop-

ment of the marine sciences is a shortage of competent technicians, and of post-secondary educational programs to train them.

Business occupations: It is probable that the field of business enterprise will not generate a large number of new kinds of jobs unheard of a decade ago, but that persons in existing jobs will, year by year, have to acquire new knowledge and skills to cope with the increasing complexities of the business world. For example, the future cashless society will require many workers with new skills and knowledge, but present job titles such as machine accountant, data-phone operator, data processing technician, credit analyst, and computer programmer will probably be used to describe these workers. Similarly, the new paths to decision making in business opened up by computer and communications networks, will require thousands of middle-management workers with new competencies, but it is doubtful that new job titles will be assigned. Many communications and telemetry technicians will be needed, thousands of well-trained two-year college graduates in finance, insurance, and real estate fields will find ready employment, and secretaries combining increased levels of general education with a mastery of developing office technology will be in great demand for the foreseeable future. As business becomes more international in scope the inputs to decision making become more difficult to control and their sources are more diffuse; communication across cultural and linguistic barriers is uncertain, and geopolitics becomes a problem. Professional and managerial personnel in business, as business becomes more complex, will face the same kind of manpower squeeze that confronted scientists and engineers two decades ago, and they will need vastly increased numbers of middle-level workers, technicians, to gather the data, man the communications systems, operate the computers, prepare graphical analyses, write the technical reports, arrange for travel and conferences and yes, run the offices. But it is not likely that a great number of new job titles will emerge, or that brand new curriculums will be necessary in large numbers. The new knowledge and new skills required will be incorporated within courses and curriculum which, for the most part, already exist in a thousand colleges from coast to coast.

Health and human services: During the 1950's and the first half of the 1960's, the engineering and industry-related technologies grew at an astonishing rate, but as the 1960 decade draws near its end, the spotlight of rapid growth is shifting to technologies related to health and human services. By comparison, estimates of the ratio of technical level personnel to professionals in engineering and industry run from 1:1 to 3:1, depending on the field and on the estimator; whereas the actual ratio in health, medicine, and dentistry is now nearly 6:1, and manpower experts in the field assert that it should be 12:1.

More than thirty allied health technologies have been identified ranging from audiometer operator to X-ray technician. Emerging occupations, that is those already identified and developing but for which educational programs are still not fully stabilized include such job titles as: inhalation therapist, electro-encephalograph technician, medical assistant, medical illustrator, community health aide, pediatric assistant, unit manager, and mental health aide. Some of these jobs are as yet not fully accepted by hospitals and physicians; and some of them, though accepted, are still in the process of evaluation with the boundary conditions of the job still poorly defined. Collegiate-technical programs to prepare persons for these jobs are, as might be imagined, diverse in concept and content, with little standardization from one state to another.

The nature of some new health technologies for the 1970's can perhaps be inferred from the titles of the featured papers presented at a recent national conference on Biomedical Technology and Manpower held at Grossmont College, El Cajon, California, in April 1969. The papers bore these titles:

"Systems Approach to Medical Technology"

"Potential Impact of Solid State Circuits on Medical Electronics"

"Biomedical Computers, Automatic Instruments, and What One Needs To Know To Operate and Maintain Them"

"Technician's Inventory of Knowledge as a Design Outline"

"Operation and Maintenance of Recording Apparatus for Vital Body Functions"

"Designer's and Manufacturer's View of Capabilities of the Biomedical Technician."

Though health manpower needs for the entire decade cannot be clearly identified at this point in time, these hypotheses will probably stand a ten-year test:

1. The need for nurses, medical lab technicians, dental assistants, and others in established health technologies will continue unabated.

2. There may emerge a rather significant need for service-level health workers who can render effective service in the home, and in community centers, rest homes, and retirement homes.

3. The new health occupations will, for the most part, require persons with college-level education and training in the biological sciences, the physical sciences, and in these sciences combined with engineering technology.

Occupations in human service: These occupations are at present in an embryonic state of development. There is little question about the need for such workers as society becomes more complex and as urbanization increases. Also, and this might be considered a fortuitous circumstance, some of the occupations in human services fields are not substantively so academically rigorous that students of average and lower academic ability are automatically ruled out. However, there are some very knotty problems centering around such matters as the career aspects of such jobs, the income to be expected, the status of these jobs in the hierarchy of occupations, and the kind and level of education and training to be offered. Significant inputs

from the social sciences and the behavioral sciences seem essential, as is the development of certain essential skills peculiar to the programs for law enforcement officers, firemen, library assistants, and recreation aides. Other related careers which will be important by the mid-70's are teacher aide, socialworker aide, public housing management assistant, traffic specialist, urban planning technician, pollution control technician, environmental health assistant, and community child care center assistant.

