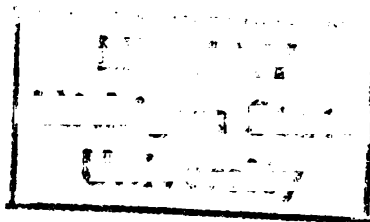




THESIS



This is to certify that the


dissertation entitled

A STUDY OF
PRACTICES WHICH ACT AS BARRIERS TO THE
ESTABLISHMENT OF COORDINATIVE RELATIONSHIPS
BETWEEN TECHNICAL COLLEGES AND INDUSTRY
FOR THE DELIVERY OF JOB TRAINING
presented by

Alan Handrick Blair

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Adult & Continuing Education


Major professor

Date October 1, 1986

Phone Renewal: 353-0891



RETURNING MATERIALS:
Place in book drop to
remove this checkout from
your record. FINES will
be charged if book is
returned after the date
stamped below.

SEP 08 2007

ADD 19 '88 88	FEB 16 '89	SEP 08 2002
48 K131	MARCH 31 '87	
	400 A094	
24 '88	JUN 30 '89	JUN 3, 1985
33 K147	July 24, 89	EX 1005
JUN 21 '88	Aug 29, 89	Dec 35/2 90
000 H203	Oct 4, 1989	
334 SEP 29 '88	Nov 1, 1989	AUG 7, 1990
Nov 2 '88		JUN 11 1996
Nov 21 '88		FEB 11 1995
H343		3/1/95
0 MAR 25 2003		FEB 16 1995

**A STUDY OF
PRACTICES WHICH ACT AS BARRIERS TO THE
ESTABLISHMENT OF COORDINATIVE RELATIONSHIPS
BETWEEN TECHNICAL COLLEGES AND INDUSTRY
FOR THE DELIVERY OF JOB TRAINING**

By

Alan Handrick Blair

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

**DOCTOR OF PHILOSOPHY
Department of Higher Education Administration
College of Education**

1986

ABSTRACT

A STUDY OF PRACTICES WHICH ACT AS BARRIERS TO THE ESTABLISHMENT OF COORDINATIVE RELATIONSHIPS BETWEEN TECHNICAL COLLEGES AND INDUSTRY FOR THE DELIVERY OF JOB TRAINING

By

Alan Handrick Blair

Much has been written to explain why cooperative job training programs between technical colleges and industry have not reached their potential despite the incentives of the Comprehensive Employment and Training Act (CETA) and the Job Training Partnership Act (JTPA). The literature identifies barriers to cooperation which tend to be generic in nature. Frequently cited as barriers are access, confusing policies, quality and cost. Such general categories are of little assistance to the administrator who is seeking to establish cooperative relations with local industry. To be more useful, these barriers need to be interpreted into operational practices.

The purpose of this research was to identify practices which acted as barriers to the establishment of cooperative relations. A list of practices which characterized both the fundamental components of interorganizational relations and two-year college-industry relations was developed by

the author and reviewed by a national panel of experts. Thirty-four practices were assembled into an instrument and administered to three sample populations: college faculty teaching in job training programs, and college administrators, and industry personnel with direct responsibility for job training programs. The groups were asked to judge the degree of importance and also the extent of practice for each within their environment.

An analysis of the results led the author to conclude that when the extent of practice was less than the level of importance, the practice became a potential barrier. Six practices were found to be significant barriers to the establishment of cooperative relations between technical colleges and industry.

DEDICATION

This research is dedicated to:

**My parents whose patience, love and constant support
never waivered in the face of the challenges posed
by my adolesence,**

**My daughters, Dana and Megan, whose love
strengthened my resolve throughout the conduct of
this project, and to**

**Mrs. Jewett who stood alone among her colleagues
in recognizing my latent abilities and challenged
me to discover them.**

ACKNOWLEDGEMENT

No task, regardless of its scope, is accomplished without the influence or assistance of significant others. I wish to acknowledge these special persons:

From my first naive and uninformed attempts at conducting research, Cas and Betty Heilman welcomed me into their home on week-ends to encourage and nurture my research. I always felt welcome; Cas treated me as a colleague, and Betty received me as if I were family.

The seemingly endless drafts of manuscript revisions served up by the guidance committee were typed, and retyped, and retyped without hesitation by Michele Hindel. Her dedication to this dissertation far exceeded my expectations of her role.

Richard Libby was instrumental in my deciding to enroll in the doctoral program, and he provided the leave of absence which enabled me to complete the coursework. His support of my graduate studies was legion.

Cherie White, my dearest friend, provided constant love, support, and encouragement to sustain me during these three difficult years. Without her behind each of my efforts this research may never have been completed.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	
Background of the Problem	1
Corporate Training	2
Professional Instruction	2
Skills Training	3
Differences Emerge	4
Toward A Rationale for Two-Year Colleges....	5
The Challenge	7
Barriers to Interorganizational	
Coordination for Employee Training	8
Statement of the Problem	10
Significance of the Research	11
Assumptions of the Study	12
Limitations of the Study	14
Definition of Terms	14
II. REVIEW OF THE LITERATURE	
Industry-Education Relationships	17
History	17
The Role of Social and Economic Forces ..	20
The Emergence of Corporate Training	22
The Need for Coordination	25
The Mutual Benefits of Coordination	29
Barriers to Coordination	31
Historical, Administrative, and	
Philosophical Barriers	32
The Generic Barriers	34
Toward the Identification of Real	
Barriers	38
The Status of Cooperative Efforts	42
Summary.....	46
The Concepts of Coordination	48
Toward a Theoretical Framework	48
Fundamentals of Coordination/	
Collaboration	51
Theory into Practice	53
Importance of the Interpersonal Dimension	
in Collaboration	60
Summary	61

CHAPTER	PAGE
III. PROCEDURES AND METHODOLOGY	
Instrument Development	63
Review of the Draft Instrument	65
Results of the Review	66
Population of the Study	69
Criteria for the Selection of the Sample ...	69
Colleges	69
Industries	70
Criteria for the Selection of	
Participants	72
Administrators	72
College Faculty	72
Industry Trainers	73
Data Collection	73
Treatment of the Data	74
Plotting the Findings	76
IV. FINDINGS	
Findings Within Groups	78
Findings Between Groups	86
Summary	91
Within Groups	91
Between Groups	91
The Practice-Barrier Grid	94
V. CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS	
Conclusions and Recommendations	99
Additional Conclusions	109
Practice-Barrier Grid	112
Summary	114
Recommendations for Further Research	117
Reflections	118
APPENDICES	
A. Industry Sample	123
B. Survey Instrument	126
C. Review Panel	130
D. Review of the Draft Instrument	132
E. Mean Scores for all Practices	140
F. Presentation of the Data	145
BIBLIOGRAPHY	163

LIST OF TABLES

TABLE	PAGE
1. Statistical Significance of the Null Hypothesis	
A. Within Groups	79
B. Between Groups	82
2. Practices Which Differed Significantly Between Groups	88
3. Group Means for Importance and Extent of Practice	92
4. Group Means for Practices Which are Barriers in East Central Ohio	93
5. Review of the Draft Instrument	
A. Mean Responses for Importance of Practice	132
B. Mean Responses for Extent of Practice	134
C. Mean Responses for the College Sample	136
D. Mean Responses for the Industry Sample	138
6. Mean Scores for All Practices	140
7. Presentation of the Data	145

LIST OF FIGURES

FIGURE	PAGE
1. Total Companies Employing One Hundred or More Employees.....	71
2. Practice-Barrier Grid	
A. Administration Grid	95
B. Industry Grid	96
C. Faculty Grid	97

CHAPTER ONE

BACKGROUND OF THE PROBLEM

Recent announcements by major corporations that they are expanding their in-house training to include their own degree granting colleges, coupled with the recent Carnegie Commission study by Carnegie trustee Nell Eurich entitled Corporate Classrooms: The Learning Business (1985) have focused much attention on the rapid growth of employee training programs conducted by corporations.

The major portion of employee training expenditures in the United States are made by the large corporations.

Noteworthy examples are the Bell System which in 1980 offered more than 12,000 courses at 1,300 locations to more than 20,000 employees; and Consolidated Edison of New York who reportedly spent some 5.5 million dollars in 1980 on the training of its 24,000 employees (Craig and Evers, 1981). This trend continues as corporations assume greater responsibilities for the education of their employees. U. S. companies are training and educating nearly eight million people, close to the total enrollment in America's four-year colleges and universities (Eurich, 1985).

Estimates of annual expenditures for in-house training have ranged from two billion dollars (Lusterman, 1977) to 100 billion dollars (Gilbert, 1976) annually with 20-40 billion

dollars viewed as the range of most educated guesses. The American Society for Training and Development reported in 1981 that an estimated 30 billion dollars was being spent annually. This is an enormous sum when compared to the combined appropriations for higher education in all fifty states, which in 1979-1980 added up to about 20 billion dollars, and more recently has been estimated to range as high as 60 billion dollars annually (Lynton, 1982; Time Inc., 1985).

CORPORATE TRAINING

Corporate training programs are of two basic types. The first type, which is frequently characterized as professional instruction, is delivered to salaried employees. The second type of corporate training is characterized by skills training and upgrading programs delivered to hourly workers. It is this second type of training which was the focus of this research.

Professional Instruction

The first type of corporate training, which is frequently characterized as professional instruction, is delivered to salaried employees. Increasingly, this type of instruction is legitimized with the award of college credit. The Chronicle of Higher Education reported in 1983 that several corporations had established their own colleges. Notable among them were the Bell System, N.C.R. Corporation, Wang, and McDonald's. Time Inc. reported in 1985

that the trend was continuing to accelerate. In an article entitled "Schooling for Survival: U.S. Corporations move en masse into the learning business" Time focused on three outstanding examples of corporate colleges: the 2,265 acre Xerox complex in Virginia, the A.T.T. residential college in New Jersey and IBM's 250 acre campus near Thornwood, New York.

There exist in the U. S. today 18 corporate colleges and universities that grant degrees, half have earned that status since 1977. The most exotic of these is the National Technological University in Colorado. Chartered in 1985, NTU will deliver advanced engineering courses via satellite across the nation. By 1988 eight more companies plan to develop degree programs (Time Inc., 1985).

Skills Training

The second type of corporate training is characterized by skills training and upgrading programs delivered to hourly workers, often by or at the request of unions. It is this second type of training which was the focus of this research. The auto industry specifically, and heavy manufacturing in general are typical examples of this type of training.

As a means of comparison it has been estimated that General Motors spent 370 million dollars for this type of training in 1985, only an estimated 20 million dollars of which was spent for training at noncompany facilities (Mueller, 1986).

Differences Emerge

It is widely recognized that the training of hourly workers differs widely from both corporate professional training and traditional collegiate instruction in strategy, structure, and access. There also exists a philosophical gap, i.e., an expressed concern among educators not to allow technology to drive the educational process instead of the other way around. This is made more difficult by the decided stance taken by higher education in general that it is not the mission of colleges to train people.

Corporate officials, on the other hand, say that they have established in-house training programs because colleges often do not provide the programs industry needs. Where useful programs do exist, the academic approach is not suitable for their employees. As an example, NCR Corporation has not found the colleges to be viable delivery mechanisms for education for their employees. They reported that colleges lack the flexibility and creativity essential to the design of curricula and delivery formats (Watkins, 1983). Other frequently mentioned industry concerns with college training include: the delivery format, a theoretical versus an applications approach, the quality of faculty frequently assigned to industry training programs, and the advantages of in-house or on-site training. Clearly there are substantial barriers to enlarging the role of colleges in corporate training.

Ernest Lynton of the University of Massachusetts who conducted a two-year study of higher education and societal needs stated that "a great deal of what is happening in corporate education is happening by default" (Lynton, 1983). The colleges and universities have not paid much attention to the growth of skills training for the business and industry sector.

Educational institutions could under no circumstances assume the full responsibility for all corporate training needs, just as corporations could not deal with the broad educational development of adults. The question is rather, whether it is desirable to increase the extent to which colleges can provide the training needs of business and industry, and more particularly can the two-year technical colleges play a role in industrial training.

TOWARD A RATIONALE FOR TWO-YEAR TECHNICAL COLLEGES

There is perhaps an obvious rationale for the establishment of interorganizational relationships between colleges and universities with strong research departments, and the corporate sector. One might naturally inquire, however, as to the rationale for two-year technical colleges to seek the establishment of coordinative training relationships with the business and industry community. A fundamental rationale can be supported by four assertions synthesized from the literature: survival, similarity, duplication, and capacity.

Survival - Survival is a rather self-serving assertion. It is largely a matter of resources and demographics. Declining enrollments, reduced operating subsidies and high rates of unemployment have provided an incentive to seek interorganizational relationships.

Technical education may in fact have an uncertain future if it is unable to adjust to the changing needs of the post-industrial, high-tech economy. Feldman (1981) concluded:

An awareness that we are preparing people now for a work market that is changing more elementally than at any time since the industrial revolution has become a desperately important component in the administration of vocational programs (p. 39).

What has been viewed as a strength for almost 50 years in vocational education, the ability of vocational programs to prepare a trained work force, may, during the next 20 years become a weakness if a new relationship is not defined between technical education and the business and industry community.

As a matter of survival it is essential that technical colleges demonstrate clearly to both government and industry that they are not only capable but well suited to addressing and helping to solve the long-term economic transformation problems of the industrial sector.

Similarity - The second assertion is that the goals of technical education and industrial job training have similarities -- one of these similarities is to meet the labor needs of business and industry. Perhaps the issue is

not so much to debate the differences, but to identify how best to achieve this similar goal.

Duplication - The third assertion stems from an acknowledgement of the growing duplication and overlap in the delivery of job training programs. The assertion is that duplication could be reduced through coordinated efforts among the providers of job training programs.

Capacity - A fourth assertion is related to the human resources potential of technical colleges. These colleges are natural resources which should be drawn upon for the betterment of society. Technical colleges possess a collective intelligence capable of analyzing and often solving many of the problems faced by industry. This is above all what technical colleges have to market.

MacRoy (1981) points out that two-year colleges are uniquely suited to interrelate with industry. Most are governed by local boards composed of individuals who are usually members of the local business community. The members of the technology advisory committees are local experts representing a wide range of community organizations. It should also be noted that two-year colleges have a vast experience in teaching adults.

THE CHALLENGE

In this postindustrial economy, three things are rapidly becoming obsolete: the skills of certain workers,

knowledge, and equipment. Dealing with each of these changes poses its own particular problem. The growing obsolescence of worker's skills can be addressed through technical training programs. Technical colleges are dedicated to providing the kinds of education and training opportunities that will directly assist in the development of the human capital component of economic development.

Vogler (1984) has observed that the economic difficulties of the late 60's and 70's are past. Unemployment and inflation are down and consumer demand and profits are rising. Business and industry are poised for expansion; and expansion will require new processes as well as new skills. Whether we call it economic development, partnerships, cooperation or community service, technical colleges ought to position themselves to become a full partner with the business and industry sector in training workers.

BARRIERS TO INTERORGANIZATIONAL COORDINATION FOR EMPLOYEE TRAINING

Clearly there are substantial barriers to enlarging the role of technical colleges in corporate training. How are these barriers most frequently characterized?

The literature generally presents opinions or perceptions of generic barriers which inhibit coordination. In a nationwide study conducted by the National Center for Research in Vocational Education, The Ohio State

University, Warmbrod inferred from discussions with college representatives of job training programs:

More often than not, the enthusiasm of the college representatives for their programs was such that discussions veered away from direct discussions of barriers, focusing instead on the innovative policies and procedures by which the colleges managed to avoid or demolish such barriers. As a result, analysis of the case studies provided a plethora of 'solutions' whose barriers could only be inferred from the discussions (p. 173).

Sheridan (1983), in conversations with two-year college presidents in Ohio, structured a typology of eight categories different from those of Warmbrod. A somewhat different approach was taken by Leach (1983) who used a survey approach to identify five categories of barriers in Illinois. With the exception of Leach, these studies contain little evidence that the inhibiting conditions had been determined using a research design. There is a problem in separating fact from opinion as it relates to identifying the barriers which inhibit coordination between business-industry and education.

To date most researchers investigating the lack of coordination between technical colleges and industry in upgrading and training workers have concentrated on conditions and circumstances such as "confusing rules and regulations," or "poor communications." While such terms can be used to describe barriers in a general sense, they are not useful to college administrators in determining whether barriers to coordination exist at their institutions.

STATEMENT OF THE PROBLEM

The specific problem was to identify those operational practices which acted to inhibit coordination between technical colleges and the industrial community for the delivery of job training programs in East Central Ohio. From a review of the literature eight components were identified as being fundamental to the establishment of interorganizational coordination. These components are:

1. A basis for exchange
2. Mutual benefit
3. Organizational awareness
4. Confidence and trust
5. Access
6. Communication
7. Similarity of values and goals
8. Incentive

It was then asked whether operational practices could be defined and examined from these components. The inquiry was guided by two questions.

Question One:

What operational practices represent interorganizational coordination between technical colleges and industry in the delivery of job training programs?

Question Two:

Is there a significant difference between levels of importance and the extent of these practices as judged by college faculty, college administration, and industry training personnel charged with the delivery of job training programs;
and,

Is there a significant difference between levels of importance and extent of practice when comparing the judgments of the three groups?

From question two a null hypothesis was constructed:

$$H_0: \mu_{ip} = \mu_{ep}$$

There is no significant difference between the mean judgments of importance and extent of each practice within or between groups.

SIGNIFICANCE OF THE RESEARCH

The major corpus of the literature addressing barriers to coordination between the corporate and higher education sectors identifies barriers which describe generalized conditions. Such descriptors are of limited assistance to the administrator who wishes to identify and eliminate those barriers. The major contribution of this study rests in its identification of current practices which have been identified as important to the establishment of college-industry coordination and which have, therefore, become criteria for estimating the potential for coordination between business-industry and education. An administrator can more easily identify and correct a practice than a generalized condition.

Secondly, it was anticipated that this study would produce a replicable instrument which could be used by college administrators to identify those practices which may be inhibiting job training coordination between their college and the local industrial community.

Finally, it was anticipated that the study and resulting analysis would:

- (1) provide administrators with an opportunity to renew their association with industry;
- (2) provide a new insight into the role of technical colleges in community economic development; and
- (3) provide a basis upon which to clarify and realign individual thinking regarding the nature of the barriers in cases where discrepancies exist.

This study provides a base for further research in industry education coordination. Having established barriers as identified by the participants, perhaps further research can be conducted to suggest strategies which will enable both organizations to work together in providing job training programs to retrain and upgrade worker skills. The emergence of coordination between education and industry could develop a new market for the two-year college replacing those lost as a result of economic and demographic shifts.

ASSUMPTIONS OF THE STUDY

This research was based upon three sets of assumptions: those relating to the roles of two-year technical colleges and industry in the delivery of job training programs; those relating to interorganizational relationships; and, those relating to the ability of the respondents to provide objective observations.

Most fundamental was the assumption that job training programs are a legitimate and longstanding national role

for two-year colleges, the majority of which are public. There was also a fundamental assumption made regarding industry: that the adoption of new technologies which accompanies the transition to a high tech, postindustrial economy requires new skills, and new skills require new and continuing training and retraining. While it was recognized that industry is providing a great deal of its own training, it was assumed that it does not possess the capacity to meet all of its training needs in-house, nor does it desire to do so.

The second set of assumptions presumed that coordination between the two sectors was desirable and that it should be occurring. The value of interorganizational coordination was established through a review of the literature, relevant legislation, and current practices of colleges and industries. The benefits to be realized from interorganizational coordination are presented elsewhere in this study. It follows then that two-year colleges have an interest in participating in job training programs, and that they have attempted to do so but have been restrained by certain barriers. These barriers can be characterized by fundamental practices which, when not sufficiently implemented by colleges and industry, reduce the potential for the establishment of interorganizational coordination.

There is a third set of assumptions which also underlies the conduct of the research. They relate to the ability of

the respondents to provide objective observations regarding their actual experience with job training programs. It was assumed that the sample selected for the study was sufficiently representative to enable a degree of confidence in generalizing the findings to East Central Ohio.

LIMITATIONS OF THE STUDY

This study was limited by the following factors:

- (1) The data collection and findings were restricted to six technical colleges in Ohio and their identified industrial communities; and
- (2) Participants were selected based upon their willingness to participate in the study.

DEFINITION OF TERMS

The following terms, as used within the body of this research and the research instrument, are intended to designate a general description of their function.

Job Training Program. Job training programs are defined as programs or courses which are initiated by the industrial community. The primary focus is to provide skill upgrading or retraining to employed adults on company time; the cost of which is borne by the company.

Industrial Community. Industrial community is a term used to define the industrial activities of a state, region, or community.

Technical College Faculty. Technical college faculty are defined as the instructional personnel of the college, both full and part-time, who have taught job training programs as defined in this study.

Technical College Administration. Technical college administration is a term used to define those individuals who directly supervise, assign, or schedule the college faculty.

Industrial Training Personnel. Industrial training personnel is a term used to define individuals employed by a company who are responsible for planning and/or supervising job training programs whether provided by the company or contracted to a technical college.

Coordination. Coordination is a term which defines the process of identifying the common goals and objectives of the technical college and a company for which it is conducting job training programs. Both institutions interrelate without sacrificing individual program goals. That is to say that each institution maintains its own goals while working with the other toward common goals.

Barriers to Coordination. These are defined as those circumstances, regulations, attitudes, perceptions, structures, procedures, or personnel which impede, restrict or otherwise inhibit coordination between the industrial

community and technical colleges in Ohio in the planning and delivery of job training programs.

Technical College. Technical college is a term used to define publically assisted, two-year colleges in Ohio which grant the Associate of Applied Science and Associate of Applied Business degrees.

CHAPTER TWO

INDUSTRY-EDUCATION RELATIONSHIPS

History

Relationships between business-industry and higher education began over a century ago when Congress, recognizing a need for training in agriculture and the mechanical arts, established the land grant colleges under the Morrill Act (1862). This early movement signaled the active involvement of industrialists in formulating new purposes, content, and methods of higher education. Thorstein Veblen for example observed 80 years ago that it was the inexorable influence of the modern corporation and its industries that first moved the established higher education institutions away from classical studies and toward research (Veblen, {1899}, 1953; Gold, 1982). These efforts, however, were not sufficient, and employers began to establish factory schools to provide entry-level skills. By 1913 representatives from 34 of those schools established a National Association of Corporation Schools (Craig and Evers, 1981). In 1923 they became the American Manufacturing Association.

