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ABSTRACT

The Office of Community College Research and Leadership project involves research, technical assitance, information dissemination, and leadership activities for postsecondary Illinois vocational-technical education target audiences, especially community college administrators. "Update" newsletters and "Research Briefs" reporting current research and information were developed and mailed to approximately 750 educators in November 1990 and May 1991. A survey of needs of Illinois community college vocational-technical education was conducted. The office concluded a technology transfer study in fall 1990 and distributed a final report and executive summary. It conducted tech prep research and development efforts for the Illinois State Board of Education's Department of Adult, Vocational, and Technical Education. Presentations were made at national meetings about research efforts. The office conducted two leadership graduate education courses. These products were delivered: Illinois Tech Prep Planning Strategies Handbook; Final Report; Update newsletter and Research Briefs; Executive Summary: Illinois Community College Vocational-Technical Education (ICCVTE) Survey; and Building World Market Competitors: Illinois Community Colleges Transfer Technology. (These appendixes--the bulk of the document--follow the 22-page report: Update newsletters and Research Briefs; Building World Market Competitors, Status Report Summary and Recommendations; Executive Summary, ICCVTE Survey; and two journal articles.) (YLB)

Final Report

Continuation of the Office of Community College Research and Leadership

Illinois State Board of Education

Adult, Vocational and Technical Education

Final Report
Continuation of the
Office of Community
College Research
and Leadership

Project Director
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Vocational and
Technical Education
College of Education
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at Urbana-Champaign

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Adult, Vocational
and Technical
Education

Vocational Education
Program Improvement
Section

November 1991

QLAC13C

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PROPOSAL ABSTRACT

Official Project Title: Continuation of the Office of Community College Research and Leadership

Principal Investigator: Dr. Debra D. Bragg, Assistant Professor

Funded Agency: Department of Vocational and Technical Education, University of Illinois at Urbana-Champaign

Location of the Funded Agency: Champaign, Illinois

Time Period Covered: July 1, 1990 - Sept. 30, 1991

Goals of the Project and its Relevance to Vocational Education:

The Office of Community College Research and Leadership project involves research, technical assistance, information dissemination, and leadership activities for postsecondary vocational-technical education target audiences, especially community college administrators. The four goals of the Office pursued during 1990-1991 were:

1. Provide throughout the project year (8/21/90-9/30/91) whenever possible, technical assistance and information dissemination/communication processes to address the needs of community college personnel for vocational-technical education research and professional/leadership development.

2. Prioritize the research needs of the key target audiences and continue to conduct applied research studies throughout the project year (8/21/90-6/30/91).

3. Maintain an information input process using an advisory community consisting of experts representing the key target audiences of the Office of Community College Research and Leadership.

4. Identify and begin to address the leadership needs of community college vocational-technical educators through an applied research project prior to 4/15/90 and the Summer Community College Leadership Institute.

Major Accomplishment of the Project:

- The *Update* newsletter and research brief reporting current research and information were developed and mailed to approximately 750 educators in November 1990 and May 1991.

- A needs assessment process was conducted during 1990 resulting in the *Executive Summary* of the 1990 Illinois community college vocational-technical education survey. This executive summary was mailed to all survey respondents and other target groups (e.g., career deans, college presidents, and state agencies) in January 1991.

- The Office concluded the technology transfer study in the fall of 1990, sponsored in part by the Illinois Council of Public Community College Presidents (ICPCCP) and the Illinois Council on Vocational Education (ICOVE). A final report and executive summary entitled *Building World Market Competitors: Illinois Community Colleges Transfer Technology* was widely distributed throughout Illinois, including the CEOs of all Illinois community colleges. In addition, an article reporting this research entitled "Technology Transfer and the Illinois Community College System" has been accepted by the *Journal on Studies in Technical Careers* for Volume XIII #2.

- **The Office conducted research and development efforts for ISBE/DAVTE in the area of Tech Prep. This research entailed:**

  - the distribution of a two-page questionnaire in late 1990 to the 17 project directors of Illinois Tech Prep planning initiatives to obtain baseline information.

  - site visits and personal interviews conducted with 10 Tech Prep planning grant consortia participants between April 1 and June 15, 1991 to identify and describe planning and implementation strategies used to initiate Tech Prep.

  - telephone interviews with project directors of the remaining 7 Tech Prep sites to obtain similar information about planning and implementation.

  - development, review, and publication of a handbook entitled *Illinois Tech Prep Planning Strategies* (to be delivered by ISBE/DAVTE in early December 1991).

  - presentations made at state and national meetings during 1991 on Tech Prep. This dissemination to the field continues through state meetings and two national meetings conducted by the American Vocational Association (AVA) in December 1991 and the American Educational Research Association (AERA) in April 1992.

- Presentations were made at national meetings throughout 1990 and 1991 about research efforts of the Office, including a U.S. Department of Education briefing on Tech Prep, AVA, AERA, the American Association of Community and Junior Colleges (AACJC), the National Council on Occupational Education (NCOE), and Leadership 2000.

- The Office conducted two leadership graduate education courses during 1990-1991. "Community College Leadership" was offered during July 1990 and "Applying Quality Processes in Educational Leadership" was offered Spring semester 1991.

Products Delivered:

- *Illinois Tech Prep Planning Strategies* handbook - 450 to be delivered in December 1991 to ISBE/DAVTE to disseminate to all Tech Prep consortia sites

- *Final Report of the Office of Community College Research and Leadership* - 7 copies to ISBE/DAVTE

- *Update* newsletter and Research Brief (Fall 1990) - 750 copies disseminated to all IL community colleges, state agencies, universities, and others subscribers

- *Update* newsletter and Research Brief (Spring 1991) - 750 copies disseminated to all IL community colleges, state agencies, universities, and others subscribers

- *Executive Summary: Illinois Community College Vocational-Technical Education Survey* - 600 copies mailed to all IL community colleges, state agencies, universities, all survey respondents, and other requestors

- *Building World Market Competitors: Illinois Community Colleges Transfer Technology* - over 1,000 copies of the final report disseminated to the IL community colleges for further distribution to IL policy makers and business/industry. Over 5,000 copies of the executive summary distributed to a diverse audience across the state.

Major Accomplishments and Significant Findings of the Project

The Office of Community College Research and Leadership project is conducted by the Department of Vocational and Technical Education at the University of Illinois at Urbana-Champaign (UIUC). This project involves research, technical assistance, information dissemination, and leadership activities for postsecondary vocational-technical education target audiences, especially community college administrators. The Office of Community College Research and Leadership is dedicated to establishing a research-based support function for the Illinois community colleges. A summary of the major accomplishments and significant findings of the project during the funding period of July 1990 to September 1991 follows.

Objective 1. Provide throughout the project year (8/21/90-9/30/91) whenever possible, technical assistance and information dissemination/communication processes to address the needs of community college personnel for vocational-technical education research and professional/leadership development.

The *Update* newsletter and research brief was developed and mailed to approximately 750 educators in November 1990 and May 1991. The *Update* newsletter increased to 12 pages in the Spring 1991 edition to accommodate the articles submitted by Illinois community college staff on such topics as quality management, teaching effectiveness, Tech Prep & articulation, minority participation, integration, customized training, and multi-cultural education. The research briefs summarized the Office's studies of Illinois community college issues and technology transfer. A copy of these newsletters and research briefs is included in Appendix A.

The Office responded to over 200 telephone and mail requests from primarily postsecondary vocational educators across Illinois and nationwide for information related to vocational-technical education, especially on topics related to research reported in the *Update* newsletter. Several requests were received regarding the Office's research activities related to customized training, technology transfer, and Tech Prep. Two other research areas for which the

Office was frequently asked to provide technical assistance were staff development and instructor evaluation. To provide easy access to information needed to respond to requests, the Office acquired a computerized reference database entitled *EndNote* and annotated bibliographies have been prepared to respond to specific information requests.

The Office's Director attended several state and national conferences to present information related to the Office's research projects. These conferences were sponsored by:

- the Illinois Community College Economic Development Director's Association (Fall 1990)
- the Illinois Council of Community College Administrators (Fall 1990 & 1991)
- the Illinois Council of Public Community College Presidents (Dec. 1990)
- the American Educational Research Association (Spring 1991)
- the American Association of Community and Junior Colleges (Spring 1991)
- the National Association of Vocational Education Program Improvement (Spring 1991)
- the League for Innovation, Leadership 2000 (Summer 1991)
- the National Council on Occupational Education (Fall 1990 & Fall 1991)

In addition, the Office's Director was invited to serve in a technical assistance capacity on two state-level committees during 1990-1991. The first was the Advanced Technology and Economic Development Committee of the Illinois Council of Public Community College Presidents. Dr. Bragg's role on this committee was to advise the committee on ways to disseminate and utilize research based on the Illinois technology transfer study. The second committee was a subcommittee of the Committee of Practitioners for ISBE/DAVTE. In this capacity, Dr. Bragg attended meetings and reviewed materials prepared on performance standards for local postsecondary vocational education programs.

Objective 2. Prioritize the research needs of the key target audiences and continue to conduct applied research studies throughout the project year (8/21/90-6/30/91).

During the 1990-1991 time period, the Office conducted three research studies with full or partial support of the ISBE/DAVTE grant. Each of these research studies will be described briefly in this section of the report.

Technology Transfer Survey

During the fall of 1990, the Office concluded a study of Illinois community college involvement in technology transfer, including postsecondary vocational-technical education programs funded by ISBE/DAVTE, JTPA, DCCA, and other local, state, and federal economic development agencies. The study was undertaken to describe the capabilities of the Illinois community college system to provide technology transfer assistance to the commercial marketplace and public sector. The project involved designing and mailing an extensive questionnaire to the Chief Executive Officers (CEOs) of all of Illinois' community colleges. Of the total sample of 45 colleges, 42 (92%) provided data to produce the survey results.

Twelve key findings were made based on the information collected via the survey. The twelve key findings can be summarized as follows:

1. Illinois community college offer a vast range of technology transfer products and services.
2. A variety of methods is used by the community colleges to promote technology transfer.
3. Illinois community colleges serve a wide range of private and public clients.
4. Illinois community college form partnerships to facilitate technology transfer.
5. CEOs promote technology transfer.
6. Business and industry seek additional technology transfer products from the Illinois community colleges.
7. Illinois community colleges encounter some roadblocks in delivering technology transfer products.

8. Economic development units alc ıg with many other college departments transfer technology.
9. Internal evaluation results are used routinely to assess technology transfer.
10. Full-time faculty experts play an important role in transferring technology.
11. Pricing policies for training associated with technology transfer reflect local fee structures.
12. Formal agreements and contracts are comprehensive and inclusive in scope.

To ensure the success of future technology transfer endeavors, the following five recommendations were offered:

1. Ensure that college and state-wide administrative policies and processes support efficient and effective delivery of technology transfer
2. Continue to strengthen partnerships with other technology transfer providers
3. Ensure adequate funding levels for community colleges involved in technology transfer initiatives
4. Continue to develop the expertise of college faculty and explore incentives to involve more full-time faculty experts in technology transfer
5. Explore opportunities to evaluation technology transfer through on-going formal evaluation processes

Over 1,000 copies of the final report and nearly 5,000 copies of the executive summary were disseminated to target audiences throughout Illinois, including the CEOs of all Illinois community colleges. Appendix B contains a copy of the executive summary of the research report entitled *Building World Market Competitors: Illinois Community Colleges Transfer Technology, 1990 Status Report Summary & Recommendations.*

Vocational-Technical Education Issues Survey

During the summer and fall of 1990, a mail survey was used to determine problem areas confronting Illinois community college vocational-technical education from the perspective of various target audiences (e.g., career deans, college presidents, and state agencies). This survey followed site visits to 15 Illinois community colleges and additional individual and group

interviews to ascertain an extensive list of potential problem areas for inclusion in the survey. The primary goal of the survey was to prioritize issues confronting postsecondary vocational-technical education. This priority list was to be used in the development of a research agenda for the Office, which has subsequently been developed and used in responding to research opportunities that can benefit the state of Illinois.

The survey was mailed to 469 individuals through the Illinois community college system. After a postcard follow-up, a 50% response rate was obtained. The survey revealed the top ten issues to be:

1. Keeping programs current with business and industry
2. Maintaining and updating facilities and equipment, especially in advanced and sophisticated technology areas
3. Responding to business and industry needs with effective economic development programs (e.g., customized training, technology transfer) (tie)
3. Conducting valid needs assessment to initiate new programs or update existing ones
5. Identifying new and emerging occupational areas
6. Gaining cooperation and involvement from high school, community college, university, and business and industry for articulation (tie)
6. Improving student retention and completion rates
8. Maintaining enrollments in existing programs (tie)
8. Improving the quality of programs
10. Educating business and industry on the value of vocational-technical programs and graduates

There was a high level of agreement among the respondent groups as to the level of priority attributed to the top ten issues. Without exception, the various target groups were concerned with maintaining up-to-date vocational-technical education programs that are responsive to business and industry. The majority of the respondents also emphasized the importance of finding better ways to deliver programs by improving funding, needs assessment,

articulation processes, and student retention strategies. For a breakdown of these findings by target audience, see the *Executive Summary: Illinois Community College Vocational-Technical Education Survey* in Appendix C.

Tech Prep

The Office conducted a research and development effort for ISBE/DAVTE in the area of Tech Prep during 1991. The goal of this effort was to identify and describe planning strategies, barriers and implementation strategies, and skills and knowledge required of leaders involved in initiating Illinois Tech Prep initiatives. This information was to be compiled and reported in a practitioner's handbook, which was designed primarily for new Tech Prep project directors and coordinators. Listed below are major activities used to collect data and produce the handbook:

- Distribution of a two-page questionnaire in late 1990 to the seventeen project directors of Illinois' Tech Prep planning initiatives to obtain baseline information
- Development of a conceptual framework for the Tech Prep planning, development, implementation, and evaluation phases as a basis for development of study questions, data collection procedures, and tools
- Site visits and personal interviews conducted with ten of the seventeen Tech Prep planning grant initiatives between April 1 and June 15, 1991 to identify and describe planning and implementation strategies used to initiate Tech Prep initiate
- Telephone interviews with project directors of the remaining seven Tech Prep sites to obtain information about their initiatives
- Follow-up letters and/or one-page profiles mailed to all seventeen sites to summarize and verify major findings
- Development, review, and publication of a Tech Prep planning handbook in August 1991

Findings from research and development efforts regarding Tech Prep revealed that specific planning and implementation strategies are used by project directors in initiating Tech

Prep programs. This research study revealed that planning strategies that can be employed to initiate Tech Prep include:

- Developing a philosophy
- Educating key staff about Tech Prep
- Gaining top leader support
- Involving key groups in planning
- Organizing and developing planning teams
- Setting realistic timelines

Selected findings in the areas of specific planning strategies, barriers and implementation strategies, and leader roles and responsibilities are summarized here to highlight some of the valuable information garnered through this research study.

Selected Tech Prep Planning Strategies

While it is too early to declare any Tech Prep planning practices *exemplary*, there were a number of approaches used by project directors seemed to lead to desired outcomes for Tech Prep.

Table 1

Tech Prep Planning Phases and Strategies

Phases	Planning Strategies
Planning	• Initiating a Tech Prep project • Involving consortia partners in substantive planning for Tech Prep • Developing a local philosophy about Tech Prep • Selecting planning strategies and developing an overall planning philosophy • Selecting individuals to be involved in planning • Developing an organizational structure for planning • Developing and using planning teams • Devising and revising timelines
Development	• Developing local policies • Conducting staff development • Developing articulated and integrated curriculum

	• Writing articulation agreements • Providing guidance and counseling for Tech Prep • Marketing Tech Prep • Ensuring meaningful collaboration with business/industry/labor
Implementation	• Initiating each component of the initiative • Monitoring the initiative as it evolves • Maintaining day-to-day processes and programs • Anticipating possible barriers • Overcoming barriers with problem solving • Developing contingency plans
Evaluation	• Documenting and evaluating Tech Prep planning • Assessing learner outcomes • Determining the broader impact of Tech Prep • Establishing ongoing, systematic evaluation processes • Ensuring continuous quality improvement of Tech Prep • Ensuring the use of evaluation results

Strategies to Overcome Barriers

Successful implementation requires employing the proper strategies and resources to ensure that Tech Prep functions effectively. Several project directors shared information about potential barriers they are dealing with in implementing their Tech Prep initiatives. Many of these observations focused on the inevitable dilemma associated with resistance to change. Several barriers were identified by more than one project director along with recommended implementation strategies for overcoming them (Table 2).

Table 2

Potential Tech Prep Barriers and Implementation Strategies

Barriers	Implementation Strategies
Lack of focus	• Communicate a vision for Tech Prep clearly, honestly, and enthusiastically • State the benefits of Tech Prep to all key groups • Know the territory • Plan for Tech Prep from a solid conceptual base • Build and maintain relationships with constituencies
Lack of commitment to Tech Prep	• Explain and sell the concept repeatedly • Build support among respected leaders

	• Involve key stakeholders • Listen and share • Empower people through team building and staff development • Celebrate milestones (e.g., first class days graduations) • Develop strategies for handling opponents
Fear of losing vocational education programs and students	• Allow time for roles, policies, and attitudes to adjust • Expect some conflict • Allow time for team building • Monitor enrollments and course-taking patterns
Lack of clear implementation strategies	• Distribute a written action plan • Specify what, why, who, and when in the implementation plans • Determine supplies, equipment, and other resources needed • Anticipate possible problems • Make contingency plans • Implement gradually • Be willing to fine tune and refocus
Communication problems	• Develop mechanisms to share accurate and consistent information • Share progress reports regularly • Schedule staff development regularly • Schedule group discussions regularly • Assign a person to troubleshoot problems • Build in procedures to handle problems • Intervene in serious problems • Provide joint planning time for instructors
Lack of resources (time, people, materials)	• Outline resource needs early • Delegate duties • Set priorities • Start one program at a time • Use existing services, people, and materials • Solicit funding from business/industry, government agencies, or others
Difficulties articulating in large diverse areas	• Use site-based planning teams • Schedule centralized staff development for team leaders who, in turn, train local planners • Maximize input from local planners • Ensure review and feedback as initiatives are developed
Lack of credibility	• Allow time for Tech Prep to become established • Demonstrate top leader commitment • Publicize the benefits of Tech Prep • Carefully market the initiative • Assist students with support services to ensure their success

Leading the Tech Prep Initiative

The job of managing a local Tech Prep initiative can be very complex. Sometimes this job is shared by members of a project leadership team, however more often it seems to be undertaken by one individual. Interviewees who were project leaders shared their perceptions about skills and knowledge required to be successful in managing Tech Prep. In addition, others involved in Tech Prep planning were asked about their impressions of the skills and knowledge required to undertake the job of Tech Prep project leader. First and foremost, interviewees described the importance of having expertise in the field of education. Interviewees described the importance of project leaders having expertise in the following education-related areas:

- curriculum development
- program planning and evaluation
- marketing and student recruitment
- specific school and college systems
- state and local educational systems
- vocational and technical education
- secondary/postsecondary education articulation processes
- academic and technical education integration concepts

In addition to these areas, Tech Prep project leaders felt that they must possess skills and knowledge in the processes of leading and managing an educational innovation project. Three project leader roles evolved from our study along with multiple responsibilities for each (Table 3).

Table 3

Roles and Responsibilities of Project Leaders

Roles	Responsibilities
Change leader	• Initiate start-up of Tech Prep • Recruit key groups for Tech Prep • Instill enthusiasm and commitment to Tech Prep • Stimulate the planning process • Create and recommend alternative approaches
Facilitator	• Search for and interpret information • Educate others about Tech Prep planning • Organize and guide planning teams

	• Help groups develop positively • Establish a climate of trust • Resolve conflicts • Link people with information and resources • Keep teams moving • Communicate (written and verbal) and listen carefully • Give formal and informal presentations • Disseminate information about the project • Conduct follow-up visits with participating sites
Manager	• Organize and coordinate planning meetings • Coordinate data collection and analysis • Organize and carry out regular project activities • Select, orient, and supervise project staff • Acquire resources and manage budgets • Maintain project records • Conduct grant writing • Juggle multiple management responsibilities

Due to length, the handbook has not been included in this final report. However, 450 copies are to be delivered to ISBE/DAVTE by early December 1991 in accordance with the project proposal. A paper entered into the Proceedings of the Community College Professional Development Pre-Conference sponsored by NCRVE, NCOE and others entitled "Effective Leadership Strategies for Planning and Implementing Tech Prep" is included in Appendix D.

Objective 3. Maintain an information input process using an advisory community consisting of experts representing the key target audiences of the Office of Community College Research and Leadership.