Occupations in industry: The needs of industry for workers with postsecondary education and training run the gamut from semiskilled and skilled trade and craft workers to the quasiprofessional engineering and science and technicians whose education and training is job oriented. The section following will treat the semiprofessional and paraprofessional, field-oriented technicians.

Industry could mechanize and automate much faster than it actually does. Labor organization pressures, government full-employment policies; and to some extent, a developing social conscience within industry itself, inhibits rapid technological advance, increased automation, and consequent severe employment cut-backs. Industry and business, by and large, have adopted the policy of automating at a rate no faster than the number of retirements, deaths, and quits.

In all probability there will not be many, if indeed any, new jobs at manual skill levels in industry. Industrial workers will still extract, haul, shape, assemble, finish, test, and package, using the materials and machines of industry, energized mostly by electrical power. Jobs will necessitate new skills from time to time as materials change (e.g., working with plastics, exotic metals, radioactive materials) but these are skill increments rather easily acquired either on the job or from brief periods of formal in-plant or evening school training.

Occupations related to science and engineering: The jobs that are being created by the advance to technology are for the most part at semiprofessional levels in occupations which require knowledge and specialized skills associated with the physical, biological, and engineering sciences. The need for semiprofessional technicians is critical in these fields. The following table presents estimates of present needs in selected fields, as taken from that publication.

Keeping in mind that the estimates reported were for 1966, and that the trend is toward increased need for science- and engineering-based technicians, the critical nature of the problem for the middle- and late-1970's comes into sharp focus.

The engineering technologies are not new or emerging. They have been around for nearly three decades and have been represented by tested and proven educational programs in technical institutes and junior colleges for most of that time period. There is little doubt that the engineering technician will continue to occupy an important spot in the middle-manpower spectrum through the 1970's and beyond. Joining him in the 1970's, however, will be a significant number of technicians in new and emerging occupations with even greater emphasis on science-based knowledge and with inputs of knowledge from two or more disci-lines. The following job titles, some new, some emerging, may become commonplace by the mid-1970's.

TECHNICIANS NEEDED NOW IN SELECTED SCIENTIFIC AND ENGINEERING FIELDS

Types of Technicians	Number Needed
Biomedical hospital equipment	50,000
Electromechanical	100,000
Electronic computer service	20,000
Communications and telemetry	10,000
Computerized drafting	5,000
Numerical control (machine tool)	10,000
Chemical manufacturing process control	5,000
Agricultural production and service	75,000
Pollution control	10,000
Total	285,000

Aerospace technician
Air traffic control technician
Bio-chemical technician
Bio-engineering technician
Bio-medical technician
Computer network communications technician
Conservation technician
Crystallography technician
Earth sciences technician
Environmental control technician
Genetics technician
Laser technician
Marine sciences technician
Meteorological technician
Nuclear propulsion technician
Oceanographic technician
Physics aide
Orbiting satellite systems technician
Science data processing technician
Solid state physics technician
Wildlife management technician

Such a list could be extended to double or triple the length of the above, but the job titles listed are typical of those already emerging and being predicted for the next decade.

Need, however, is only one parameter of the manpower problem. Recruitment of students, planning curriculum content, and securing a competent instructional staff are all equally important dimensions of middle-manpower development, and it is to these and related matters that we turn in the concluding section.

Dealing in futures, whether in the commodity market or in the social and behavioral sciences, is an uncertain business. Within the context of predictions about society's future, the foregoing discussion has attempted to suggest some new and emerging occupations which may be of direct concern to postsecondary education in the decade of the 1970's. Lest there be some misunderstanding, it is reiterated here that many, perhaps most, of the middle-manpower jobs of today will persist into and through the next decade. Machinists, auto mechanics, secretaries, electronics technicians, nurses, policemen, and computer programmers are not going out of style.

Target-setting approaches to manpower development are intended to influence the future course of development rather than to try to predict accurately what the manpower situation will be at a given future time.