While the underpinning for industry-education relationships was set in place during the later decades of the nineteenth and the early twentieth centuries, and the barons of industry such as Rockefeller and Carnegie provided the

philanthropy, substantive cooperation never developed between the two sectors. The concept of stewardship was not without suspicion. While colleges welcomed the money, scholars resisted too close an association with the "captains of industry," a pattern of attraction and avoidance developed which continues today. One of the factors contributing to the problem was the fear of the academicians that the willingness of industry to provide support would not be without an accompanying interference in academic policies and practices. Another important factor restraining cooperation was that business and education were unequal institutions, with few goods on either side to exchange. A more detailed discussion of this early relationship is found in Veysey (1965) The Emergence of the American University.

The Smith-Hughes Act (1917) emerged as the result of a similar influence of the corporate community to establish a relationship with the educational sector to ensure a labor supply. The act authorized the first federal funds for vocational education. It provided for the training of youth to create a supply of skilled job seekers from which business and industry could draw according to their needs. This was a reactive role as far as the expressed or projected needs of business and industry.

Since World War II, the worlds of education and work have been transformed almost beyond recognition. The country

has moved from a goods producing to a service economy. Almost without notice, American industry shifted its manpower requirements, using more people with higher levels of education than ever before. Between 1948 and 1977 the median number of school years completed among craftworkers, operatives and laborers shifted from 9.0 to 12.2; and for professional, technical and managerial workers from 12.8 to 16.0.

Not until the post-war years did relationships between business-industry and education begin to develop. A rather complex network of relationships began to emerge as a result of increased contact between the two sectors. Some of the key factors in the development were:

- (1) a corporate presence on college boards and college graduates in the board rooms of industry;
- (2) expanded educational philanthropy;
- (3) consultantships and community service projects of faculty;
- (4) corporate and union tuition assistance;
- (5) the growth of professional associations which brought the two sectors together; and
- (6) the ability of colleges to provide all types of occupational training.

Beyond these factors, there existed a common interest in solving economic, political and technological problems. The emerging relationships were to form the basis for coalition building between the two sectors (Gold, 1981). The relationship between business-industry and education declined during the 1960's and most of the 1970's. A

tumultuous period of student unrest permeated college campuses during that period. In a very short period the corporate influence had been eclipsed and corporate representatives usually withdrew or were pushed aside during the "riots and rebellions" of these years.

During the years that followed, the corporate sector was passively critical of higher education due in part to the abundant supply of college graduates. Late in the 1970's a renewed interest in reestablishing relationships with education was initiated primarily by the business-industry community. Timpane (1984) contends that only the insistent demands of the economy and the labor market succeeded in forcing a reconstruction of corporate involvement.

The Role of Social and Economic Forces

The interdependence of business, industry, labor and education was formally recognized in the rules and regulations issued by the U. S. Office of Education in 1922. The nature of the relationship has changed with changing social needs. The legislation designed to link business and industry with education in the 1960's and early 1970's was not designed as a vehicle to promote economic growth; rather it was viewed as a means of affecting social equality and mobility. The most significant of this legislation, the Economic Opportunity Act (1964) and the Manpower Development and Training Act (1962) had few planned or desired linkages with higher education. The

ideology of the 1960's was unfavorable to such linkages in part as a result of a shared common bias against professionalism and institutionalized expertise. As a consequence these programs were staffed by members of the groups which the programs were intended to serve, entrenching the bias against higher education.

This philosophical bias hardened with the passage of the Comprehensive Employment and Training Act (CETA) in 1973 and the turf disagreements which it precipitated. The broader mission of higher education and their longer-term focus drove the higher education community further from the employment and training agencies.

The 1980's have seen another shift in the nature of the relationship in response to social and technological changes. The current demographic trend projects a long-term decline in fertility. This trend is expected to shift the focus of manpower training from the preparation of youth to the retraining of adults, women and older citizens. At the same time technological change is resulting in the obsolescence of occupations at a faster rate than ever before. The same advances in technology have sharply increased the demand for higher level training and retraining programs (Franchek, et al., 1984). In response to the growing need for economic development activities the government enacted the Job Training Partnership Act in 1982. This act mandates coordination

between education and training providers and industry at the local level. However, the nature and quality of the relationships between education and job training agencies during the 1960's and 1970's left both organizations ill prepared to establish cooperative linkages for job training in the 1980's.

THE EMERGENCE OF CORPORATE TRAINING

In response to the decline in America's productivity in the late 1960's and early 1970's the industrial community sought to reindustrialize through investment in new technology, plants and equipment, and by investing in human resources. It soon became apparent that adoption of new technologies required new skills, and new skills required new and continuing training and retraining. Business and industry of all sizes began to make large investments in the retraining and upgrading of employee skills. Craig and Evers (1981) reported that:

Private and public employers in the United States are making a massive investment in the education and training of their employees -- roughly 30 billion dollars annually according to the American Society for Training and Development (p. 29).

A more recent study conducted by the Carnegie Foundation (Eurich, 1984) estimates that corporations spend upwards of 40 billion dollars a year (vs. more than 60 billion dollars for colleges and universities). The same study estimates that U.S. companies are training and educating nearly 8

million people, close to the total enrollment in America's four-year colleges and universities.

Consider some examples. Craig and Evers (1981) reported that in 1980 the Bell System projected expenditures of 1.7 billion dollars for the education and training of 20,000 to 30,000 employees at 1,300 different locations. During that same year, Consolidated Edison of New York spent 5.5 million dollars to train 24,000 employees, and Lloyds Bank of California spent 4 million dollars to train approximately 4,000 employees.

It should also be noted that there are presently 18 business launched, degree granting colleges and universities in the United States. The most visible are the General Motors Institute, the Wang Institute, Xerox, American Telephone and Telegraph and I.B.M. The newest entry into the field is the National Technology University, a sort of high-tech university of the air which uses satellite technology to distribute programs nationwide.

The emergence of the corporate training system is what Ernest Lynton and others refer to as the shadow education system (Lusterman, 1977; Goldstein, 1980; Lynton, 1982). It was fostered initially by a lack of interest on the part of two-year colleges and later by an apparent lack of coordination between the business-industrial community and the two-year colleges. Today this shadow education system is providing the majority of the employee retraining and

skill upgrading programs that are delivered to employed workers in this country.

Several studies conducted during the late 1970's and early 1980's at the local, state and regional levels tend to support the contention that business and industry were continuing to provide their own training programs; that coordination between two-year colleges and the industrial community was not occurring at all, or was occurring slowly and selectively (Warmbrod, 1983; Sheridan, 1983; Moore, 1982; Leach, 1983; Rinehart, 1982; and Marlette, 1981).

By 1984 this apparent lack of coordination between higher education and business-industry, and the barriers which impeded it, had gained national attention. The 1984 Year-book of the American Vocational Association, Collaboration: Vocational Education and the Public Sector focused the entire volume on the topic. Special issues of the Journal of Studies in Technical Careers, the Community and Junior College Journal and Phi Delta Kappan were also dedicated to the topic of business-education coordination.

In a speech before the National Symposium on Partnerships in Education, Donald Clark (1984) stated that conditions are ripe for greater interaction between these two different worlds. He continued:

At no other time in the history of public education have strong and effective cooperative relationships

(partnerships) with the employment community been as vital as they are today (p. 247).

Yet colleges are largely unable to reestablish coordination with industry to effectively penetrate the shadow system and to reduce duplication and overlap in the planning and delivery of job training programs.

THE NEED FOR COORDINATION

The two-year colleges are rapidly emerging as separate providers of job training programs. As the need for workers with current technical skills increases, so does the concern about duplication and overlapping of training among job training providers. Burkett (1975) expressed a growing concern about the duplication of training programs. He noted that the lack of a national manpower policy has resulted in various institutional, government and employee programs performing the same function.

Similarly Leach (1983) pointed out that:

The employment training system in the United States has been described as a 'non-system' -- a mixture of separate delivery mechanisms as varied as the needs that created them. Although this non-system is flexible, it is often inefficient and ineffective. One means of improving the efficiency and effectiveness of employment training is through collaboration efforts among delivery systems. The time is past when one system can go it alone. The number of individuals who need training is growing while available resources are shrinking. Collaboration efforts, which make the most of every available resource, are needed. (James Leach, 1983, p. 7)

Clark and Rinehart (1982) reinforce this need for coordination among providers of job training programs.

Recently, colleges, universities, and employers -- public and private -- have expressed the need for developing a cost-effective structure and process for cooperative efforts. Institutions of higher education are confronted with a growing scarcity of funds, a need for program accountability, and increased demand to serve new and diverse groups that want a greater volume and mix of occupational training programs and services. Simultaneously, the employment community's need for a highly motivated, disciplined, and skilled work force, especially in high technology industries, suggests that conditions are ripe for greater interaction between these two different worlds (p. 1).

The federal government has also acknowledged the need for coordination in the planning and delivery of job training services. The 1973 Comprehensive Employment and Training Act (CETA) stressed the need for coordination between prime sponsors and vocational education. In 1978 when Congress reauthorized CETA, a movement in thinking began to occur from that of "separate but coordinated" activities to "integral collaboration." With the passage of the Job Training Partnership Act (JTPA) Congress has mandated the idea of a community partnership in the delivery of education and training services. Griffin (1983) reports that the JTPA

places the private employer in the partnership as far as the local community is concerned and places with them prime responsibility for the success or failure of the training program (p. 34).

The concept of industry-education coordination is not new, it has existed for almost a century. What tends to change is the nature of the relationship, which is based upon the needs or vested interests of each sector. For some time post-secondary institutions have been dependent on federal

and state government aid. As a direct consequence of a growing scarcity of funds, demographic changes, an aging work force, a declining youth population, worker dislocation and industrial transition, technical colleges have current and specific needs that could interest them in establishing coordinative relationships with various groups, agencies, and institutions for the purpose of voluntary exchange of resources. The reaction of the technical colleges to these conditions has been to turn toward business and industry in search of their needs. Simultaneously there is a need within the industrial community for a highly motivated and skilled work force, especially in the areas of technology. This translates to a need for skilled workers, a need to improve training delivery systems, a need to avoid duplication and overlap in training, a need to use resources efficiently, and a need to establish conditions so that bargaining power can be increased. Taken as a whole these needs suggest that conditions exist which would support a greater interaction between education and business-industry.

What technical colleges have the ability to deliver, and what business and industry desperately require, is manpower, training, and research. Skilled labor is, therefore, the vested interest of business and industry. It is also what education can provide. On the other hand, what education needs, and what business can provide is

political power, economic resources and access to the learner.

From a political perspective business, industry and the unions can lend their considerable political support to encourage adequate public financing and appropriate policies regarding higher education. They represent an important coalition from an economic perspective as well since they control the largest national source of tuition funds for learners. Most importantly, the coalition of business, industry and unions provides and controls a feeder network of adult learners to colleges. Industry controls so many factors affecting the decision to take training that their support is essential.

Swanson and Murphy (1981) contend that the goals of vocational education and (industrial) training are the same -- to meet the labor needs of business and industry. To accomplish this goal, industry must effectively communicate the requests of the work force in terms of short and long-range employment needs. In turn, education must respond by providing appropriate training. The challenge which lies before the representatives of education and industry is to determine and implement means by which to achieve this common purpose. Colleges could under no circumstance assume the full responsibility for all corporate training needs just as corporations could not deal with the general broad educational development of adults. What is needed is

to identify what each sector "needs" to carry with its education and training missions and what each is willing to give up to the other. While interest in and attention to coordinative relationships has increased as reflected in recent policy statements and research reports issued by the National Association for Industry-Education Cooperation, the American Vocational Association, and the National Center for Research in Vocational Education, joint efforts between the sectors have generally been fragmented, duplicative and superficial.

What is needed is to move beyond the legislated relationships, beyond the projects, to a recognition that if partnerships between business-industry and education are to be effective in addressing the problems of overlapping and duplicative job training programs they will require a structure and process to reduce the barriers which currently inhibit coordination. These separate organizational systems need to integrate their personnel, facilities and equipment in an organized and systematic manner. The process that is central to the establishment of such relationships is coordination.

THE MUTUAL BENEFITS OF COORDINATION

One of the fundamental elements in the establishment of a coordinative relationship is that of mutual benefit. What each party has to gain must be considered valuable enough to warrant entering into the relationship. In order to

gain something, one must exchange something of value for it. In education-industry relations what is exchanged is usually a degree of autonomy in the form of decision making and control. In order for a relationship to emerge, the mutual benefit to be gained must be judged greater than the autonomy lost. A major assumption of this study is that education-industry relationships will yield a mutual benefit.

Flynn (1982) enumerated four benefits which government sponsored employment and training agencies have enjoyed as a result of their relationship with higher education. It seems appropriate to suggest that industry could enjoy similar benefits. When these agencies utilize the staff and facilities of colleges, they gain from the experience of the formal classroom instruction and services already available. The programs and services are strengthened in quality as a consequence. A second benefit to industry is legitimacy and public credibility which serve to validate the training received by industrial personnel. Additional benefits are a source of training programs specific to their needs, a cost-effective training system, and technology transfer. The college can benefit from faculty growth and development opportunities, increased program credibility, a political ally, economic resources and a source of students.

In summary, there is a synergistic benefit in that the total productivity and growth will be greater than the sum that could have been produced by each party acting separately.

BARRIERS TO COORDINATION

The literature is burgeoning with articles and studies which focus on the identification of barriers or obstacles to interorganizational coordination. There is increasing commentary on the relationship of industry-education coordination in the delivery of job training. Most recently reports have been issued by: the National Center for Research in Vocational Education, the American Association of Community and Junior Colleges, the Association for Industry-Education Cooperation, the American Vocational Association, and the American Council on Education. This literature can be divided into two quite distinct categories: monographs and research studies. The monographs tend to address the more generic barriers to interorganizational coordination regardless of organizational type. The research studies, on the other hand, tend to examine the interorganizational relationships of specific organizations and are, therefore, more specific.

Rather than to dwell on the barriers, the focus of this research was to identify those practices which tended to reduce the potential for coordination between industry and

technical colleges in the delivery of job training programs to workers. A review of the literature has revealed that while opinion abounds, there are few research studies which offer the guidance of earlier scholarly direction. This review will be restricted to those research studies which relate to industry-education coordination for job training.

Historical, Administrative and Philosophical Barriers

In a monograph prepared for the Higher Education/CETA Project under the sponsorship of the American Council on Education, Flynn (1982) discussed the historical, administrative and philosophical barriers to participation by colleges in employment training programs.

The great society programs of the 1960's such as the Employment Opportunity Act (1964) and the Manpower Development and Training Act (1962) had few planned or desired linkages with higher education. The ideology of the 1960's was to staff programs using members of the groups to be served. Most members of those groups lacked an educational background and shared a common bias against interorganizational expertise. That tended to further enforce the image of higher education as critics of, rather than partners in, the job training process. As a result, at the time CETA was created few community or business-industry agencies had any experience in working with colleges. Following the enactment of CETA in 1973, several philosophical differences surfaced. Colleges traditionally served a

broader mission and fostered a more developmental orientation to studies than did local employment and training agencies with their targeted and short-term focus. Further conflicts arose over evaluation procedures, treatment of research and political acceptability of results. Therefore, a significant positive role for higher education in the employment and training network was delayed historically by the nature of early manpower legislation.

One of the most fundamental differences between higher education and the employment and training community rests in the decision making process. Colleges, Flynn suggested, have a strong tradition of shared governance and decision making which precludes fast action. The fact that most colleges do not have an individual position or office that stands out as an access point to college resources is cited as an additional obstacle to coordination for job training services. The author cited the following obstacles as well: differences in funding cycles, academic calendar, the need to assign faculty months in advance, and the granting of credit. This monograph provided an excellent overview of the historical and philosophical obstacles to coordination. It is significant in its contribution to understanding the historical framework and contextual environment of the barriers which inhibit the establishment of coordinative efforts between technical colleges and industry for job training.

The Generic Barriers

Mahoney (1982) conducting research to determine the factors that influenced the creation of interorganizational relationships for the delivery of job training identified several inhibiting barriers. Thirty-seven colleges were surveyed and data collected from directors of job training offices using an open-ended format. Each director was asked to identify problems which he had experienced in establishing or operating services to industry.

The findings were reported in two categories, faculty and institutional barriers. Faculty were cited as a general barrier. They were not always available at the times needed, and sometimes lacked the necessary technical qualifications. When instructors were recruited from industry they frequently lacked pedagogical skills.

The institutional barriers cited included the absence of a readily identifiable campus office with which the business-industry community could interact, and difficulties in establishing the credibility of college training programs.

The value of this study is that it began to identify specific groups of perceivers of barriers to collaboration. It was weakened, however, by the absence of a research design.

Mahoney's study clearly presented the barriers as perceived by the college segment of the population. An industrial perspective was added to the traditionally institutional

focus in a study conducted by Moore (1982). The greatest significance of Moore's study lies in its attempt to add industry perspective to collegiate efforts to establish linkages and to develop job training programs.

The study was conducted in Ohio. It presented four general issues which colleges and industry identified as inhibiting cooperation between themselves. They were:

Access - Both organizations have experienced access problems. Industry has been frustrated by an inability to gain initial access, by inflexible operating procedures and by standardized curricula and teaching methods. College personnel, on the other hand, have experienced difficulty gaining access to the industry representatives who can best articulate the training needs of the workers.

Quality - Industry has a continuing concern with the quality of instructional programs, including the appropriateness of methods and materials for adult learners and the technical competency of college instructors. Instructors in their attempt to deliver quality programs must deal with factors such as: a lack of needs assessments by industry may result in confusion regarding expected outcomes; and, industry personnel sometimes have unrealistic expectations regarding course development and teaching time.

Cost Effectiveness - Job training programs offered to industry are typically not reimbursed by state subsidy. Therefore, colleges must operate on a "cost-plus" basis. As a result the critical mass of students is an important factor in cost calculation that industry does not fully understand.

Internal Organizational Barriers - Some of the barriers which college administrators face are competition between academic departments, negative faculty attitudes toward job training programs and a lack of commitment by the college president. Industry trainers also face barriers, particularly a lack of understanding about technical colleges, their faculty and their mission. As a result negative attitudes and myths are too frequently perpetuated.

Despite the significant contribution which the Moore study makes by seeking an industrial perspective, it is weakened by its lack of a research design. The perspectives are inferred from conversations between two of the authors based upon a three-year study. There does not appear to be any hard data to support the inferences, as accurate as they might be. The study is generic and fails to focus on a particular group of colleges or industries. Rather it deals in generalizations based upon the three-year study.

Similar generic barriers were presented in an economic development context in a study conducted by Sheridan

(1983). The issue raised, according to Sheridan, is less one of what higher education is doing and more what higher education could be doing. Following a description of exemplary economic development programs (e.g. the use of the state's resources to attract, create, retain, and expand jobs), the question of why higher education is not doing more was addressed. Sheridan acknowledged that higher education is hampered in establishing linkages with business and industry by two general categories of barriers: internal institutional barriers and problems in relationships with the outside world. Within these two categories eight generic barriers were identified which, in Sheridan's opinion, higher education must overcome if it is to form partnerships for economic development. Those categories are:

- (1) methods of resource allocation for colleges;
- (2) peer evaluation and reward systems for college faculty;
- (3) organizational structure of the college;
- (4) responsiveness, access and relevance of academic programs;
- (5) a fear by faculty that linkages may result in cooption and loss of academic freedom;
- (6) a concern by colleges that cooperation might be viewed as public support of private industry;
- (7) underfunding of higher education; and
- (8) an absence of interorganizational cooperation between higher education institutions.

This study is important because it focused concern with job training programs to the state level, collected data from

specific institutions, and synthesized the findings to conceptualize eight broad barriers to establishing linkages between higher education and industry for economic development purposes.

In the design of the Sheridan study, it appears that perceived barriers were collected only from higher education, and only from the president. There appears to have been no attempt to gather perceptions from faculty, administration or industrial personnel. Also there appears to have been no attempt to distinguish between liberal arts and technical colleges, or between industry size in seeking to identify the barriers. A second weakness of the study rests in its methodology which appears to have been a loose combination of open-ended surveys and interviews. No research design or data tables were presented. Finally, the suggested barriers are general in nature, subjectively selected and based solely upon the perceptions of the college presidents.

Toward The Identification of Real Barriers

The vocational technical adult education districts (VTAE) of Wisconsin were the site of a research study conducted by Marlette (1981) to establish training linkages between CETA projects and small businesses.

Data was collected using a survey instrument which was mailed to 915 businesses. In addition to the major purpose

of the study, the author also reported that specific barriers did exist which prevented full utilization of existing VTAE services.

The small businesses responding indicated the following barriers (in rank order) to using the training services offered by the VTAE.

Too busy or too tired to attend classes	35%
Poor class scheduling times	25%
Residence too far from the school	23%
Course offerings did not meet training needs	22%
Not aware of course offerings	13%
Other	9%

Among the barriers identified in the "other" category were two barriers which ranked more importantly in other studies. These were institutional "red tape" (rules and regulations), and a lack of understanding as to how training services were delivered.

The survey items included in the instrument seemed to focus more upon access and awareness than on the fundamental elements of interorganizational coordination which would lead to a clearer identification of the barriers. The barriers identified in this study were very specific to the sample; businesses established for less than five years and employing twenty or fewer employees. As a result it would be inappropriate to generalize the findings to the larger business and industrial community. The differences between

adult vocational education training programs as delivered by CETA prime sponsor contractors and the job training programs delivered by technical colleges are so different that a transfer of the identified barriers to the technical college/industry relationship would be inappropriate.

The first research based study with a national scope which addressed relationships between two-year colleges and industry in job training was conducted by Warmbrod and Faddis (1983) for the National Center for Research in Vocational Education. The study was to serve as a guide for two-year colleges in the development of training programs to upgrade and retrain workers.