Two advisory committee meetings were held where experts representing the various target groups discussed needs, problem areas, and issues that could potentially be addressed by the Office. The first meeting was held on November 14, 1990 in conjunction with the annual conference of Illinois Council of Community College Administrators (ICCCA) in Peoria. The second meeting was held on February 15, 1991 in conjunction with the Illinois Vocational Association (IVA) annual conference, again in Peoria. During both meetings, advisory committee members provided encouragement for the Office's involvement in Tech Prep research

and technical assistance. The committee's guidance provided focus for a great deal of the Office's work throughout the 1990-1991 time period.

Objective 4. Identify and begin to address the leadership needs of community college vocational-technical educators through an applied research project prior to 4/15/90 and the Summer Community College Leadership Institute.

During 1990-1991, the Office pursued two thrusts related to community college vocational education leadership: 1) conducting a review of literature on the topic of vocational education/community college leadership development and 2) reviewing and developing a higher education program at UIUC for community college personnel. Both of these activities continue into 1991-1992. In addition, during 1990-1991, the Director was responsible for developing and teaching two graduate courses in the Department of Vocational and Technical Education with a strong leadership theme. These courses were VOTEC 456, Section E12, "Community College Leadership" taught Summer of 1990 and VOTEC 456, Section E13, "Applying Quality Processes in Educational Leadership" taught Spring semester 1991. Both courses were rated highly by students as indicated by end-of-course evaluation scores of 4.5 to 5.0 on a scale of 1.0-5.0 on such indicators as overall course quality and overall instructor effectiveness. Unfortunately, the summer "Community College Leadership Institute" was not offered during the summer of 1991 due to a lack of funding.

ILLINOIS STATE BOARD OF EDUCATION
DEPARTMENT OF ADULT, VOCATIONAL AND TECHNICAL EDUCATION
VOCATIONAL EDUCATION PROGRAM IMPROVEMENT SECTION

PRODUCT ABSTRACT

1. Title of material: Illinois Tech Prep Planning Strategies

2. Date material was completed: Sept. 30, 1991

3. Please check those applicable: New material: X Revised material: ___
   Field-tested material: ___

4. Originating agency: Dept. of Vocational and Technical Education, Univ. of Illinois
   Address: 345 Education Building, Champaign, IL Zip Code: 61820

5. Name(s) of developer(s): Debra D. Bragg, Glenda K. Huffman, Lois Hamilton, & Deborah Hlav
   Address: 345 Education Building, Champaign, IL Zip Code: 61820

6. Developed pursuant to Contract Number: QLAC13C

7. Subject Matter (Check only one according to Dept. of Education Code):

Code			
___	01 Agricultural Education	___	10 Industrial Technology
___	03 Bus., Mrktng. & Man. Occup.	___	16 Technical Education
___	04 Distributive Education	___	17 Trade & Industrial Educ.
___	07 Health Occupations Education	___	22 Cooperative Education
___	09 Home Economics Education	___	Career Education
		X	Other (Specify) Tech Prep

8. Education Level

___	Pre-K Thru 6	___	7-8	___	9-10
___	Post-Secondary	___	Adult	X	Tchr. (Inservice)
___	Adm. (Pre Service)			X	Other (Specify) Planning handbook for Admins & Teachers & many others

9. Intended for Use By:

___	Student	___	Classroom Teacher	___	Local Administrator
___	Teacher Ed.	___	Guidance Staff	___	State Personnel
X	Other (Specify) All consortium partners				

10. Student Type:

___	Regular	___	Disadvantaged	___	Handicapped
___	Limited-English Profic.	X	Other (Specify) ATT		

11. **Medium and Format of Materials:**

_X_ HARD COPY	___ VIDEOTAPE	___ FILM	___ MICROFICHE
No. of pages 116	___ Minutes	___ Minutes	___ B & W
_Y_ Paper bound	___ B & W	___ B & W	___ Color
___ Hard bound	___ Color	___ Color	
___ Loose-leaf	___ inches	___ mm	
Photos: Yes___ No_X_		Diagrams: Yes_X_	No___
___ Slides	___ Film Strips	___ Audio	___ Other
No. of frames___	No. of frames___	___ Automatic sync.	Specify:
___ B&W	___ B & W	___ Ex	_____
___ Color	___ Color	___ Manual cue	_____
___ Audio	___ Audio	___ Reel	_____
___ Carousel provided		___ Cassette	
___ Other packaging used		___ Cartridge	

(Specify)_____

12. **Availability:** 450 copies delivered to DAVTE/ISBE. Additional copies at cost from the Curriculum Materials Clearinghouse, Western Illinois Univ.

___ One copy free For Sale @ $___ per copy ___ Not available
To be submitted In ERIC system (No._____) ____ Loan copy available
Contact: Name_____Phone ( )_____
Address_____Zip Code_____

13. **Copyright Restrictions:**

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Contact: Name_____Phone ( )_____
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14. **What level(s) of assistance is required to provide implementation of this outcome?**

_X_ awareness _X_ understanding
_Y_ deciding _Y_ implementing

15. **Are Consultive/Inservice (or staff development) available?** Yes_X_ No___
On a limited basis or at expense of local projects

Contact: Illinois State Board of Education
Department of Adult, Vocational & Technical Education
Vocational Educ. Program Improvement Section, E-426
100 North First Street
Springfield, Illinois 62777-0001
(217) 782-4620

16. **General Description (State the general objective and suggested method of use. Summarize the content and tell how it is organized. Write the description so that it can be used to promote the material. Continue on back of this sheet or on another sheet if necessary.)**

OFFICE OF COMMUNITY COLLEGE RESEARCH AND LEADERSHIP
Debra D. Bragg, Ph.D., Director

Announcing a New Handbook on Tech Prep

Illinois Tech Prep Planning Strategies

Illinois State Board of Education,
Department of Adult, Vocational and Technical Education
Written by Debra D. Bragg, Glenda K. Huffman,
Lois Hamilton, and Deborah Hlavna
University of Illinois at Urbana-Champaign

This Tech Prep planning handbook is based largely on the practical thinking and day-to-day experiences of planners of the Tech Prep initiatives begun in Illinois during the 1990-1991 school year. During that year, 17 secondary and postsecondary education partners were funded by the ISBE's Department of Adult, Vocational, and Technical Education (DAVTE) to develop Tech Prep initiatives. The primary purpose of this planning handbook is to provide Tech Prep project directors, coordinators, and other individuals involved in planning activities with ideas for starting up effective Tech Prep initiatives. This handbook provides a mix of practical and research-based information. It is intended to generate ideas, share successful practices, and encourage communication about approaches to the successful design of Tech Prep initiatives.

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How to Get a Copy

To get a copy of the handbook, contact the Materials Distribution Service at Western Illinois University, 46 Horrabin Hall, Macomb, IL, 61455, 800-322-3905. The **Handbook** will be available by December 1, 1991 at minimal cost.

Evaluation and Impact

Research & Program Improvement

The Office of Community College Research and Leadership has begun a number of research, service, and leadership activities to support postsecondary vocational-technical education in the Illinois community colleges. The three studies conducted during 1990-1991 were supported fully or in part by ISBE/DAVTE funds. All three of these studies have been well received by peer researchers and practitioners as indicated by their acceptance for publication in professional journals and paper presentation in state and national meetings, including the American Educational Research Association meetings in 1991 and 1992.

The purpose of all three studies, especially the research focusing on Illinois Tech Prep planning, was to influence the program improvement processes of local vocational-technical education programs. These studies involved experts from within and outside of Illinois in formative evaluation, especially in the production of information for local practitioners. For example, the *Illinois Tech Prep Planning Strategies* handbook was reviewed extensively during its development by ISBE/DAVTE, UIUC, ICCB, and selected Illinois community college personnel. The names of all external reviewers are listed in the section of this report on "Human Resources". Since the handbook has not yet reached local programs, follow up of its utility and effectiveness cannot be determined. However, follow-up evaluation is planned during the 1991-1992 project year.

Finally, the research agenda undertaken by the Office of Community College Research and Leadership was begun solely with support from ISBE/DAVTE in 1989-1990. Over the next year and beyond, this support has proven to be extremely beneficial in planting the seed for additional funding for research activities that promise to benefit postsecondary vocational-technical education in the state of Illinois. Through additional financial support from the Illinois Council on Vocational Education (ICoVE), Illinois Council of Public Community College Presidents (ICPCCP), and the National Center for Research in Vocational Education (NCRVE), the Office has been able to conduct a number of important research studies beyond those

discussed in this final report. These added research activities provide the opportunity to leverage ISBE/DAVTE funds for needed research in the postsecondary arena. Consequently, it seems likelythat ISBE/DAVTE has achieved much more impact with its funding of the Office of Community College Research and Leadership than was anticipated when the Office was initiated in 1989.

Dissemination & Technical Assistance

Efforts to provide technical assistance and support for postsecondary vocational-technical education programs have been met consistently. Staff have followed up on requests routinely and documented those requiring extensive effort. This requested information has been analyzed and used as input into more formal dissemination procedures, such as *Update*. Throughout 1990-1991, the circulation of *Update* has more than doubled. Copies of the newsletter and research brief are now mailed to individuals in diverse postsecondary education roles across Illinois and the US. *Update* has also acquired a few international subscribers. Over this time period, the format for *Update* has changed somewhat based on feedback from subscribers and the Office's advisory committee. In addition, article submissions to *Update* have increased dramatically requiring that the Spring 1991 issue increase to 12 pages.

Leadership Development

Throughout 1990-1991, the primary focus of the Office's activities has been on research and dissemination, especially due to the Tech Prep project added to the Office's scope of work during the period of February through September 1991. However, during 1990-91, two graduate courses were developed and taught by Dr. Bragg at UIUC entitled, "Community College Leadership" and "Applying Quality Processes in Educational Leadership". These graduate courses had enrollments of 8 and 11 students, respectively. The end-of-course evaluations for these course were very positive, ranging from 4.5 to 5.0 on a 1.0-5.0 scale on various quality indicators.

Resource Listing

Materials

Books:

Grubb, W. N. & Stern, D. (1989, June). *Separating the Wheat from the Chaff: The Role of Vocational Education in Economic Development*. Berkeley: National Center for Research in Vocational Education.

Miller, R. I. (Ed.) (1991). *Applying the Deming Method to Higher Education for More Effective Human Resource Management*. Washington, DC: The College and Personnel Association.

Software:

DOS Version 4.0
DOS Version 5.0 Upgrade
TOPS Netprint, DOS version
Pagemaker for Windows
Microsoft Excell
Microsoft Word for Windows
Microsoft Windows

Hardware:

IBM Model 55SX 80386 CPU
IBM Model 8513 VGA Monitor
Logitech Mouse
PhoneNET Connector
TOPS flashcard, Version 2.1
3.5" internal drive for IBM-compatible PC

Human Resources

Paid Participants:

Debra D. Bragg, Assistant Professor, University of Illinois at Urbana-Champaign (UIUC), Project Director
Lois Hamilton, Graduate Research Associate, UIUC, Project research assistant
Glenda K. Huffman, Research Specialist, UIUC, Coordinator of the Tech Prep planning strategies study
Deborah P. Hlavna, Graduate Research Associate, UIUC, Research assistant for the Tech Prep planning strategies study
Ron Sanderson, Dean, Lake Land Community College, Reviewer *Illinois Tech Prep Planning Strategies* handbook
Pam Block, EFE Director, Northwest Suburban Career Cooperative, Reviewer *Illinois Tech Prep Planning Strategies* handbook
Debra Hunter, Tech Prep Project Coordinator, Illinois Eastern Community Colleges, Reviewer *Illinois Tech Prep Planning Strategies* handbook

Unpaid Participants on the Advisory Committee:

Charles Baldwin, Vice President, Parkland College
Tom Boldrey, Career Occupations Programs, Eastern Illinois University
Lynn Burger, Director of Occupational and Adult Education, Illinois Community College Board
Bernard Ferreri, Associate Vice Chancellor, City Colleges of Chicago
Rita Fishbach, Associate Professor, Illinois Central College
Larry Fischer, Director Agriculture Education Center, John Wood Community College
Ivan Lach, Deputy Executive Director, Illinois Community College Board
Linda Lafferty, Contract Administrator, Vocational Education Program Improvement, ISBE/DAVTE
Richard Miguel, Assistant Superintendent, ISBE/DAVTE
Edward Osborne, Associate Professor, Agriculture Education, UIUC
Joseph Piland, President, Highland Community College
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Paul Thompson, President, William Rainey Harper College
Paul Thurston, Head, Department of Administration, Higher and Continuing Education, UIUC
Tim Wentling, Head, Department of Vocational and Technical, UIUC

Unpaid Reviewers for the *Illinois Tech Prep Planning Strategies* handbook:

Lynn Burger, Director of Occupational and Adult Education, Illinois Community College Board
Nancy Cooper, Business/Industry Training Director, Richland Community College
Mike Harmon, Research Specialist, Department of Vocational and Technical, UIUC
Sheri Kallembach, Research Associate, Department of Vocational and Technical, UIUC
Preston Morgan, Tech Prep Coordinator, Illinois Community College Board

Unpaid Contributors to the Illinois technology transfer study:

Daniel LaVista, President, College of Lake County
Herb Lyon, Chancellor, Black Hawk College
Russ Hamm, Dean, College of Lake County

Problems

Only one problem was encountered during this project and that occurred during final production of the *Illinois Tech Prep Planning Strategies* handbook. Due to the need to review and verify a final version of the handbook with ISBE/DAVTE, the date set for printing by the UIUC Printing Services Office was slipped back 6 weeks. This delay meant that the handbook had to be printed after the beginning of UIUC's fall semester, which is a very busy time. As a consequence, the handbook was not printed on the schedule originally established in the project's timeline. Unfortunately, UIUC Printing Services has been *extremely* slow, resulting in completion of the handbook in early December. To remedy this problem somewhat, a camera-ready copy was mailed to the Curriculum Materials Clearinghouse at Western Illinois University for dissemination in early November 1991.

Conclusions, Recommendations and Future Activities

During 1990-1991, the Office has experienced a great deal of growth in terms of the level of work accomplished and the numbers of individuals receiving services. The Office has been able to meet its commitments to conducting applied research, disseminating current research information, and providing leadership development for personnel of the Illinois community colleges. While the Office met its objectives during 1990-1991, and is continuing its efforts into 1991-1992, it is important to recognize that ISBE/DAVTE funding has provided the initial impetus for this effort and its continued support is vital to addressing the unmet needs of Illinois' community college vocational educators. Even with the Office, too little research and service exists for Illinois' postsecondary vocational-technical education, given enrollments in these programs.

As was revealed in the *Update* Research Brief 2, Fall 1990, little research is conducted on issues and problems of postsecondary vocational education programs, even though enormous growth in postsecondary vocational education has produced many problem areas suitable for research. Given this situation, it is believed that the Office of Community College Research and Leadership represents a very cost-effective investment by ISBE/DAVTE to assist in meeting the needs of Illinois community college vocational-technical educators. It is recommended that ISBE/DAVTE continue funding the basic elements of the Office of Community College Research and Leadership, (i.e., applied, research, dissemination, and leadership development). A basic level of support is essential in sustaining the research efforts of the Office and in ensuring that Illinois' postsecondary vocational educators are a primary beneficiary of the research, dissemination, and leadership activities of UIUC's College of Education.

Publicity

Throughout 1990-1991, three research studies conducted by the Office were reported at numerous state and national meetings, thereby giving the Office publicity with educational professionals at these levels. These conferences were sponsored by:

- the Illinois Community College Economic Development Director's Association (Fall 1990)
- the Illinois Council of Community College Administrators (Fall 1990 & 1991)
- the Illinois Council of Public Community College Presidents (December 1990)
- the American Educational Research Association (Spring 1991)
- the American Association of Community and Junior Colleges (Spring 1991)
- the National Association of Vocational Education Program Improvement (Spring 1991)
- the League for Innovation, Leadership 2000 (Summer 1991)
- the National Council on Occupational Education (Fall 1990 & Fall 1991)

In addition, two articles were published based on the Office's research work. Both of these articles appear in Appendix D. The article entitled, "The Evolving Role of Community Colleges in Technology Transfer" will be published in the *Journal of Studies in Technical Careers*, Volume XIII #2. The second article entitled, "Effective Leadership Strategies for Planning and Implementing Tech Prep" will be published by the National Center for Research in Vocational Education (NCRVE) in a conference proceedings from the 1991 NCRVE/NCOE pre-conference. This article is also being considered for publication in the *Community/Junior College Quarterly of Research and Practice*.

Appendix A: *Update* Newsletters and Research Briefs

NEWSLETTER
VOLUME 2 NUMBER 1 FALL 1990

Update

ON RESEARCH AND LEADERSHIP

Office of Community College Research and Leadership — University of Illinois at Urbana-Champaign

Tech Prep Initiative Kicks Off

"Strengthening vocational-technical education in Illinois is the goal of a new State Board of Education initiative known as Tech Prep."

Over 200 participants heard about the state's commitment to a new Tech Prep initiative from Richard Miguel, Assistant Superintendent for ISBE/DAVTE; Robert Leininger, State Superintendent of Education; and Ivan Lach, Deputy Executive Director of the Illinois Community College Board. These and other prominent educators and business leaders shared their enthusiasm for Tech Prep at a statewide conference held September 11-12 in Springfield.

Tech Prep captures the attention of educators because of its potential to improve the quality of vocational programs. Dick Miguel explains, "It is my conviction that Tech Prep can be both the impetus for and cornerstone of vocational education reform during the next five years."

"It addresses most, if not all, of the major problem areas of vocational education today. It incorporates an academic component, articulates programs to the postsecondary level, involves participation from the private sector and labor, and increases the rigor of vocational programs."

Illinois' Tech Prep initiative is designed to prepare students for advanced technical careers through rigorous academic and vocational programs. It combines a common core of learning in math, science, communications, and various technologies to bridge secondary-level students with college and work. Starting early- or mid-high school, students receive integrated academic and vocational coursework that applies to realistic work and life problems.

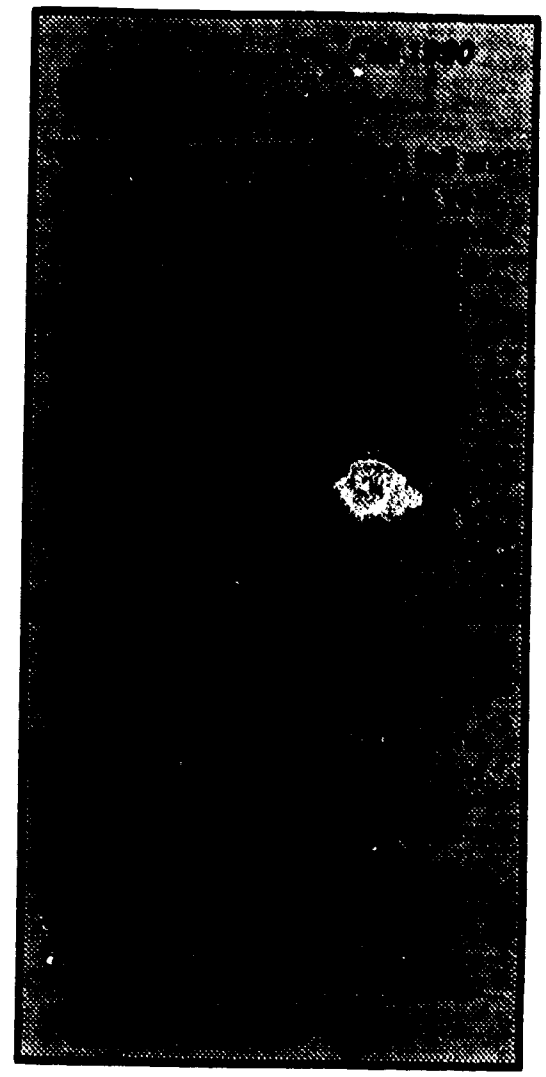
Students obtain credentials for the workplace and college by acquiring:

- Technical skills for entry-level jobs or related college programs
- Academic skills for 2-year college degree programs that may be continued at 4-year colleges or universities

Planning grants totaling more than $650,000 have been awarded to 17 sites. All planning grants must involve high schools, community colleges, and businesses and industries as equal partners.

As part of Tech Prep, the State Board is working with the Department of Commerce and Community Affairs, the Illinois Job Training Coordinating Council, and the Illinois Manufacturers Association to pilot a statewide manufacturing Tech Prep program at five Illinois sites.

The Office of Community College Research and Leadership and Department of Vocational and Technical Education are conducting state and national research projects on Tech Prep. For additional information or assistance on Tech Prep, contact Debra Bragg at (217) 333-0807.



In this Issue

Tech Prep: Another Way to Articulate

Various models are evolving that are useful in implementing secondary/postsecondary articulation. This article discusses three articulation models, including the Tech Prep (Technical Preparation) model that is generating enthusiasm because of its potential for improving education in Illinois and across the country.