For the 1970's it could be said that the need index will be relatively great in the health and human services occupations; in the natural resources-ecology-environment field; and in the science/engineering technology field. There are two other indices, however, which affect the degree of realism of a target-setting approach—an ability index, and a prestige index. Ability index is related to the academic and manipulative capabilities of the students who will attend community colleges and technical schools; and prestige index has to do with whether or not a given occupational field has drawing power, image, or attraction for large numbers of students. A few examples can serve to illustrate the dilemmas which will frequently confront curriculum planners during the decade:

1. *The service occupations*—The need index will be very high; the ability index about medium (depending on the particular job field); and the prestige index (at present) is very low.

2. *Natural resources, ecology, environment*—The need index will be substantial; the ability index above that possessed by the majority of two-year college students; and the image index, although low at present, may be elevated by the mid-70's.

3. *Health and human services*—The need index will be very high; ability index medium, depending on speciality; prestige index is high for health occupations, low (at present) for human services.

4. *Science/engineering technologies*—Need index will be high; ability index will be above that which is characteristic of two-year college students; prestige index high.

The crux of the student recruitment problem can be summarized as follows: The occupations with a high need index tend to have either a high ability index or a low prestige index. Or, put another way: students who are matched to the ability index of an occupation generally regard that occupation as having low prestige, even when the need is great.

The deans of 1975 may find faculty recruitment somewhat less of a problem than it has been during the 60's. For one thing the rate of increase in post-secondary enrollments will not be as great as it has been in this decade. Further, greatly increased numbers of new college graduates will be available in the early 1970's and with teachers' salaries now reasonably comparable to entry salaries in other professions, the teacher shortage may disappear in all but a few highly specialized fields. Even this year, it is reported that there may be an over-supply of teachers, and it is possible that such perennially short fields as physics, biology, engineering, and mathematics may move off the critical list in another year or two.

Persons with highly specialized practical experience in the various middle-manpower occupational fields will, of course, always be hard to recruit. Where, for example does one find instructors for a marine sciences program? Or for bio-engineering technology? Or for laser technology?

Curriculum planning will present all the usual problems along with some new ones yet undiscovered. Inherent in the predictions of this paper are the following suggestions for curriculum planners:

1. The new and emerging occupations will be for the most part, at semiprofessional and technical levels rather than at trade and craft levels. A number of the para-professional fields will develop four-year curriculums leading to a bachelor's degree, as engineering technology and medical laboratory technology have already done.

2. Most of the new programs will require generous inputs from one or more of the following fields of knowledge: The physical sciences, the biological sciences, the social sciences, and the behavioral sciences.

3. Since many of the new occupations involve human service, the communication of information, and teamwork with professionals, more attention will have to be given to general education.

4. Since enrollments in advanced specialty courses will probably be low (for several years at least), consideration should be given to both of the following: clustering of the programs with a common freshman core for the cluster; and regional planning which results in high cost, low enrollment courses being placed in selected institutions with the core courses being offered in many institutions. With such a scheme, for example, a student could take the major part of a health technology core at his local junior college or technical school, and transfer to the nearest regional institution offering the sophomore work for the operating room technician curriculum.

Two highly important matters deserve mention in closing. Without a satisfactory solution to conflicting and diffuse patterns in both of the following, junior colleges and technical schools will find it difficult to exert any significant force on the new manpower problems of the 1970's.

1. The lack of secondary school programs planned and operated specifically to prepare high school graduates for entry into associate degree, technician-level programs in junior colleges and technical schools. Specifically, this means that high schools must give more attention to the average student. He must come out of high school with better English skills, with mathematics at least through

elementary algebra and geometry; and with a physical science or a biological science (or both) taught with laboratory at his level of understanding. (All too many tailor these courses so that they "fit" only the top 15 or 20 per cent of students. The future technicians are not prepared for collegiate-technical studies on graduation from high school.)

2. The rules, regulations, and prescriptions which govern the allocation of federal vocational education funds in most states. Rooted in fifty years of tradition, oriented toward secondary education, and still hung up on the less-than-college-grade syndrome, many state plans for vocational education make it extremely difficult if not impossible to operate collegiate-technical level programs for new and emerging occupations and have them approved for federal vocational funds.

At best we see the future "through a glass darkly." At worst there is no image at all, merely an unilluminated void. These thoughts have been intended to focus the glass. It is your task to light up the void.