A qualitative research approach was used to gather data from five community and technical colleges nationwide, focusing on their upgrading and retraining services to industry. The data collected from the five sample colleges was synthesized to identify the barriers that the colleges encountered in providing services to industry. Thirty-nine barriers were identified and clustered into ten categories and are summarized below.

- (1) Barriers to the creation of linkages for job training.
- (2) Cumbersome course approval systems of colleges.
- (3) The amount of time needed by colleges for forecasting and planning.
- (4) The inexperience of colleges in marketing customized training.

- (5) The quick response time required for customized training.
- (6) The risks involved in customized training.
- (7) College resources often lack the flexibility necessary to compete for job training programs.
- (8) The internal organization of colleges often weakens attempts to develop job training programs.
- (9) Qualified faculty and staffing are difficult to secure at the times and places needed.
- (10) Interorganizational competition rather than cooperation.

Since the subject colleges were selected on the basis of their success in establishing coordinative relationships, barriers which they had encountered along the way could only be inferred. The authors were careful to draw attention to the fact that the thirty-nine barriers which they identified were inferred from interviews with the college personnel; no distinction in perception being drawn between faculty and administration. Furthermore, one is left to conclude that the perceptions of the participating industries were not sought as a part of the study.

Warmbrod and Faddis (1983) make an important contribution in recognizing the importance of the role of community and technical colleges in economic development through the upgrading and retraining of adult workers for business and industry. The identification of thirty-nine important barriers which restrict coordinative efforts between two-year colleges and industry for the delivery of job training programs is significant.

However, this study did not attempt to separate the perceived barriers by the groups doing the perceiving (faculty, administration, industry), also, the identified barriers are only inferred, and not based upon a research design.

THE STATUS OF COOPERATIVE EFFORTS

The American Council on Education Higher Education/CETA Project sponsored a series of monographs in the early 1980's which conjectured about the nature and structure of industry-higher education cooperative relationships. In a monograph prepared for that series, Clark and Rinehart (1982) reaffirmed a continued national interest in establishing linkages between higher education and the employment community. They also recognized that these efforts have generally been fragmented, duplicative and uncoordinated, often on an ad hoc basis. The authors presented a model for establishing or improving cooperative relations between higher education and the employment community. The model was constructed using two generic categories; the "employment community," and higher education. The "employment community" included business, labor organizations, government bodies and the professions. Similarly, higher education was used as a generic term for all post-secondary education activities. The structure breaks down when the authors offer a generic list of barriers which, in their opinion, must be overcome to enable cooperative

relationships to be established. The problem lies with the difficulty in differentiating between the subgroups of the "employment community." Are the barriers universal or are some more specific to some groups than to others.

The monograph is further weakened by the apparant lack of a research design in identifying the barriers or by any indication as to which group was doing the perceiving. The eight barriers are:

- (1) Budget and cost factors;
- (2) Legal restrictions;
- (3) Corporate and collegiate policies;
- (4) Semantic barriers;
- (5) Interpersonal factors;
- (6) Long-range planning considerations;
- (7) Hidden barriers; and
- (8) Neglect of management and learning principles.

There was no indication as to whether the degree of importance as a barrier varied with the organization, or if barriers were perceived as such by educators or the employment community, or both.

In 1983 Leach and Barnard conducted a study sponsored by the Illinois State Board of Education to determine the status of existing cooperation and collaboration efforts among the major employment training delivery systems in Illinois. Seven research questions were posited by the

authors. Listed below are three which relate directly to this current study.

- (1) What is the current status of cooperation/collaboration among the major employment training delivery systems?
- (2) To what extent do each of the employment training delivery systems perceive cooperation/collaboration to be needed, desirable and/or possible?
- (3) What are the barriers to cooperation/collaboration among employment training delivery systems?

A three step approach was used to collect information related to the questions. A literature review was conducted followed by interviews with a sample of representatives of the training systems, and the administration of a questionnaire mailed to all representatives of the seven major employment training systems in Illinois. The seven training systems are: (1) the military; (2) the Job Training Partnership Act; (3) business and industry; (4) apprenticeship programs; (5) universities; (6) community colleges; and (7) proprietary schools.

The training systems of interest in that study are the community colleges and those programs conducted by business and industry. The findings indicated that the community colleges had established the greatest number of cooperative efforts with other employment training systems; primarily with CETA agencies, other community colleges and business and industry. Business and industry, on the other hand, appeared to have established the fewest cooperative efforts

with other systems. One could conclude from such findings that the community college programs initiated cooperative efforts more frequently than did industry.

Findings relating to the perceived need to cooperate/ collaborate with other training delivery systems supported the same pattern. That is, the community colleges were found to perceive a very high need to cooperate with business and industry, while business and industry perceived only a moderate need to cooperate with the community colleges. Similarly, the community colleges perceived it highly possible and desirable to collaborate with other systems, while business and industry felt it to be only moderately possible and desirable.

Five barriers were selected by the researchers and the sample groups were asked to rate them according to the degree that they were perceived as barriers. The meaning of the barriers selected could have been confusing to one or more of the groups. The posed barriers were:

- Turf protection;
- Inadequate communication;
- Confusing rules and regulations;
- Planning cycle problems; and
- Role incongruence and role confusion.

When asked to identify which of five barriers to cooperation were the most restrictive, the community colleges identified turf protection as the most significant, followed by confusing rules and regulations and inadequate communications. Business and industry identified role

incongruence and role confusion as most restrictive, followed by turf protection and inadequate communication.

The study is weakened somewhat by the preselection of only five barriers by the researchers. The major contribution of the study rests with its research design of sampling specific job training agencies and arranging the data in a manner which facilitates comparisons between types of agencies.

SUMMARY

The eight studies reviewed all make contributions to identifying the barriers to interorganizational coordination. Yet each displays a flaw in design or methodology that weakens its findings. The image portrayed in the literature is that there are a total of 13 generic barriers to coordination in the delivery of job training programs:

- (1) Organizational structure;
- (2) Absence of an visible training office;
- (3) Differences in planning and funding cycles;
- (4) Availability of qualified instructors;
- (5) Credibility of training programs;
- (6) Budget and cost factors;
- (7) Confusing policies and procedures;
- (8) Communication;
- (9) Courses which fail to meet training needs;
- (10) A lack of understanding of the organizations and their services;
- (11) Turf protection;

(12) Role confusion; and

(13) Evaluation and reward system;

The type of organization and the individuals doing the perceiving being of little significance.

The four monographs (Flynn, Mahoney, Clark and Rinehart, and Moore, et. al.) are typical. None of them is research based. Clark and Rinehart fail to identify what group is doing the perceiving (education or industry). While Mahoney looks only to education for perceived barriers. Moore and Flynn present an interesting mix of both; some barriers ascribed to industry, some to education, and some unidentified. Of these four studies only Mahoney attempts to gather perceptions from a distinct subpopulation of education or industry.

Three studies (Marlette, Leach and Barnard, and Sheridan) were conducted using a research design. Of the three, only Leach and Barnard collected data from both education and industry and compared the findings. Their findings stand in contrast by suggesting that community colleges and industry do perceive a difference in the degree of restriction posed by each barrier. It is also possible that individuals within technical colleges and industry who play major roles in job training might perceive the barriers differently.

Many journal articles, commission reports, monographs and

presented papers address the need to overcome these inter-organizational barriers and to work more cooperatively in the development and delivery of job training programs. If technical college administrators are to heed this advice, they need to know what specific barriers exist and what practices characterize them.

THE CONCEPTS OF COORDINATION

Toward A Theoretical Framework

The work of behavioral scientists, social psychologists and management specialists have specifically addressed the theory of interorganizational relationships. Thompson (1967), Eyster (1975), Esterline (1976) and others have studied the processes of cooperation and coordination.

Terms such as collaboration, cooperation and coordination are used in the literature (often interchangeably) to describe interagency or interorganizational relationships. Some authors have drawn distinctions between the terms, and as they relate to this study they are reported below.

Esterline (1976) provided the simplest interpretation of coordination. He defined it as the organized exchange of needed resources between two or more organizations for any purpose. Commonality of purpose is unnecessary.

Greenwood (1981) defined coordination as it related specifically to coordination between education and the business community in the delivery of job training programs:

Coordination is the process of identifying the common goals and objectives . . . having identified the areas of common purpose, the process continues to interrelating the mix and delivery of services toward these common objectives without sacrificing individual program goals or responsibilities (p. 123).

In this process, each organization retains its own goals while concurrently assisting other organizations to attain some common goals.

A similar viewpoint was expressed by Preston (1980) when discussing the concept of coordination. He stated:

One aspect of coordination is the identification of common elements in a system or program. It does not aim at the elimination of unique elements. Nor does it imply the definition of one common objective or that only one approach is correct. Finally, coordination does not presuppose the elimination of all duplication since, in many instances duplication is appropriate and necessary (p. 4).

Hord (1981) draws a clear distinction between cooperation and collaboration as processes. Collaboration, she contends, is not possible without cooperation, but the inverse is not true. Successful collaboration depends upon a clear definition of the expectations by all, and a consequent agreement on the goals to be shared. Cooperation on the other hand does not require shared goals.

The term coordination will be the preferred term used in this research to describe supportive relationships between two or more organizations who have identified and agreed upon shared goals. The terms coordination and collaboration will be regarded as equal and interchangeable.

However, the term used by the original authors will be used in reference to specific ideas, theories and quotes.

Two critical features are central to the concept of coordination as it is applied to higher education: (1) whether the relationship is voluntary or mandated, and (2) whether participating institutions complement each other in attaining a common goal. The object of the coordination, if it is to succeed, must be the contribution that the relationship can make to a predetermined common goal, the mutual benefit derived.

The general structure for coordination as defined by Maurice (1982) can be graphically illustrated by a series of three concentric circles, each representing different levels of cohesiveness within the technical college environment. The inner most or environment circle would represent the state regulatory and coordinating agencies. The next band would illustrate the first level of supportive relationships, usually at the local level such as technology advisory committees and policy making boards. The outermost band would represent voluntary relationships which contribute in some way to the mission and goals of the college. There are numerous groups, agencies and institutions that have the potential to become supportive relationships. This study will focus on the potential for the establishment of supportive relationships between

technical colleges and the industrial community for the common goals of training and upgrading worker skills.

Fundamentals of Coordination/Collaboration

All too often, opportunities for establishing coordinative relationships go unexplored. What are the signs that an opportunity exists for the establishment of a relationship, and how is it nurtured? Bechard (1975) observed that there is a growing need for increasing interactions which are collaborative rather than competitive. To that end, he set forth three conditions which he felt were fundamental to either process. First there must exist a real dissatisfaction with the status quo, sufficient to mobilize energy into action. Second, there must be leaders (in both organizations) who have some mental picture of a desired state that would be worth the energy to mobilize. Finally, the leaders must also have knowledge of some practical first steps toward the desired state (p. 434).

Barton (1977) in discussing the concept of collaboration in a work-education setting presents it as a broad-based community process in which "important institutions and sectors of the community that have the responsibility, resources and influence to deal with the whole should all participate."

This process is characterized by the following components in terms that facilitate relationships:

- (1) An organized activity. Both the goal and the controlling policies for the conduct of the activity are agreed upon in advance by the participants in the relationship.
- (2) Participation. The participation of a significant number of sectors to provide the expectation of achievement is essential. In the context of this study it would include representatives of industry, labor, faculty and administration.
- (3) Achievement. In order to establish a coordinative relationship, there must be an expectation on the part of the major participants that significant achievements will result.
- (4) Involvement. To be effective there must be an involvement by all participants in the organized activities, rather than any group or groups being in an advisory role.
- (5) An agenda. The existence of an agenda of substantive activities, a prioritizing of the items on the agenda, and a mechanism for implementing the agenda are essential.

Wilson (1980) identified collaboration as a process consisting of five interrelating elements necessary to achieve effective work-education relationships. He regards the following as minimal to any collaborative action:

- (1) Mutual benefit. The participants in the relationship must be persuaded that they can find solutions to real problems and obtain assistance in fulfilling real needs through relationship.
- (2) A problem. There must in fact be a problem, need or issue to be addressed. There must be a basis for the relationship beyond the basic fact that it is good in itself.
- (3) An invitation. One of the parties must reach out to the other. There can be no relationship until a contact has been made.
- (4) Strategies. This is the working phase, the point at which a relationship, if it is to develop, does develop. Strategies are developed for achieving the outcomes which motivated the interaction.

- (5) Assessment and evaluation. It is important to periodically assess the mutual benefit of the relationship. Is it still working, how well, or if not, why not? Are there new issues to be addressed?

In reporting the findings of a case study in which a national research center attempted to work with a large school district in a collaborative mode, Hord (1981) identified the following 10 elements which form a conceptual base upon which a functional relationship can be constructed:

- (1) Need and interests which are shared and understood by both organizations;
- (2) Time to encourage shared activities resulting in bilateral decisions;
- (3) Energy characterized as a reaching out to the other side;
- (4) Communication characterized by open interaction at all levels;
- (5) Resources sufficient to carry out the defined activities;
- (6) Personnel appropriate to the activities;
- (7) Control of a loose, creative, flexible nature, characterized by a willingness to take risks;
- (8) Perceptions which are common and shared by all members of both groups;
- (9) Leadership that is strong, especially as it relates to items 3, 4 and 6; and
- (10) Personal traits of patience, persistence and willingness.

Theory into Practice

Building upon the earlier theories of Bechard (1975), Barton (1977), Wilson (1980), and Hord (1981), Maurice

(1982) synthesized a typology of eight components for the establishment and maintenance of interorganizational relationships. These components represent the fundamental conditions which seem to underlie coordinative relationships. Their presence tends to increase the potential for the successful establishment of interorganizational relationships.

1) A basis for exchange. Coordination requires that some sort of transaction take place between coordinating agencies. Kochan (1975) points out that this transaction is usually expressed in terms of the resources each participant brings to the relationship. As long as there is something worth exchanging there is the possibility for coordination. The potential for coordination between technical colleges and industry for example is based on the exchange of training by the college for the student enrollments and dollars of industry. Each agency has something of interest to the other, and a basis for coordination is established.

(2) Mutual benefit. The perceived value of items of exchange is important. If there is something to exchange the concern then becomes whether there are benefits to be realized from the exchange. Self interest becomes a factor of importance. Maurice (1982) points out that the decision whether or not to interact becomes a cost-benefit analysis, i.e., what does my organization have

to give up or contribute. The decision to establish an interorganizational relationship is an important decision for an institution, since some autonomy must be sacrificed in order to realize those benefits. If the perceived benefits are not sufficient the institution may forego the benefits in order to retain autonomy. In the circumstance whereby industry contracts with a technical college to deliver job training programs, the perceived benefits to each institution must be greater than the degree of autonomy which each feels that it relinquishes in order to establish the relationship.

(3) Organizational awareness. Awareness refers to the degree to which organizations are familiar with the missions, goals and services of the other organizations, i.e., the extent to which each institution is knowledgeable concerning the potential of others to support its activities. The development of organizational awareness can be diminished in the technical college-industry context by a confusing organizational structure. When either party is unclear what office or which individuals to approach for service; where policies are unclear and roles are ambiguous, the potential for coordination is reduced.

The extent to which technical colleges and industries familiarize themselves with the missions, goals and services which each have to offer, the greater the potential for the establishment of coordinative relationships.

(4) Confidence and trust. A first step toward the establishment of a coordinative relationship is a total awareness of the characteristics of other organizations from which a mutual benefit of exchange can be derived. Sufficient knowledge must exist to serve as a foundation upon which to construct mutual confidence. Of equal important is the fact that once established, the confidence and trust must be sustained.

In the context of job training programs, confidence and trust relate to the instructional reputation of the college. The potential for a coordinative relationship will be enhanced to the extent that industry is confident that the college can deliver the training that it claims. Industry must also be confident that the college has faculty whose skills are current with industry practice, that those faculty will be willing to teach job training programs, and that they will be able to interpret the needs of industry into appropriate courses. Conversely, the college administration must be confident that industry will cooperate in the design of instructional materials, that they will take advantage of programs once planned, and that they will also credential them through continued employment of those who complete the programs.

(5) Access. The accessibility of organizations to each other is an essential element to the establishment of coordinative relationships. There are two major types

of accessibility -- physical and organizational. Physical accessibility refers to the physical convenience of organizations. Taken in the technical college-industry context, the extent to which the college is capable of delivering job training programs to industry at times and locations convenient to the trainees characterizes physical accessibility.

Organizational accessibility on the other hand is characterized by practices which tend to promote interorganizational contact with persons performing similar roles. The use of technical advisory committees to review curriculum is characteristic. The willingness of the college to modify policies such as admissions and registration to increase accessibility to industry is another. It is unlikely, therefore, that a relationship can be sustained without some form of access to each participating organization. Accessibility is central both to the potential and effectiveness of coordinative relationships.

(6) Communication. Organizations establish policies which either create channels for interorganizational communication or inhibit them. Policies must be supported by an appropriate organizational structure to encourage communication. Within the context of this study, a policy which encourages communication for job training must be supported with the structure of a visible job training director, and that director must have decision

making power or close access to it in order to sustain a relationship once established.

As the number of organizations with which an institution interacts increases, the need for internal communication increases proportionately to accommodate the flow of information necessary to sustain the relationship. The need for internal communication channels will be greatest as the number of coordinate relationships increases. When the internal channels become inadequate, the benefits of coordination are more difficult to accomplish.

(7) Similarity of values and goals. Similarity on a few critical attributes is considered a necessity for interorganizational relations (Miller, 1958; John and Demarche, 1951). Coordinative activities will be negatively affected by differing attributes such as values, goals, objectives and organizational structure. Conversely, the greater the similarity of goals and functions between two organizations the greater the tendency that they will compete with each other. There would appear to be at least conceptual agreement between the technical college and industry that there is a need both to upgrade existing employee skills and to retrain employees for new jobs in industry. However, if the delivery of that training should be viewed as a goal by both organizations, then the potential for coordination is diminished. Conversely, the potential for coordination is increased if

complementing goals can be identified such as industry taking responsibility for identifying the training needs, and the college delivering the training. Therefore, institutions with missions and goals which are complementary would appear to be more conducive to the establishment of coordinative relationships.

(8) Incentive. Coordination between technical colleges and industry is increased when incentives to coordinate are present. The greater the perceived value of the incentive the greater the potential for coordination. The incentive to initiate coordinative relationships is the basic necessity which differentiates between superficial or symbolic relationships and those which are productive. Incentives of the policy or legislative type have low value and generally result in only superficial coordination. On the other hand, when the incentive is reduced training costs for better trained workers for industry, and perhaps increased enrollments or access to technical equipment for the college, a real incentive exists and the potential for coordination is increased.

In summary, according to Maurice the potential for the formation of a coordinative relationship between two organizations is increased if these fundamental conditions are present. Conversely then it would seem that the absence of these conditions would create a neutral environment at best, and would act as barriers to the establishment of relationships at worst.

IMPORTANCE OF THE INTERPERSONAL DIMENSION IN COLLABORATION

A common idea inherent in the theory of Maurice is that of interpersonal relationships. The concept permeates the whole set of fundamental factors which he defines and makes them more viable.

Numerous studies have identified the interpersonal dimension to be a key concept of successful interorganizational relations. The National Association of State Boards of Education, in 1979, established three state task forces to study problems between CETA and vocational education. The Louisiana CETA/Vocational Education Task Force (1979), the Maryland CETA/Education Task Force (1979), and the Minnesota CETA/Education Task Force (1979) all identified communication difficulties and human interaction as major barriers to coordination. An earlier study supported by the U.S. Department of Labor (Cassell, 1976), which focused on coordination in Federal Region V, reported that the area of most concern was inadequate communication methods. In a report by the Pennsylvania Department of Education (1980) examining CETA/education relationships, it was concluded that relationships are largely a function of the people involved. Braithwaite (1980) in studying the components of successful interinstitutional relationships in Virginia identified communication as the most important factor. Roessler and Mack (1975) concluded their study of inter-agency coordination by stating that:

. . . the human element is still and probably always will be a crucial variable in improving interagency linkages. (p. 20)

Pattakos and Smith (1982) assembled a list of some of the most commonly identified barriers to interagency coordination of human services. While the list of barriers which they identified was largely generic, it did tend to focus on communication and interpersonal elements. Leach and Barnard (1983) in summarizing a review of the literature on the issues of coordination concluded that there was considerable evidence that the human element is the critical variable in interagency coordination.

Interpersonal relations are a common thread throughout all those studies. The concept is also common to the earlier theories from which Maurice synthesized his eight fundamental components for interorganizational coordination. Maurice added a further dimension by building his fundamental components to represent different aspects of interpersonal relations.

SUMMARY

The studies of Bechard, Barton, Wilson and Hord directly address identification of the fundamental components of interorganizational coordination. Their research established that there were in fact conditions which were common to coordinative relationships. Maurice then synthesized those conditions into a typology consisting of eight

fundamental components for the establishment of interorganizational relationships. Those components are:

- Basis for exchange
- Mutual benefit
- Organizational awareness
- Confidence and trust
- Access
- Communication
- Similarity of values and goals
- Incentive

The question of whether those components could be interpreted into practices representative of the relationship between technical colleges and industry in the delivery of job training programs is addressed in chapter three.

CHAPTER THREE

INSTRUMENT DEVELOPMENT

This research was essentially concerned with the establishment of coordinative relationships between technical colleges and the industrial sector in the planning and delivery of job training programs. A review of the literature indicated that there were elements which were fundamental to such relationships. The most common of those elements were synthesized by Maurice into eight fundamental components. The purpose of instrument development was to determine whether those elements could be interpreted into practices representative of the relationships between technical colleges and industry in the delivery of job training programs. The eight components synthesized by Maurice were selected as the basis for the instrument. Those components best characterize the fundamental components of interorganizational coordination. They are:

- (1) a basis for exchange;
- (2) mutual benefit;
- (3) organizational awareness;
- (4) confidence and trust;
- (5) access;
- (6) communication;
- (7) similarity of attributes; and
- (8) incentive.