The time-shortened model provides credits or advanced standing for postsecondary-level coursework before high school graduation. Typically, students complete their associate degrees in less than two years. The model does not necessarily involve changes in curricula beyond providing technical coursework earlier in students' secondary programs.

The advanced curriculum model, often referred to as 2+2, 2+2+2, etc., usually sequences 2-year blocks of courses beginning at the 9th or 11th grades and ending at the 14th or 16th grades. The model provides for easy entry and exit. Advanced curriculum models are typically well-sequenced and involve advanced technical content early in a student's high school courses.

The Tech Prep model is the most aggressive since it can be used to integrate academic and vocational-technical subject matter to produce an approach to learning that is applied, realistic and interesting to students. Like the advanced-curriculum model, Tech Prep often provides 2-year blocks of coursework to give a foundation for the next 2 years of education, sometimes culminating at a 4-year college or university.

Several research studies have focused on strategies for implementing Tech Prep and have revealed the importance of gaining cooperation from all organizations involved in Tech Prep. Findings have also pointed to the contributions of capable and committed leadership in making Tech Prep successful. Administrators should not underestimate the importance of showing commitment to Tech Prep and nurturing a team spirit from the very beginning. Collaboration is an important part of successful Tech Prep. Listed in the box below are implementation strategies found by research to be important in establishing effective Tech Prep programs.

Research Questions

Tech Prep represents a potential mechanism and opportunity for reforming education. As Tech Prep is implemented, it will be important to determine its contributions to the well-being of students as well as the entire educational enterprise. Listed below are five questions that need to be addressed as we search for benefits associated with Tech Prep.

1. What opportunities will Tech Prep provide for students representing a range of academic abilities?
2. To what extent will Tech Prep attract students who have had little previous exposure to or interest in vocational-technical education?
3. At what grade level should Tech Prep begin and end?
4. To what extent can Tech Prep become a vehicle for integration of academic and vocational curricula?
5. How well will Tech Prep deliver on its goals to prepare technically-skilled and academically-educated individuals for college and work?

Tech Prep Implementation Strategies

- o Ensure commitment and leadership from top local participants
- o Designate an individual to take responsibility for Tech Prep at all participating institutions
- o Develop and communicate a system-wide policy on Tech Prep
- o Develop an implementation plan with all participating institutions
- o Use joint task forces with representatives from all participating organizations
- o Determine student eligibility standards for admission and placement
- o From the beginning, involve key personnel, (i.e., faculty, counselors, employers) from participating institutions
- o Develop a joint curriculum review process
- o Develop guidelines for faculty and counselors to use with students and parents
- o Develop promotional strategies to attract students
- o Develop shared advisory committees across secondary and postsecondary levels
- o Plan and conduct orientation and training sessions for staff of participating organizations
- o Share facilities and equipment
- o Develop mutual annual budgets for articulation activities

Teaching Critical Thinking in Vocational Classes

By George A. Heyman and Elaine R. Daley

As the world, technology, and human relationships grow more complex, problem solving and model building skills are more important in vocational education. No longer can technical skills be taught in a vacuum; the worker of the future must do more than simply type a monthly report, fix a person's car, or set up a computer system. Rather, to remain adaptive to changing work environments and customer needs, employees must think critically to synthesize situations and execute appropriate responses. Although teaching critical thinking seems to have originated in the liberal arts disciplines, we believe it is essential to vocational education as well. This article presents three novel approaches to infusing critical thinking into accounting courses that could be adapted for other vocational courses.

Not in a Vacuum -- An Historical Approach

Knowing the history of a vocational field helps students understand the context in which work is done. A first step in teaching history is asking students to define what a professional in a particular vocational field looks like and does. Visualization techniques help students picture and describe an image of a typical person in the field. This exercise gives students a basis from which to discuss what professionals *really* do, as well as to dispel myths about them. For example, the fact that many accountants are involved with jobs in law enforcement, especially with the spread of white collar crime, generates at least a few lifted eyebrows from students. Once students have an idea of what modern accountants do, along with historical anecdotes, (e.g., the effect Venetian merchants of the 15th century had on double entry bookkeeping), they can see how the profession evolved to its present state.

Setting the Tone

Humor can help students understand the tone of interactions between the professional and others in the business environment. In accounting, the word "audit" tends to evoke trepidation and a sense of wrongdoing. After the concepts of auditing have been taught, the role of auditors and their interactions with clients can be explored. These relationships are complex, and even though auditors are supposed to remain independent (unbiased in mental attitude) from their clients, they still rely on their clients for fees. To set the stage for this discussion, the poem "T'was the Morn of the Audit" by Myron and Dawena Labell can be used. The poem, a take off on Clement Moore's "A Visit From St. Nicholas" starts students thinking about what takes place during an audit. More importantly, the poem helps students feel the atmosphere of an audit rather than just learn about the mechanics or witness an audit. This sense of feeling becomes critical when students realize that auditing is a thought process that relies on technical skills and not a precise science.

Interdisciplinary Collaborative Approaches

Teachers of vocational courses can get help from colleagues in different fields. At Oakton College, a professor of English helped to develop exercises to teach listening and questioning skills for accountants. The teacher prepared a handout about questioning in specific types of situations. Students reviewed the handout and created a scenario using a case from an accounting textbook. To illustrate the scenario, the English professor played the auditor and the accounting professor portrayed the respondent (with varying degrees of indignity, rage and embarrassment). Students explored why certain questions were inappropriate. They were very interested in seeing teachers from two different disciplines work together. Students learned that knowledge and skills from one discipline can be relevant and useful in another discipline.

Concluding Comments

There may be resistance to infusing critical thinking into the classroom. Teachers may have to develop relationships with faculty in other disciplines to help them learn different teaching techniques. Students may say they want to learn accounting, so why write, work in groups on cases or discuss history. It may seem to students that time is taken away from the course subject matter. Overall, students must be assured that they will be learning as much, if not more, with critical thinking approaches than through traditional approaches.

George A. Heyman, CPA, is a Professor of Accounting and Elaine R. Daly is an Associate Professor of Data Processing at Oakton Community College in Des Plaines, IL. Please contact them at (708) 635-1600 to obtain more information about teaching critical thinking in vocational classes.

Quality was Theme of University of Illinois Community College Leadership Institute

During the 1990 summer semester, the University of Illinois' Department of Vocational and Technical Education offered a new graduate workshop for community college leaders. Debra Bragg, Director of the Office of Community College Research and Leadership, developed and taught the course, entitled ***Community College Leadership***.

Administrators and faculty from across the state participated in the intensive 8-day graduate workshop. The course examined quality management processes used in American business and industry. Participants applied quality improvement processes, team problem solving, and participative management approaches to problems in their own educational institutions.

Teams formed to apply quality improvement processes to programs at three Illinois community colleges. The teams were successful in using an 8-step quality improvement process developed by Florida Power and Light Corp., a winner of the Malcolm Baldrige award. Two teams identified innovative ideas for improving community college programs that offer customized training to local business and industry. A third team improved strategies for orienting new part-time faculty.

8-Step Quality Improvement Process

1. Identify and describe the process or problem
2a. Identify outputs (existing conditions)
2b. Identify customers influenced by the process
3. Determine customer expectations
4. Describe the current process
5. Focus on improvement opportunities
6. Determine root causes of the problem
7. Develop, test, and implement solutions
8. Evaluate and maintain quality improvements

If you are interested in implementing quality improvement processes in your college, we would be pleased to assist you or direct you to other community college personnel who are involved in quality improvement projects. Additionally, if you are interested in applying quality in educational settings consider enrolling Spring Semester in the Dept. of Vocational-Technical Ed. course, ***Applying Quality Processes in Educational Leadership****. For details on registration, contact Debra Bragg at (217) 333-0807.*

The following article reflects the experiences and views of Brendon Foley, an institute participant, on his team's quality improvement project.

Quality Improvement Processes Applied to Customized Training

By Brendan Foley

Quality methodologies, planning for successful organizational change, and facilitating effective leadership teams were some of the major components of U of I's leadership institute for community colleges. Teams focused on programs within their workplaces that could be addressed during the course as part of quality improvement projects. This article illustrates one team's efforts to use group problem solving methods and tools to make improvements in a community college program.

The Quality Improvement Project

Team members contributed a number of potential topics for the quality improvement project and settled on the idea of assisting a community college customized training unit to meet the growing training needs of businesses in its area.

The team's contributions to improving the unit revolved around helping it to be more efficient with existing resources. The team recognized that as long as training needs of local businesses were unmet, the community college was missing opportunities for realizing such benefits as:

1. Visibility of the community college in the district
2. Partnerships between the college and businesses
3. Revenue for the unit and college
4. Maximum productivity from college employees

The team worked through the 8-step quality improvement process to develop three alternative solutions for the college's customized training unit. The solutions generally involved using strategies to get business and industry more actively involved in the community college's customized training program. Following the institute, the team shared its solutions with personnel at the community college and the process of quality improvement began.

Applying Quality Processes

All three teams participating in the institute applied an 8-step quality improvement process developed by Florida Power and Light Co. to their selected problem areas.

Briefly described below are the methods and tools used to accomplish seven steps. Step 8 requires the solutions to be implemented, so it could not be addressed during the institute.

1. Identifying/Describing the Problem. The teams developed written problem statements and rationale for improving the selected problem areas.

2. Identifying Customers and Outputs. The teams brainstormed lists of outputs and used the nominal group technique to identify key customer groups.

3. Determining Customer Expectations. Brainstorming produced the teams' perceptions about customer expectations. The teams conducted interviews with customers to validate their perceptions and expand their lists of customer expectations.

4. Describing the Current Process. The teams generated lists of suppliers and inputs. Then, the series of activities that made up the selected processes or programs were sequenced into flow charts. This step was instrumental in identifying potential problems with customer satisfaction and process efficiency, and in targeting potential performance gaps.

5. Focusing on Improvement Opportunities. Each team prioritized three improvement opportunities based on criteria such as customer need, resource availibility, feasibility of improvement, and congruence with college mission.

6. Determining Root Causes. Using cause and effect analysis, the teams brainstormed possible causes of problems by asking "why" repeatedly to get to the root of each cause.

7. Developing, Testing and Implementing. Potential solutions were identified and plans for implementing improvements were developed. Using a decision matrix tool, (i.e., a tool useful in comparing the effectiveness of alternative solutions), solutions were identified and submitted to a force-field analysis. The force-field analysis identified forces that were driving or restraining progress toward enacting solutions.

Finally, to implement the solutions, the teams developed action plans consisting of activities, responsible persons, and beginning and ending target dates.

Team Member's Reactions

Team members expressed a high degree of satisfaction with the group dynamics involved in the problem solving model. It was interesting to note how the various roles and responsibilities of team members shifted as they worked their way through the process. Both expertise in the problem areas and skills in facilitating group consensus appeared to drive ownership of leadership roles.

In response to inquiries from the course participants regarding their ability to conduct quality improvement projects, the instructor, Debra Bragg, summarized her support for participants' efforts by saying, "Trust the process. Trust the people. It works."

Brendon Foley is a Graduate Research Associate in the Department of Vocational and Technical Education and an independent consultant in Crete, Illinois.

Community College Research Studies

This section regularly features recent research, evaluation and development projects involving Illinois community colleges. We encourage you to submit an article about your college's innovative projects to *Update* by February 28, 1991.

Southern Illinois University's Project to Develop a Nurse's Aid Certification Exam

The Department of Vocational Education Studies at Southern Illinois University at Carbondate is developing a nurse aid certification exam. This special project, funded by the Education and Training Unit of the Illinois Department of Public Health, results from a change in federal medicare legislation.

While Illinois has been a leader in nurse aid training and certification since the 1970's, new federal medicare legislation requires a separate certification exam prior to employment of nurse aides. An advisory committee made up of individuals in the long-term health care industry is involved in assisting in the development and validation of the exam. Faculty in the Department of Vocational Education Studies have previously developed certification exams in areas such as industrial technology and allied health.

Once the examination has been developed and validated, the Department will enlist the assistance of Illinois community colleges in administering the state-wide test. Currently, nurse aides are often unable to find test sites convenient to their work or residences. Most Illinois community colleges offer nurse aide training, so many will be asked to be test sites for the new exam.

This project involves government, education and business and industry to serve the needs of workers and employers in the health care industry. While the exam is specific to the nurse aide field, the Department of Vocational Education Studies plans to be involved in other similar activities. New federal legislation authorizing the Carl D. Perkins Vocational Education Act, Job Training Partnership Act, and Family Welfare and Reform Legislation all speak to the need to identify performance standards for youth and adults preparing for work. Community colleges will play a pivotal role in training for and assessing the technical competencies necessary to work.

For more information about this project, contact Jacquelyn King in Vocational Education Studies, Southern Illinois University at (618) 453-3321.

Oakton College Establishes Alliance with Tooling and Manufacturing Association

Oakton College has joined with the Tooling and Manufacturing Association (TMA) to promote and provide courses for individuals in the precision metal working industry. The TMA is deeply concerned about the lack of persons entering skilled jobs in the industry, jobs which typically pay over $25,000 annually. Employers report they have many more openings than qualified applicants.

The TMA is an independent trade association of over 1,400 Chicago area special tooling, machining and contract manufacturing companies. Responding to members' demand for trained workers, the association which is located in Oakton's district, contacted the dean of the division of mathematics, humanities and technologies to develop a creative educational program.

The result is a cooperative endeavor in which the TMA recruits and registers students and provides curriculum materials. The college equipped a 12-station CAD/CAM laboratory, available for other courses as well, and hires and evaluates instructors. Students receive college credit in the courses, which is a part of Oakton's Mechanical Design curriculum.

Since the program's inception in February, 80 students have completed their CAD/CAM training. Especially selected by management for participation in the program students demonstrate a high degree of motivation. Consequently, course material is covered faster and assignments are executed in a more depth than often occurs with a traditional student population.

The Oakton - TMA alliance is an outstanding example of a community college and industry collaborating to prepare workers with essential technical skills required by manufacturers.

For more information contact Urban Thobe, Dean of Mathematics, Humanities and Technologies at Oakton, College (708) 635-1689.

University of Illinois' Sophisticated Technologies Project Moves Into Final Phases

A three year University of Illinois research project on sophisticated technology, the workforce, and vocational education has moved into its final phase of study. Previously the study assessed the affect of sophisticated technologies on the workforce and analyzed related educational programs at the state community colleges. The project now has two goals: the development of an inservice handbook for part-time community college faculty and a study of the impact of Illinois State Board of Education's Quality Assistance Plan (QAP) at selected community colleges.

Provisions for part-time faculty inservice training has long been seen as an area for improvement in the community college system. For a number of reasons, providing effective pedagogical training to these instructors has been a difficult task. The Sophisticated Technologies project staff is currently working to identify specific inservice needs of part-time instructors in the occupational/career areas, and develop an effective written mechanism for presenting appropriate training. Data is being gathered through interviews with career deans and full-time and part-time instructors at several community colleges throughout Illinois.

The project staff will also be visiting selected community colleges to observe their progress in integrating academic and vocational instruction in occupational/career programs. The on-site visits required for this phase of the assessment will be made early next year. Both phases of the project will be completed by June 20, 1991.

For more information, please contact Scott D. Johnson or Mike Harmon at the University of Illinois at (217) 333-0807.

Call for Articles

We welcome articles for the spring issue of *Update* in any of the following areas:

- research & evaluation studies
- exemplary occupational programs
- new and innovative ideas
- leadership and staff development
- workshops, conferences, courses & seminars

The deadline for submitting articles for spring is February 28, 1991.

Lincoln Land College's Program for Improving Teaching Effectiveness of Part-Time Off-Campus Instructors

In the spring of 1986, Lincoln Land Community College formally initiated a program designed to provide professional teaching support for over 150 part-time instructors teaching at 31 off-campus sites. Full-time and part-time faculty convinced college administration that a carefully-planned, timely-executed support program was needed.

Faculty at Lincoln Land were eager to participate in the program. The plan called for the training of 14 Lincoln Land Community College master teachers to function as evaluators for part-time off-campus instructors. All faculty could apply to be a "master teacher". Those selected received a handbook of evaluation instruments and participated in an active training workshop.

As part-time off-campus instructors enter into teaching at the college, they are given an orientation to allow them to ask questions about the evaluation process and a packet of information explaining the various aspects of the evaluation program. They are also provided the opportunity to meet with their evaluator prior to scheduling a classroom observation.

During the academic year, each part-time off-campus instructor is visited by an evaluator who observes teaching behaviors with a valid and reliable instrument. A summary of the instructor's teaching strengths and weaknesses is prepared by the evaluator. Following the observation, the evaluator confers with the part-time instructor in the spirit of a helping relationship. In a dialogue between the two, a plan for teaching improvement is constructed.

The program has been assessed regularly to determine its effectiveness at improving teaching performance of part-time off-campus instructors. Program evaluation results are also used to prioritize topics for part-time off-campus professional development programs.

In the fall of 1989, the support program was extended to the evaluation and mentoring of adjunct faculty on campus. The college felt that observation of adjunct faculty by trained evaluators and mentors within the academic discipline would add another dimension of teaching excellence to the college's programs.

For more information about Lincoln Land's support programs for part-time off-campus and adjunct faculty, please contact Patricia Eggers, Dean of Transfer and Part-Time Instruction at (217) 786-2200.

Subscription/Address Change

To obtain a FREE copy of *Update* or change your address, mail this completed form to the Office of Community College Research and Leadership, Room 344 Education Building, 1310 South Sixth Street, Champaign, IL 61820.

Name:_____

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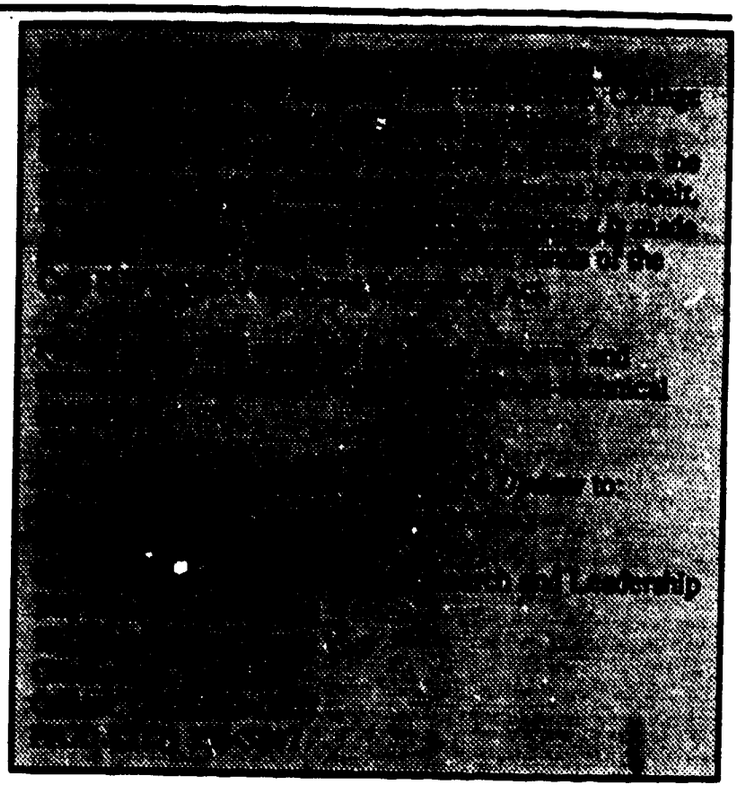

We wish to acknowledge the contributions of Lois Hamilton, Grad. Research Assoc. for the Office of Community College Research and Leadership, to the preparation of this newsletter. Lois is pursuing a doctorate in vocational-technical education at the U of I while on sabbatical leave from Illinois Central College where she is an Associate Professor in the Clinical Health Dept.

Update
Office of Community College
Research and Leadership
Department of Vocational and
Technical Education
University of Illinois
Room 344 Education Building
1310 South Sixth Street
Champaign, IL 61820

RESEARCH BRIEF 2 FALL 1990

Update

ON RESEARCH AND LEADERSHIP

Office of Community College Research and Leadership University of Illinois at Urbana-Champaign

Turning Issues into Opportunities: 1990 Vocational-Technical Education Survey Results

by Debra D. Bragg and Deborah P. Hlavna

"No wise fish would go anywhere without a porpoise... Why, if a fish came to me, and told me he was going on a journey, I should say 'With what porpoise?'"

from Alice in Wonderland

Issues are inevitable. They evolve from the complex, diverse and rapidly changing world in which we live. The most important challenge we face as educators in the 1990s involves resolving issues in ways that result in higher quality educational programs. How do we accomplish that in light of growing student expectations and financial cutbacks? We base our actions on strategic and meaningful goals. We develop a vision for educational excellence within our programs and colleges that helps us prioritize and finalize decisions. Leaders of the 1990s must enthusiastically engage in the process of turning issues into opportunities. They must make the right decisions and mobilize resources to produce significant outcomes for students.