CONSULTANT REACTIONS

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. . . Professor Harris' sampling approach to the identification of new and emerging occupations is most appropriate to this discussion. In making his prediction of our capabilities to do the job required in the 70's, he applies three indices—the first of these is need. I have already related as to its prediction. The other two indices are ability, as it pertains to capacity to succeed in selected programs and prestige as related to drawing power or attraction of students. I would urge some caution in the application of both of these, particularly as they apply to the urban areas. The traditional ability measures are becoming increasingly suspect when applied to minority groups. Admittedly no better predictive tool has been developed, but perhaps they can be by-passed in favor of more effective instructional strategies. The greater use of tutors, teacher aides and early compensatory programs are being tried with some promise. The prestige factor is by no means immutable. Our assignment of greater prestige to science/engineering technology is another of our professional hang-ups. It may be the result from our persistent nostalgia to be identified as collegiate.

. . . The cautious, if not pessimistic, predictions of the author are understandable. I would share his outlook if I thought that we were to continue to travel the same route that we have followed.

. . . Reference is made to four-year curriculums leading to the Bachelor of Technology. This development is a most significant one. Raising the top rung of the technical or paraprofessional level beyond grade fourteen will not only aid our recruitment but will enable us to better prepare middleman power for increasingly complex technologies and more sensitive supervisory responsibilities. Our thinking has been for too long circumscribed by the two years of education responsibility allotted to us. Not only must we look ahead to continuing education through Grades 15 and 16, but we must also look back to at least Grades 11 and 12 as part of the same continuum of occupational ladder.

. . . The suggestion that secondary school programs be planned and operated to prepare high school graduates for entry into junior college occupational programs is most palatable. The concept is not a new one, for there were among those who pioneered the community college movement, some who advocated the 6-4-4 system of school organization. In their writings, you will find strong arguments for the occupational continuum Grades 11-14.

. . . Sometimes geography and/or socio-economic factors are causes for the relative failure of career programs in not attracting students. For example, despite the help of a five-year grant from HUD, a program at Essex Community College to train city planners and urban renewal workers has attracted relatively few students in five years. From the outset the administrators were aware of certain conditions militating against its success, e.g. an anti-urban renewal climate in the county and the absence of any sizeable ghetto. For this reason we brought an inner city community college into the program on a consortium basis. Yet in neither of the two colleges has the program been, quantitatively speaking, very successful. Among the discernable reasons for this are: lack of student interest; lack of faculty support for career programs which do not demon-

strate prompt quantitative success; and the geographic and socioeconomic factor. I submit that if the community college is to fulfill an active aggressive role as an agent of social change these so-called mistakes must continue to occur.

. . . Community colleges need to increase public exposure, knowledge and awareness of certain fields and occupations. If people generally don't know what city planning is, how can we expect their children to seek a career in it? One reason why we find relatively large enrollments in law enforcement curriculums is that everyone at least knows what a policeman is and does, although their concept may not be entirely correct. This can be done–although not without difficulty–by cracking into the elementary and secondary school curriculums, not with boring occupational content such as a unit in the 9th grade, on "What shall I become?" but with economics, sociology, and political science creatively and relevantly injected into the public school curriculums, far earlier than normally considered–in place of Pizzaro, Cortez and Montezuma, in place of the history of Maryland, and in place of the abstruse values of "the annual rainfall in our county ."

. . . The junior college should conceive of education as a continuous process and even begin militating for it by: (1) possibly mandatory free education to age 18, (2) continuous, i.e., periodic re-education throughout life, (3) subsidized re-education for those over 50.

. . . Relative to the disappointments of the decade in this respect I would differ with Professor Harris, contending that community colleges and technical schools have had no impact on developmental and basic education whatsoever. They have not as yet begun to address themselves to what portends to be a crucial problem in the 80's. The only fresh wind is the observation that educators at all levels are more favorably inclined toward occupational education than at any time in our recent history.

. . . The shortage of teachers in the vocational-technical areas is critical. Some of this might be caused by the questionable contingency that a college degree is necessary if one is to teach in the occupational areas. It was suggested that a criterion of competency rather than academic degree be considered in acquiring teaching personnel.

. . . Finally, the use of personalized programs might be a more realistic approach to occupational training. Students who do not require as much training time to become skilled should not be confined to rigid schedules. Such personalized treatments should carry throughout all post-high vocational-technical institutions.