In order to render these broad classifications useful for the instrumentation it was necessary to translate them into operational practices. Therefore, the researcher combined an analysis of the literature, and dialogue with practitioners and researchers, to prepare a comprehensive list of practices that appeared to be representative of the components in the technical college-industry setting. Initially more than 100 practices were identified. That comprehensive list was further refined to yield sixty practices. In developing the instrument, care was taken to be certain that the practices were representative not only of technical colleges but also of the eight fundamental components of Maurice's typology. While each practice was characteristic of at least one of the fundamental components, there was no one-to-one pairing of components with practices. There was too much overlap to make such pairing practical. The sixty practices were then assembled into a draft instrument.

The instrument was used to determine how important the review panel regarded each practice to be in their college-industry environment. The instrument was also used to determine how confident each participant was that the stated practice existed within their organization. A four point Likert scale was used. The range was:

- not confident
- somewhat confident
- quite confident
- extremely confident
- no basis for judgment

Review of the Draft Instrument

The purpose of the review was to establish that the practices were in fact representative of the relationships between technical colleges and industry. The draft survey instrument was reviewed by a panel of experts consisting of ten persons who possessed expertise either in the supervision or delivery of job training programs, or in research dealing with college-industry partnerships for economic development. Panel participants are listed in APPENDIX C.

The panel consisted of:

- (1) two academic researchers who have published research on the topic of barriers to the delivery of job training programs by technical colleges;
- (2) two college administrators who have direct supervisory responsibility for job training programs;
- (3) three college faculty who have taught job training programs; and
- (4) three industry personnel who are directly responsible for job training.

The reviewers were asked to respond to the draft instrument in several ways. They were asked to: provide a general critique of the instrument, complete the instrument, and respond to five specific questions. These questions were:

- (1) Are the items expressed in a way to be understandable by all groups?
- (2) Are the descriptions of the practices relevant and significant?
- (3) Identify the practices which you do not think characterize the fundamental elements.
- (4) Are there other significant practices which are not stated?
- (5) Is there an appropriate balance of items?

Results of the Review

Nine of the ten reviewers responded to the draft instrument. Six of those responding made comments of more than a general nature. Their comments focused upon two major concerns:

- (1) the statements of practice, and
- (2) the length of the instrument.

Leach, Warmbrod, and Brown observed that many of the survey items which had been listed as practices were more characteristic of beliefs, opinions or policies. All three stressed the importance of consistency of terms to avoid confusion. In a related comment, Mr. Neeper responded that the wording of some of the questions left him feeling "iffy" about the accuracy of his responses. It was their collective suggestion that statements which were not practices be rewritten as practices or eliminated. That was accomplished in the final draft of the instrument.

A second concern was expressed regarding the length of the instrument. Warmbrod, Leach and Blagg expressed the opinion that 60 items were too many and, therefore, might discourage responses. When the survey items were revised to reflect practices, the number of items was reduced from 60 to 34, addressing the length concern at the same time. A copy of the final instrument is included in APPENDIX B. Several additional comments of a more general nature were offered and are summarized below.

COMMENT	ACTION TAKEN
1. Make all practices "good practices" essential to strong programs.	None
2. The vertical format of the scale may be difficult to read.	Eliminated
3. Be consistent with the use of terms.	The items were reviewed for consistency of such terms as cooperative, industry trainer, college instructor, and inter-organizational.
4. Some terms need to be clarified.	The terms reward system and delivery of training were clarified in the wording of items. Two definitions were added to the instrument.
5. Cluster items into groups corresponding with the essential elements.	Items were clustered into ten groups.

Additional comments were encouraging. One stated that there was a good balance of questions, and a second stated that the instrument met the goals of the five questions the panel was asked to consider. The lack of any comments regarding the confidence scale was also encouraging, suggesting that it was acceptable.

It should be noted that of the nine panel members who reviewed the draft instrument, only six completed the instrument (2 college administrators; 1 college instructor; and three industry trainers). The two researchers had no basis for judgment. There were too few responses for each item to permit even a preliminary statistical treatment.

Both individual and mean responses for each item are reported by group. The mean differences between responses for each item were tabulated by group for both importance and practice. Those data are shown in APPENDIX D. Due to the small number of respondents, the three college personnel were combined to form a college group.

The college group judged the practices to be of greater importance than did the industry group. The college group also judged the practices to be more in-place than did the industry group. When importance was compared with extent of practice, the two groups tended to differ more frequently, and more widely on extent of practice than on the importance of practice.

The sum of the differences for importance and practice are reported in APPENDIX D. When they are compared it can be seen that the two groups differed more frequently and with greater confidence on degree of practice than on degree of importance. On only four items (11, 22, 23, 58) did the industry group indicate a greater degree of importance or practice than the college group.

Although these data were too limited to construct t-tests, it did seem to indicate that differences in group means might be expected among the three groups being sampled.

POPULATION OF THE STUDY

The population for this study was the public two-year technical colleges and the business/industry community in East Central Ohio. The sample consisted of three groups of participants drawn from technical colleges and industries who deliver job training programs. The three groups were:

- (1) college administrators/supervisors who direct job training programs for industry;
- (2) college faculty (both full and part-time) who teach job training programs for industry; and
- (3) industry trainers who supervise, plan or administer job training for industry.

The following design was used in the selection of the sample to increase the degree to which the findings might be generalized to the state.

CRITERIA FOR SELECTION OF THE SAMPLE

Colleges

There are eight public two-year technical colleges located in East Central Ohio. Six were selected to participate in the study. The following criteria were used:

- (1) willingness to participate;
- (2) level of participation in the delivery of job training programs to industry; and
- (3) size of local industrial base.

One college was dismissed because it is the home college of the researcher. A second was dismissed because it lacked a sufficient industrial base (fewer than five businesses with more than 100 employees). The presidents of the remaining

six technical colleges were personally contacted by the researcher to discuss their possible interest in having their college serve as a research site. All six college presidents expressed a desire to participate in the study. Since all six colleges met the criteria for selection, all were used as research sites. The six technical colleges were:

Colleges	Counties
Columbus Technical Institute	Franklin
Marion Technical College	Marion
North Central Technical College	Richland
Stark Technical College	Stark
Jefferson Technical College	Jefferson
Central Ohio Technical College	Licking

Industries

The Ohio Industrial Directory (Harris, 1985) was used to identify the industries within each of the six sample counties that employed more than 100 persons. The Ohio Industrial Directory reports on the basis of individual establishments. In collecting the data, the publisher mailed more than 18,000 questionnaires to Ohio establishments. Companies operating on a multi-division basis received a request for information at each plant location. Information for companies not responding to the questionnaire was verified by telephone. The Directory cautions that it is possible that some companies were inadvertently missed.

A total of 242 companies employing more than 100 persons were identified. Since a sample size of 100 companies was sought, the percentage of the 242 industries located in each county was calculated. That percentage became the number in the sample from each county.

FIGURE ONE

College	Total Companies Employing 100 or more	% of Total	Size of Sample
Columbus Technical Institute	91	38	38
Marion Technical College	23	10	10
North Central Technical College	36	14	14
Stark Technical College	67	28	28
Jefferson Technical College	7	3	3
Central Ohio Technical College	18	7	7
TOTALS	242	100	100

Each county sample was drawn randomly from that county's pool of industries employing more than 100 persons. The industries were selected based upon the following criteria:

- (1) The company was classified as a manufacturing industry by Standard Industry Code (SIC), and
- (2) The industry employs more than 100 persons.

For a complete listing of the industries selected to participate in the study, see the appendix TABLE FIVE.

CRITERIA FOR SELECTION OF PARTICIPANTS

Administrators

The researcher requested that the president of each college select two administrators to participate in the study. The following criteria were used:

- (1) must have an administrative or supervisory responsibility for job training programs; and
- (2) must have at least two year's experience in the position (two year's experience was judged by the researcher to be adequate to respond to the survey).

A sample size of two was selected because it was known by the researcher that there were only two levels of administration between the president and the faculty at the sample colleges.

College Faculty

The faculty were selected by the administrator of job training programs at each college. The number selected from each college was no fewer than three, and was proportionate to the number of faculty from the largest college.

The number of faculty selected from each college was as follows:

COLLEGE	FACULTY
Columbus Technical Institute	17
Marion Technical College	9
North Central Technical College	12
Stark Technical College	10
Jefferson Technical College	14
Central Ohio Technical College	8

The faculty were selected using the following criteria:

- (1) must be an employee of the college; and
- (2) must have taught a minimum of two courses/ programs to employees of industry (a two course minimum was judged by the researcher to be adequate to respond to the survey).

Industry Trainers

The industry trainer sample was composed of those individuals who were identified as responsible for job training at each of the 100 industrial sites as identified in the Harris Industrial Directory.

DATA COLLECTION

Following revision of the instrument it was prepared for distribution to the three sample groups. The surveys were coded for purposes of later identification. The faculty and administrative surveys were sent directly to the respective presidents for distribution in four of the six colleges. It was thought by the researcher that this might encourage a better rate of return from those two sample groups. At Columbus Technical Institute that approach was not practical due to its size. Therefore, instruments were mailed directly to members of the sample. At Central Ohio Technical College a note of support was sent to all members of the sample by the dean. Survey instruments were mailed directly to the industry sample, and no method was determined to increase the rate of return.

All instruments were requested to be returned within two weeks. One week past the requested due date, follow-up letters were sent to all participants who had not responded. A second instrument, cover letter and due date were then mailed. A third follow-up letter, instrument and due date were mailed to all non-respondents one week past the second due date.

The initial group of letters and instruments was mailed December 1, 1985. All non-respondents received two follow-up letters. Data collection was terminated February 28, 1986, two weeks after the last due date. All instruments were placed into one of four groups for treatment purposes, and are summarized below.

	RETURNED			NOT RETURNED
	Complete & usable	Incomplete	Declined	
FACULTY N=71	77%	1%	8%	14%
ADMINIS- TRATION N=12	83%	0	8%	9%
INDUSTRY N=100	39%	2%	31%	28%

TREATMENT OF THE DATA

All raw data was input into an IBM PC computer using Supercalc 3 (release 2) for statistical treatment. It was then arranged into the following tables:

TABLES

1. Statistical Significance of the Null Hypothesis
 - A. Within Groups
 - B. Between Groups
 2. Practices Which Differed Significantly
Between Groups
 3. Group Means For Importance and Extent of Practice
 4. Group Means for Practices Which are Barriers in
East Central Ohio
 5. Review of the Draft Instrument:
 - A. Mean Responses for Importance of Practice
 - B. Mean Responses for Extent of Practice
 - C. Mean Responses for the College Sample
 - D. Mean Responses for the Industry Sample
 6. Mean Scores for All Practices
 7. Presentation of the Data
-

The statistical technique of analysis of variance (ANOVA) was used to test the null hypothesis between groups, and the t-test was used within groups. The null hypothesis was applied to each of the thirty-four practices of the instrument.

$$H_0: \quad ip = \quad ep$$

There is no significant difference between the mean judgments of importance and extent of each practice within or between groups.

The null was rejected when differences in opinion within or between the sample groups relative to the two variables, importance and extent of practice, were greater than would be expected by chance alone at least 95% of the time

($\alpha=.05$). ANOVA was selected for the statistical treatment rather than multiple t-tests to permit simultaneous examination of all pairs of means.

When differences were found to be significant using ANOVA, the Scheffe test was used to determine between which pairs of groups the difference was found. The Scheffe was selected because it is not effected by unequal group sizes and it is the strictest test of the options.

It was determined that if there were cases in which pairs of practices were found to be statistically significant, but had mean scores of 3.00 or greater meaning that they were judged quite to extremely confident, the practices would not be regarded as real barriers.

Plotting the Findings

The findings for each group will be plotted on a scatter graph using the coordinates of importance and extent for each of the practices. This will produce three graphs which will compare importance and extent of each practice within each of the three groups. The graphs will illustrate four types of practices:

Those which are

- * high in importance and high in extent of practice;
- * high in importance and low in extent of practice;
- * low in importance and high in extent of practice;
- * low in importance and low in extent of practice.

Plots of the graphs are included in chapter four and will be used to further analyze the findings. A mean of 3.00 was selected as the midpoint between a high and a low score. While 2.50 is the arithmetic mid-point, 3.00 was selected based upon a rationale that if the practices are fundamental to the establishment of interorganizational relationships, then a mean of less than quite confident (3.00) seems inconsistent with being "fundamental".

CHAPTER FOUR

FINDINGS

The focus of this research was to determine which of the thirty-four practices presented in the instrument acted as barriers to the establishment of interorganizational coordination between two-year technical colleges and industry for the delivery of job training programs. The findings are summarized in TABLE ONE.

FINDINGS WITHIN GROUPS

Null Hypothesis: $H_0: \mu_{ip} = \mu_{ep}$

There is no significant difference between the mean judgments of importance and extent of each practice within each group.

The hypothesis was tested using T-tests to determine whether differences between the variables importance and extent of practice were statistically significant within each of the three groups.

Within the faculty group all thirty-four practices were found to differ significantly when comparing judgments of importance and extent of practice. Therefore, the null hypothesis was rejected for all practices for the faculty group. It was found that the extent to which each practice was in place was less than its corresponding level of importance.

TABLE ONE: A

Statistical Significance of the Null Hypothesis:

There is no significant difference between the mean judgments of importance and extent of practice within groups

R = Reject the Null

NR = Fail to Reject the Null

Fac = Faculty

Adm = Administration

Ind = Industry

Practice	Groups		
	Fac	Adm	Ind
1. The technical college adapts their policies and procedures to meet the needs of job training programs.	R	R	R
2. Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.	R	R	R
3. The technical college delivers job training programs to industry at times and locations convenient to the trainees.	R	NR	R
4. The technical college and industry share planning, decision making and authority when developing job training programs.	R	R	R
5. The designated contact person for job training within the college or industry has the authority to make commitments.	R	NR	R
6. The technical college develops and delivers short start-up training programs.	R	NR	R
7. The technical college administration assigns the best qualified faculty to teach in job training programs.	R	R	R
8. Technical college instructors can clearly define and communicate the job training services of the college.	R	R	R
9. Industry trainers can clearly define and communicate the job training needs of the industry to the college instructors.	R	R	R
10. Industrial training personnel accurately identify and communicate their training needs to the college job training personnel.	R	NR	R
11. The technical college instructors accurately interpret the training needs of industry.	R	R	R

R = Reject the Null
NR = Fail to Reject the Null

Fac = Faculty
Adm = Administration
Ind = Industry

Practice	Groups		
	Fac	Adm	Ind
12. The technical college administration seeks the appropriate contact person when initiating a cooperative job training program with industry.	R	R	R
13. The industrial trainer seeks the appropriate contact person when initiating a cooperative job training program with the college.	R	R	R
14. The technical college allocates adequate resources in terms of dollars, classrooms, labs and equipment to offer job training programs to industry.	R	R	R
15. Industry provides college instructors with access to industrial materials and equipment for use in training programs delivered on-site.	R	R	R
16. Industry provides college instructors with access to employee education and training records relevant to planning training programs.	R	R	R
17. Industry and college trainers exchange training materials.	R	NR	R
18. Technical college facilities and equipment are allocated to meet the needs of job training programs and the regular academic programs.	R	R	R
19. When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.	R	R	R
20. The technical college instructors use teaching methods which are sensitive to the needs of adult learners.	R	R	R
21. Industry trainers use teaching methods which are sensitive to the needs of adult learners.	R	R	R
22. College instructors use a "hands-on" application approach when teaching skills identified by industry.	R	R	R
23. Industry encourages qualified employees to teach in job training programs.	R	R	R

R = Reject the Null
NR = Fail to Reject the Null

Fac = Faculty
Adm = Administration
Ind = Industry

Practice	Groups		
	Fac	Adm	Ind
24. The technical college recognizes job training activities when considering promotion and salary of their instructors.	R	R	NR
25. The technical college encourages their instructors to initiate job training relationships with industry.	R	R	R
26. Management encourages their industry trainers to initiate job training relationships with the college.	R	NR	R
27. Industry provides students and the technical college provides the facilities and instruction required to train employees.	R	NR	R
28. Industry provides economic and political support for the technical college in exchange for a skilled work force trained by the technical college.	R	R	R
29. Industry demonstrates accurate cost benefits to support their job training programs.	R	R	R
30. The technical college demonstrates accurate cost benefits to support their job training programs.	R	R	R
31. The technical college administrators display a commitment to cooperating with industry for job training.	R	R	NR
32. The chief operating officers of industry display a commitment to cooperating with the technical college for job training.	R	R	R
33. Industry has a clearly defined administrative policy regarding training which encourages cooperation with the technical college.	R	NR	R
34. The technical college has a clearly defined policy which encourages cooperating in training industrial personnel.	R	R	R

TABLE ONE: B

Statistical Significance of the Null Hypothesis:

There is no significant difference between the mean judgments of importance and extent of practice between groups

Groups which differ significantly:

F:A = Faculty-Administration
F:I = Faculty-Industry
A:I = Administration-Industry

R = Reject the Null
NR = Fail to Reject Null

Practice	Importance of Practice	Extent of Practice
1. The technical college adapts their policies and procedures to meet the needs of job training programs.	NR	NR
2. Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.	R A:I	NR
3. The technical college delivers job training programs to industry at times and locations convenient to the trainees.	NR	NR
4. The technical college and industry share planning, decision making and authority when developing job training programs.	NR	NR
5. The designated contact person for job training within the college or industry has the authority to make commitments.	NR A:I	R A:F A:I
6. The technical college develops and delivers short start-up training programs.	NR	NR
7. The technical college administration assigns the best qualified faculty to teach in job training programs.	NR	R A:I
8. Technical college instructors can clearly define and communicate the job training services of the college.	NR	NR
9. Industry trainers can clearly define and communicate the job training needs of the industry to the college instructors.	NR	NR
10. Industrial training personnel accurately identify and communicate their training needs to the college job training personnel.	NR	NR

F:A = Faculty-Administration
 F:I = Faculty-Industry
 A:I = Administration-Industry

R = Reject the Null
 NR = Fail to Reject Null

Practice	Importance of Practice	Extent of Practice
11. The technical college instructors accurately interpret the training needs of industry.	NR	NR
12. The technical college administration seeks the appropriate contact person when initiating a cooperative job training program with industry.	NR	NR
13. The industrial trainer seeks the appropriate contact person when initiating a cooperative job training program with the college.	NR	NR
14. The technical college allocates adequate resources in terms of dollars, class-rooms, labs and equipment to offer job training programs to industry.	NR	NR
15. Industry provides college instructors with access to industrial materials and equipment for use in training programs delivered on-site.	NR	NR
16. Industry provides college instructors with access to employee education and training records relevant to planning training programs.	NR	NR
17. Industry and college trainers exchange training materials.	NR	NR
18. Technical college facilities and equipment are allocated to meet the needs of job training programs and the regular academic programs.	NR	NR
19. When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.	R F:I A:I	NR
20. The technical college instructors use teaching methods which are sensitive to the needs of adult learners.	R F:I	R F:I
21. Industry trainers use teaching methods which are sensitive to the needs of adult learners.	NR	NR
22. College instructors use a "hands-on" application approach when teaching skills identified by industry.	NR	R F:I

F:A = Faculty-Administration
 F:I = Faculty-Industry
 A:I = Administration-Industry

R = Reject the Null
 NR = Fail to Reject Null

Practice	Importance of Practice	Extent of Practice
23. Industry encourages qualified employees to teach in job training programs.	NR	NR
24. The technical college recognizes job training activities when considering promotion and salary of their instructors.	NR	NR
25. The technical college encourages their instructors to initiate job training relationships with industry.	NR	NR
26. Management encourages their industry trainers to initiate job training relationships with the college.	NR	NR
27. Industry provides students and the technical college provides the facilities and instruction required to train employees.	R F:I	NR
28. Industry provides economic and political support for the technical college in exchange for a skilled work force trained by the technical college.	NR	NR
29. Industry demonstrates accurate cost benefits to support their job training programs.	NR	NR
30. The technical college demonstrates accurate cost benefits to support their job training programs.	R A:I	R F:I
31. The technical college administrators display a commitment to cooperating with industry for job training.	R F:I A:I	NR
32. The chief operating officers of industry display a commitment to cooperating with the technical college for job training.	NR	NR
33. Industry has a clearly defined administrative policy regarding training which encourages cooperation with the technical college.	NR	NR
34. The technical college has a clearly defined policy which encourages cooperating in training industrial personnel.	R F:I	NR

Within the industry group thirty-two of the thirty-four practices were found to differ significantly when comparing judgments of importance with extent of practice. The two practices for which no significant differences were found were practice twenty-four and practice thirty-one.

24. The technical college recognizes job training activities when considering promotion and salary of their instructors.

31. The technical college administrators display a commitment to cooperating with industry for job training.

For these two practices there were no judged difference between importance and extent of practice indicating that the extent of practice was appropriate to the level of importance. Therefore, the null hypothesis was rejected for the industry group for all practices except practice twenty-four and practice thirty-one.

Within the administrative group, twenty-seven of the thirty-four practices were found to differ significantly when comparing judgments of importance with extent of practice. The eight practices which did not differ significantly are listed below. For these practices there was no judged difference between importance and extent of practice indicating that the extent of practice was appropriate to the level of importance.

3. The technical college delivers job training programs to industry at times and locations convenient to the trainees.

5. The designated contact person for job training within the college or industry has the authority to make commitments.

- 6. The technical college develops and delivers short start-up training programs.
- 10. Industrial training personnel accurately identify and communicate their training needs to the college job training personnel.
- 17. Industry and college trainers exchange training materials.
- 26. Management encourages their industry trainers to initiate job training relationships with the college.
- 27. Industry provides students and the technical college provides the facilities and instruction required to train employees.
- 33. Industry has a clearly defined administrative policy regarding training which encourages cooperation with the technical college.

Therefore, the null hypothesis was rejected for the administrative group for all practices except practices 3, 5, 6, 10, 17, 26, 27, and 33. It is important to note that for each of the three groups, the mean for importance of practice was always greater than the mean for extent of practice.

FINDINGS BETWEEN GROUPS

Null Hypothesis: $H_0: \mu_{ip} = \mu_{ep}$

There is no significant difference between the mean judgments of importance and extent of each practice between each group.