This research brief shares findings from a statewide research project involving Illinois community college educators in determining issues in postsecondary vocational-technical education. The Office of Community College Research and Leadership conducted the study during 1989-90 to prioritize the key concerns facing Illinois community college vocational-technical education. The findings provide information for leadership development and program improvement, and guide the development of a research agenda for the Office of Community College Research and Leadership and other researchers in Illinois.

The Need to Focus on Postsecondary Vocational Education

Growth in postsecondary vocational-technical education over the past 25 years has been enormous, particularly in the nation's community colleges. While postsecondary enrollments have blossomed, demonstrating the increasingly important role of vocational education beyond high school, most research in the vocational education field has continued to focus on the secondary level. Our Office recently completed a review of the major vocational education research journals published from 1987 to 1990 and found very few studies focusing on postsecondary vocational-technical education. Similarly, our review of major community college research journals identified few studies targeting vocational-technical education.

The apparent void in research addressing important issues in postsecondary vocational-technical education is problematic. Policy makers, educational researchers, teacher educators, and others need a better understanding of concerns facing community college vocational-technical education. Better information is needed to build a knowledge base for improved decision making, policy analysis, and program development in community college vocational-technical education.

Study Design

This study was designed to obtain information from individuals directly involved in administering and/or delivering vocational-technical education in Illinois' community colleges. Our primary goal was to listen and learn about the issues from those most directly involved in the business of postsecondary vocational-technical education.

The study was conducted over a period of 12 months through various data collection activities, including the following:

- o Reviews of recent applicable periodicals and research journals
- o Meetings with an advisory group of community college presidents, deans, and state agency/board staff
- o Visits to 15 Illinois community colleges to interview administrators and faculty
- o A focus group interview session with 6 community college career deans

Based on data collected during these initial research activities, we organized an extensive list of issues surrounding vocational-technical education in Illinois' community colleges. Then, using the list of issues as a starting point, we designed and pilot tested a mail survey and identified a sample of key stakeholder groups to respond to the survey to help clarify and prioritize the issues.

Survey Respondents

The survey was mailed to a total of 469 individuals throughout Illinois. After a postcard follow-up, a 50% response rate was obtained. Some of groups that participated were:

- o Community college presidents
- o Community college career deans
- o Community college transfer deans
- o Community college faculty
- o Community college economic development directors
- o Education for Employment (EFE) directors

The response rate varied for the respondent groups, ranging from 65% for community college career deans to 21% for community college presidents.

Survey Findings

The initial analysis of survey data revealed a high degree of agreement amongst the various respondent groups about the important issues in postsecondary vocational-technical education. All but one of the respondent groups identified in the list above, EFE directors, perceived the area of *delivering high quality vocational-technical education programs* as being in greatest need of improvement. To determine the specific nature of the concerns related to each of these categories, the respondents provided additional rankings and narrative information about issues.

Major Issue Categories Ranked from Most (1) to Least (6) Important

1. Delivering high quality community college vocational-technical education programs
2. Administering (planning, evaluating, funding, etc.) community college vocational-technical education
3. Meeting the needs of all student populations through appropriate recruitment, retention, support, and job placement services
4. Implementing articulation programs amongst high schools, community colleges, and universities
5. Delivering effective economic development programs for local business/industry, (e.g., customized training, consulting services, technology transfer)
6. Developing current and future faculty and administrators for community college vocational-technical programs

High Priority Issues

The six major categories of issues were broken down into a total of 32 sub-issues, henceforth referred to as issues. Respondents indicated the level of priority they would give to resolving each issue based on the needs of the community college vocational-technical education programs with which they were most familiar. Respondents gave each issue a priority ranking from 1 to 5, with 1 representing the lowest and 5 the highest priority. Ten issues are shown below and ordered from highest to lowest priority based on group means.

Top Ten Issues

1. Keeping programs current with business/industry (4.7)
2. Maintaining and updating facilities and equipment, especially in advanced and sophisticated technology areas (4.6)
3. Responding to business/industry needs with effective economic development programs, (e.g. customized training, technology transfer) (4.4)
3. Conducting valid needs assessments to initiate new programs or update existing programs (4.4)
5. Identifying new and emerging occupational areas (4.3)
6. Gaining cooperation and involvement from key high school, community college, university, and business/industry personnel for articulation (4.2)
6. Improving student retention and completion rates (4.2)
8. Maintaining enrollments in existing programs (4.1)
8. Improving the quality of programs (4.1)
10. Educating business/industry on the value of vocational-technical programs and graduates (4.0)

There was a high level of agreement amongst the respondent groups about the level of priority attributed to the top 10 issues. Without exception, the respondent groups were concerned about maintaining up-to-date vocational-technical education programs that are responsive to business/industry needs. The vast majority of the respondents also emphasized the importance of finding better ways to deliver quality programs through improved needs assessment, articulation, economic development, and student retention processes.

Low Priority Issues

All but 1 of the 32 issues presented in the survey were ranked by a majority of the respondent groups as of moderate to high priority, as evidenced by a mean score of between 3.0 and 5.0. The issue that was given a lower priority ranking was *developing more highly coordinated planning and reporting processes amongst EFE regions, DAVTE, ICCB, JTPA and others.* Three groups, (i.e., presidents (2.6), faculty (2.7), and economic development directors (2.8)) indicated this issue was of lower priority for them. Whereas the other three groups, (i.e., career deans (3.5), transfer deans (3.6), and EFE directors (3.6)) gave the issue a moderate ranking, it remained relatively low for these groups as well.

Presidents' Issues

- o Responding to business/industry needs with effective ec. development (4.9)
- o Keeping programs current with business/industry (4.6)
- o Improving the quality of programs (4.6)
- o Identifying new and emerging occupational areas (4.5)
- o Gaining cooperation and involvement for articulation programs (4.5)

Career Deans' Issues

- o Keeping programs current with business/industry (4.8)
- o Maintaining and updating facilities and equipment (4.8)
- o Maintaining enrollments in existing programs (4.5)
- o Gaining cooperation and involvement for articulation programs (4.4)
- o Improving student retention and completion rates (4.3)
- o Responding to business/industry needs with effective ec. development (4.3)

Transfer Deans' Issues

- o Keeping programs current with business/industry (4.8)
- o Responding to business/industry needs with effective ec. development (4.6)
- o Maintaining and updating facilities and equipment (4.5)
- o Conducting valid needs assessment to initiate or update programs (4.5)
- o Identifying new and emerging occupational areas (4.4)

Faculty Issues

- o Keeping programs current with business/industry (4.6)
- o Maintaining and updating facilities and equipment (4.5)
- o Improving student retention and completion rates (4.3)
- o Identifying new and emerging occupational areas (4.2)
- o Improving the quality of programs (4.2)

Economic Development Directors' Issues

- o Responding to business/industry needs with effective ec. development (4.9)
- o Keeping programs current with business/industry (4.7)
- o Maintaining and updating facilities and equipment (4.4)
- o Identifying new and emerging occupational areas (4.3)
- o Conducting valid needs assessment to initiate or update programs (4.3)

EFE Directors' Issues

- o Keeping programs current with business/industry (4.8)
- o Maintaining and updating facilities and equipment (4.7)
- o Gaining cooperation and involvement for articulation programs (4.6)
- o Educating business/industry on the value of vocational-technical programs and their graduates (4.3)
- o Improving job placement rates (4.2)

Summary Comments

How can we best handle issues? We must have a meaningful vision of quality education to guide our search for solutions. Once decisions are made about where to place priorities, issues can be addressed through changes in statewide educational policies and administrative practices, through innovations in local programs and practices, or through new research and program improvement efforts. It is through a continuous process of program improvement that issues are transformed into opportunities.

The Office of Community College Research and Leadership aims to use the survey findings to assist in projects to improve community college vocational-technical education. The study has identified a number of important areas where improvements can be made. The challenge for educational leaders is in finding innovative solutions that result in improved outcomes for students.

The Authors

Debra D. Bragg is a Visiting Assistant Professor and Director of the Office of Community College Research and Leadership in the College of Education, Department of Vocational and Technical Education, University of Illinois at Urbana-Champaign.

Deborah P. Hlavna is a Graduate Research Assistant for the Office of Community College Research and Leadership. She is currently pursuing doctoral studies in the Department of Vocational and Technical Education at the University of Illinois at Urbana-Champaign.

This *Update* Research Brief was prepared pursuant to a grant from the Illinois State Board of Education/Department of Adult, Vocational and Technical Education. Funding was made possible through program improvement funds of the Carl D. Perkins Vocational Education Act. Forthcoming issues will examine the latest research pertinent to Illinois community college vocational-technical education.

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Update

ON RESEARCH AND LEADERSHIP

Office of Community College Research and Leadership — University of Illinois at Urbana-Champaign

Quality Management

Is It An Education Issue? Or Is It Only a Business Issue?

By Mary K. Patino,
College of DuPage

> *"As the economy grows more complex and more dependent on human capital, the standards set by the American education system must be raised."* William B. Johnston, Workforce 2000 (1989).

Is it possible for educational strategies to be developed that will provide customer satisfaction... roughly translated to student success in the workplace and in life?

Can we assess how good we are no matter where or what we do in the educational system? Do we have benchmarks to forecast where we want to be as well as to determine exactly where we are?

Do we focus on product or program (course) excellence rather than improvement in process excellence (learning)?

In September of 1989, I was fortunate to attend Motorola's Malcolm Baldrige Award Briefing held at the Motorola Training and Education Center. Primarily held for suppliers to the company, a few open slots are given to the public for the purpose of information sharing.

Since that time I have collected materials and information on quality management as it relates to the varied manufacturing and service industries that we [the College of DuPage] serve in District 502. A more difficult challenge has been to make application for my division as a supplier to Motorola of a consultative and training service from an institution of higher education.

In a related activity, I was part of British/American educator exchange through the Illinois Consortium for International Studies (ICIS). I was surprised to learn that the British were measuring the quality of their educational system with British National Standards very closely matched to the International Standard Organization. These standards for products and services are being adopted by the European Community for 1992.

The National Center on Education and the Economy suggested five steps that could move our society toward a successful skill development process for citizens.

1. A national educational performance standard
2. Universal mastery of basic skills secured by a certificate
3. A nationally-agreed-to system of technician certification and professional education
4. Incentives to employers to engage in reorganization and training
5. A system of coordination, from local, state, and regional to the national level

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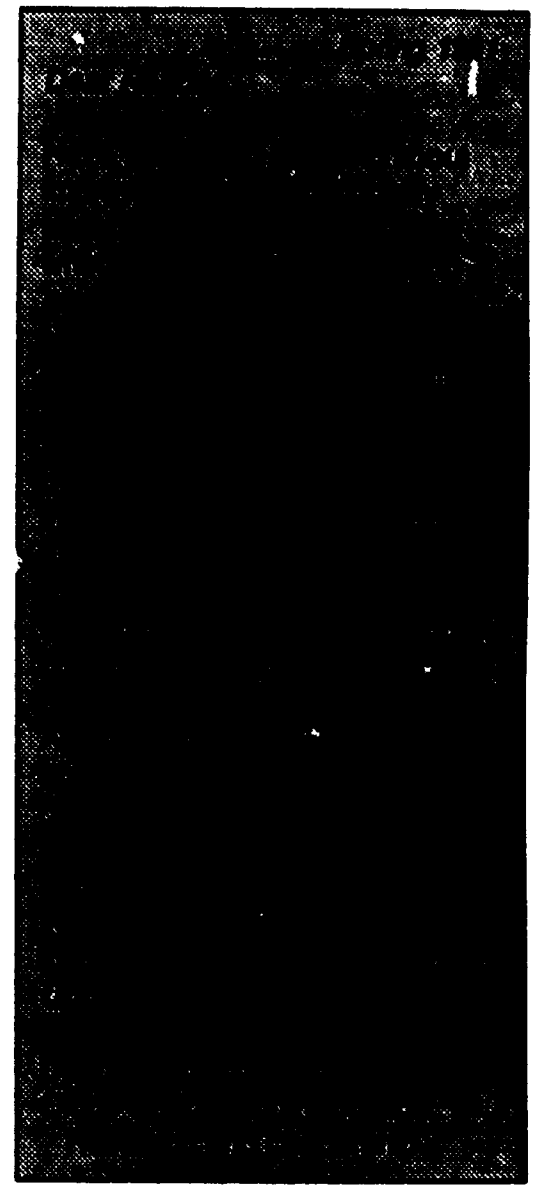

In this Issue

Quality Management

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The educational system has come under attack for an underprepared workforce, for not preparing students how to learn or think, and for graduating students from high school and college who cannot read current technical manuals in the workplace.

If U.S. productivity has crawled to a halt in the last few years as claimed, then our country will not be able to survive in this global economy with an inadequately prepared workforce. The challenge has then become to apply quality standards and processes for educational excellence in training and the classroom. A bigger challenge remains to stimulate educational debate to ensure long term dynamism and stability for quality efforts within the system.

Challenges and Problems: Motorola's Six Sigma Challenge

Motorola has accepted six sigma as the five year goal to approach the Standard of Zero Defects and be best-in-class in everything it does. The performance of a product is determined by how much margin exists between the design requirements of its characteristics (and those of its parts/steps) and the actual value of those characteristics.

The characteristics are produced by processes in the factory and by suppliers. Each process attempts to reproduce its characteristics identically from unit to unit, but within each process some variation occurs. For some processes, such as those that use real time feedback to control the outcome, the variation is quite small, and for others it may be quite large.

Variation of a process is measured in standard deviations (sigma) from the mean. The normal variation, defined as process width, is + or - 3 sigma about the mean. For example, when Motorola builds a product containing 1,200 parts/steps, it can expect 3.24 defects per unit (1200 x 0.0027), on an average. This would result in a rolled yield of less than 4%, which means fewer than 4 units out of every 100 would go through the entire manufacturing process without a defect.

Thus, one can see that for a product to be built virtually defect-free, it must be designed to accept characteristics that are significantly more than + or - 3 sigma away from the mean. It can be shown that a design that can accept twice the normal variation, or + or - 6 sigma, can be expected to have no more than 3.4 parts per million defective for each characteristic. In the same case of a product containing 1,200 parts/steps, we would now expect only 0.0041 defects per unit. This would mean that 996 units out of 1000 would go through the entire manufacturing process without a defect.

Can we say that 996 of 1000 of our students have received the knowledge and applied skills necessary for success in employment or continued education?

Can each of us, as instructors, be a catalyst for change as a quality assurance manager for our class and our service? Can we accept individual responsibility for installing our own quality system that will stand up to outside review reports or audits?

Are collaborative relationships in place within all levels of the educational system? Do we feel the sense of urgency that we must establish standards or are we so paralyzed by not wanting to 'limit' anyone that we hesitate to establish quantitative goals or expectations?

Steps to Six Sigma In a Non-Manufacturing Environment

The six steps to sigma in the non-manufacturing environment are to:

1. Identify the product you create or the service you provide
2. Identify the customers for your products or service and determine what they consider important
3. Identify your needs to provide the product/service so that it satisfies the customer
4. Define the process for doing the work
5. "Mistake proof" the process and eliminate wasted effort
6. Ensure continuous improvement by measuring, analyzing, and controlling the improved process

The Ultimate Challenge: Total Quality Management in Educational Systems

When you consider quality in any environment, but especially in education, product and process must be a joint design. The curriculum and instructional process must be designed with the student's learning in mind. The defects per unit of work will be directly proportional to the complexity of the process and completely proportional to the opportunities to lower the margin of error.

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Waubonsee *"Interactions '90"* Program Showcased at AACJC Convention

A Waubonsee Community College program was selected for special recognition at the American Association of Community and Junior Colleges conference. *Interconnections '90: A Collaborative Effort Among Public and Private Education, Higher Education and Business and Industry* was presented on April 15 in Kansas City, MO.

Interconnections '90 is a cooperative effort to ensure that Waubonsee College District communities have a method to train and educate their workforce to meet the needs of employers in the future. It is an inter-institutional partnership with area public and private schools, local businesses and industries located along I-88, the Illinois Research and Development Corridor, the Valley Industrial Association, the Corridor Partnership for Excellence in Education, and the College.

This innovative program prepares students for postsecondary or industrial training programs leading to employment in specific occupations. It involves area teachers, administrators, counselors, and business persons in designing curriculum to address training needs, and blends problem-solving skills garnered from computer technology to robotics, engineering to technical writing, into classroom applications.

Other components of the partnership include:

1. Establishing a Principles of Technology curriculum, offered at the high school level in a corporate facility, with corporate staff serving as mentors

2. Providing opportunities for public school teachers and community college instructors to interact with the corporate world so that business and industry needs are integrated into curricula

3. Encouraging partnerships among groups in the local communities to evaluate training needs and make adjustments in course work to better meet needs

4. Enhancing community college recruitment efforts to encourage new students to enroll in tech prep, 2+2+2 and technology-related programs to ensure a trained workforce for the future

Jacqueline Henning, Waubonsee Community College (WCC) Board of Trustees Chair, presented the *Interconnections '90* workshop along with John Swalec, WCC President and Kenneth Allen, WCC Assistant Vice President for Research and Community Programs.

Additional information can be obtained by contacting the Office of Public Relations, Waubonsee Community College, Sugar Grove, IL, (708) 466-4811.

The Office of Community College Research and Leadership Advisory Committee

Special thanks is extended to the Office of Community College Research and Leadership advisory committee for providing wisdom and support for the past two years. The committee members are:

Charles Baldwin, Director of Career Programs, Parkland College
Tom Boldrey, Career Occupations Programs, Eastern Illinois University
Lynn Burger, Director of Occupational and Adult Education, Illinois Community College Board
Bernard Ferreri, Associate Vice Chancellor, City Colleges of Chicago
Larry Fischer, Director Agriculture Education Center, John Wood Community College
Rita Fischbach, Professor, Illinois Central College
Ivan Lach, Deputy Executive Director, Illinois Community College Board
Linda Lafferty, Contract Administrator, Vocational Education Program Improvement, ISBE/DAVTE
Richard Miguel, Assistant Superintendent, ISBE/DAVTE
Edward Osborne, Associate Professor, Agriculture Education, University of Illinois
Joseph Piland, President, Highland Community College
Ron Sanderson, Dean, Vocational-Technical Education, Lake Land College
Paul Thompson, President, William Rainey Harper College
Paul Thurston, Head, Department of Administration, Higher and Continuing Education, University of Illinois
Tim Wentling, Head, Department of Vocational and Technical Education, University of Illinois

Two New Handbooks Address Teaching Effectiveness

Teaching Skills Handbook for Part Time Faculty Nearing Completion

by Mike Harmon, University of Illinois

Working under a grant to study the impact of sophisticated technologies on the workforce and education, University of Illinois researchers have completed the draft version of a teaching skills handbook for Illinois' part time community college occupational and career program instructors. The handbook is entitled ***Teaching Techniques for Part Time Community College Instructors***.

A related study, designed to evaluate the impact of vocational-academic integration activities carried out by selected community colleges under the state's Quality Assistance Plan (QAP), is currently underway. Both studies are being funded by the Illinois State Board of Education/Department of Adult, Vocational and Technical Education (ISBE/DAVTE).

In collecting data for the handbook, researchers first interviewed administrators and full time and part time instructors at eight community colleges throughout the state. These interviews sought to identify what members of each group believed were the pedagogical strengths and weaknesses of part time faculty. Classroom observations were then used to verify these perceptions and identify additional instructional characteristics.

The teaching skills handbook was designed and written to reinforce the teaching strengths that were identified through the interviews and observations, and to suggest strategies for improving common weaknesses. The strategies provided in the book are based on both recent educational research and the practical solutions suggested by interviewees.

The major themes of the handbook include:

- o The changing nature of work and training
- o Learning differences
- o Teaching basics
- o Teaching cognitive skills
- o Planning for instruction
- o Presenting lessons
- o Classroom management
- o Evaluating learning
- o Evaluating instruction
- o Working with special students

The handbook is currently being reviewed by community college personnel. General distribution of the handbook, including bound copies and unbound copies that may be reproduced, is scheduled for June 20, 1991.

For more information, contact Scott D. Johnson or Mike Harmon at the University of Illinois, Champaign, IL, (217) 333-0807.

Preparing for Teaching Effectiveness: An Orientation Program for New Faculty

By Patricia O. Eggers, Lincoln Land Community College

As an outgrowth of our adjunct faculty support program, Lincoln Land Community College (LLCC) changed the focus of the orientation program for new faculty to include support and information to help instructors new to the college to prepare for teaching effectively. A handbook was developed entitled, ***Preparing for Teaching Effectiveness***, and mentors were assigned to each new instructor.