STUDENT RECRUITMENT AND SELECTION FOR POST-SECONDARY OCCUPATIONAL EDUCATION PROGRAMS

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Educators and employers are becoming aware of the importance of preparing individuals for entrance into many occupations at the post-secondary level. Therefore, increased attention should be given to the recruitment and selection of those who are interested and can profit by enrolling in such programs.

Our rapidly developing technological society has created major social and economic problems not only for our nation but on a worldwide basis. There are large numbers of unemployed and underemployed individuals while at the same time many unfilled work opportunities exist. Substantiation of this fact is readily evident when one examines the help-wanted pages of our newspapers and magazines.

One of the major problems in meeting manpower needs is the recruitment of students for nonbaccalaureate, post-secondary occupational education programs. A serious status-image inhibiting recruitment results from our society placing excessive emphasis on the significance of the baccalaureate degree. This and other problems effecting occupational education should be examined. The challenge then is to devise and apply solutions. The problems herein listed are not intended to be all inclusive but are intended to be indicative of areas creating difficulties.

In an age that places great emphasis on the acquisition of a baccalaureate degree, the status of an individual having less is considered by many as insignificant. The result is difficulty in recruiting individuals for those occupational education programs not designed as part of a baccalaureate degree curriculum. No simple answer exists to this problem, but we must strive unceasingly to solve it. It might be highly desirable to provide everyone with a baccalaureate degree at birth and then proceed with realistic education!

Another major obstacle to the recruitment of students for post-secondary occupational education programs is the inadequacy of guidance and counseling services in elementary, junior, and senior high schools. In too many instances such services are provided in a narrow fashion designed primarily for baccalaureate degree candidates and at a "too late" date. How can the guidance and counseling services be strengthened at all levels?

Providing citizens with complete, factual information relative to occupational education is an important, difficult task. Only as such information is provided in a thorough manner will individuals be encouraged to pursue those programs designed to help satisfy the manpower needs of our nation. The question in need of an answer is "How can appropriate information regarding manpower demands, and opportunities for preparing to meet those needs, be disseminated in an effective manner?"

The strong technological and economic advances in our nation have been accompanied by such problems as urban and rural poverty, school dropouts, racial inequalities, and educationally disadvantaged populations. How to recruit persons for postsecondary occupational programs from these groups presents many perplexing problems. How do we reach such individuals? We must find ways and means to serve this population if the welfare of our society is to be strengthened and a strong economy is to be maintained.

It seems very evident that if our socioeconomic problems are going to be met, postsecondary occupational programs must be available on an open-door policy. How can essential remedial and developmental needs be met by an institution operating with an "open-door" policy? How can quality programs be maintained when such a policy is used?

Organizations can be used to spread word about rewards for successful occupational workers. A good example of this potential was recently illustrated by the Connecticut

Chemical Manufacturing Association. While facilities for educating chemical technicians were very good, inadequate numbers of students were being enrolled in the programs. The association, in cooperation with educators, put into effect a program to inform the public of both the need and the rewards for persons employed in this occupation. What resulted were increased enrollments in chemical technology curriculums. However, it was soon evident that successful recruiting required an ongoing publicity program rather than a one-shot effort.

The range of agencies and organizations that stand ready to provide service similar to the Connecticut Chemical Manufacturers Association is almost unlimited.

Cooperative education programs and part-time work opportunities are an effective technique for recruitment. It is a difficult program to provide in an effective manner. However, those responsible for postsecondary occupational education should extend themselves to assure full utilization of cooperative education. It seems only natural that persons with average or above-average capabilities are the ones preferred for occupational education programs, particularly when openings are limited and applicants exceed the number of work stations. Institutions providing occupational education must develop ways and means for "including in" rather than "selecting out" the wide range of individuals having need for preparation for entrance into employment and for those employed who need upgrading and updating.

We can no longer ignore those who may have limited capabilities, those who may have been denied opportunities, or those who have failed to achieve maximum educational development in kindergarten through high school years. With these comments, let us review some of the problems relating to the selection of students.

Our real concern centers on how we can effectively assist individuals having a wide range of characteristics to select the program that is within their capabilities and then help them to progress where they can take their places as contributing members of our society.