The hypothesis was tested using analysis of variance to determine whether differences between the variables importance and extent of practice were statistically significant between the three groups.

The importance of the practice was not found to be significantly different from the extent of the practice for twenty-four of the thirty-four practices when comparing the judgments of the three groups. Therefore the null hypothesis was not rejected for all but ten of the practices. The ten practices which did differ significantly are presented in TABLE TWO and discussed below.

Practice Two: Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.

The administrative group judged this practice to be significantly more important (3.80) than the industry group (3.04). There was no significant difference in extent of the practice.

Practice Five: The designated contact person for job training within the college or industry has the authority to make commitments.

The administrative group judged this practice to be significantly more important (3.90) than the industry group (3.04); and significantly more in place as a practice (3.70) than the faculty group (2.82).

Practice Seven: The technical college administration assigns the best qualified faculty to teach in job training programs.

The administrative group judged this practice to be significantly more in place as a practice (3.40) than

TABLE TWO

Practices Which Differed Significantly Between Groups

<u>Groups</u>		<u>Means of Differing Groups</u>				
Fac:Ind = Faculty/Industry		Mean of First Group				
Adm:Ind = Administration/Industry		Mean of Second Group				
Fac:Adm = Faculty/Administration						
<u>Variables</u>						
Imp = Importance of the Practice						
Ext = Extent of the Practice						
PRACTICE	FAC:IND		ADM:IND		FAC:ADM	
	Imp	Ext	Imp	Ext	Imp	Ext
2. Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.			3.80 3.04			
5. The designated contact person for job training within the college or industry has the authority to make commitments.			3.90 3.04	3.70 2.43		2.82 3.70
7. The technical college administration assigns the best qualified faculty to teach in job training programs.				3.40 2.58		
19. When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.	3.62 2.97		3.90 2.97			
20. The technical college instructors use teaching methods which are sensitive to the needs of adult learners.	3.92 3.50	3.35 2.80				
22. College instructors use a "hands-on" application approach when teaching skills identified by industry.		3.17 2.63				
27. Industry provides students and the technical college provides the facilities and instruction required to train employees.	3.50 3.03					
30. The technical college demonstrates accurate cost benefits to support their job training programs.		2.92 2.35	3.80 2.87			
31. The technical college administrators display a commitment to cooperating with industry for job training.	3.83 3.34		4.00 3.34			
34. The technical college has a clearly defined policy which encourages cooperating in training industrial personnel.	3.78 3.30					

the industry group (2.58). There was no significant difference in the importance of the practice.

Practice Nineteen: When job training is needed by industry, contracting with a college for training is an alternative considered and frequently used.

Both the faculty group (3.62) and the administrative group (3.90) judged this practice to be significantly more important than the industry group (2.97). There was no significant difference in extent of practice.

Practice Twenty: The technical college instructors use teaching methods which are sensitive to the needs of adult learners.

The faculty group judged this practice to be significantly more important (3.92) and more in place as a practice (3.35) than the industry group (3.50 importance and 2.80 extent).

Practice Twenty-Two: College instructors use a "hands-on" application approach when teaching skills identified by industry.

The faculty group judged this practice to be significantly more in place as a practice (3.17) than the industry group (2.63). There was no significant difference in the importance of the practice.

Practice Twenty-Seven: Industry provides students and the technical college provides the facilities and instruction required to train employees.

The faculty group judged this practice to be significantly more important (3.50) than the industry group (3.03). There was no significant difference in the extent of the practice.

Practice Thirty: The technical college demonstrates accurate cost benefits to support their job training programs.

The administration group judged this practice to be significantly more important (3.80) than the industry group (2.87). The faculty group judged it to be significantly more in place (2.92) than the industry group (2.35).

Practice Thirty-One: The technical college administrators display a commitment to cooperating with industry for job training.

Both the faculty (3.83) and administrative (4.00) groups judged this practice to be significantly more important than the industry group (3.34). There was no significant difference between the groups on the extent of practice.

Practice Thirty-Four: The technical college has a clearly defined policy which encourages cooperation in training industrial personnel.

The faculty group judged this practice to be significantly more important (3.78) than the industry group (3.30). There was no significant difference in the extent of the practice.

SUMMARY

Within Groups

The mean difference between importance and extent was not significant for any of the practices. However, it is important to note that the mean of importance was judged to be greater than the mean of extent of the corresponding practice for all cases.

Between Groups

The null hypothesis was rejected for ten practices as summarized in TABLE TWO. For these ten practices there was a significant difference between the judgments of two groups on either the extent or the importance of the practice or both. It was concluded that when a significant difference in group judgments exists, that practice is a barrier to coordination.

It was determined in the methodology that pairs of practices which were found to be statistically significant and have mean scores of 3.00 or greater would not be regarded as barriers. Practices 2, 27, 31, and 34 belong in that category. For those practices caution should be exercised in regarding them as real barriers to coordination. Both their importance and extent of practice were judged to be in the quite to extremely confident range. This would indicate that there was in fact no real difference in judgments for these practices. Therefore, only six practices (See TABLE FOUR) were concluded to be

TABLE THREE

Group Means For: Importance of Practice
Extent of Practice

Scale

Not Confident 1
Somewhat confident 2
Quite Confident 3
Extremely Confident 4
No Basis for Judgment 0 (not calculated)

Practice	Importance			Extent		
	Fac	Adm	Ind	Fac	Adm	Ind
2. Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.	3.27	3.80	3.04	2.87	2.60	2.46
5. The designated contact person for job training within the college or industry has the authority to make commitments.	3.31	3.90	3.04	2.82	3.70	2.43
7. The technical college administration assigns the best qualified faculty to teach in job training programs.	3.65	4.00	3.61	2.65	3.40	2.58
19. When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.	3.62	3.90	2.97	2.79	2.90	2.61
20. The technical college instructors use teaching methods which are sensitive to the needs of adult learners.	3.92	4.00	3.50	3.35	2.90	2.80
22. College instructors use a "hands-on" application approach when teaching skills identified by industry.	3.70	3.80	3.47	3.17	3.30	2.63
27. Industry provides students and the technical college provides the facilities and instruction required to train employees.	3.50	3.50	3.03	2.89	3.00	2.78
30. The technical college demonstrates accurate cost benefits to support their job training programs.	3.41	3.80	2.87	2.92	3.00	2.35
31. The technical college administrators display a commitment to cooperating with industry for job training.	3.83	4.00	3.34	3.31	3.20	3.10
34. The technical college has a clearly defined policy which encourages cooperating in training industrial personnel.	3.78	3.89	3.30	2.82	2.67	2.78

TABLE FOUR
Group Means for
Practices Which Are Barriers in East Central Ohio

<u>Groups</u>	<u>Means of Differing Groups</u>
Fac:Ind = Faculty/Industry	Mean of First Group
Adm:Ind = Administration/Industry	Mean of Second Group
Fac:Adm = Faculty/Administration	

Variables

Imp = Importance of the Practice
 Ext = Extent of the Practice

PRACTICE	FAC:IND		ADM:IND		FAC:ADM	
	Imp	Ext	Imp	Ext	Imp	Ext
The designated contact person for job training within the college or industry has the authority to make commitments.			3.90 3.04	3.70 2.43		2.82 3.70
The technical college administration assigns the best qualified faculty to teach in job training programs.				3.40 2.58		
When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.	3.62 2.97		3.90 2.97			
The technical college instructors use teaching methods which are sensitive to the needs of adult learners.	3.92 3.50	3.35 2.80				
College instructors use a "hands-on" application approach when teaching skills identified by industry.		3.17 2.63				
The technical college demonstrates accurate cost benefits to support their job training programs.		2.92 2.35	3.80 2.87			

Scale

- 1- Not important
- 2- Somewhat important
- 3- Quite important
- 4- Extremely important
- 0- No basis for judgment

barriers to the establishment of interorganizational relationships between colleges and industry for the delivery of job training programs.

The Practice-Barrier Grid

The research findings indicated that only six of the thirty-four practices evaluated by the survey instrument were statistically significant and, therefore, acted as barriers to the establishment of coordinative relationships consistent with the design of the research. It would be imprudent, however, to assume that the remaining twenty-eight practices were being practiced appropriate to their judged levels of importance and, therefore, not inhibiting coordinative efforts.

FIGURE TWO presents a grid for comparing means of importance and extent of practice for each of the three groups for the purpose of differentiating between their relative strengths. When the coordinates for the importance and extent of each practice are plotted on a scatter graph, a pattern emerges which is useful in assessing the relative strengths of specific practices in a given environment. Practices which plot in the upper right quadrant may be viewed as strengths (high importance, high practice) in the establishment of college/industry coordination. These practices are positive factors in the establishment of coordinative relations. Practices which plot in the upper left quadrant may be viewed as

FIGURE 2A
PRACTICE-BARRIER GRID

The coordinates for the importance and extent of practice for each of the thirty-four practices are plotted to reveal a pattern useful in assessing the relative strengths of specific practices in the research environment.

Upper Right Quadrant: These practices may be viewed as strengths. They are positive factors in the establishment of coordinative relations.

Upper Left Quadrant: These practices may be viewed as opportunities for improvement. They will need to be strengthened to increase the potential for the establishment of coordination.

Lower Right Quadrant: These practices are the overachievers. They are the practices whose extent of practice exceeds their importance.

Lower Left Quadrant: These practices are the "grippers." They are low in importance and low in practice yet must be in place to facilitate the establishment of coordinative relationships.

Administration

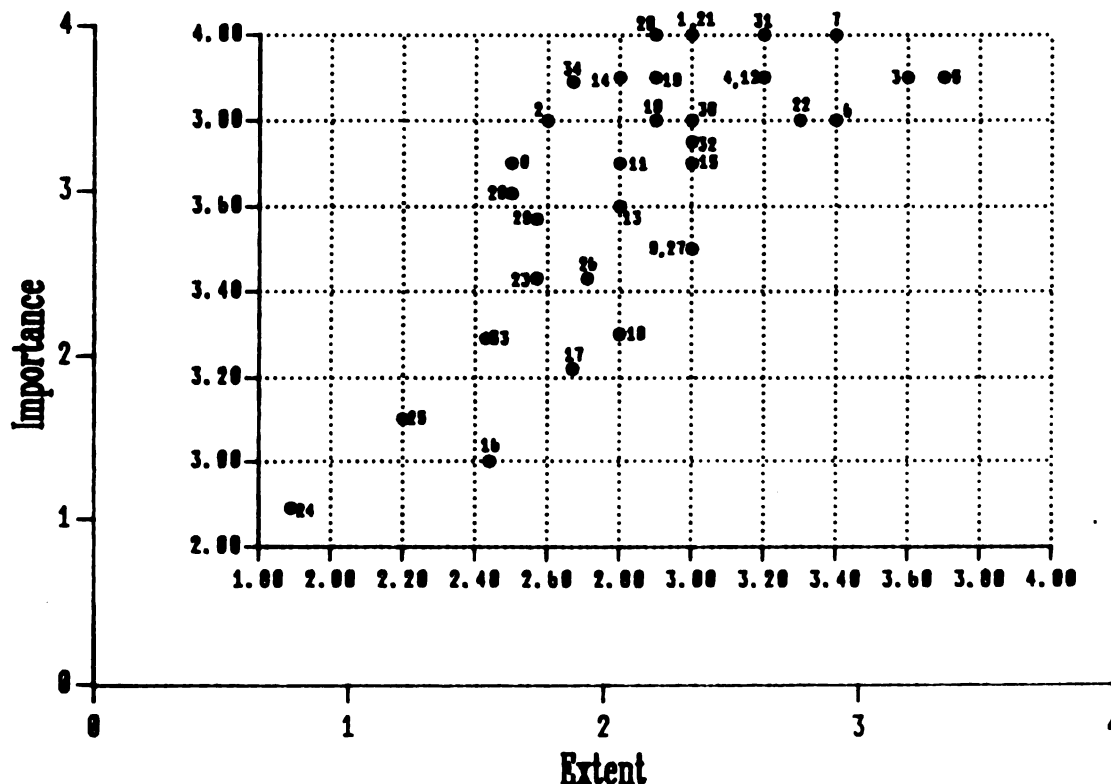


FIGURE 2B
PRACTICE-BARRIER GRID

The coordinates for the importance and extent of practice for each of the thirty-four practices are plotted to reveal a pattern useful in assessing the relative strengths of specific practices in the research environment.

Upper Right Quadrant: These practices may be viewed as strengths. They are positive factors in the establishment of coordinative relations.

Upper Left Quadrant: These practices may be viewed as opportunities for improvement. They will need to be strengthened to increase the potential for the establishment of coordination.

Lower Right Quadrant: These practices are the overachievers. They are the practices whose extent of practice exceeds their importance.

Lower Left Quadrant: These practices are the "grippers." They are low in importance and low in practice yet must be in place to facilitate the establishment of coordinative relationships.

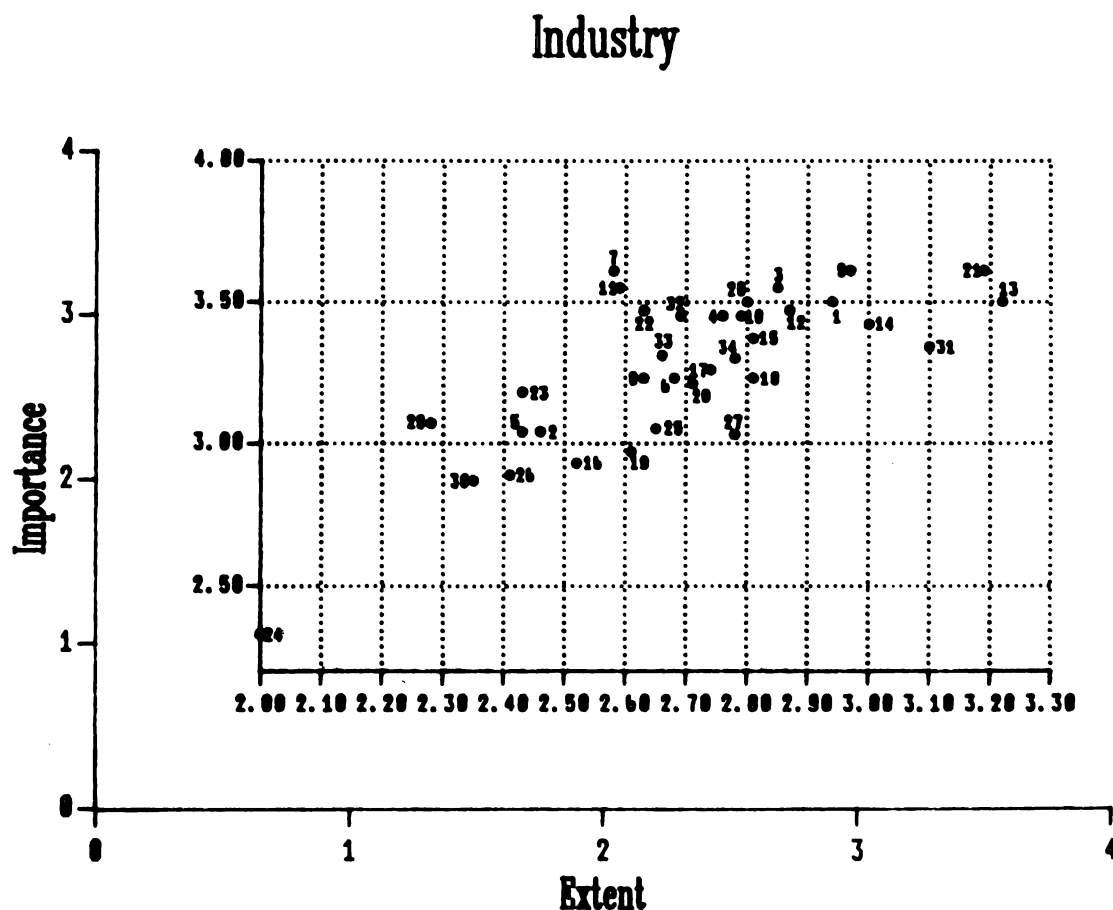


FIGURE 2C
PRACTICE-BARRIER GRID

The coordinates for the importance and extent of practice for each of the thirty-four practices are plotted to reveal a pattern useful in assessing the relative strengths of specific practices in the research environment.

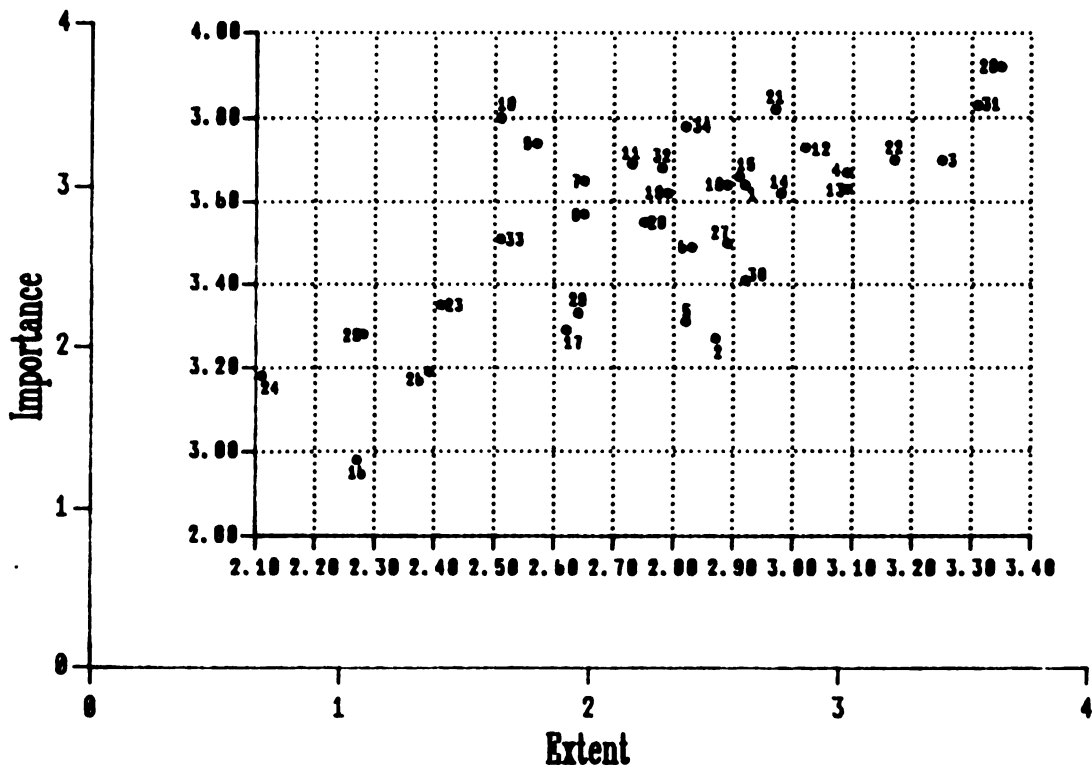
Upper Right Quadrant: These practices may be viewed as strengths. They are positive factors in the establishment of coordinative relations.

Upper Left Quadrant: These practices may be viewed as opportunities for improvement. They will need to be strengthened to increase the potential for the establishment of coordination.

Lower Right Quadrant: These practices are the overachievers. They are the practices whose extent of practice exceeds their importance.

Lower Left Quadrant: These practices are the "grippers." They are low in importance and low in practice yet must be in place to facilitate the establishment of coordinative relationships.

Faculty



opportunities for improvement (high importance, low performance). These practices will need to be strengthened to increase the potential for the establishment of college/industry coordination. The "overachievers" are located in the lower right quadrant. They are the practices whose extent of practice exceeds their importance. Practices locating there may be wasting resources. Finally, practices locating in the lower left quadrant are the "grippers". They are low in importance and low in practice yet must be in place to facilitate the establishment of college/industry coordination.

This grid provides administrators with a tool with which to analyze practices to determine which might be acting as barriers in their own environment. Relating practices to the fundamental components, the administrator can fashion strategies for barrier reduction thereby increasing the potential for establishing college/industry coordination in the delivery of job training programs.

CHAPTER FIVE

CONCLUSIONS, RECOMMENDATIONS AND REFLECTIONS

The initial premise of this research was that all of the practices included in the survey instrument were potential barriers. The purpose of the research was to test these practices to determine which, in fact, were barriers in the environment of East Central Ohio. This research identified six practices which were not judged to be in place to an extent equal to their degree of importance. As a result, they tended to inhibit rather than to facilitate the establishment of interorganizational relationships between the technical colleges and local industry for job training programs in East Central Ohio. Those practices are summarized below.

Barrier One: The designated contact person for job training within the college or industry was not judged to have the authority to make commitments.

There was a significant difference between the responses of administration and both industry and faculty when comparing their judgments of the extent of this practice. The administration and industry also differed as to the importance of this practice, although the differences were not real (as both groups judged the practice to be in the quite important to extremely important range). This

difference in judgment may reflect ineffective communications between the administration and the other two groups regarding the delegation of decision making responsibility. The administrative response indicates that they feel that they have the authority to commit the college to job training programs. However, the response of industry and faculty implies that they do not feel that the designated contact person has the authority to act or is not effective in communicating this authority to industry, or that industry lacks confidence in commitments made by the contact person.

This is an example of both the communication and confidence components of interorganizational relationship development. This difference in judgments will act to inhibit coordination until it is mitigated to a point where the extent of practice is judged to be nearly equal to the degree of importance.

Recommendation

To reduce this barrier practice must be brought into closer alignment with degree of importance. To accomplish this the chief executive officer must clearly delegate to the designated contact person the authority to commit the organization to training programs. It is equally important that the chief executive officer communicate that delegation of authority in a manner which will lead others to perceive that the individual responsible for training

has the appropriate authority. In order to effectively convey the delegation of authority, it is recommended that the job description clearly set forth the authority of the individual to commit the institution to job training programs.

Secondly, it is recommended that the individual responsible for training hold a title and/or rank parallel to others within the organization with similar authority. Thirdly, it is recommended that the delegation of authority be communicated directly by the college president to the chief executive officer of industry, as well as to the faculty body.

Barrier Two: Industry did not judge that the technical college administration assigned the best qualified faculty to teach in job training programs.