The handbook provides the new instructor information on such topics as:

- o First teaching experiences
- o The first class meeting
- o Guidelines for teaching effectiveness
- o Creating a climate for learning
- o Effective teaching strategies
- o Constructing an effective syllabus

Formative evaluation instruments are also displayed to let teachers know up front how they will be evaluated.

Each new instructor is matched with a mentor who observes and confers with the instructor early in the first teaching term. The mentor stays in telephone contact with the instructor to answer questions and provide continuing support.

For additional information, contact Patricia O. Eggers, Lincoln Land Community College, Springfield, IL, (217) 786-2200.

R & D Projects Focus on Tech Prep & Articulation

Tech Prep Planning Handbook Being Developed at the University of Illinois

Currently, the Office of Community College Research and Leadership is involved in the development of a ***Tech Prep Planning Handbook*** for the new Tech Prep planning projects that will be awarded by ISBE July 1. This project, also funded by ISBE/DAVTE, is designed to create a handbook to assist community college and school administrators in planning and implementing new Tech Prep projects.

Information in the ***Tech Prep Planning Handbook*** reflects the experiences, recommendations, and success stories of individuals involved in the current Tech Prep planning projects. To date, seven of the current Tech Prep project sites have been visited to collect data. Additional data will be collected through mail surveys and visits to several other Tech Prep planning sites.

Sections of the handbook will cover:

- o Assessing the need for Tech Prep
- o Gaining commitment and support
- o Involving key groups
- o Planning the articulation components
- o Planning and initiating inservice
- o Developing Tech Prep curriculum
- o Designing the guidance & counseling components
- o Developing marketing and public relations tools

In a related project, the National Center for Research in Vocational Education (NCRVE) at the University of California at Berkeley has awarded the University of Illinois a contract to examine factors influencing Tech Prep planning and implementation. This two-year project began January 1, 1991 and is designed to examine the planning and implementation phases of federally-funded Tech-Prep initiatives. Eventually, the project will assess the impact of Tech Prep on secondary and postsecondary education programs.

The focus of the 1991 phase of the project is to (1) describe the ways state and local educational agencies, colleges, and schools plan and implement Tech Prep and (2) identify factors that influence the effectiveness of Tech-Prep planning and implementation.

Two reports will be prepared in 1992. A state administrator's guide to Tech Prep planning and implementation will be completed in August and a final technical report about the project's methods and findings will be completed in December.

For more details contact Debra Bragg at the University of Illinois, Champaign, IL, (217) 333-0807.

LPN to ADN: Can Licensed Practical Nurses Successfully Articulate into Associate Degree Nursing Programs?

Nursing programs that prepare licensed practical nurses (LPNs), and two-, three-, and four-year registered nurses (RNs) have not articulated well. Movement from one level to another has been difficult, if not impossible, without repeating the entire nursing program at the next level (Bullough, 1972).

An articulated LPN-RN career mobilty program has been in place for 5 years at Carl Sandburg College (CSC). A study was conducted to determine if CSC Practical Nursing (PN) graduates and LPNs (from any program) who integrated into the second year of the CSC Associate Degree Nursing (ADN) program performed as well as CSC generic ADN students in the second year of the ADN program.

Results of the study demonstrated that PNs and LPNs performed almost as well on nursing grade point average (GPA) and National League for Nursing (NLN) tests, and better on the National Council Licensure Examination for Registered Nurses (NCLEX) than generic ADN graduates. Generic ADN graduates had a mean GPA of 2.96 and all articulating PN and LPN graduates had a mean GPA of 2.74 on second year nursing courses. Hypothesis testing showed a significant difference between the two groups on GPA and no significant difference on NLN-test scores and NCLEX test scores. Eighty-two generic ADN graduates and seventy-seven LPN graduates participated in the study.

For further information about this research, contact either Betty Phelps or Alice Enderlin at Carl Sandburg College, Galesburg, IL, (309) 344-2518, ext. 253 or 292.

Community College Research Studies

This section regularly features recent research, evaluation and development projects involving Illinois community colleges. We encourage you to submit an article about your college's innovative projects to *Update* by September 1, 1991.

ICoVE Completes Three Studies on Timely Issues

by Peter Johnson, Illinois Council on Vocational Education (ICoVE)

The Illinois Council on Vocational Education (ICoVE) completed three studies in early 1991. The studies addressed the educational needs of business and labor and building partnerships with education, apprenticeships, and correctional education. Copies of each will be made available in late spring through the ICoVE office in Springfield.

The study related to business and labor entitled ***Building Public-Private Partnerships to Improve Vocational Education in Illinois*** addressed two issues:

1. What goals should the private sector and educators pursue in an effort to improve vocational education in Illinois?

2. What strategies should be used in building public-private partnerships to improve vocational education?

The results and recommendations are based on 1,120 responses from business and 26 labor organizations in Illinois.

The publication entitled ***Apprenticeship Programs in Illinois: Opportunities for Expansion and Improved Coordination with Vocational Education*** was designed to analyze opportunities in traditional building trades apprenticeship programs and statewide expansion in other apprenticeable occupations in Illinois. It addresses topics related to selection criteria for occupations, recommended occupational targets, industry-based career systems, types of apprenticeship-vocational education linkages, and major foundations for effective apprenticeship--vocational education linkages.

The study entitled ***Correctional Education: A Way to Stay Out*** addressed correctional education, its effect on recidivism, and the cost of crime in the State of Illinois. The publication is the result of information gained by the ICoVE Corrections Committee through public hearings, interviews with inmates in Illinois Correctional Institutions, and national meetings and workshops. The publication addresses topics related to education and its effect on recidivism, a need for a statewide long range plan for correctional education, rewards for educational achievement, a need for requiring inmates to have job skills before release, and transition programs for those leaving the prisons of Illinois.

In addition to the publications mentioned, ICoVE will again publish its biennial report on the status of vocational education in Illinois and ICoVE's recommendations as a result of the public-private partnerships study.

For more information about these publications, contact Peter Johnson, ICoVE, Springfield, IL, (217) 782-2891.

Minority Participation Examined by Chicago Colleges

By Clifford Fields, Dawson Technical Institute

The Illinois State Board of Education has awarded a grant to Chicago City-wide College and Dawson Technical Institute to develop a model to improve the quality and quantity of minority student participation in vocational-technical education programs. The project will develop strategies to promote and encourage minority student participation in high quality vocational-technical education programs.

The goal of the model will be to design strategies that will increase minority awareness and participation in vocational-technical programs. The target audience of the project is minority high school freshmen.

For additional information, contact Clifford Fields, Vice President, Voc/Tech Education Programs, Dawson Technical Institute, Chicago, IL.

Academic Participation and Achievement Studied at John A. Logan College

by Tom Davenport, John A. Logan College

The current emphasis on integration of non-vocational courses into vocational programs encouraged John A. Logan College to assess the level of academic participation and achievement of students in vocational programs. Since community college programs require completion of non-vocational courses to graduate, the question was, "How many vocational students take only vocational courses and don't enroll in required non-vocational courses?" The College was interested in this information by major.

Data were compiled as of spring semester 1990 from transcript records since students' initial enrollment in the College. The College's UNISYS system was utilized to obtain data for individual students on courses completed and grades received. These data were transferred to a matrix for each major, indicating required courses taken and specific grades received.

For example, the criminal justice program, which requires general psychology, American government, sociology, technical writing, and English composition or communications, was examined to determine how many of the 148 students majoring in criminal justice had enrolled and completed these courses.

The study revealed that a high level of academic participation occurred by students enrolled in vocational programs. The results for all vocational programs combined showed that 70% of vocational students participated in required non-vocational courses. Only part-time evening programs showed low participation rates and this may be attributed to evening students taking longer to complete programs and, thus, not having had enough time to enroll in non-vocational courses at the time of the study.

The results indicate that integration of academic and vocational education is occurring at John A. Logan College. Further, upon random examination, there appeared little difference between the success, as measured by grades, of vocational and non-vocational students in academic courses. While further research is needed, these initial data provide a basis for future targeted integration activities.

For more information, contact Tom Davenport, John A. Logan College, Carterville, IL, (618) 985-3741.

University of Illinois Studies Vocational/Academic Integration

by Chris Roegge, University of Illinois

A project at the University of Illinois is focusing on describing methods of establishing and implementing programs that integrate academic and vocational instruction. Integration of vocational and academic content, skills, and instruction is receiving considerable national attention. This ISBE/DAVTE-funded project differs from many other research in that it focuses on locally-developed programs.

The project will identify and study integrated programs and/or courses that are not the direct result of any state or national initiative, but are locally conceived, planned, and implemented. The rationale being twofold: (1) externally-initiated programs or activities may be unduly constraining; (2) many local innovations, though worthy of emulation, go unshared and unnoticed beyond the boundaries of the school where they are developed. By studying integrated efforts, the project aspires to develop guidelines for training instructors.

The first major task of the project was to find local integration efforts that fit an operational definition of the integration concept. For the purpose of this project, integrated programs were defined as any programs in which "*collaboration between academic and vocational teachers is taking place for the purpose of integrating vocational and academic content to improve instruction.*"

Nine sites -- four community colleges and five secondary schools -- were selected for in-depth study. Each site was visited by a project staff member where interviews were conducted with vocational and academic teachers involved in the integrated activities and with administrators. Classroom observations were conducted to better understand integrated instruction.

Data are being summarized and analyzed at this time. The product of this activity will be a guidebook of strategies and recommendations for planning and implementing integrated programs. The guidebook will be useful for planning and conducting preservice or inservice teacher education courses and as a reference for individual program planning activities. The project is scheduled for completion by June 30, 1991.

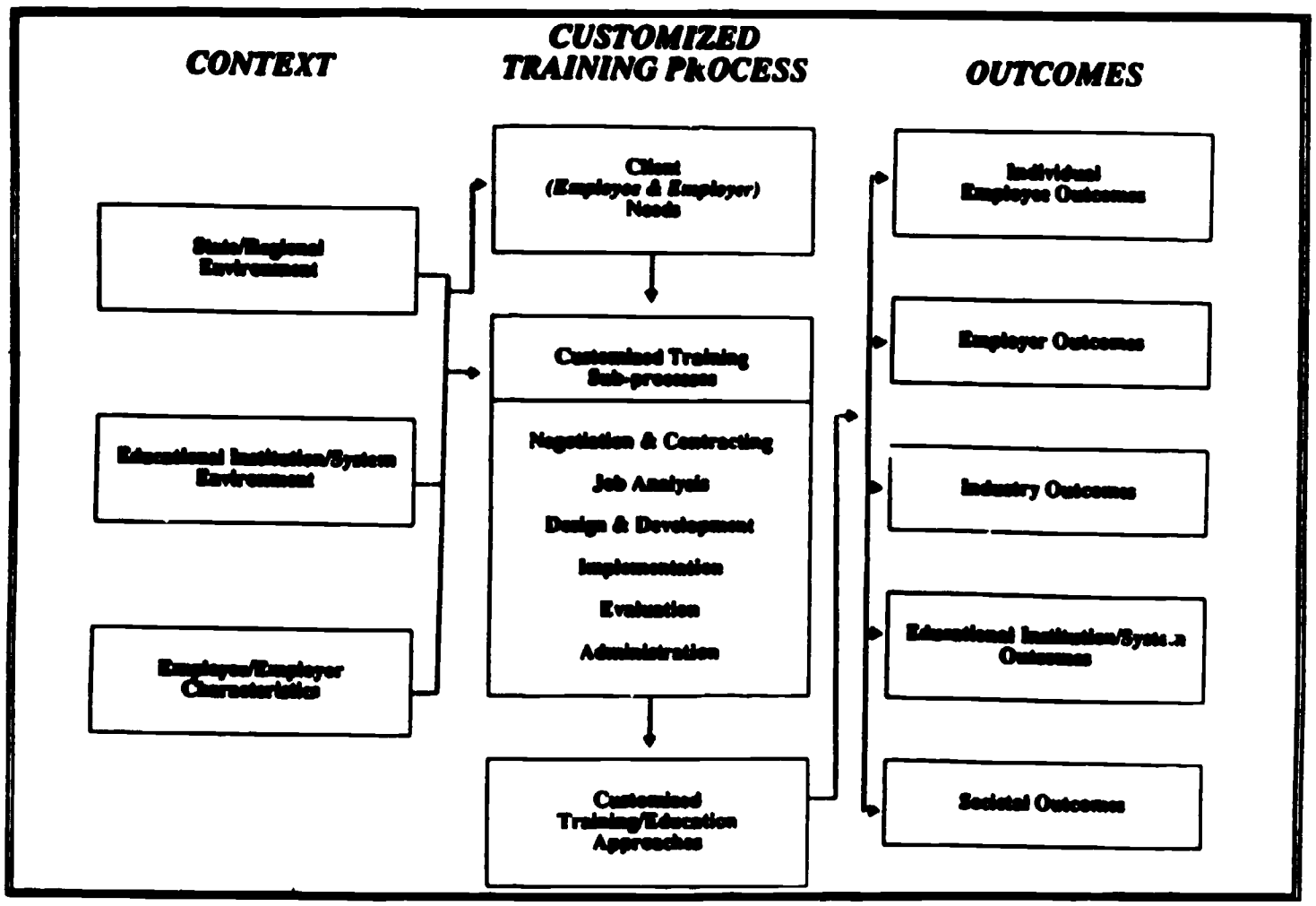
For more information, contact Chris A. Roegge, University of Illinois, Champaign, IL at (217) 333-0807.

Customized Training Evaluation Framework Developed at the University of Illinois

This project, conducted jointly by the University of Illinois and the Industrial Technology Institute, was designed to develop (1) an operational definition of customized training conducted by two-year postsecondary institutions and (2) a conceptual framework for evaluating its impact and effectiveness. The project was funded in 1990 through a subcontract from the National Center for Research in Vocational Education (NCRVE) at the University of California at Berkeley.

The Operational Definition of Customized Training specifies:

1. Contracts between colleges and external parties
2. Payments between colleges and external parties for education/training products and services
3. A relationship to economic development strategies
4. An objective of improving the competencies of target audiences associated with external parties
5. Specificity to the needs of target audiences



The Conceptual Framework was developed to describe the key components of customized training and the relationships among these components, based on the previously described operational definition. The conceptual framework provides a basis for identifying the elements needed to describe the nature, extent, and impact of customized training. By using the conceptual framework as a basis for program evaluation, state agencies and community colleges can develop program evaluation tools and processes for determining the impact of customized training on the economic well-being of communities and states.

First, the conceptual framework contains sets of variables identified with context that provide the basis for the way customized training is carried out. The second set of variables is the customized training subprocesses. The outputs of these subprocesses are client-driven products and services. Finally, it is necessary to focus on the outcomes of customized training as they effect multiple beneficiaries of the customized training process.

For additional information, contact Debra Bragg, University of Illinois, Champaign, IL, (217) 333-0807.

Upcoming Professional Development Opportunities

Professional Food Production Workshop Offered in June at Joliet

Joliet Junior College Culinary Arts Department will host a Professional Food Production Workshop in June, 1991. The workshop will be a hands-on "principles in practice" of food preparation techniques. Workshop participants should be food instructors, dieticians, nutritionists, home economists, and food purveyors. *For more information, contact Joliet Junior College, Culinary Arts/Hotel Restaurant Management Program, Joliet, IL, (815) 729-9020, ext. 255.*

Leadership 2000 to be held in Chicago July 7-10

The third annual international conference on leadership development in community colleges will be held at the Chicago Marriott Hotel in Chicago, IL on July 7-10, 1991. The conference is conducted by the League for Innovation in the Community College and The University of Texas at Austin with support from the W. K. Kellogg Foundation. *For more information, contact Suanne Roueche, "Leadership 2000", The University of Texas at Austin, EDB 348, Austin, TX 78712 or call (512) 471-7545.*

American Vocational Association Annual Convention Scheduled for December 6-10 in Los Angeles

The 1991 annual convention of the American Vocational Association will be held in Los Angeles on December 6-10. A recent editorial by Kay Clayton, AVA President, described more heightened attention to postsecondary vocational education issues and needs from AVA. The conference will include presentations on Tech Prep, special populations, program evaluation, and more. For more information, watch for registration information in future issues of the *Vocational Education Journal* or call AVA Headquarters in Washington, D.C.

National Pre-Conference on *"Sharing What Works"* to held in San Antonio October 18-19

The national pre-conference will be held on October 18th-19th, 1991, at the Holiday Inn Riverwalk in San Antonio, Texas prior to the 17th Annual National Council for Occupational Education Conference. The conference is being sponsored by NCRVE, the National Council for Occupational Education, AACJC, and the National Council of Instructional Administrators.

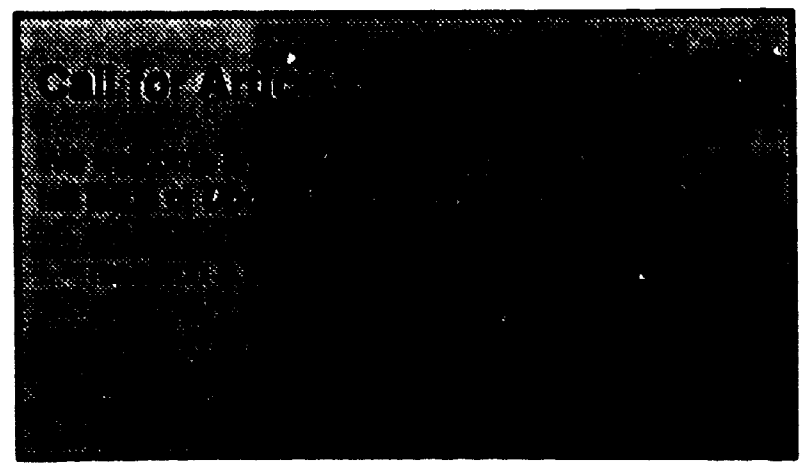
The conference will focus on:

1. The development of part-time faculty
2. Vocational/academic integration
3. The implementation of Tech Prep programs
4. Teaching at-risk youth and adults in the 90's

For information and registration materials, contact Beverly Perkins, 112 Lane Hall-Virginia Tech, Blacksburg, VA 24061-0254, (703) 231-8722 or Fax (703)231-3292.

First Annual Conference of Community College Chairs to be held in Phoenix March 26-28, 1992

The first annual conference of community college chairs will be held at the Hyatt Regency Hotel in Phoenix, Arizona on March 26-28, 1992. The conference is being conducted by the National Community College Chair Academy. *For additional information call (602) 461-7304.*



New Programs Offered at Parkland College

Students Participate in Multi-Cultural Tutoring Program

Parkland College announces the selection of six students who will participate in a new program designed to help multi-cultural elementary students and teachers. Irene Edwards, Robert A. Harris, and Aziza Mosi of Urbana, and Barbara Polk, Thomas Phillips, and Alanna Miles of Champaign have been chosen by the Parkland faculty as Basic Educational Skills Tutoring (BEST) scholars.

To be considered for the program, second-year students of Latino, African-American, or Native-American background must have a minimum grade point average of 2.5 on a 4.0 scale, an aspiration to teach, and a letter of recommendation from an instructor.

The BEST program is a joint effort of Parkland College, the University of Illinois, area high schools, and the Urban League of Champaign County. The threefold purpose the BEST program is:

1. To provide individualized tutoring to 72 multi-cultural elementary pupils judged at risk of academic failure
2. To increase the number of multi-cultural educators
3. To teach educators how to deal with the problems of "academically at risk" multi-cultural youngsters

Through the program, selected elementary students will meet on school days from 3 to 5 p.m. at Champaign and Urbana schools to receive individualized tutoring and take part in mini-lessons in history, art, music, geography, or other subjects. Each site will be staffed by teams that include BEST scholars from Parkland College and area high schools as well as several candidates for elementary teaching certificates in the teacher education program at the University of Illinois. The Urban League of Champaign County is acting as a liaison between the parents of the students and the cooperating institutions.

Tutoring by the University of Illinois students began February 5, while Parkland's BEST scholars began teaching the mini-lessons February 18. In addition to being paid for their teaching time, qualified Parkland BEST scholars will have one year of tuition and fees at the University of Illinois waived.

Funds for the program have been made available through a multi-cultural educational achievement grant under the Higher Educational Cooperative Act (HECA).

Preliminary plans call for the BEST program to apply for funds for eight years, at which time the program costs will be assumed by the cooperating institutions.

For more information about the BEST program, call Mwansa Mandela at Parkland College, Champaign, IL, (217) 351-2219.