No effort will be made to identify the many prepared, purchasable tests available for those interested in a formal examination device. The use of such tests relating to interest, mechanical aptitude, visualization, comprehension, reading, and mathematics will undoubtedly provide certain data about the individual. However, they frequently fail to measure important characteristics such as determination, maturity, and concern for success. As leaders in the field of occupational education, we need to weigh carefully the strengths and weaknesses of formal testing devices, using them with a full understanding of their shortcomings. Interpretations of such tests must be made only in the very broadest sense.

An approach frequently followed involves the use of supplemental information gathered from application forms and by supplementary data from agencies, institutions, or organizations having had contact with the applicant. A personal interview is frequently a part of this technique. This procedure, though helpful, also may have definite weaknesses in that very little objective information becomes available. Miscellaneous data is reviewable, a visual picture of the applicant is obtained, and an understanding of the expressed interest of the individual is acquired.

Some of the more successful schools have used a simple application form with an elementary mathematics test. The short formal test is followed by an oral interview to determine interest. On the basis of expressed interest and achievement, chiefly on the elementary test, applicants are assigned to the program of their choice for orientation and tryout. The courses are structured to allow four to ten weeks for careful instructor-observation of student interest and progress. As the student progresses, the instructor carefully evaluates his success in the program. If the student progresses satisfactorily, he or she will be permitted to proceed with succeeding units until completion. When it is apparent the program is inappropriate for the individual on the basis of interest and/or achievement, the person, following appropriate counseling, may be transferred to another program where he begins another orientation period. Conceivably this procedure could be repeated a number of times until the proper niche is found for the student.

Some will say this type of selection is a waste of time and is too difficult to administer. A program of this nature requires maximum flexibility plus better than normal counseling services. The flexibility essential for such programs involves the use of educational technology, at least to supplement and strengthen instructional procedures. Furthermore, a procedure of this nature makes an open-door policy possible; the end result will be the preparation of individuals for employment to the maximum extent possible in keeping with their interest and abilities.

Does the tryout procedure appear to have merit? If so, how can greater encouragement be given to the selection and assignment of applicants on the basis of expressed interest followed by orientation and/or tryout periods? What type of organization of skills and knowledge is required for such a program? How can the content be programmed? To what extent should the program be self-pacing?

There is every evidence that greater and greater attention will be given to postsecondary occupational education at federal, state, and local levels.

Included among the challenges ahead is the task of coordinating and articulating occupational education programs between the secondary and postsecondary institutions. Planning at the state and local level is also extremely important.

The demands for postsecondary occupational education are tremendous. What can you do to assist with the improvement and strengthening of recruitment and selection of students for post-secondary occupational education? You determine the answer!

CONSULTANT REACTIONS

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. . . I would like to make one suggestion in answer to Knoebel's quest for a more adequate public information program about occupational programs. When preparing information for the public, try to concentrate more on the broad curriculum groupings, such as health services, engineering technology, and mid-management training.

. . . Although Knoebel expresses a real concern about matching students to programs, I think we should try it another way. Instead of selecting programs within the capabilities of the students, techniques, and materials should be developed to build on student strengths, skills, and attitudes. This will call for some breaking of an educational lockstep, for we often unintentionally force students into existing programs.

. . . Many experiments have shown that general IQ tests, general aptitude tests, and broad-base college entrance examinations correlate poorly with success in occupational programs. More singular tests such as those which seek out mathematics skills or science knowledge or social responsibility appear to be more readily useful for occupational education students.

. . . One of the most effective selling points for occupational career programs is to get right down to potential earnings of the successful graduate of a skills program. This calls for counseling personnel who know the facts and who can sell programs. Once sold on the occupational field, the student needs counselor help in realistic program selection which fits his interests and abilities.

. . . One matter, which has not been mentioned, is the effect a quality teacher has upon recruitment, selection, and retention. A teacher with a good reputation among practitioners in the field, plus interest in students and a natural ability to teach, is absolutely vital to a quality program. In my opinion, whether or not a teacher in an occupational field has a collegiate degree is unimportant, as long as he possesses the technical and teaching skills to do the job."

In order to have viable programs in recruitment and selection in occupational career fields we must believe that quality is measured by the success of properly placed students in a program. Program quality should not be measured in terms of sophistication.

. . . As educators we should not have to recruit, *but instead, inform the public in what they might choose. We should* not have to select *but, rather guide the public along occupational routes in which there is a mutual compatibility between job availability and personnel supply.*