There was no significant difference between administration and industry when comparing their judgments of the importance of this practice. There was, however, a significant difference in their judgments of the extent of its practice. This would suggest that industry does not regard the faculty assigned to job training programs as being the best qualified that the college has to offer. This difference in judgments could result from a difference in the criteria and standards applied by the college and industry to judge the best qualified faculty. Also, the

continuing trend of colleges to employ part-time faculty to teach job training programs could be a contributing factor. Regardless of the cause, the findings suggested a lack of confidence by industry that the colleges are providing their best qualified faculty for job training programs. Confidence is a fundamental component in the establishment of interorganizational relations. This difference in judgments will continue to inhibit coordination until the colleges bring practice into balance with importance by assigning faculty that industry regards as qualified.

Recommendation

Industry is of the opinion that the best qualified faculty are not always assigned to job training programs. The following recommendations are offered to college administrators in order to reduce or overcome this barrier. First and foremost the college should not make promises if assignments of faculty may be restricted by contract, custom, or personal preference. At the same time it is essential to convey to industry that such restrictions do exist and then provide them with the best faculty available.

Secondly, it would seem prudent for the college that wishes to participate in job training programs to provide opportunities for interested faculty to update both their technical skills and their androgogical skills to better qualify them to teach to industry. Examples would include

industrial exchanges, expanded consulting opportunities, methods courses, and other professional development activities. Finally, the administrator who is committed to industrial training will structure means of rewarding job training activities in promotion and salary systems.

Barrier Three: When job training is needed by industry, industrial trainers do not judge contracting with a college for training as an alternative.

Judgments of importance of this practice by faculty and the administrative group differed significantly from that of the industry group. Although the ratings were relatively high for all three groups, the differences were still quite real. This practice lies at the base of college sponsored job training and should reflect the general posture of a group toward college sponsored job training programs. The findings indicate that both administrators and faculty placed a high importance on considering college sponsored job training programs as a viable alternative for industry. Industry, however, regarded these programs as less viable and less frequently used. It may be concluded that industry likely does not consider these programs to offer a mutual benefit, an essential component for the establishment of coordinative programs. This would appear to be a major barrier to the establishment of coordinative job training programs between technical colleges and industry.

Recommendation

The reluctance of industry to contract with the college for job training programs may be viewed as the collective effect of all of the barriers. Only with their reduction and an accompanying effort promoting the advantages of college delivered job training programs will industry be likely to consider the technical college as a training provider.

Specifically it will be necessary for the college to identify and to promote the benefits to industry of using the college to deliver job training programs. Benefits which should be developed and promoted are cost effectiveness, technical quality, the ability to develop programs for hourly employees at several levels, and quick start, customized short-term training programs. The benefits then need to become part of a promotional effort with the chief executive officer playing a central role.

Barrier Four: The teaching methods used by technical college faculty are not judged by industrial trainers to be sensitive to the needs of adult learners.

A significant difference was found between faculty and industry in comparing their judgments of the importance of the practice. However, the means were 3.92 and 3.50 respectively (quite important to extremely important), indicating that the difference was not real in practice.

The reported difference in extent of practice was much more significant. There are at least two possible explanations of this difference in judgments. With increasing frequency, part-time faculty are hired to teach job training programs. If they have not had proper androgogical coursework, they may not be aware of instructional methodologies best suited to adult learners, or that there is even a difference. A judged weakness in androgogical methods may also act as a disincentive for industry. Viewing the extent of practice from the industry perspective, trainees who may be experiencing frustrations totally disassociated with teaching methods may be communicating their frustrations to industry who interpret them as poor teaching. These differences may signal a lack of confidence by industry that the college can provide the necessary training. Confidence and incentives are both fundamental components for the establishment of inter-organizational relationships and must be strengthened, or the weakness of this practice will continue to inhibit coordination.

Recommendation

Reduction of this barrier is directly related to the instructional component. The initial recommendation is that an evaluation of the instructional philosophy and skills of the instructional staff be conducted for those who teach, or who wish to teach in job training programs.

Faculty must be keenly aware not only that there are differences between adult learners and 17-21 year old learners, but also how to structure instruction to account for those differences. Assessment and development are recommended to ensure androgogical skills in those faculty teaching job training programs. It is also recommended that closer planning occur between college and industry to learn the entering skill levels and basic readiness of all employees in job training programs. Finally, training classes should be made more heterogeneous to allow for differences in entering skill levels.

Barrier Five: Industry trainers do not judge that college instructors use a "hands-on" application approach when teaching skills identified by industry.

There was no significant difference between faculty and industry when comparing their judgments of the importance of this practice. There was, however, a significant difference in their judgments of the extent of the practice. The industry mean of 2.63 indicated that this practice was in place at a level lower than its degree of importance suggested.

This practice is demonstrative of the confidence component of the eight fundamental components. The size of the difference between importance and extent indicates that this is a significant barrier and will need to be addressed

to facilitate the formation of interorganizational relationships.

Recommendation

Since industry has expressed a low degree of confidence that hands-on training is occurring, the first step which an administrator might take toward reducing this barrier is to learn whether the barrier is related to teaching methods or to equipment resources. If there is not sufficient equipment available at the training site to facilitate hands-on instruction, then the recommended action is to gain access to additional equipment. This may be accomplished by relocating the class site, by using loaned equipment, by rescheduling the class time to make equipment accessible, or by other measures which will make equipment more accessible.

If, on the other hand, it is a teaching methods problem of not knowing how to use a hands-on approach, the recommended action is to train the faculty through release time to visit industry, to enroll in proprietary training sessions, to enroll in methods courses/workshops, or to shadow a master teacher. A clarification of hands-on instruction with the industry contact would also be recommended to ensure that hands-on training is not equated with time on the production line.

Barrier Six: Industrial trainers did not judge that the technical college demonstrated accurate cost benefits to support their job training programs.

While faculty and industry differed significantly on the extent of this practice, there was no significant difference in their judgments of its importance. What is interesting to note, however, was that administration and industry differed significantly as to the importance of the practice. Mutual benefit is a fundamental component for the establishment of interorganizational relations. Therefore, the college must effectively demonstrate the cost benefits of college sponsored job training programs to industry. That there was not a significant difference in the judgments of administration and industry on extent of the practice is a statistical phenomenon resulting from the small size of the administrative sample.

Recommendation

While the college faculty and administration seemed certain that they were offering cost effective programs, the findings suggest that this was not the judgment of industry. In order to reduce this barrier it is recommended that college administrators begin to take a business approach in the promotion of the cost benefits of training programs. Resist the traditional format of reporting full-time equivalents, contact hours, complex

subsidy formulas, and other soft data. Rather a straight forward business accounting approach which emphasizes return on investment, cost avoidance, and cost reduction is recommended. If the college does not have data upon which to develop a cost benefit report, develop a means for collecting it. More importantly, get the cost data in the hands of the decision makers in the industry.

Additional Conclusions:

- a. Technical college administrators of job training programs judged the practices to be more in place than either of the other two groups.

The importance of all thirty-four practices was consistently judged by all three groups to be greater than the related extent of practice. Typically, it is more characteristic to admit the importance of something than it is to carry it into practice. While all practices were judged by all groups to be in place, these practices differed in extent. An examination of the mean differences revealed that the smallest differences between importance and extent were reported by the administrative sample.

It would seem appropriate to conclude, therefore, that the administration viewed existing practices and relationships more optimistically than either of the other two groups. This becomes especially significant when one is reminded that the administrative sample was drawn from individuals with direct responsibility for job training programs,

rather than from senior administrative levels which might be expected to be less informed regarding specific programs.

From the findings it was concluded that administrators responsible for job training programs held a more optimistic view of those practices than the findings supported. If administrators wish to increase the potential for the establishment of coordinative relationships with industry it is recommended that the job training administrators increase their awareness of actual practices through increased communication with faculty and industry. Two means are suggested to accomplish that recommendation. First, the administrator should take a more active role in the marketing, design and delivery of training programs. Second, the administrator should communicate more frequently with faculty and others who are directly involved in the planning and delivery of job training programs.

b. The barriers exist between the college personnel and industry and not between the college administration and faculty.

Of the ten practices for which significant differences were found, the faculty and administration differed on only a single practice (the extent of practice 5). All other differences were found to exist between faculty and industry, or administration and industry.

It is plausible that the philosophical and conceptual harmony between administrators and faculty may have falsely led administrators to believe that such harmony extended to college-industry relations as well.

As with the previous conclusion the recommendation is the same, that the administrator needs more contact and interaction with the industry counterpart in order to assess needs and opinions of industry more accurately.

c. The generic barriers identified in the literature are similar to the barriers identified through the research.

An analysis of the six practices which were identified as barriers revealed a similarity with the previously identified generic barriers. The generic barriers summarized in the literature review were very broad. It suggested that barriers resulted from such general actions as access, quality, cost, communication, and organizational structure. The research based barriers all appear to fit within at least one of the generic categories. While the generic categories are of limited usefulness by themselves, it is recommended that they be accepted as accurately portraying the broad categories of barriers existing between technical colleges and industry.

Practice-Barrier Grid: An Emerging Model

The Practice-Barrier Grid was developed to provide a visual representation of the research findings from which conclusions could be fashioned. The grid compared degree of importance to extent of practice for each of the three groups by plotting each set of coordinates on a scattergram. The grids supported what the researcher had anticipated, that most practices would locate either in the strengths or opportunities quadrants of the grid. Those practices which plotted as strengths should increase the potential for the establishment of coordination, while those practices which plotted as opportunities will require improvement to increase their potential for the establishment of coordinative relations.

It is the practices which locate in the third quadrant, however, which demand the most attention. These practices are characterized as being judged low in importance and low in practice, yet fundamental to the establishment of coordinative relationships. They have been termed "grippers". Four practices located in this quadrant: practices 16, 19, 26, and 30.

Of all of the practices, those locating in the third quadrant perhaps deserve the most careful review by administrators. Those practices, which earlier were determined to be fundamental to the establishment of

coordinative relationships, were judged by some groups to be both low in importance and low in practice. Therefore, they may pose the greatest challenge to the establishment of relations between colleges and the industrial community for the delivery of job training programs.

Looking first at the faculty grid, the single practice in this category is practice 16:

16. Industry provides college instructors with access to employee education and training records relevant to planning training programs.

This practice was also judged to be a "griper" by the industry group. It is not surprising that while both groups recognize this as an important practice, both seem reluctant to practice it, perhaps due to the time consuming nature of the task.

The industry group identified three additional practices in this category: practices 19, 26, and 30.

19. When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.
26. Management encourages their industry trainers to initiate job training relationships with the college.
30. The technical college demonstrates accurate cost benefits to support their job training programs.

Two of these practices, 19 and 30, were barriers within the environment of the study and need to be improved in both importance and practice. Practice 26 appears to be a true "griper". Industry seems to recognize the value of

this practice in the establishment of a relationship, but appears reluctant or ineffective in implementing the practice.

Finally the administrative group judged practice 24 to be a "griper".

24. The technical college recognizes job training activities when considering promotion and salary of their instructors.

Administrators acknowledge the significant importance of rewarding faculty participation when making promotion and salary decisions, but fail to make a practice of it to an extent consistent with its importance.

Practice of an activity is an extension of the importance which is attached to it. With regard to these four "grippers" it would seem that increased practice will only follow an increase in the importance which decision makers attach to them. Therefore, the recommended action is to develop strategies which could result in changing the attitudes of administrators within colleges and industry who are responsible for job training decisions.

SUMMARY

The instrumentation for this research was derived by identifying practices within the college/industry environment which relate to the delivery of job training programs, and which were characteristic of one or more of the

fundamental components. It was found that a one-to-one correspondence could not be constructed between component and practice as a result of this interrelationship.

The linkages between the components/practices perhaps provide one explanation of the finding that no practice was found to be unpracticed. Rather it was found that all practices were in place to varying degrees and in various combinations. What was lacking appears to be the synergy which is created when all components/practices are in place at a level consistent with their judged importance within a specific college/industry environment.

Reflecting back upon the components which were synthesized from the literature to be fundamental to the establishment of interorganizational relations, certain linkages emerge as they relate to college/industry job training programs. For example, basis for exchange, mutual benefit, and incentive are all interrelated, and one can not be evaluated apart from the other two. There is also a linkage between organizational awareness and access. Similarly, communication, while a distinct component, permeates all of the other components as well, and is possibly the linch pin of the typology of fundamental components.

As one views the practices collectively, the common denominator is certainly communications. Information; how

it is exchanged, when it is exchanged, and between whom it is exchanged lies at the base of most of the practices.

It is the practice of communication that makes the difference between a good practice, and a barrier to the establishment of a relationship. Therefore, the human element remains central to the establishment of inter-organizational relationships, and it is strong human relation skills played out between two organizations that, in the end, will fashion operational relationships.

Job training programs are more in-place at the six subject colleges than anticipated at the outset of the study.

All of the colleges offer some degree of job training to industry. However, there appears to be considerably more uncertainty about how to initiate relations than expected. In addition to the establishment of the positive practices presented in this study, increased communications between the chief executive officers of each organization (at the local level) is essential to foster the development of operational relationships for job training.

While all of this may appear to be terribly obvious in retrospect, there is a tendency to lose sight of the obvious as administrators analyze and solve problems.

It is, therefore, useful to be reminded that access, trust, communication, and incentive are fundamental to all interorganizational relationships and must be nurtured to

establish productive relationships between colleges and industry.

In conclusion, the research revealed fewer barriers to coordination than were expected. The researcher cautions future users of the instrumentation not to assume that the only practices which may be acting as barriers are those which are statistically different. It is recommended that the Practices-Barriers Grid be used to determine additional practices which may be inhibiting coordination. The grid helps to identify those practices which are strengths, those which may be barriers and need to be strengthened, and those which are classified as overachievers. It is acknowledged that the "Grid concept" needs further refining as a diagnostic tool, but its potential for assisting the technical college administrator in identifying practices which inhibit coordination is promising.

RECOMMENDATIONS FOR FURTHER RESEARCH

Upon reflection, the researcher suggests several opportunities to expand and further test the findings of this study. First, and perhaps the most obvious, is the opportunity to apply the instrument and Practice-Barrier Grid in another environment using a case study methodology. A controlled replication might lead a researcher in the direction of additional research which I would expect to be

rewarding. The first deals with the identification of the practices. It would be reasonable to expect that practices which are included on the current instrument could be refined, and that the instrument might be expanded to include additional practices.

A more exciting direction for further research rests within the concept of the Grid itself. Several questions remain to be tested: is the concept in fact a sound one; are the assumptions posed by the instrument scale appropriate (e.g. is 3.00 an acceptable "level of acceptable practice"; what might be considered acceptable levels of importance and practice, and are they universal to the concept of coordinative relationships, or are they perhaps environmental/institutional in nature?

The continued investigation of these and related questions should continue to expand our knowledge and understanding of the formation of coordinative relationships between colleges and industry.

REFLECTIONS

Reflecting on the results of this study, I am left with several impressions which extend beyond the formal conclusions, but which nevertheless seem worth sharing with the reader. First, the question of why a college would wish to cooperate with business and industry in the

training of employees needs to be addressed. The all too obvious, and common response is the self serving one of increased enrollments and revenues. However, I believe that there are stronger though perhaps less obvious responses. The desire to work together as partners for a better community, and for broader mutual benefits is an example of a stronger motivation for coordination. While it would seem unlikely that any college administration would deny quality of life as an ideal, enrollment and revenue generally continue to drive decisions to participate in community economic development among Ohio's two-year technical colleges.

The Ohio Board of Regents has recently initiated incentives, in cooperation with the Ohio General Assembly and the Ohio Department of Development, to fund projects which promote and contribute to community economic development. The two-year colleges have received a substantial portion of those funds to plan and deliver valuable economic development programs. These are commendable efforts to encourage and reward economic development projects in a non-subsidy manner. The response from all sectors has been encouraging.

Secondly, the fact that 59% of the industry sample declined to participate in the study is in itself somewhat revealing. It perhaps reaffirms that there are circumstances and conditions which cause industry to be

reluctant to team with colleges for job training. In consideration of the fact that two follow-up letters were sent, it seems reasonable to assume then that nearly 60% of the industry sample was disinterested in the potential of establishing coordinative training relationships with colleges. If one generalizes that to be characteristic of East Central Ohio, then as college administrators we face a real challenge in the establishment of operational relationships with industry.

While the lack of response by industry was surprising, the uninformed optimism exhibited by the administrative sample was discouraging. These were not college presidents from whom such extreme optimism might be excused. Rather these were the judgments of administrators directly responsible for the establishment of job training relationships with industry. While their judgments might be expected to be more positive than those of industry, they were dissonant even from the judgments of their own faculties. This must be viewed as a serious problem in the establishment of relationships with industry. The administrators as a group are convinced that the practices are more in place than the other two groups judged them to be. It is my hope that administrators of job training programs are an audience to this study and heed the call for more informed objectivity.

Drawing upon what I have learned from this research, I would speculate that for the majority of technical colleges in Ohio, their involvement with employee training will derive from individual contacts initiated by the college, will be delivered to companies with fewer than 100 employees, and will be low cost, quick start, and not too dissimilar from components of existing courses at the college.

While much attention is focused on the job training role of the technical colleges, I would suggest that the role of faculty as consultant/problem solver to locally owned small business and manufacturing concerns will increase more rapidly than employee training. Eventually it will be an equally important role of the technical college in economic development.

In the conduct of this research I was careful to avoid use of the term "perceptions" because of its behavioral implications. However, it became clear to me that regardless of terminology what I had collected were perceptions. The members of the three groups each came from their own environment and their responses were colored with biases created by those environments. I too came with my own set of biases created by the environment of my own institution. Those biases, despite my best efforts to the contrary, probably flavored the structure and tone of the survey statements.

Environments are real, they influence our activities and thoughts, and they must be acknowledged. In the final analysis of this research, the reader is cautioned to be aware that bias can not be totally eliminated from the responses.

APPENDICES

APPENDIX A**INDUSTRY SAMPLE****LICKING COUNTY**

Industry	Action
1. Structurlite	Non-Participant
2. Walker Manufacturing	Completed
3. Georgia Pacific	Non-Participant
4. Larsan Manufacturing	Non-Participant
5. Owens-Corning	Completed
6. Rockwell International	No Response
7. Diebold, Inc.	No Response
8. Dow Chemical	No Response

STARK COUNTY

Industry	Action
9. Belden Brick	Completed
10. Canton Malleable	Non-Participant
11. Central States Can	Completed
12. Danner Press	Non-Participant
13. Diebold Co.	Completed
14. Edmont	Completed
15. Ekco	Non-Participant
16. Haines and Co.	Non-Participant
17. Hoover Co.	Completed
18. LTV Steel	Completed
19. Portage Electric	Non-Participant
20. Repository	Non-Participant
21. R. G. Smith Co.	Non-Participant
22. Sugardale	Non-Participant
23. Timken Co.	Completed
24. TRW/Aircraft	Non-Participant
25. Whitacre-Greer	Completed
26. Wolco National	Completed
27. Alliance Machine	Non-Participant
28. Frito-Lay	Completed
29. Geauga Co.	Non-Participant
30. Georgia-Pacific	Completed
31. U. S. Ceramic	Completed
32. Teledyne	Completed
33. U. S. Chemical	Non-Participant
34. White Engines	Completed
35. Winters Industries	Non-Participant
36. Canton Drop Forge	Non-Participant
37. Ford Motor Co.	Non-Participant
38. Unknown	Completed

JEFFERSON COUNTY

Industry	Action
39. Titanium Metals	Completed
40. Wheeling-Pittsburg Steel	Non-Participant
41. Hancock Manufacturing	Completed

FRANKLIN COUNTY

Industry	Action
42. Abbott Labs	Completed
43. R. G. Barry	No Response
44. Capital Manufacturing	Non-Participant
45. Columbus Showcase	Non-Participant
46. Copco Paper	Non-Participant
47. Crane Plastics	Completed
48. Cream Cone Machine	Non-Participant
49. General Motors	Completed
50. Hanna Chemical	Non-Participant
51. Horton Corp.	Non-Participant
52. Liebert Corp.	Non-Participant
53. Metal Container	No Response
54. National Electric	No Response
55. National Fire	Completed
56. Owens-Illinois	Completed
57. Sensotec	Non-Participant
58. Capital City Products	Completed
59. United McGill	Completed
60. Worthington Industries	No Response
61. Robert Shaw Co.	Non-Participant
62. Kirk Williams Co.	Non-Participant
63. Toledo Scale	No Response
64. Sutphen Corp.	No Response
65. Accuray Corp.	No Response
66. Anheuser-Busch	No Response
67. Ashland Chemical	No Response
68. Borden, Inc.	No Response
69. CVI, Inc.	Completed
70. Cardinal Industries	No Response
71. Columbus Coated Fabric	No Response
72. Ebco Manufacturing	No Response
73. Magic Chef	No Response
74. National Electric Coil	No Response
75. Rockwell International	Completed
76. Medex, Inc.	No Response

MARION COUNTY

Industry	Action
77. Boise Cascade	No Response
78. Central Soya	Completed
79. Fairfield Engineering	Non-Participant
80. Overhead Door	No Response
81. Whirlpool	Completed
82. Eaton Corp.	Completed
83. Stratoflex	Completed
84. Abbot and Co.	Non-Participant
85. Marion Power Shovel	No Response
86. Marion Steel Co.	Non-Participant
87. Quaker Oats	Completed
88. Wyandot	Completed

RICHLAND COUNTY

Industry	Action
89. Gorman-Rupp	Completed
90. Hi-Stat Manufacturing	Completed
91. Neer Manufacturing	No Response
92. Artesian Industries	No Response
93. G. M. Fisher Body	Completed
94. Ideal Electric	No Response
95. Mansfield Brass	Completed
96. Mansfield Plating	Non-Participant
97. North American Knitting	Responded too late
98. Ohio Brass	Incomplete
99. Peabody-Barnes	Completed
100. Federal Signal	Non-Participant

APPENDIX B

Survey Instrument

To what extent are you confident that THIS PRACTICE IS IMPORTANT?		CONFIDENCE LEVELS		To what extent are you confident that THIS PRACTICE IS -IN PLACE- IN YOUR COMMUNITY?	
		Not Confident	Somewhat Confident	Quite Confident	Extremely Confident
		1	2	3	4
		No Basis For Judgment			
		1	2	3	4
1	2	3	4	0	
1. The technical college adapts their policies and procedures to meet the needs of job training programs.					
1	2	3	4	0	
2. Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.					
1	2	3	4	0	
3. The technical college delivers job training programs to industry at times and locations convenient to the trainees.					
1	2	3	4	0	
4. The technical college and industry share planning, decision making and authority when developing job training programs.					
1	2	3	4	0	
5. The designated contact person for job training within the college or industry has the authority to make commitments.					
1	2	3	4	0	
6. The technical college develops and delivers short start-up training programs.					
1	2	3	4	0	
7. The technical college administration assigns the best qualified faculty to teach in job training programs.					
1	2	3	4	0	
8. Technical college instructors can clearly define and communicate the job training services of the college.					
1	2	3	4	0	
9. Industry trainers can clearly define and communicate the job training needs of the industry to the college instructors.					
1	2	3	4	0	
10. Industrial training personnel accurately identify and communicate their training needs to the college job training personnel.					