Universal Computation Environment Program Offered

Parkland College is currently offering its second semester of classes in its new, one-of-a-kind Universal Computation Environment Program. Funded in part by a grant from the National Science Foundation, the Universal Computation Environment Program teaches students how to operate computer networks, which allow people to share files and equipment such as modems, printers, and disc drives, even when they are using different types of computers.

Basic courses dealing with how to share files and set up a computer on a network. Advanced classes deal with maintaining networks.

"Networks tend to be finicky, and fail for one reason or another, so they need a lot of attention," said Jeff Koenke, Director of the program. *"Those who graduate from the program will be able to help the network do what it's suppose to do."*

The college is currently offering two classes in the program: Introduction to Computer Networks and Overview of Operating Systems. Eventually six or eight classes will be offered for certification. The remaining classes should be in place by the end of this year.

Mr. Koenke called the Universal Computation Environment Program *"unique in the country."* In preparing courses, he looked through catalogues from other schools and found only two or three classes related to computer networking and they tended to be theoretical, not practical. *"I'm not aware of any four-year schools that are getting into computer networking like we are doing,"* he added.

For more information about the Universal Computation Environment Program, contact Jeff Koenke at Parkland College, Champaign, IL, (217) 351-2200.

Quality Management

Continued from page 2

Striving for continuous improvement and looking for performance level concepts will give us an instructional design/student development loop for interaction. This interaction is the opportunity for quality measurement of both process and product.

Will this emphasis on instructional management for quality become the mecca for measurement gurus who believe before you can improve a process you must be able to measure the process? Or is it time that education no longer rest its laurels on intuition?

Can we identify the complex problems within education with any meaning without measurement? Can we build quality into our programs without imposing a system for control?

As education professionals, quality improvements must become a national priority. When President George Bush presented the Malcolm Baldrige National Quality Award in November of 1989, he said,

> *"The improvement of quality in products and the improvement of quality in service - these are national priorities as never before."* George Bush (1989)

The Malcolm Baldrige Quality Award Guidelines

The Malcolm Baldrige Quality Award program symbolizes the quest for excellence standards for American companies. The guidelines are presented here as a quality improvement checklist for your consideration and application to our profession.

Leadership

- o Executive leadership in creating quality excellence
- o Quality values projected consistently and regularly
- o Quality values that are part of daily management
- o Quality leadership that extends into the community

Human [illegible]

- o Strategies for increasing the effectiveness of employees
- o Employee involvement, such as quality circles
- o Quality education/training and on-the-job reinforcement
- o Employee recognition and performance measurement
- o Employee well being and morale

[illegible]

- o Scope and management of quality data and information
- o Analysis of quality data and information

[illegible]

- o Strategic quality planning in the short- and long-term
- o Competitive comparisons and benchmarks for quality
- o Quality priorities for the short- and long-term

[illegible]

- o Design of quality products and services
- o Process and quality control
- o Continuous improvement of processes, products, and services
- o Quality assessment of processes, products, and services
- o Quality assurance, assessment and improvement of suppliers through audits, inspections, and certification

[illegible]

- o Trends in quality improvement in relation to customer needs and expectations
- o Comparison of quality results against global averages
- o Business process and support service quality improvement
- o Supplier quality improvement through awards and recognition

[illegible]

- o Knowledge of student requirements and expectations
- o Customer relationship management including follow-up
- o Customer service standards
- o Commitment to customers with quick response
- o Customer satisfaction determination
- o Customer satisfaction results
- o Complaint resolution for quality improvement

This article on "Quality Management" by Dr. Mary K. Patino is excerpted from the 1991 Winter newsletter For Openers of the College of DuPage. Copies of the Baldrige Award Criteria are available from the National Institute of Standards and Technology, Gaithersburg, MD 20899, (309) 975-2036.

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To obtain a FREE copy of *Update* or change your address, mail this completed form to the Office of Community College Research and Leadership, Room 344 Education Building, 1310 South Sixth Street, Champaign, IL 61820.

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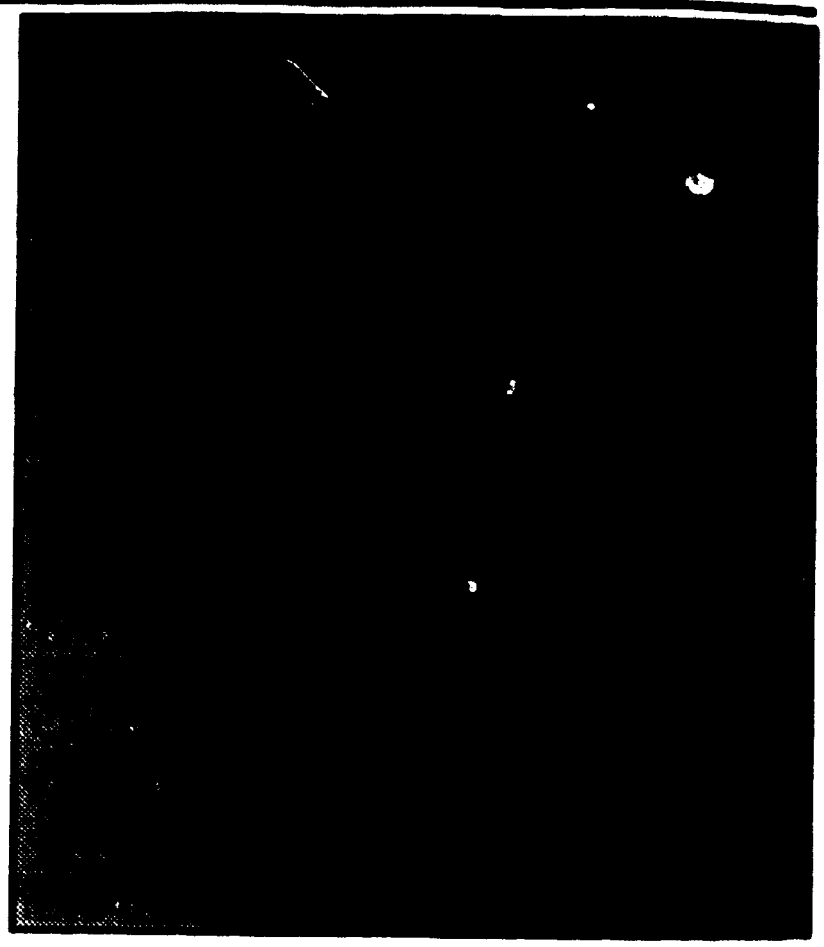


Update
Office of Community College
Research and Leadership
Department of Vocational and
Technical Education
University of Illinois
Room 344 Education Building
1310 South Sixth Street
Champaign, IL 61820

RESEARCH BRIEF 3 SPRING 1991

Update

ON RESEARCH AND LEADERSHIP

Office of Community College Research and Leadership University of Illinois at Urbana-Champaign

Executive Summary

Building World-Market Competitors: Technology Transfer and the Illinois Community College System

Prepared by Debra D. Bragg

During the decade of the 1980s, the Illinois community college system became increasingly involved in economic development. Illinois community colleges currently provide a foundation for economic development initiatives throughout the state through well-developed business assistance centers, information databases, resource networks, customized contract training services, advanced occupational and technical courses, and knowledgeable leadership. Many Illinois employers are served through the extensive economic development programs of the colleges.

During 1990, the Illinois Council of Public Community College Presidents commissioned a survey to document the capabilities of the Illinois community college system to provide technology transfer assistance to the commercial marketplace, public sector, and individual entrepreneurs. The project involved designing and mailing an extensive questionnaire to the Chief Executive Officers (CEOs) of all of the Illinois community colleges. Of the 45 colleges surveyed, 42 responded providing a very high response rate of 93%.

Key Findings

The survey revealed 12 key findings regarding the capacity of the Illinois community colleges to deliver technology transfer programs and services. In addition, 5 recommendations were developed to provide suggestions for future technology transfer initiatives. These findings and recommendations are summarized in this Research Brief.

A Vast Array of Tech Transfer Products & Services are Offered

Nearly all of the Illinois community colleges provide a wide range of products and services including the following:

- o Technical assistance with current technologies
- o Resources for small businesses, entrepreneurs and inventors
- o Troubleshooting and problem solving of technical applications
- o Strategic planning for local business and industry
- o Customized contract training and education
- o Demonstrations of technologies

I want to acknowledge Mr. Russ Hamm, Dr. Dan LaVista, and Dr. Herb Lyon for their valuable contributions and unwavering commitment to the project; the Illinois Council of Public Community College Presidents and ICoVE for funding the project; and the ICCB and ISBE/DAVTE for their continuing support of the Office of Community College Research and Leadership.

Frequently the colleges provide technology transfer directly through their own personnel, facilities and equipment. Additionally, most of the colleges broker technology transfer expertise and resources within their local communities to maximize their ability to meet client needs. Within the wide range of technology transfer products offered by the colleges, advanced customized contract training and education in the areas of business, computers and engineering is very prevalent. All of the colleges deliver advanced customized technical training on their own campuses or at local employers' facilities.

Growth in technology transfer training and consulting activity was shown between FY88 and FY89 (Figure 1). On-campus customized technical training was the most prevalent of the 5 types of technology transfer services offered in FY89 and FY89. This is roughly equivalent to each college offering 3 training programs for external clients every week of the regular academic year. Of the 5 types of technology transfer and consulting explored in the survey, in-plant customized training by college faculty or staff experienced the most growth. It increased 25% during the FY88 to FY89 period. Further, the findings revealed that while the colleges were less active in the areas of consulting and referrals, these areas had grown by 11% and 15%, respectively.

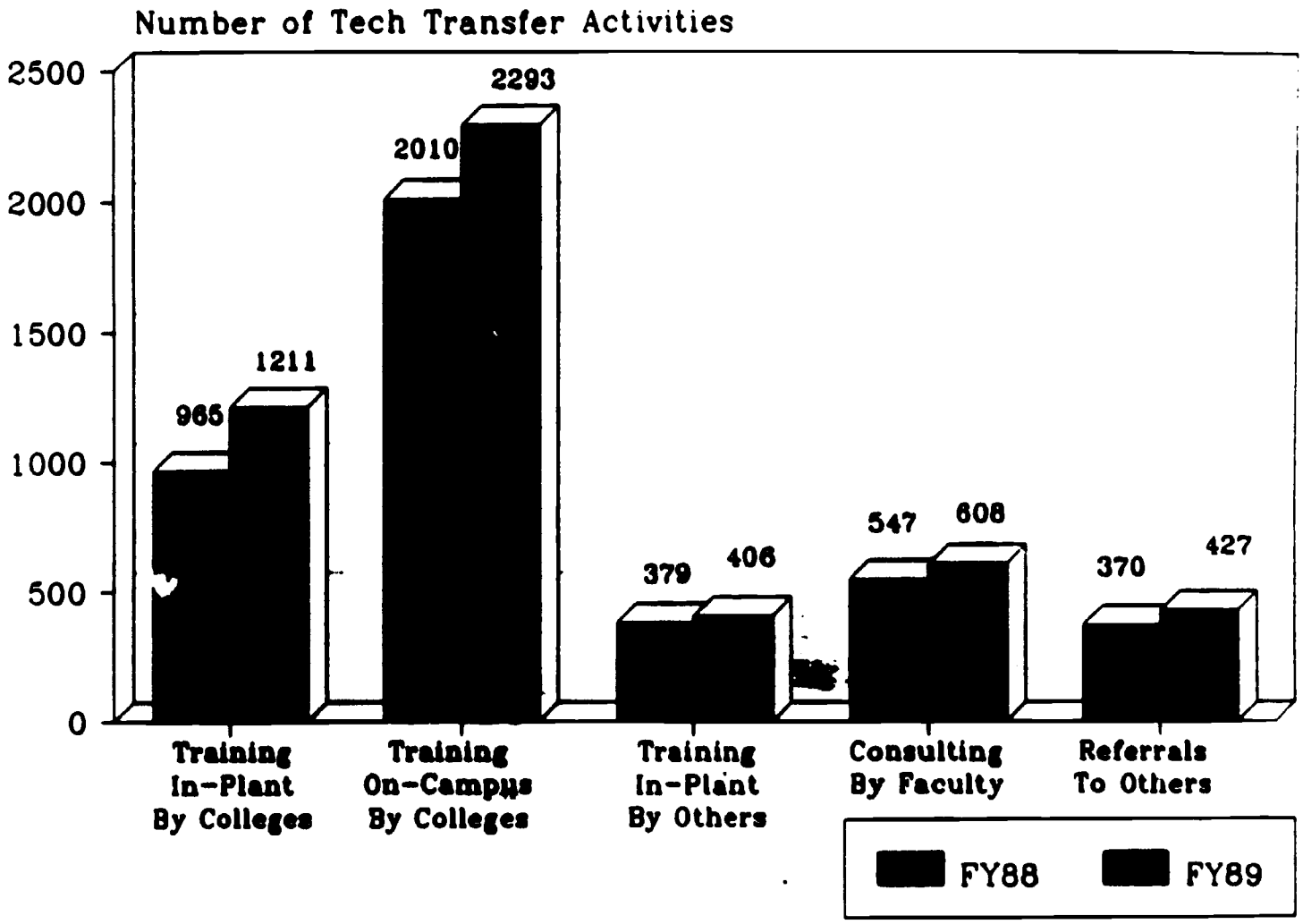


Figure 1. *Technology Transfer and Consulting Offered During FY88 and FY89*

Tech Transfer is Promoted Widely

At least six promotional methods are used by the colleges to initiate technology transfer activities including such proactive methods as solicitation, publicity/promotion and partnerships. The colleges also report initiating new technology transfer activity by responding to requests and referrals from business and industry, labor organizations, and college personnel and students.

A Wide Range of Clients are Served

Illinois' community colleges serve a wide range of clients seeking technology transfer, including private manufacturing and nonmanufacturing firms, public agencies, and individual entrepreneurs.

Partnerships Are Facilitated

Community colleges are not alone in providing technology transfer programs in Illinois. Partnerships with other public and private organizations are plentiful. The majority of community colleges report partnering with private firms, government agencies, private consultants, professional organizations, four-year colleges and universities, private industry councils, and other community colleges to deliver technology transfer.

CEOs Should Promote Tech Transfer

Illinois community college CEOs can be important advocates for tech transfer. They demonstrate their commitment within the colleges by providing resources and setting policies to support technology transfer. Equally as important, CEOs promote technology transfer outside the colleges with trustees, local business and industry leaders, state policy makers, members of the General Assembly, and taxpayers.

Clients Seek More Tech Transfer Assistance

Over three-fourths of the colleges report that local business and industry, particularly small and medium sized firms, have additional needs for technology transfer products and services. Six general areas identified by the colleges for future technology transfer programs are listed below:

- o Basic skills enhancement
- o Computers
- o Quality management and productivity improvement
- o Advanced manufacturing technologies
- o Advanced quality control and assurance
- o Human resource development

Clients also tell the colleges they need to expand technology transfer products and services in the following areas:

- o Needs assessments
- o Instructional design assistance
- o Technology assessments
- o Productivity assessments
- o Advanced technology demonstrations

Roadblocks Can Hamper Tech Transfer

Consistently, community colleges view themselves as capable of meeting client demand for technology transfer with committed and capable leadership. It is within this context that the colleges identify improvement opportunities to continue to improve the quality of their programs. The findings point to the need to improve technology transfer through the following strategies:

- o Make business and industry more aware of tech transfer initiatives
- o Increase funding for technology transfer
- o Obtain more advanced technology equipment and facilities for tech transfer

Economic Development Units Lead Tech Transfer

Within the colleges, economic development units are focal points for technology transfer. Occupational and technical education departments play an important secondary role. Other units that support the capabilities of colleges to provide technology transfer are adult/continuing education, central administration, and academic departments.

Evaluation is Informal

Over 50% of the colleges regularly evaluate technology transfer programs by using informal communications and surveys or interviews. Nearly all of the colleges evaluate the costs, efficiency and effectiveness of technology transfer programs and services for their clients. Fewer of the colleges evaluate the benefits of technology transfer for their own personnel, facilities, or students. The evaluations are usually conducted by internal college personnel.

Full-time Faculty Play a Key Role

Most of the colleges value full-time faculty involvement as evidenced by over 80% providing salary supplements or stipends to those faculty who participate. Further, the majority of colleges provide internal professional development, vendor training, tuition reimbursement for coursework, sabbatical leaves, or arranged leaves with business and industry to enhance the ability of faculty to contribute to technology transfer. Fewer colleges arrange faculty exchanges with other colleges or business and industry.

Pricing Policies Vary Widely

The approaches colleges take in pricing customized training associated with technology transfer vary greatly. Colleges develop pricing formulas independent of one another in order to meet the needs of local clients. Total prices for training are largely dependent upon fees assessed for instruction, administration and training development.

Formal Agreements are Comprehensive

Across the Illinois colleges, formal agreements and contracts for technology transfer contain items specifying partnerships, objectives, equipment, facilities, pricing and/or funding strategies, personnel, and outcomes.

Recommendations

In order for the Illinois community college system to meet the vast array of technology transfer needs of commercial firms, public agencies, entrepreneurs, and others, it is important to continue to build effective technology transfer programs. At the same time, colleges need to develop new and innovative technology transfer initiatives to meet emerging needs. To ensure the success of future tech transfer endeavors, the following five recommendations are offered:

1. Ensure that college- and state-wide administrative policies and processes support efficient and effective delivery of technology transfer
2. Continue to strengthen partnerships with other technology transfer providers
3. Ensure adequate funding levels for community college technology transfer products and services
4. Continue to develop the expertise of college faculty and explore incentives to involve more full-time faculty experts in technology transfer
5. Explore opportunities to evaluate technology transfer programs through on-going formal evaluation processes

Copies of Building World-Market Competitors: Technology Transfer and the Illinois Community College System, 1990 Status Report, can be obtained through your local public community college.

The Author

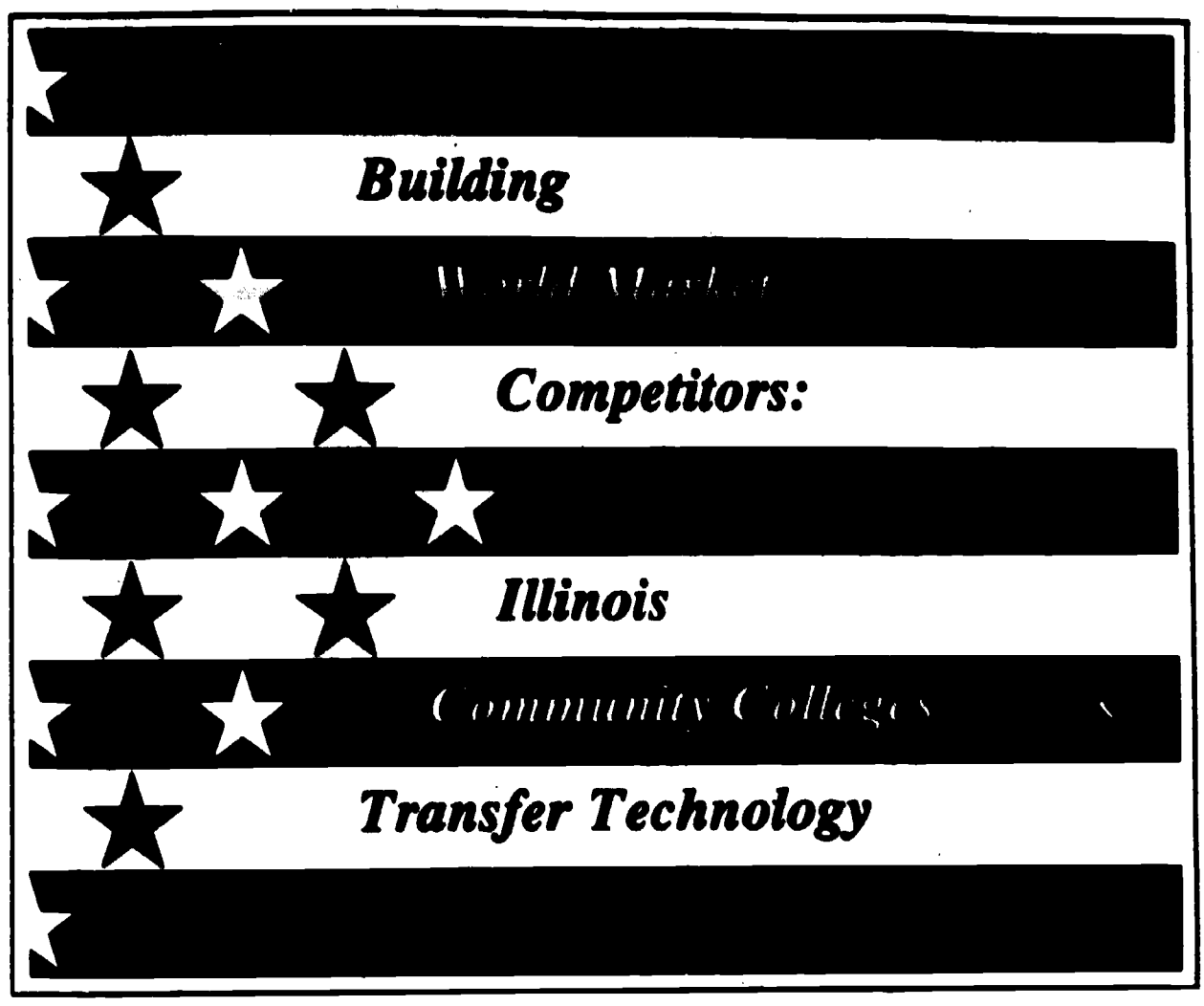
Debra D. Bragg is a Visiting Assistant Professor and Director of the Office of Community College Research and Leadership in the College of Education, Department of Vocational and Technical Education, University of Illinois at Urbana-Champaign.