CIRCLE					PRACTICES	CIRCLE				
1	2	3	4	0	22. College instructors use a "hands-on" application approach when teaching skills identified by industry.	1	2	3	4	0
1	2	3	4	0	23. Industry encourages qualified employees to teach in job training programs.	1	2	3	4	0
1	2	3	4	0	24. The technical college recognizes job training activities when considering promotion and salary of their instructors.	1	2	3	4	0
1	2	3	4	0	25. The technical college encourages their instructors to initiate job training relationships with industry.	1	2	3	4	0
1	2	3	4	0	26. Management encourages their industry trainers to initiate job training relationships with the college.	1	2	3	4	0
1	2	3	4	0	27. Industry provides students and the technical college provides the facilities and instruction required to train employees.	1	2	3	4	0
1	2	3	4	0	28. Industry provides economic and political support for the technical college in exchange for a skilled work force trained by the technical college.	1	2	3	4	0
1	2	3	4	0	29. Industry demonstrates accurate cost benefits to support their job training programs.	1	2	3	4	0
1	2	3	4	0	30. The technical college demonstrates accurate cost benefits to support their job training programs.	1	2	3	4	0
1	2	3	4	0	31. The technical college administrators display a commitment to cooperating with industry for job training.	1	2	3	4	0

CIRCLE					PRACTICES					CIRCLE				
1	2	3	4	0	32. The chief operating officers of industry display a commitment to cooperating with the technical college for job training.					1	2	3	4	0
1	2	3	4	0	33. Industry has a clearly defined administrative policy regarding training which encourages cooperation with the technical college.					1	2	3	4	0
1	2	3	4	0	34. The technical college has a clearly defined policy which encourages cooperation in training industrial personnel.					1	2	3	4	0

APPENDIX C

Review Panel

The members of the panel were:

Research Representatives

1. Ms. Catherine Warmbrod
National Center for Research in
Vocational Education
Ohio State University
Columbus, Ohio
2. Dr. James Leach
College of Education
Education Building - Room 346
University of Illinois
1310 South Sixth Street
Champaign, Illinois 61820

Technical College Administrators

1. Dr. Harold Brown, Vice President
Business and Industry Division
Columbus Technical Institute
550 East Spring Street
Columbus, Ohio
2. Mr. Leon Albert, Director
Center for Employee Development
and Management
Stark Technical College
6200 Frank Ave., N.W.
Canton, Ohio 44720

Technical College Faculty

1. Mr. Joe Hutta, Representative
Business and Industry Division
Columbus Technical Institute
550 East Spring Street
Columbus, Ohio 43216
2. Mr. Edward West
Ohio Technology Transfer Agent
Jefferson Technical College
4000 Sunset Boulevard
Steubenville, Ohio 43952

3. Mr. Jerry Blagg
Assistant Professor
Mechanical/Industrial Engineering
Muskingum Area Technical College
Zanesville, Ohio 43701

Industrial Trainers

1. Mr. Robert T. Neeper, Coordinator
Personnel Relations
The Ohio Edison Power Company
Box 349
Toronto, Ohio 43964
2. Mr. Dan Stockwell
Director of Safety, Health, and Training
Brockway Glass Company
1700 State Street
Zanesville, Ohio 43701
3. Mr. David A. Meyer, Training Manager
Rockwell International Corp.
P.O. Box 1259
Columbus, Ohio 43216

APPENDIX D**TABLE FIVE: A**

**Draft Instrument Review:
Mean Responses For Importance of Practice**

ITEM	COLLEGE SAMPLE	INDUSTRY SAMPLE	DIFFERENCE (C-I)
1	5.00	4.00	1.00
2	5.00	4.00	1.00
3	4.66	3.00	1.66
4	4.66	4.00	0.66
5	4.66	4.33	0.33
6	4.66	3.33	1.33
7	4.33	3.66	0.67
8	5.00	3.66	1.34
9	4.00	4.00	0.00
10	4.33	3.66	0.67
11	2.50	3.33	-0.83
12	4.50	4.00	0.50
13	4.33	4.33	0.00
14	4.33	4.00	0.33
15	4.66	3.66	1.00
16	4.66	3.66	1.00
17	4.33	4.00	0.33
18	4.33	3.66	0.67
19	4.00	3.66	0.34
20	4.00	4.00	0.00
21	4.66	4.00	0.66
22	4.00	4.50	-0.50
23	3.66	4.66	-1.00
24	4.66	4.00	0.66
25	4.33	4.33	0.00
26	4.33	3.33	1.00
27	4.50	3.00	1.50
28	4.66	4.00	0.66
29	4.00	3.33	0.67
30	4.33	4.00	0.33
31	3.33	1.33	2.00
32	4.00	3.66	0.34
33	4.00	3.00	1.00
34	4.33	3.33	1.00
35	4.00	3.66	0.34
36	4.33	3.66	0.67
37	4.66	4.33	0.33
38	4.33	3.66	0.67

ITEM	COLLEGE SAMPLE	INDUSTRY SAMPLE	DIFFERENCE (C-I)
39	4.33	4.00	0.33
40	5.00	4.00	1.00
41	4.66	4.33	0.33
42	4.33	3.00	1.33
43	4.66	4.33	0.33
44	4.66	4.00	0.66
45	4.00	3.66	0.34
46	4.33	4.00	0.33
47	4.00	3.66	0.34
48	4.00	4.00	0.00
49	4.33	2.66	1.67
50	4.33	2.00	2.33
51	3.33	2.33	1.00
52	4.33	3.33	1.00
53	4.33	2.33	2.00
54	3.33	2.33	1.00
55	5.00	3.66	1.34
56	4.00	2.66	1.34
57	4.00	3.00	1.00
58	3.33	2.66	0.67
59	5.00	4.66	0.34
60	4.66	2.33	2.33
Sum of Difference			43.34

TABLE FIVE: B

**Draft Instrument Review:
Mean Responses For Extent Of Practice**

ITEM	COLLEGE SAMPLE	INDUSTRY SAMPLE	DIFFERENCE (C-I)
1	5.00	4.00	1.00
2	4.50	4.00	0.50
3	5.00	2.66	2.34
4	4.33	2.66	1.67
5	4.33	2.33	2.00
6	4.66	2.50	2.16
7	4.00	2.00	2.00
8	4.66	3.00	1.66
9	4.50	3.00	1.50
10	4.00	3.00	1.00
11	1.50	3.00	-1.50
12	5.00	3.00	2.00
13	2.33	2.33	0.00
14	4.66	3.66	1.00
15	4.33	3.33	1.00
16	3.66	3.33	0.33
17	3.00	2.33	0.67
18	3.00	3.00	0.00
19	3.66	3.33	0.33
20	3.33	2.50	0.83
21	4.33	2.66	1.67
22	2.33	2.00	0.33
23	3.00	3.66	-0.66
24	3.33	2.33	1.00
25	3.00	1.50	1.50
26	2.33	1.50	0.83
27	3.00	3.00	0.00
28	4.33	3.00	1.33
29	3.00	3.00	0.00
30	4.33	3.33	1.00
31	3.00	1.50	1.50
32	4.00	2.66	1.34
33	3.33	3.00	0.33
34	4.33	3.33	1.00
35	4.00	3.33	0.67
36	4.00	2.33	1.67
37	4.33	2.00	2.33
38	4.66	2.66	2.00
39	4.33	2.33	2.00
40	3.66	3.33	0.33
41	4.00	3.66	0.34
42	3.66	2.66	1.00

ITEM	COLLEGE SAMPLE	INDUSTRY SAMPLE	DIFFERENCE (C-I)
43	3.66	3.00	0.66
44	4.33	2.66	1.67
45	4.33	3.00	1.33
46	4.00	3.00	1.00
47	3.66	3.33	0.33
48	4.00	3.00	1.00
49	4.66	2.33	2.33
50	4.33	2.33	2.00
51	3.33	1.33	2.00
52	4.00	1.33	2.67
53	3.66	3.66	0.00
54	3.00	2.50	0.50
55	5.00	2.33	2.67
56	4.00	1.00	3.00
57	4.00	2.00	2.00
58	2.66	3.33	-0.67
59	5.00	3.00	2.00
60	4.66	1.00	3.66
Sum of Difference			70.15

TABLE FIVE: C

**Draft Instrument Review:
Mean Responses College Sample**

ITEM	IMPORTANCE	EXTENT	DIFFERENCE (I-E)
1	5.00	5.00	0.00
2	5.00	4.50	0.50
3	4.66	5.00	-0.34
4	4.66	4.33	0.33
5	4.66	4.33	0.33
6	4.66	4.66	0.00
7	4.33	4.00	0.33
8	5.00	4.66	0.34
9	4.00	4.50	-0.50
10	4.33	4.00	0.33
11	2.50	1.50	1.00
12	4.50	5.00	-0.50
13	4.33	2.33	2.00
14	4.33	4.66	-0.33
15	4.66	4.33	0.33
16	4.66	3.66	1.00
17	4.33	3.00	1.33
18	4.33	3.00	1.33
19	4.00	3.66	0.34
20	4.00	3.33	0.67
21	4.66	4.33	0.33
22	4.00	2.33	1.67
23	3.66	3.00	0.66
24	4.66	3.33	1.33
25	4.33	3.00	1.33
26	4.33	2.33	2.00
27	4.50	3.00	1.50
28	4.66	4.33	0.33
29	4.00	3.00	1.00
30	4.33	4.33	0.00
31	3.33	3.00	0.33
32	4.00	4.00	0.00
33	4.00	3.33	0.67
34	4.33	4.33	0.00
35	4.00	4.00	0.00
36	4.33	4.00	0.33
37	4.66	4.33	0.33
38	4.33	4.66	-0.33
39	4.33	4.33	0.00
40	5.00	3.66	1.34
41	4.66	4.00	0.66
42	4.33	3.66	0.67
43	4.66	3.66	1.00

ITEM	IMPORTANCE	EXTENT	DIFFERENCE (I-E)
44	4.66	4.33	0.33
45	4.00	4.33	-0.33
46	4.33	4.00	0.33
47	4.00	3.66	0.34
48	4.00	4.00	0.00
49	4.33	4.66	-0.33
50	4.33	4.33	0.00
51	3.33	3.33	0.00
52	4.33	4.00	0.33
53	4.33	3.66	0.67
54	3.33	3.00	0.33
55	5.00	5.00	0.00
56	4.00	4.00	0.00
57	4.00	4.00	0.00
58	3.33	2.66	0.67
59	5.00	5.00	0.00
60	4.66	4.66	0.00
Sum of Difference			25.98

TABLE FIVE D:

**Draft Instrument Review:
Mean Responses Industry Sample**

ITEM	IMPORTANCE	EXTENT	DIFFERENCE (I-E)
1	4.00	4.00	0.00
2	4.00	4.00	0.00
3	3.00	2.66	0.34
4	4.00	2.66	1.34
5	4.33	2.33	2.00
6	3.33	2.50	0.83
7	3.66	2.00	1.66
8	3.66	3.00	0.66
9	4.00	3.00	1.00
10	3.66	3.00	0.66
11	3.33	3.00	0.33
12	4.00	3.00	1.00
13	4.33	2.33	2.00
14	4.00	3.66	0.34
15	3.66	3.33	0.33
16	3.66	3.33	0.33
17	4.00	2.33	1.67
18	3.66	3.00	0.66
19	3.66	3.33	0.33
20	4.00	2.50	1.50
21	4.00	2.66	1.34
22	4.50	2.00	2.50
23	4.66	3.66	1.00
24	4.00	2.33	1.67
25	4.33	1.50	2.83
26	3.33	1.50	1.83
27	3.00	3.00	0.00
28	4.00	3.00	1.00
29	3.33	3.00	0.33
30	4.00	3.33	0.67
31	1.33	1.50	-0.17
32	3.66	2.66	1.00
33	3.00	3.00	0.00
34	3.33	3.33	0.00
35	3.66	3.33	0.33
36	3.66	2.33	1.33
37	4.33	2.00	2.33
38	3.66	2.66	1.00
39	4.00	2.33	1.67
40	4.00	3.33	0.67
41	4.33	3.66	0.67
42	3.00	2.66	0.34
43	4.33	3.00	1.33

ITEM	IMPORTANCE	EXTENT	DIFFERENCE (I-E)
44	4.00	2.66	1.34
45	3.66	3.00	0.66
46	4.00	3.00	1.00
47	3.66	3.33	0.33
48	4.00	3.00	1.00
49	2.66	2.33	0.33
50	2.00	2.33	-0.33
51	2.33	1.33	1.00
52	3.33	1.33	2.00
53	2.33	3.66	-1.33
54	2.33	2.50	-0.17
55	3.66	2.33	1.33
56	2.66	1.00	1.66
57	3.00	2.00	1.00
58	2.66	3.33	-0.67
59	4.66	3.00	1.66
60	2.33	1.00	1.33
Sum of Difference			52.79

APPENDIX E

TABLE SIX

Mean Scores For All Practices

Practice	Importance			Extent		
	Fac	Adm	Ind	Fac	Adm	Ind
1. The technical college adapts their policies and procedures to meet the needs of job training programs.	3.64	4.00	3.50	2.89	3.00	2.94
2. Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.	3.27	3.80	3.04	2.87	2.60	2.46
3. The technical college delivers job training programs to industry at times and locations convenient to the trainees.	3.70	3.90	3.55	3.25	3.60	2.85
4. The technical college and industry share planning, decision making and authority when developing job training programs.	3.67	3.90	3.45	3.09	3.20	2.76
5. The designated contact person for job training within the college or industry has the authority to make commitments.	3.31	3.90	3.04	2.82	3.70	2.43
6. The technical college develops and delivers short start-up training programs.	3.49	3.80	3.23	2.83	3.40	2.68

Practice	Importance			Extent		
	Fac	Adm	Ind	Fac	Adm	Ind
7. The technical college administration assigns the best qualified faculty to teach in job training programs.	3.65	4.00	3.61	2.65	3.40	2.58
8. Technical college instructors can clearly define and communicate the job training services of the college.	3.55	3.70	3.23	2.75	2.50	2.63
9. Industry trainers can clearly define and communicate the job training needs of the industry to the college instructors.	3.74	3.50	3.61	2.57	3.00	2.97
10. Industrial training personnel accurately identify and communicate their training needs to the college job training personnel.	3.80	3.30	3.45	2.51	2.80	2.79
11. The technical college instructors accurately interpret the training needs of industry.	3.69	3.70	3.55	2.73	2.80	2.59
12. The technical college administration seeks the appropriate contact person when initiating a cooperative job training program with industry.	3.73	3.90	3.47	3.02	3.20	2.87
13. The industrial trainer seeks the appropriate contact person when initiating a cooperative job training program with the college.	3.63	3.60	3.50	3.09	2.80	3.22
14. The technical college allocates adequate resources and equipment to offer job training programs to industry.	3.62	3.90	3.42	2.98	2.80	3.00

Practice	Importance			Extent		
	Fac	Adm	Ind	Fac	Adm	Ind
15. Industry provides college instructors with access to industrial materials and equipment for use in training programs delivered at the industrial site.	3.66	3.70	3.37	2.91	3.00	2.81
16. Industry provides college instructors with access to employee education and training records relevant to planning training programs.	2.98	3.00	2.93	2.27	2.44	2.52
17. Industry and college trainers exchange training materials.	3.29	3.22	3.26	2.62	2.67	2.74
18. Technical college facilities and equipment are allocated to meet the needs of job training programs and the regular academic programs.	3.64	3.80	3.23	2.92	2.90	2.81
19. When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.	3.62	3.90	2.97	2.79	2.90	2.61
20. The technical college instructors use teaching methods which are sensitive to the needs of adult learners.	3.92	4.00	3.50	3.35	2.90	2.80
21. Industry trainers use teaching methods which are sensitive to the needs of adult learners.	3.82	4.00	3.61	2.97	3.00	3.19
22. College instructors use a "hands-on" application approach when teach-skills identified by industry.	3.70	3.80	3.47	3.17	3.30	2.63

Practice	Importance			Extent		
	Fac	Adm	Ind	Fac	Adm	Ind
23. Industry encourages qualified employees to teach in job training programs.	3.35	3.43	3.18	2.41	2.57	2.43
24. The technical college recognizes job training activities when considering promotion and salary of their instructors.	3.18	2.89	2.33	2.11	1.89	2.00
25. The technical college encourages their instructors to initiate job training relationships with industry.	3.28	3.10	3.05	2.28	2.20	2.65
26. Management encourages their industry trainers to initiate job training relationships with the college.	3.19	3.43	2.89	2.39	2.71	2.41
27. Industry provides students and the technical college provides the facilities and instruction required to train employees.	3.50	3.50	3.03	2.89	3.00	2.78
28. Industry provides economic and political support for the technical college in exchange for a skilled work force trained by the technical college.	3.57	3.63	3.21	2.65	2.50	2.71
29. Industry demonstrates accurate cost benefits to support their job training programs.	3.33	3.57	3.07	2.64	2.57	2.28
30. The technical college demonstrates accurate cost benefits to support their job training programs.	3.41	3.80	2.87	2.92	3.00	2.35

Practice	Importance			Extent		
	Fac	Adm	Ind	Fac	Adm	Ind
31. The technical college administrators display a commitment to cooperating with industry for job training.	3.83	4.00	3.34	3.31	3.20	3.10
32. The chief operating officers of industry display a commitment to cooperating with the technical college for job training.	3.68	3.75	3.45	2.78	3.00	2.69
33. Industry has a clearly defined administrative policy regarding training which encourages cooperation with the technical college.	3.51	3.29	3.31	2.51	2.43	2.66
34. The technical college has a clearly defined policy which encourages cooperating in training industrial personnel.	3.78	3.89	3.30	2.82	2.67	2.78

APPENDIX F**TABLE SEVEN****Presentation of the Data****Differences within Groups:**

Mean Score: Mean scores are reported by group for importance and extent of practice.

Probability: The probability that there would be no significant difference within groups on the two variables, importance and extent of practice.

Null Hypothesis:

When the null hypothesis was rejected it indicated that there was a difference between the importance and extent of the practice measured. It was concluded that the extent of the practice was less than the importance of the practice would suggest.

Differences Between Groups:

Probability: The probability that there would be no significant difference between any pair of groups on the two variables, importance and extent of practice.

Differing Pairs: F = Faculty, A = Administration,
I = Industry.

Null Hypothesis:

When the null hypothesis was rejected it indicated that there was a difference between groups in their judgments of either the importance or the extent of a practice. When the null was rejected, that practice was concluded to be a barrier to the establishment of coordinative relationships between the differing groups.

Practice One:

The technical college adapts their policies and procedures to meet the needs of job training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.64	2.89	7.51	.000	Rejected
Administrators	4.00	3.00	3.35	.008	Rejected
Industry	3.50	2.94	3.79	.001	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	2.213	.1148	Not Rejected	
Extent	.1129	.8934	Not Rejected	

Practice Two:

Admissions and registration procedures of the technical college are modified as necessary to meet the needs of trainees.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.27	2.87	2.72	.009	Rejected
Administrators	3.80	2.60	3.09	.013	Rejected
Industry	3.04	2.46	2.51	.019	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	4.320	.016	Rejected	A:I
Extent	1.983	.1439	Not Rejected	

Practice Three:

The technical college delivers job training programs to industry at times and locations convenient to the trainees.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.70	3.25	4.13	.000	Rejected
Administrators	3.90	3.60	1.96	.081	Not Rejected
Industry	3.55	2.85	4.21	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	1.138	.3245	Not Rejected	
Extent	3.382	.0382	Not Rejected*	

Practice Four:

The technical college and industry share planning, decision making and authority when developing job training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.67	3.09	4.33	.000	Rejected
Administrators	3.90	3.20	2.69	.025	Rejected
Industry	3.45	2.76	4.07	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	2.474	.089	Not Rejected	
Extent	1.804	.1703	Not Rejected	

*The results of the ANOVA indicated a statistically significant difference. However, when the means were adjusted for unequal numbers of observations using the Scheffe test, no significant difference was found.

Practice Five:

The designated contact person for job training within the college or industry has the authority to make commitments.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.31	2.82	3.77	.000	Rejected
Administrators	3.90	3.70	1.50	.168	Rejected
Industry	3.04	2.43	2.56	.017	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	5.794	.0042	Rejected	A:I
Extent	7.544	.0010	Rejected	A:F A:I

Practice Six:

The technical college develops and delivers short start-up training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.49	2.83	5.07	.000	Rejected
Administrators	3.80	3.40	1.50	.168	Not Rejected
Industry	3.23	2.68	2.53	.019	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	3.730	.0279	Not Rejected*	
Extent	1.882	.1592	Not Rejected	

*The results of the ANOVA indicated a statistically significant difference. However, when the means were adjusted for unequal numbers of observations using the Scheffe test, no significant difference was found.