This *Update* Research Brief was prepared pursuant to a grant from the Illinois State Board of Education/Department of Adult, Vocational and Technical Education. Funding was made possible through program improvement funds of the Carl D. Perkins Vocational Education Act. Forthcoming issues will examine the latest research pertinent to Illinois community college vocational-technical education.

Appendix B: Building World Market Competitors:

Illinois Community Colleges Transfer Technology

1990 Status Report Summary & Recommendations



1990 Status Report

Summary and Recommendations

Supported by
The Illinois Council of Public Community College Presidents
and
The Illinois Council on Vocational Education

Our world is increasingly competitive!

Thus, Illinois firms must utilize the latest technology to operate at their full productive and competitive capacities.

Your Illinois Community College System is poised to transfer technology to the entire state.

Illinois' community college districts now cover every part of our great state. Their mission reflects our 1970 State Constitution, which declares that "A fundamental goal of the people of the State of Illinois is the educational development of all persons to the limit of their capacities."

Your community colleges...

Your community colleges are unique institutions that are locally controlled but are effectively coordinated statewide. They are funded through a combination of tuition and fees, local tax dollars, and state support.

For your purposes, they are readily accessible, practical, flexible, innovative, and — above all — responsive. They employ well-trained full-time and part-time faculty.

Among the many services and programs that they provide, the community colleges are heavily involved in training, retraining, and upgrading of skills to meet current and emerging local, regional, and state labor force needs.

Your workforce meets the technology of tomorrow at your local community college. In 1988, the Illinois Community College System won the prestigious *Keep America Working Partnership Award* for its work in workforce training.

Engineering Technology at Black Hawk College

College of Lake County's automated industrial center.

A recent study...

A recent study conducted by the University of Illinois documented the tremendous success of the Illinois Community College system in transferring technology to firms across the state, at minimal cost.

Major findings of the study:

Illinois community colleges offer a vast range of technology-transfer programs and services, including

- Technical assistance with current technology
- Information and resources for small businesses, entrepreneurs, and inventors
- Troubleshooting and problem-solving in technical applications
- Strategic planning for local business and industry
- Customized contract training in such areas as business management, computer use, and engineering
- Demonstrations of new technologies

Community colleges provide technology transfer directly through their own personnel, facilities, and equipment, either on their own campuses or at the facilities of local employers.

A wide range of clients are served — including private manufacturing and non-manufacturing firms, public agencies, individual entrepreneurs, and labor.

Community colleges often form technology-transfer partnerships with private firms, government agencies, private consultants, professional organizations, four-year colleges and universities, private industry councils, and other community colleges. Most colleges are active in brokering technology-transfer resources within local communities - consistent with the collaborative philosophy of community colleges.

Illinois community college Presidents understand technology transfer and are champions of it. They provide resources and policies supporting it, and promote it with trustees, local business and industry leaders, state-policy makers, members of the GeneralAssembly, and taxpayers.

Technology-transfer programs and services are delivered by various units within the community colleges, such as economic development offices, occupational and technical education departments, adult and continuing education, and appropriate academic departments. Technology-transfer functions are regularly evaluated to determine their effectiveness. Faculty experts are integrally involved in technology-transfer activities.

Aviation Maintenance Technology at
Richard J. Daley College

Business and industry want more technology transfer from the Illinois community colleges. Additional demand is especially reported in

- Productivity, technology, needs, and instructional design assessments
- Advanced technology demonstrations
- Basic skills enhancement
- Computer training
- Human resource development
- Advanced quality control and assurance
- Productivity improvement

Colleges develop prices for technology-transfer services and program to meet the needs of local clients — generally covering the cost of instruction, administration, and training development. Most community college technology transfer activity is conducted under inclusive formal agreements.

Copies of the full study-report — *Building World-Market Competitors: Illinois Community Colleges Transfer Technology, 1990 Status Report* — can be obtained by contacting the President's Office at your local community college.

For more information...

For more information on how you can be assisted with your own technology-transfer needs, please contact your local public Illinois community college.

Advanced industrial technicians program
at the College of Lake County.

Appendix C: Executive Summary:

Illinois Community College Vocational-Technical Education Survey

Executive Summary
Illinois Community College
Vocational-Technical Education Survey

The Office of Community College Research and Leadership at the University of Illinois at Urbana-Champaign conducted a study during 1989-90 to prioritize issues and research questions pertinent to Illinois community college vocational-technical education programs. The intent of the study was to identify key problem areas that could be addressed through applied research activities. To that end, the study is providing valuable input into a research agenda for the Office of Community College Research and Leadership. The findings are also being used to determine leadership development needs of Illinois community college faculty and administrators and to identify problem areas that should be addressed through program improvement efforts.

This ***Executive Summary*** highlights the major findings of the study. For additional copies or more information about the study, contact the Office of Community College Research and Leadership, University of Illinois, 344 Education Building, 1310 South Sixth Street, Champaign, IL 61820.

Study Design

The study was designed to obtain information from individuals involved in administration and delivery of vocational-technical education at the Illinois community colleges. The goal was to listen and learn about the issues from those directly involved in community college vocational-technical education.

Over the 12-month period during which the study was conducted various data collection activities were instituted including the following:

- o Literature review of applicable periodicals and research journals
- o Meetings with an advisory council composed of community college presidents, deans, and state agency/board staff
- o Visits and interviews with administrators and faculty at 15 Illinois community colleges
- o A focus group interview session with 6 community college career deans

Based on data collected during these initial research activities, an extensive list of issues regarding vocational-technical education in the Illinois community college was identified. These issues provided the basis for a survey that was mailed to key stakeholder groups.

Survey Respondents

The survey was mailed to 469 individuals throughout the state of Illinois. After a postcard follow-up, a 50% response rate was obtained. The response rate varied among respondent groups from a high of 65% for career deans to 21% for college presidents. Groups that participated included:

- o Community College Presidents
- o Community College Career Deans
- o Community College Transfer Deans
- o Community College Faculty
- o Community College Economic Development Directors
- o Education for Employment (EFE) Directors.

Survey Results

Analysis of the data revealed a high degree of consensus among the various groups as to the key issues confronting community college vocational-technical education. All but one of the groups (EFE directors) perceived that ***delivering high quality vocational-technical education is the area in greatest need of improvement***. Listed below are the six major issues ranked from most to least important by the total group of survey respondents.

Major Issues Ranked From Most (1) to Least (6) Important

1. Delivering high quality vocational-technical programs
2. Administering (planning, funding, evaluating, etc.) vocational-technical education
3. Meeting the needs of all student populations through appropriate recruitment, retention, support, and job placement services
4. Implementing articulation programs among high schools, community colleges, and universities
5. Delivering effective economic development programs for local business and industry, (e.g. customized training, consulting services, technology transfer)
6. Developing current and future faculty and administrators for vocational-technical education programs

High Priority Issues

The 6 major issues were broken down into a total of 32 sub-categories that were then presented as individual issues. Respondents indicated the level of priority they would assign to resolve each issue based on the needs of the community college vocational-technical education program(s) with which they were most familiar. Respondents ranked each issue from 1 to 5, with 1 representing the lowest priority to 5 the highest. Shown below are the top 10 issues ranked in the order of their importance to the entire group of survey respondents.

Top Ten Issues

1. Keeping programs current with business and industry (4.7)
2. Maintaining and updating facilities and equipment, especially in advanced and sophisticated technology areas (4.6)
3. Responding to business and industry needs with effective economic development programs (e.g. customized training, technology transfer) (4.4)
3. Conducting valid needs assessment to initiate new programs or update existing programs (4.4)
5. Identifying new and emerging occupational areas (4.3)
6. Gaining cooperation and involvement from key high school, community college, university, and business and industry personnel for articulation (4.2)
6. Improving student retention and completion rates (4.2)
8. Maintaining enrollments in existing programs (4.1)
8. Improving the quality of programs (4.1)
10. Education business and industry on the value of vocational-technical programs and graduates (4.0)

There was a high level of agreement among the respondent groups as to the level of priority attributed to the top ten issues. Without exception, the groups were concerned with ***maintaining up-to-date vocational-technical education programs that are responsive to business and industry.*** The majority of the respondents also emphasized the importance of ***finding better ways to deliver programs by improving funding, needs assessments, articulation processes, and student retention strategies.***

Ratings of Respondent Groups on Top Ten Issues

A breakdown of how the six respondent groups viewed the top ten issues is shown in the chart below.

Respondent Group Ratings of Top Ten Issues

Issues	Presidents	Career Deans	Transfer Deans	Faculty	Economic Dev. Dir's	EFE Dir's
1. Programs current with bus/industry	4.6[1]	4.8	4.8	4.6	4.7	4.8
2. Maintain or update facilities & equipment	4.4	4.8	4.5	4.5	4.4	4.8
3. Respond to business/ industry needs with ec. dev. programs	4.9	4.3	4.6	4.2	4.9	4.1
3. Needs assessment for new programs or updated programs	4.3	4.1	4.5	4.2	4.3	3.8
5. Identify new or emerging occup's	4.5	4.3	4.4	4.2	4.3	4.1
6. Articulation	4.5	4.4	4.2	4.1	4.2	4.6
6. Student retention and completion	4.5	4.3	4.0	4.3	3.8	3.7
8. Maintain enrollments	3.6	4.5	3.9	4.1	4.1	4.1
8. Improve programs	4.6	4.2	4.1	4.2	4.0	4.2
10. Educate business/ industry on value of voc. ed. programs and graduates	3.5	4.2	3.6	4.0	4.3	4.3

[1]The means are based on each respondent group's ratings on a 1 to 5 scale, with 1 representing the lowest priority and 5 the highest priority.

Low Priority Issues

All but 1 of the 32 issues presented in the survey were ranked by the respondent groups as of moderate to high priority as evidenced by a mean score of between 3 and 5. The issue that was given a relatively low priority was ***developing more highly coordinated planning and reporting processes among EFE regions, DAVTE, ICCB, JTPA, and others.*** The 3 groups that indicated that this issue was a low priority were presidents (2.6), faculty (2.7), and economic development directors (2.8). The 3 remaining groups that gave this issue a moderate rating were career deans (3.5), transfer deans (3.6), and EFE directors (3.6). Even among these groups, however, there was a tendency to see this issue as lower in priority than many of the other issues presented in the survey.

Research Needs

All respondents were asked to describe what they considered to be the three highest priority research needs of Illinois community college vocational-technical education programs. A majority of the respondents provided narrative information about the specific nature of their needs. Overall, the needs related closely to the issues identified by each respondent group. The following section reports research areas that the six groups gave a high priority.

Presidents

According to presidents, how to fund vocational-technical programs so they remain current and responsive to the needs of business and industry is an important research question. The presidents wanted to increase the ability of their colleges to be proactive to business and industry by finding better methods for identifying new and emerging industries and for determining how industries are altering their employment practices. Another concern of the presidents is whether graduates of their colleges are performing successfully in jobs obtained in training-related areas.

Career Deans

Where to find and how to access funding sources are two questions raised by career deans. How to deliver programs and maintain the facilities and equipment necessary to deliver those programs was a related question of the deans. Career deans also indicated that they would like research on new and emerging occupational areas that are likely to be impacted by local business and industry employers.

Transfer Deans

Transfer deans need research into the potential development of a comprehensive data base that could be used to identify:

- o emerging occupations
- o changing job requirements
- o funding sources
- o placement of students in training-related jobs

Transfer deans also indicate a need for research into how to maintain or increase enrollment in vocational-technical programs. They are also concerned with finding better ways to recruit underrepresented ethnic and minority groups to their colleges.

Faculty

How to gain cooperation and involvement from all parties interested in the delivery of quality programs is a question raised by faculty. Faculty members also want to find ways to improve the image of vocational education. Another research need involves finding better ways to educate students who enter community colleges with varying levels of basic skills preparation.

Economic Development Directors

Similarly to presidents and career deans, economic development directors indicate that research is necessary to identify new and emerging occupational areas. These individuals also indicate they increasingly need to respond to business and industry with current and sophisticated programs. In line with their economic development duties, the directors need to find ways to bring about greater involvement by college faculty and administrators in economic development programs.

Education for Employment Directors

How to fund programs and the accompanying equipment required to keep those programs current with business and industry is an important question for EFE administrators. They also indicate that community college faculty require retraining to keep up with rapidly evolving technology and specify a need for research on faculty development requirements. These individuals also need better ways to encourage cooperation among business and industry and all educational institutions.

Summary and Conclusions

The survey about vocational-technical education programs in the Illinois community colleges has revealed several problem areas that deserve greater attention. Some of the important applied research questions uncovered by the survey follow:

- How effective (i.e., current, responsive) are community college vocational-technical education programs to business and industry?
- How successful are the graduates of community college vocational-technical education programs at securing productive and meaningful employment in business and industry?
- What methods are most effective in identifying new and emerging occupational areas?
- What methods are most effective in educating students who lack basic skills preparation?
- What role can vocational-technical education programs play in economic development?

Some of the issues that were identified through the study should be addressed through changes in administrative processes and policies. Examples of these types of problems include funding issues, enrollment concerns, and equipment/facility update considerations. These types of findings will be shared with community college administrators, state-level officials, policy makers, and others to make them aware of these important needs.

In summary, the survey has identified a number of important areas for future inquiry. Research studies are already underway in the Office of Community College Research and Leadership in the areas of economic development, articulation, and accountability. The survey is building a foundation for community college research in Illinois and making an important contribution to a research agenda that can impact positively on the quality of vocational-technical education programs in the Illinois community college system.

Appendix D: Publicity

The Evolving Role of Community Colleges in Technology Transfer

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Running head: ROLE OF COMMUNITY COLLEGES IN TECHNOLOGY TRANSFER

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Abstract

This study sought to describe the scope and diversity of technology transfer initiatives, products, and services offered by the Illinois Community College System. The study found that community colleges are a catalyst for technology transfer with a diverse set of clients. In addition, the study identified the responsibilities of internal college units and staff in delivering technology transfer, the types and levels of college resources used in deploying technology transfer assistance, and the pricing policies used by colleges in marketing customized training associated with technology transfer. Five recommendations were made to assist the community college system in future technology transfer initiatives.

Introduction

During the decade of the 1980s, community colleges across the United States became increasingly sophisticated and productive in delivering economic development assistance, especially technology transfer, to business and industry. Today, as we move into the 1990s and employers face more highly-competitive world markets, community colleges demonstrate the capability to operate as economic development support systems. Technology transfer initiatives of community colleges are designed to be responsive to the needs of local firms to expand into new and competitive markets. These initiatives include business assistance centers, comprehensive databases and resource networks, and expertise in applied technologies, business, and economic development. This mix of leadership, resources, and expertise appears to make the community college a logical provider of technology transfer assistance for business and industry across the nation.

Purpose of the Study

While the activities of community colleges in the area of technology transfer appear to be growing, relatively little is known outside of community college systems about the products and services generated to assist business and industry and to stimulate economic development. To illuminate the capabilities of a statewide community college system, a study was conducted to explore the involvement of the Illinois community colleges in providing technology transfer assistance to manufacturing and nonmanufacturing firms, public agencies, and individual entrepreneurs. The primary purpose of the study was to capture a comprehensive description of the level and scope of involvement of a statewide community college system in technology transfer.

The two major goals of the study were:

- To document the scope and diversity of technology transfer initiatives, products, and services for private and public clients.
- To determine future directions for technology transfer initiatives of the statewide community college system.

For the purposes of the statewide survey (Bragg, 1990), technology transfer was defined in terms of the major role community colleges play in the diffusion of technological innovations and processes. The survey stated,

> Technology transfer is the application of existing technology and new technological breakthroughs in the commercial marketplace. Technology transfer occurs when colleges assist firms to use technologies to operate at their full productive and competitive capacities. The activity should involve:
>
> 1. the use of community college personnel and resources directly via consulting, training or other related activities or indirectly via referrals to other experts and resources, and
> 2. the integration of existing or new technological products, processes, or services into commercial operations in the marketplace. (p. 1)

Background

Since the early 1980s, community colleges across the United States have become increasingly active in providing economic development, including technology transfer, for small and medium-sized firms (Grubb and Stern, 1989). There are several reasons for the increased participation of community colleges in technology transfer (Bonewit, 1984; Breuder, 1988). First, community colleges are geographically dispersed throughout states so they are located close to public- and private-sector clients. Second, community colleges are highly visible and accessible to their communities. Third, many community colleges have established a successful track record of meeting client needs for education and training through traditional college courses or customized training programs. Finally, community colleges possess resources in faculty expertise, college curricula, facilities, and other training tools that are highly useful in transferring technology within client organizations.

The involvement of community colleges in technology transfer is designed to assist in the movement of technology from one arena to another through a multi-stage process (Goetsch, 1989). Initially technology transfer is the movement of new technologies from research

laboratories to vendors in commercial settings where the technologies can be produced and marketed. Later, technologies are more widely diffused and adopted by end users for a multitude of commercial or personal purposes. Goetsch points out that community colleges play an important role in all stages of technology transfer, but especially in the diffusion and adoption stages where the need for education and training is particularly high.

While technology is typically viewed as equipment or machinery, it can also be conceptualized as methodologies for extending human capability and enhancing social settings (Schon, 1967; National Science Foundation, 1983). Based on this view, Jacobs (1990) described technology transfer as "a process which includes far more than the simple adoption of a tool or new method.... The process by which technology is transferred becomes far more interactive between the source of the technology, and the end user." He concurred that community colleges should play a role throughout the entire process of technology transfer.

Technology transfer is provided through a variety of programs, products, and services including customized or contract technical training; business leader seminars and institutes; technology demonstration centers; small business incubators and assistance centers; and specialized consulting and technical assistance services (Bonewit, 1984; Breuder, 1988). The community college role in technology transfer parallels the needs of potential technology users (Goetsch, 1989). First, community colleges improve the awareness of decision makers about the array of new technologies available in the marketplace and assist with decisions to acquire new technologies. Second, colleges educate workers about the features of new technologies to help overcome reluctance and fear. Third, community colleges retrain and upgrade the academic and technical skills of workers, thereby enabling client organizations to operate new technologies efficiently and productively (Bragg and Jacobs, in press).

Often community colleges are supported in their roles as facilitators of technology transfer through a commitment of leadership and funding from the state level (Burger, 1988; Stewart, Cooper, Harrell & Hammett, 1990). Either through community college systems or

political leadership, some states have played a particularly important role in economic development and technology transfer. Burger (1988) explains,

> The single most important factor in the successful involvement of community colleges in economic development is commitment. Foremost is the commitment at the state level from the Governor, the legislature, and the Illinois Community College Board, or their counterparts in your state, in the form of funding and leadership. (p. 163)

Blair (1986) identified the need for state funding to provide centers of excellence that conduct applied research, provide training, and carry out technology transfer to benefit major industries. In addition, state funding was needed to hire support staff and conduct projects targeted for technology diffusion purposes.

Within community colleges, technology transfer efforts occur through the involvement of numerous parties, (i.e., presidents, boards of trustees, economic development staff, academic and technical faculties). At either the state or local level, technology transfer is not a solitary endeavor; it occurs through cooperative arrangements with internal and external personnel and organizations. Technology transfer initiatives appear to be highly successful in higher education institutions where there is an emphasis on funding services for small firms, defining roles and mission related to technology transfer, creating a dedicated center or point of contact for technology transfer, and establishing leadership from the presidential level (Blair, 1986).