Practice Seven:

The technical college administration assigns the best qualified faculty to teach in job training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.65	2.65	7.15	.000	Rejected
Administrators	4.00	3.40	2.71	.024	Rejected
Industry	3.61	2.58	6.87	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	1.539	.219	Not Rejected	
Extent	3.426	.0370	Rejected	A:I

Practice Eight:

Technical college instructors can clearly define and communicate the job training services of the college.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.55	2.75	6.87	.000	Rejected
Administrators	3.70	2.50	4.81	.001	Rejected
Industry	3.23	2.63	3.65	.001	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	2.956	.056	Not Rejected	
Extent	3.998	.6716	Not Rejected	

Practice Nine:

Industry trainers can clearly define and communicate the job training needs of the industry to the college instructors.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.74	2.57	8.60	.000	Rejected
Administrators	3.50	3.00	1.86	.096	Rejected
Industry	3.61	2.97	4.09	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	.8552	.428	Not Rejected	
Extent	2.939	.0583	Not Rejected	

Practice Ten:

Industrial training personnel accurately identify and communicate their training needs to the college job training personnel.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.80	2.51	8.34	.000	Rejected
Administrators	3.30	2.80	1.86	.096	Not Rejected
Industry	3.45	2.79	3.93	.001	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	3.373	.038	Not Rejected*	
Extent	1.183	.3116	Not Rejected	

*The results of the ANOVA indicated a statistically significant difference. However, when the means were adjusted for unequal numbers of observations using the Scheffe test, no significant difference was found.

Practice Eleven:

The technical college instructors accurately interpret the training needs of industry.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.69	2.73	7.39	.000	Rejected
Administrators	3.70	2.80	3.86	.004	Rejected
Industry	3.55	2.59	6.01	.000	Rejected
Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs	
Importance	.6896	.504	Not Rejected		
Extent	.4249	.655	Not Rejected		

Practice Twelve:

The technical college administration seeks the appropriate contact person when initiating a cooperative job training program with industry.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.73	3.02	5.46	.000	Rejected
Administrators	3.90	3.20	3.28	.010	Rejected
Industry	3.50	2.87	2.69	.012	Rejected
Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs	
Importance	2.477	.089	Not Rejected		
Extent	.5269	.592	Not Rejected		

Practice Thirteen:

The industrial trainer seeks the appropriate contact person when initiating a cooperative job training program with the college.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.63	3.09	4.24	.000	Rejected
Administrators	3.60	2.80	6.00	.000	Rejected
Industry	3.50	3.22	2.33	.027	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	.3206	.726	Not Rejected	
Extent	1.185	.3107	Not Rejected	

Practice Fourteen:

The technical college allocates adequate resources in terms of dollars, classrooms, labs and equipment to offer job training programs to industry.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.62	2.98	5.45	.000	Rejected
Administrators	3.90	2.80	3.50	.007	Rejected
Industry	3.42	3.00	3.47	.002	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	2.685	.073	Not Rejected	
Extent	.197	.8214	Not Rejected	

Practice Fifteen:

Industry provides college instructors with access to industrial materials and equipment for use in training programs delivered at the industrial site.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.66	2.91	5.14	.000	Rejected
Administrators	3.70	3.00	2.69	.025	Rejected
Industry	3.37	2.81	4.14	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	3.476	.034	Not Rejected*	
Extent	.162	.851	Not Rejected	

Practice Sixteen:

Industry provides college instructors with access to employee education and training records relevant to planning training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	2.98	2.27	4.50	.000	Rejected
Administrators	3.00	2.44	3.16	.013	Rejected
Industry	2.93	2.52	2.38	.025	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	.382	.683	Not Rejected	
Extent	.646	.527	Not Rejected	

*The results of the ANOVA indicated a statistically significant difference. However, when the means were adjusted for unequal numbers of observations using the Scheffe test, no significant difference was found.

Practice Seventeen:

Industry and college trainers exchange training materials.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.29	2.62	4.11	.00	Rejected
Administrators	3.22	2.67	2.29	.05	Not Rejected
Industry	3.26	2.74	3.85	.00	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	.536	.586	Not Rejected	
Extent	.101	.904	Not Rejected	

Practice Eighteen:

Technical college facilities and equipment are allocated to meet the needs of job training programs and the regular academic programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.64	2.92	5.09	.000	Rejected
Administrators	3.80	2.90	2.59	.029	Rejected
Industry	3.23	2.81	2.67	.013	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	3.230	.043	Not Rejected*	
Extent	.131	.877	Not Rejected	

*The results of the ANOVA indicated a statistically significant difference. However, when the means were adjusted for unequal numbers of observations using the Scheffe test, no significant difference was found.

Practice Nineteen:

When job training is needed by industry, contracting with a college for the training is an alternative considered and frequently used.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.62	2.79	5.22	.000	Rejected
Administrators	3.90	2.90	3.35	.008	Rejected
Industry	2.97	2.61	2.16	.039	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	13.247	.000	Rejected	F:I A:I
Extent	.4062	.6674	Not Rejected	

Practice Twenty:

The technical college instructors use teaching methods which are sensitive to the needs of adult learners.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.92	3.35	5.55	.000	Rejected
Administrators	4.00	2.90	3.97	.003	Rejected
Industry	3.50	2.80	5.11	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	4.109	.019	Rejected	F:I
Extent	4.812	.0104	Rejected	F:I

Practice Twenty-One:

Industry trainers use teaching methods which are sensitive to the needs of adult learners.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.82	2.97	5.80	.000	Rejected
Administrators	4.00	3.00	3.24	.018	Rejected
Industry	3.61	3.19	4.14	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	1.863	.1612	Not Rejected	
Extent	.635	.5329	Not Rejected	

Practice Twenty-Two:

College instructors use a "hands-on" application approach when teaching skills identified by industry.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.70	3.17	4.96	.000	Rejected
Administrators	3.80	3.30	3.00	.015	Rejected
Industry	3.47	2.63	5.47	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	1.461	.236	Not Rejected	
Extent	4.313	.016	Rejected	F:I

Practice Twenty-Three:

Industry encourages qualified employees to teach in job training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.35	2.41	5.58	.000	Rejected
Administrators	3.43	2.57	2.52	.045	Rejected
Industry	3.18	2.43	3.58	.001	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	.432	.650	Not Rejected	
Extent	.084	.919	Not Rejected	

Practice Twenty-Four:

The technical college recognizes job training activities when considering promotion and salary of their instructors.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.18	2.11	6.06	.000	Rejected
Administrators	2.89	1.89	3.00	.017	Rejected
Industry	2.33	2.00	1.00	.347	Not Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	.453	.637	Not Rejected	
Extent	.217	.806	Not Rejected	

Practice Twenty-Five:

The technical college encourages their instructors to initiate job training relationships with industry.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.28	2.28	5.55	.000	Rejected
Administrators	3.10	2.20	2.59	.029	Rejected
Industry	3.05	2.65	2.37	.028	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	.060	.941	Not Rejected	
Extent	.743	.479	Not Rejected	

Practice Twenty-Six:

Management encourages their industry trainers to initiate job training relationships with the college.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.19	2.39	4.93	.000	Rejected
Administrators	3.43	2.71	1.99	.094	Not Rejected
Industry	2.89	2.41	2.47	.021	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	2.546	.084	Not Rejected	
Extent	.417	.661	Not Rejected	

Practice Twenty-Seven:

Industry provides students and the technical college provides the facilities and instruction required to train employees.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.50	2.89	5.00	.000	Rejected
Administrators	3.50	3.00	2.24	.052	Not Rejected
Industry	3.03	2.78	2.27	.030	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	3.460	.035	Rejected	F:I
Extent	.287	.751	Not Rejected	

Practice Twenty-Eight:

Industry provides economic and political support for the technical college in exchange for a skilled work force trained by the technical college.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.57	2.65	6.77	.000	Rejected
Administrators	3.63	2.50	3.81	.007	Rejected
Industry	3.21	2.71	2.47	.020	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	1.893	.156	Not Rejected	
Extent	.173	.841	Not Rejected	

Practice Twenty-Nine:

Industry demonstrates accurate cost benefits to support their job training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.33	2.64	4.69	.000	Rejected
Administrators	3.57	2.57	3.24	.018	Rejected
Industry	3.07	2.28	4.07	.000	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	1.931	.151	Not Rejected	
Extent	1.568	.216	Not Rejected	

Practice Thirty:

The technical college demonstrates accurate cost benefits to support their job training programs.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.41	2.92	4.02	.000	Rejected
Administrators	3.80	3.00	3.21	.011	Rejected
Industry	2.87	2.35	2.31	.030	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	5.192	.007	Rejected	A:I
Extent	3.963	.023	Rejected	F:I

Practice Thirty-One:

The technical college administrators display a commitment to cooperating with industry for job training.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.83	3.31	4.31	.000	Rejected
Administrators	4.00	3.20	3.21	.011	Rejected
Industry	3.34	3.10	1.89	.070	Not Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	6.499	.002	Rejected	F:I A:I
Extent	.585	.559	Not Rejected	

Practice Thirty-Two:

The chief operating officers of industry display a commitment to cooperating with the technical college for job training.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.68	2.78	7.52	.000	Rejected
Administrators	3.75	3.00	2.39	.048	Rejected
Industry	3.45	2.69	3.28	.003	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	2.500	.087	Not Rejected	
Extent	.417	.660	Not Rejected	

Practice Thirty-Three:

Industry has a clearly defined administrative policy regarding training which encourages cooperation with the technical college.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.51	2.51	6.45	.000	Rejected
Administrators	3.29	2.43	1.69	.143	Not Rejected
Industry	3.31	2.66	3.77	.001	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	2.002	.141	Not Rejected	
Extent	.240	.787	Not Rejected	

Practice Thirty-Four:

The technical college has a clearly defined policy which encourages cooperation in training industrial personnel.

alpha=.05

Within:	Mean Imp.	Score Ext.	t-value	two-tail prob.	Null
Faculty	3.78	2.82	7.68	.000	Rejected
Administrators	3.89	2.67	3.35	.010	Rejected
Industry	3.30	2.78	2.79	.011	Rejected

Between	f-ratio	f-prob.	Null Hypothesis	Differing Pairs
Importance	6.091	.003	Rejected	F:I
Extent	.108	.897	Not Rejected	

BIBLIOGRAPHY

BIBLIOGRAPHY

- American Association of Community and Junior Colleges. Putting America Back to Work: The Kellogg Leadership Initiative. Washington, D.C.: American Association of Community and Junior Colleges, 1984.
- American Vocational Association. Collaboration: Vocational Education and the Private Sector. Washington, D.C.: American Vocational Association, 1984.
- Apple, Michael W. "Curriculum in the Year 2000: Tensions and Possibilities." Phi Delta Kappan, January, 1983, p. 322.
- Barton, Paul E. "Vocational Education: Federal Policies for the 1980's." Education and Urban Society, 14:1, November, 1981.
- Barton, T. E., Bobron, S. C., and Walsh, J. J. "Industry/Education Community Councils." NIE Papers in Education and Work, No. 9, 1977.
- Beckhard, R. "Organization Development in Large Systems" in K. D. Benne, et. al., eds., The Laboratory Method of Changing and Learning, Palo Alto, CA: Science and Behavior Books, Inc., 1975.
- Bolino, A. C. Productivity: Vocational Education's Role. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1981.
- Bottoms, Gene and Copa, Patricia. "A Perspective on Vocational Education Today." Phi Delta Kappan, January, 1983.
- Bowen Ezra. "Schooling for Survival: U.S. Corporations Move En Masse Into the Learning Business." Time, February 11, 1985, p.74-75.
- Braithwaite, Ronald L. A case study and judicial evaluation of CETA/Education linkages and their transferability. Final Report. Virginia: 1980.

Burkett, Lowell A. "The Structure for Providing a Workforce in Today's World." In Merle E. Strong (ed.), Developing the Nation's Workforce, A.V.A. Yearbook 5, 1975.

Cassell, Frank H., et al. Intergovernmental Linkage and Cooperation: Models for Strengthening State and Local Management of Manpower Programs. Evanston, Illinois: Graduate School of Management, Northwestern University, 1976.

Clark, Donald. "The Industry-Education Structure and Process for Fostering Education Reform." Journal of Studies in Technical Careers, 6:4, Fall, 1984.

Clark, Donald M. and Rinehart, Richard L. Structures and Strategies for Linking the Higher Education and Employment Communities. Higher Education/CETA Project Monograph, American Council on Education, Washington, D.C., July, 1982.

Clark, Harold F. and Davis, Joe C. "Training in Business and Industry." In Merle E. Strong (ed.), Developing the Nation's Work Force, Washington, D.C.: American Vocational Association, 1975.

Clary, Joseph R., and Iverson, Maynard J. Maximizing Responsiveness to Industry by North Carolina Technical and Community Colleges. Raleigh, North Carolina: Department of Community Colleges, 1983.

Clayton, G. E. Worker Productivity: A Challenge for Vocational Education. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1982.

Craig, Robert L. and Evers, Christine J. "Employers as Educators: The Shadow Education System." New Directions for Experiential Learning: Business and Higher Education -- Towards New Alliances, San Francisco: Jossey-Bass, September, 1981.

Cullen, J. G., Sawzin, S. A., Sisson, G. R., and Swanson, R. A. "Training, What's It Worth?" Training and Development Journal, 30:8, 1976.

Easterline, B. H. "Coordination: A Conceptual Model and Practical Consideration." Paper delivered to the Education Commission of the States' National Seminar on State Capacity Building, December, 1976.

- Elliott, Phyllis M. "Building Partnerships with Business and Industry." IVA News and Views, 13:5, January, 1984.
- Eurich, Nell. Corporate Classrooms: The Learning Business. The Carnegie Commission, 1985.
- Evans, Rupert N. "Vocational Education and Reindustrialization." In Contemporary Challenges for Vocational Education, Katy B. Greenwood, ed., Arlington, Virginia: American Vocational Association, 1981.
- Eyster, G. W. "Interagency Collaboration: The Keystone to Community Education." Community Education Journal, 1975.
- Feldman, M. "Looking Ahead: A Matter of Necessity." In The Future of Vocational Education, G. I. Swanson, ed., Arlington, Virginia: American Vocational Association, 1981.
- Fidler, Timothy. "Advancing Community College Impact Through Business and Industry." New Directions for Community Colleges, No. 38, San Francisco: Jossey-Bass, 1982.
- Flynn, Marilyn L. The Contribution of Higher Education to Employment and Training Programs: Patterns, Potential Benefits, and Constraints. Higher Education - CETA Project Monograph, Washington, D.C.: American Council on Education, 1982.
- General Motors, Inc., Public Relations Department. Information provided by Mr. John Mueller in a conversation on March 17, 1986.
- Gilbert, T. F. "Training: The \$100 Billion Opportunity." Training and Development Journal, November, 1976.
- Gold, G. G. "Toward Business-Higher Education Alliances". New Directions for Community Colleges, San Francisco: Jossey-Bass, 1981.
- Goldstein, H. Training and Education by Industry. Washington, D.C.: National Institute for Work and Learning, 1980.
- Greenwood, Katy B. Contemporary Challenges for Vocational Education. Arlington, Virginia: American Vocational Association, 1981.
- _____. Education for Work: Extent of Coordination in Texas. Texas State Department of Community Affairs, 1981.

- Griffin, Dean. "A New Partnership Becomes Law." VocEd, 58:1, January/February, 1983.
- Hord, Shirley M. Working Together: Cooperation or Collaboration? Texas University, Austin, Research and Development Center for Teacher Education, 1981.
- Jackson, R. J. "An Analysis of Corporate-Community College Relations." Community Services Catalyst, 11:3, 1981.
- Johns, R., and Demarche, D. "Community Organization and Agency Responsibility." New York: New York Association, 1951.
- Kochran, T. A. "Determinants of the Power of Boundary Units in an Interorganizational Bargaining Relation." Administrative Science Quarterly, 5:435, 1975.
- Leach, James A. Reindustrialization: Implications for Vocational Education. Columbus, Ohio: The National Center for Research in Vocational Education, 1982.
- Leach, James A. and Bernard, Wynetta S. A Study of Cooperation/Collaboration Among Employment Training Systems in Illinois: A Final Report. Springfield: Illinois State Board of Education, 1983.
- Levine, Marsha. Corporate Education and Training. Washington, D.C.: National Commission on Student Financial Assistance, 1982.
- Levine, S., and White, P. "Exchange as a Conceptual Framework for the Study of Interorganizational Relationships," Administrative Science Quarterly, 1975, 5, p. 435.
- Lewis, M. V. and Russell, J. F. Trends, Events and Issues Likely to Influence Vocational Education in the 1980's. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1980.
- Litwak, E. and Hylton, L. F. "Inter-Organizational Analysis: Hypothesis on Coordinating Agencies." Administrative Science Quarterly, 7:395, 1962.
- Louisiana CETA/Vocational Education Task Force Committee. CETA/Vocational Education Coordination in Louisiana: A Special Task Force Progress Report. Baton Rouge, LA: State of Louisiana, July 1979.

- Lusterman, S. Education in Industry. New York: The Conference Board, 1977.
- Lynton, Ernest A. "Colleges, Universities and Corporate Training." G. Gold (ed.), New Directions for Experiential Learning: Business and Higher Education -- Toward New Alliances, No. 15, San Francisco: Jossey-Bass, 1981.
- Lynton, Ernest A. "Improving Cooperation Between Colleges and Corporations." Educational Record, 63:4, Fall, 1982.
- MacRoy, C. R. "Community Colleges: A Natural Link Between Industry and Education." Journal of Industry-Education Cooperation, 2:2, 1981.
- Mahoney, James R. Community College Centers for Contracted Programs: A Sequel to Shoulders to the Wheel. Washington, D.C.: American Association of Community and Junior Colleges, 1982.
- Marlette, Julianne M. "Facilitating Economic Development Through Linkages Between Vocational Education, CETA and Small Businesses: Final Report." Wisconsin Vocational, Technical and Adult Education District 1, Eau Claire, 1981.
- Martorana, S. V. "Education for Work: Responsibilities and Responses of Two-Year Colleges." New Directions for Education and Work, No. 1, Spring, 1978.
- Marty, Myron A., ed. "Responding to New Missions." New Directions for Community Colleges, San Francisco: Jossey-Bass, 1978.
- Maryland CETA/Education Task Force. Rolf Blank, Kirschner Associates, Director. Academic Credit for Work Experience in Maryland. Washington, D.C.: National Association of State Boards of Education, April, 1979.
- Maurice, Clyde. "Multi-Agency System Linkages and Coordination." Contemporary Challenges for Vocational Education, Yearbook of the American Vocational Association, 1982.
- Miller, W. N. "Interinstitutional Conflict as a Major Impediment to Delinquency Prevention." Human Organization, 1958.

Minnesota CETA - Education Task Force. Planning Together: A Guide for CETA and Education Program Planners. Part of the National Association of State Boards of Education Study. St. Paul, MN, August, 1979.

Moore, Ann H., Settle, Theodore J., and Skinner, Patricia A. "Strengthening College/Company Cooperation: An Ohio Perspective." Presented to the National University Continuing Education Association (Region 6) Conference, 1982.

Pattakos, Alex and Smith, Russell L. Interagency Coordination in the Illinois Employment and Training System: A Blueprint. DeKalb, Illinois: Center for Governmental Studies, Northern Illinois University, 1982.

Paul, K. K. and Carlos, E. A. "The Role of Vocational Education in Economic Development." In Contemporary Challenges for Vocational Education, Katy B. Greenwood, ed., Arlington, Virginia: American Vocational Association, 1981.

Pennsylvania Department of Education, Improvement of CETA/Educational Linkages. Harrisburg, Pennsylvania: October, 1980.

Preston, Michael B. Coordinating CETA Programs in Illinois: Responsibility vs. Authority. Urbana, Illinois: Institute of Government and Public Affairs, University of Illinois, October, 1980.

Rinehart, Richard L. "Industry College Cooperation: New Components, Barriers and Strategies." A paper presented at the Annual Convention of the American Association of Community and Junior Colleges, April, 1982.

Roessler, Richard, and Mack, Greta. Strategies for Interagency Linkages: A Literature Review. Fayetteville, AR: University of Arkansas, Arkansas Rehabilitation Services, 1975.

Ruff, R., Shylo, B., and Russell, J. F. Vocational Education: A Look Into the Future. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1981.

Russell, Jill F. "Alternative Futures for Vocational and Technical Education." Journal of Epsilon Pi Tau, 9:1, Spring, 1983.

Santos, Gladys B. "Job Training Systems: Many Doors to Success." VocEd, 1983, 58:1, p. 23.

- Sheridan, Richard G. Ohio Tomorrow: State Economic Growth and Development and the Role of Higher Education, Part IV: Who is Doing What, Where and How on Ohio's Campuses. College of Urban Affairs: Cleveland State University, 1983.
- Solomon, Lewis C., ed. Reassessing the Link Between Work and Education. San Francisco: Jossey-Bass Inc., 1978.
- Striner, H. E. "Why Must We Invest in Human Capital." Vocational Education, May, 1982.
- Swanson, R. A. and Murphy, B. P. "The Growing Trend of Industry and Business Training." In Contemporary Challenges for Vocational Education, Katy B. Greenwood, ed., Arlington, Virginia: American Vocational Association, 1981.
- Thompson, J. D. Organizations in Action, New York: McGraw-Hill, 1967.
- Timpane, Michael. "Business Has Rediscovered the Public Schools." Phi Delta Kappan, 65:389, February, 1984.
- Tyree, Lawrence W. and McConnell, Nancy C. Linking Community Colleges With Economic Development in Florida. ISHE Fellows Program Research Report No. 3, 1982.
- Veysey, L. The Emergence of the American University. Chicago: University of Chicago Press, 1965.
- Vogler, Daniel E. "Mission Expansion: Business-Industry and Education Involvement." Community Services Catalyst, Fall, 1984.
- Warmbrod, Catherine P., and Faddis, Constance R. Retraining and Upgrading Workers: A Guide for Postsecondary Education. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1983.
- Watkins, Beverly T. "Higher Education Now Big Business for Big Business." Chronicle of Higher Education, 26:7, April 13, 1983.
- Wilson, James W. Models for Collaboration: Developing Work-Education Ties. Madison, Wisconsin: American Society for Training and Development, 1980.