Methodology

An extensive mail survey was used to collect data for this study. The questionnaire was developed from input provided by the economic development and advanced technology committee of the Illinois Council of Public Community College Presidents. Based on an initial list of questions provided by the committee, the general topics identified for the technology transfer survey were:

- Products and services
  Facilities and equipment
- Formal relationships, partnerships, and competition
- Internal college processes, (e.g., marketing, promotion, pricing, funding, evaluation)

- o Personnel, (e.g., CEOs, full-time faculty)
- o Faculty development and retraining
- o Roadblocks
- o Success stories
- o Needs of clients

An initial draft of the mail survey was completed in January 1990 and presented to the economic development and advanced technology committee for review. Following minor revisions, a field test of the questionnaire was conducted in 5 of the Illinois community college districts. Information provided by the field sites was extremely valuable in creating the final 40-page mail survey which was broken into 3 sections: General Technology Transfer Programs, Pricing of Technology Transfer, and Technology Transfer Resources.

The General Technology Transfer Programs section included 18 questions related to the scope and status of technology transfer programs offered in FY88, FY89 and FY90. This section requested information regarding clients, partners and competitors; processes, personnel, procedures, and departmental assignments; barriers; and future plans.

The section on Pricing of Technology Transfer provided four specific cases illustrative of different types of training typically associated with technology transfer. The colleges were asked to indicate their total prices and formulas used to calculate the prices.

The Technology Transfer Resources section requested that colleges identify three or more examples of advanced technology courses, workshops or seminars involving technology transfer during FY89 in the following areas:

- o Agriculture
- o Business
- o Computers, computer technology and information sciences
- o Engineering and engineering-related technologies
- o Health
- o Science technologies

The colleges also indicated staffing patterns (i.e., full-time faculty, part-time faculty or outside contractors), facilities, equipment, and delivery methods for training and education associated with technology transfer.

The survey was mailed to the Chief Executive Officers (CEOs) of 45 Illinois community college campuses or districts, including the 5 field test sites, in March 1990. Once received by

the CEOs, a team of faculty and administrators knowledgeable about technology transfer was requested to be responsible for completing the survey. In early April, community colleges that failed to respond to the survey received follow-up postcards. Later in April and May, community colleges that had not participated in the survey received follow-up phone calls, along with a second copy of the survey. By June 1990, responses were received from 42 of the 45 colleges or districts sampled, resulting in a 93% response rate.

Discussion

The following discussion addresses the level and scope of involvement of community colleges in technology transfer. The discussion involves the range of technology transfer products and services offered by community colleges, client characteristics and future needs, partnerships among community colleges and other private- and public-sector organizations, the roles and responsibilities of community college units and personnel, barriers to delivering technology transfer, pricing policies, evaluation approaches, and contracting procedures.

Technology Transfer Products and Services

Community colleges offer a wide range of technology transfer products and services including the following:

- o Technical assistance with current technologies
- o Information and resources for small businesses
- o Information and resources for entrepreneurs and inventors
- o Troubleshooting and problem solving of technical applications
- o Strategic planning for local business and industry
- o Customized contract training and education
- o Demonstrations of technologies

The survey findings revealed that all of the colleges offer technology transfer products and services of the following four types:

- o Strategies to assess local business and industry needs
- o Occupational and technical education courses
- o Customized technical training
- o Course development and design services

Frequently, community colleges provide technology transfer directly through their own personnel, facilities, and equipment. Of the list of 17 technology transfer products and services listed in the survey, all but 2 are delivered more often by the personnel of the community colleges than through contracts or referrals with outside experts and agencies. Additionally, most of the colleges broker technology transfer expertise and resources within communities to maximize their ability to meet client needs. Over one-half of the colleges contract or partner to provide such products and services as the following:

- o Customized technical training
- o Customized managerial training
- o Information related to technology

The findings revealed that over 75% of the community colleges offer advanced technology transfer courses, workshops, or seminars in the areas of business; computers, computer technologies, and information sciences; and engineering and engineering technologies (Figure 1). The majority of colleges also offer advanced technology training and education courses in the health field. Furthermore, nearly one-half of the colleges offer training and education in agriculture and about one-fifth offer training and education in the science technologies.

Insert Figure 1 about here

Over 50% of the colleges occasionally refer businesses and industries who contact them for technology transfer services to experts outside the colleges. Apparently, community colleges recognize that local experts and agencies are required from time to time to adequately meet client needs. The majority of colleges either contract with outside experts to provide products or services or refer clients to outside experts when assisting with small business creation; solving

problems with current technology; advising about business relocation, expansion, or retention; or assisting entrepreneurs and businesses with patents.

Growth in technology transfer training and consulting activity was reported by the respondents between FY88 and FY89 (Figure 2). Customized or contract technical training, especially that which was delivered on campus, was the most prevalent of the 5 types of technology transfer services offered by the colleges in FY88 and FY89. On average, each of the colleges offered approximately 90 customized training courses during FY89. This level of activity is roughly equivalent to each community college offering 3 technical training courses for external clients nearly every week of the regular academic year.

Insert Figure 2 about here

Of the five types of technology transfer and consulting explored in this particular section of the survey, in-plant customized or contract training by college faculty or staff experienced the most growth. In-plant training increased 25% during the FY88 to FY89 time period. Further, the findings revealed that while the colleges are less active in the areas of faculty consulting and referrals to outside experts, this activity is growing. Faculty consulting grew by 11% and referrals by 15% from FY88 and FY89. It should be noted that these statistics may understate the importance of consulting and referrals within the total spectrum of technology transfer activity because of the likelihood of under-reporting this type of highly random and individualized activity.

Technology Transfer Clients

Community colleges serve a wide range of clients seeking technology transfer including private manufacturing and nonmanufacturing firms, public agencies, and individual entrepreneurs. Within the manufacturing arena, the vast majority of colleges serve

manufacturers of electrical/electronic equipment, fabricated metals, and machinery (Table 1). Manufacturers that are clients of nearly one-half of the colleges include firms that produce food and kindred products and printing and publishing firms.

Insert Table 1 about here

Partnerships for Technology Transfer

Community colleges are not alone in providing technology transfer programs. Partnerships with other public and private organizations are plentiful. Over two-thirds of the colleges form partnerships with private firms, government agencies, private consultants, professional organizations, four-year colleges and universities, private industry councils, and other community colleges to deliver technology transfer (Table 2). Over one-half of the colleges join with Private Industry Councils and other community colleges to deliver technology transfer.

Insert Table 2 about here

While the findings show the prevalence of partnerships, most of the colleges acknowledge that other organizations in their communities are involved in technology transfer. Over 75% of the colleges report competition from some of the same types of organizations they involve as partners (i.e., private firms, private consultants, and four-year colleges and universities).

Th CEO's Role in Promotion of Technology Transfer

Community college CEOs can be important advocates for technology transfer. The survey findings revealed that college CEOs should demonstrate commitment for technology transfer within their institutions by providing resources and setting policies to support

technology transfer (Table 3). Equally as important, the colleges recognize the importance of their CEOs promoting technology transfer externally with college board trustees, local business and industry leaders, state policy makers, members of state legislatures, and taxpayers.

Insert Table 3 about here

Business and Industry Needs for Technology Transfer

Over 75% of the colleges report that business and industry, particularly small and medium sized firms, have needs for technology transfer products and services that can be grouped into six categories: basic skills enhancement, computers, quality management and productivity improvement, advanced manufacturing technologies, advanced quality control and assurance, and human resource development (Figure 3). Business and industry also specify the need to expand their technology transfer products and services in the following areas:

- o Needs assessments
- o Instructional design assistance
- o Technology assessments
- o Productivity assessments
- o Advanced technology demonstrations

Insert Figure 3 about here

Barriers to Delivering Technology Transfer

Consistently community colleges view themselves as capable of meeting business and industry demand for technology transfer with committed and capable leadership. It is within this context that community colleges identify improvement opportunities to continue to develop their

technology transfer programs (Table 4). The colleges report the need to improve technology transfer through the following strategies:

- o Making business and industry more aware of community college technology transfer initiatives
- o Increasing funding for technology transfer
- o Obtaining more advanced technology equipment and facilities for technology transfer

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Insert Table 4 here

Organizational Responsibility for Technology Transfer

Economic development units (e.g., business and industry training centers, small business development centers) are the primary unit in the colleges that have responsibility for technology transfer (Figure 4). Of the 39 colleges responding to this question, 69% indicated the economic development units have primary responsibility; 82% indicated that these units have either primary or secondary responsibility. Additional data collected through the survey but not shown in the table indicate that occupational and technical education has either primary or secondary responsibility for technology transfer in 44% of the colleges. Other units that support the capabilities to provide technology transfer are adult/continuing education, central administration, and academic departments.

Insert Figure 4 about here

Evaluation of Technology Transfer

The majority of the colleges reported that they regularly evaluate technology transfer programs by using informal communications or surveys/interviews rather than formal evaluation

studies (Table 5). Nearly all of the colleges indicated that they evaluate the profit./revenues, costs, efficiency, and effectiveness of technology transfer programs, products, and services for their business and industry clients. Fewer of the colleges evaluate the benefits of technology transfer for their own personnel, facilities, or students. The evaluations are usually conducted by internal personnel rather than business and industry clients or outside evaluators.

Insert Table 5 about here

Full-time Faculty Involvement in Transferring Technology

The colleges value full-time faculty involvement in technology transfer, as evidenced by over 80% providing salary supplements or stipends to faculty who participate in technology transfer. Further, the vast majority of colleges provide internal professional development, vendor training, tuition reimbursement for coursework, sabbatical leaves, or arranged leaves with business and industry to enhance the ability of faculty to contribute to technology transfer (Table 6).

Insert Table 6 about here

Pricing Policies for Training Associated with Technology Transfer

The approaches community colleges take in pricing customized or contract training associated with technology transfer vary greatly. Apparently colleges develop pricing formulas independently to meet the needs of local clients. Generally the colleges include a number of

different items into their calculations when determining a total charge for training. Many of the colleges charge fees for the following:

- o Instruction
- o Administration
- o Student services
- o Books and supplies
- o Facilities/equipment usage
- o Marketing and promotion
- o Overhead and indirect costs
- o Development

Much of the variation in total charges is attributable to the variation in charges for instruction, development, and administration, including indirect and overhead costs. When given the exact same set of scenarios, the colleges indicated the following ranges in charges:

- o Instruction -- $20.00 to $100.00 per hour
- o Development -- $0.00 to $50.00 per hour
- o Administration -- 0% to 60% of total direct costs

Formal Agreements for Technology Transfer

Formal agreements and contracts are comprehensive and inclusive in scope. Across the community college system, formal agreements and contracts for technology transfer contain items specifying partnerships, objectives, equipment, facilities, pricing and funding strategies, personnel, and outcomes.

Summary

This study explored the scope and level of involvement of community colleges in technology transfer. The study findings revealed that community colleges facilitate technology transfer with both public- and private-sector clients through a wide array of technology transfer programs, products, and services. Most prevalent among them was customized or contract technical training, particularly in the computer, engineering, and business areas. Other types of technology transfer products and services provided by the colleges were technical assistance, consulting services, troubleshooting, strategic planning, and technology demonstrations. Clients

expressed the need for training in the areas of basic skills enhancement, computers, quality improvement, advanced manufacturing technologies, and human resource development.

Within the colleges, leadership provided by CEOs for technology transfer is viewed as extremely important to the success of technology transfer initiatives. The responsibilities for deploying technology transfer typically fall to centralized economic development units, with support provided by occupational and technical education, academic departments, adult/continuing education, and central administration units. Partnerships between community colleges and private firms, four-year colleges and universities, and other community colleges are a common means of providing technology transfer assistance. Finally, while few barriers are perceived to hinder community college involvement in technology transfer, the findings revealed the importance of colleges maintaining highly visible programs, increasing funding, and maintaining technologically advanced equipment and facilities to better meet the changing needs of clients.

Recommendations

The survey findings have implications for ways community colleges should conduct and plan future technology transfer initiatives. In this regard, five recommendations were formulated to provide a framework for state-level public policy development, for development of college-level technology transfer initiatives, and for further study of technology transfer activities conducted by community college systems.

1. **Ensure that internal college and systemwide administrative policies and processes support efficient and effective delivery of technology transfer.**

Processes such as curriculum development, course registration, facilities allocation, marketing, and pricing should be designed to support technology transfer. For example, community college systems should explore establishing pricing guidelines that take into account such factors as geographic location, college characteristics, and client needs.

2. **Continue to strengthen partnerships with other organizations to provide technology transfer assistance.**

As technology transfer evolves, community colleges are likely to become increasingly knowledgeable about the types of products and services they can provide via partnerships with other organizations. It is very important for community colleges to promote their capabilities for providing technology transfer assistance with employers. Statewide networks are needed to coordinate the technology transfer initiatives of community colleges in local communities and across states.

3. **Ensure that technology transfer initiatives of community colleges are adequately funded.**

Adequate levels of funding are needed from within colleges as well as from external sources, primarily public funds. In order for community colleges to maintain the necessary facilities, equipment, faculty, administration, and support services to offer technology transfer to private-sector small and medium sized firms, the public-sector, and individual entrepreneurs, it is critical to have well-funded programs.

4. **Continue to develop the expertise of college faculty and explore incentives to involve full-time faculty experts in technology transfer.**

As technology becomes increasingly complex and community colleges play a more prominent role in technical assistance, colleges should provide intensive professional development opportunities to enhance the technical expertise of faculty. Innovative incentives are needed to involve faculty in key roles in delivering technology transfer.

5. **Explore opportunities to evaluate and improve technology transfer programs through on-going formal evaluation processes.**

Questions about the quality, effectiveness, and efficiency of technology transfer programs are quite complex to answer. Community college systems need a clear understanding

of the potential costs and benefits of their involvement in technology transfer initiatives over the long term. In order to create useful measures for evaluating community college involvement in technology transfer, on-going formal data collection processes are needed. Further, formal program evaluation approaches are needed to determine the impact of community college technology transfer programs on local and state economies.

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Author Notes

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Business

Banking and finance
Desktop publishing
Data base management
Entrepreneurship
Human resource development
Real estate
Small business management & marketing
Spreadsheets
Supervision and management
Word processing

Computers, computer technology and information systems

Computer (mainframe, micro) operations
Computer maintenance, diagnosis and repair
Computer processing
Data processing
Programming languages
Operating systems
Software applications and packages
Systems Analysis

Engineering and engineering-related technologies

Automotive technologies
Architectural technologies
Blueprint reading
Computer aided design and drafting
Computer aided manufacturing
Computer integrated manufacturing
Computer numerical control
Electricity and electronics
Hydraulics
Industrial controls
Machine tool design and technology
Materials science and management
Pneumatics
Programmable controllers
Robotics
Statistical Process Control
Quality control and improvement
Welding technologies

Figure 1. Advanced technology training and education provided by community colleges

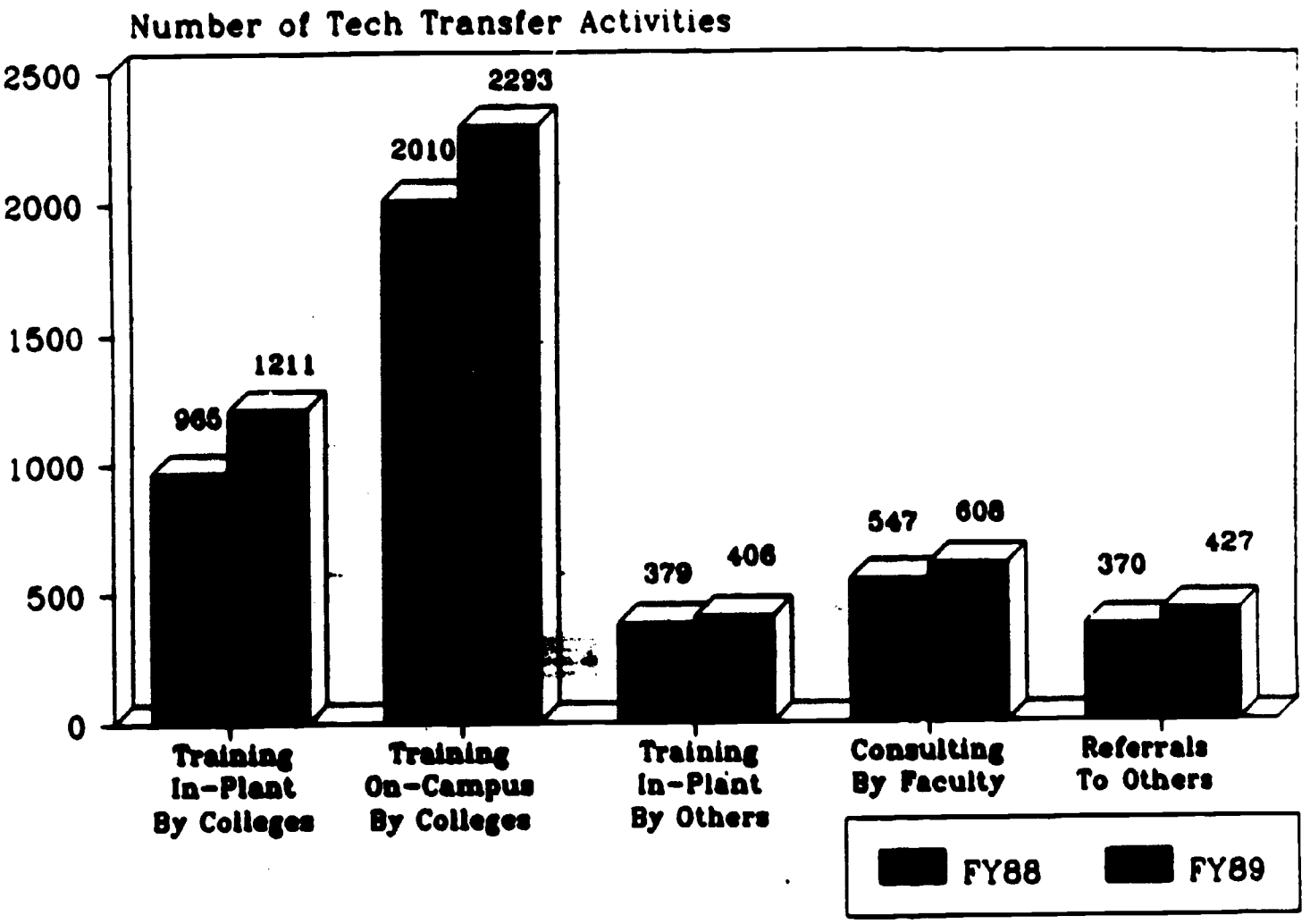

Figure 2. Training, consulting, and referrals offered by community colleges

Table 1

Types of manufacturers receiving technology transfer products and services during FY88 and FY89

Types of manufacturers	No. of colleges	% of colleges
Electrical/electronic equipment	33	79
Fabricated metals	30	71
Machinery	29	69
Food and kindred products	20	48
Printing and publishing	20	48
Rubber and misc. plastic products	17	41
Transportation equipment	17	41
Stone, clay, glass	6	14

Table 2

Community college partners and competitors in technology transfer

Types of partners/competitors	Colleges reporting partnerships		Colleges reporting competition	
	No.	%	No.	%
Private firms (vendors)	32	77	39	93
Government agencies	32	77	12	29
Private consultants	30	71	39	93
Professional organ. and societies	30	71	24	57
Four-year colleges and universities	28	67	36	86
Private Industry Councils	25	60	15	36
Other community colleges	24	57	21	50
Area vocational centers	18	43	12	29
Labor unions, labor mgmt councils	18	43	12	29
Federal laboratories	6	14	2	5
Proprietary schools	2	5	27	64

Table 3

Preferred level of involvement of CEOs in technology transfer

Statements about CEO involvement	None/ Somewhat %	A Fair Amount %	A Great Deal %	Don't Know %
Community partnerships between college and business leaders	5	24	69	2
Commitment of college resources to technology transfer	5	33	57	5
Community service leading to indirect marketing	17	19	64	0
Education of trustees about technology transfer	19	19	57	5
Promotion systemwide and with state agencies and legislatures	21	24	52	2
Participation in foundation board associations	12	48	40	0
Promotion of technology transfer with trustees	25	36	38	0
Participation on college's own task forces	39	40	19	2
Promotion on the national level	42	33	17	7
Participation in workshops on technology transfer	52	38	10	0

Note. The rows may not add to 100% due to rounding.

Basic skills enhancement	Reading Writing Math Computer literacy Technical communications Report writing
Quality management and productivity improvements	Implementing quality/productivity improvements Team problem solving Participative management Strategic business planning Productivity assessment and enhancement Organizational and cultural change
Advanced quality control and assurance	Statistical Process Control Just-in-time inventory management
Computers	Mainframe and midrange computers Microcomputers Software applications and packages
Advanced manufacturing technologies	Computer integrated manufacturing Computer numerical control Robotics Mechanical design Electrical troubleshooting and maintenance Automated manufacturing and drafting
Human resource development	Personnel management Supervisory skill development Employee performance evaluation

Figure 3. Technology transfer needs of business and industry

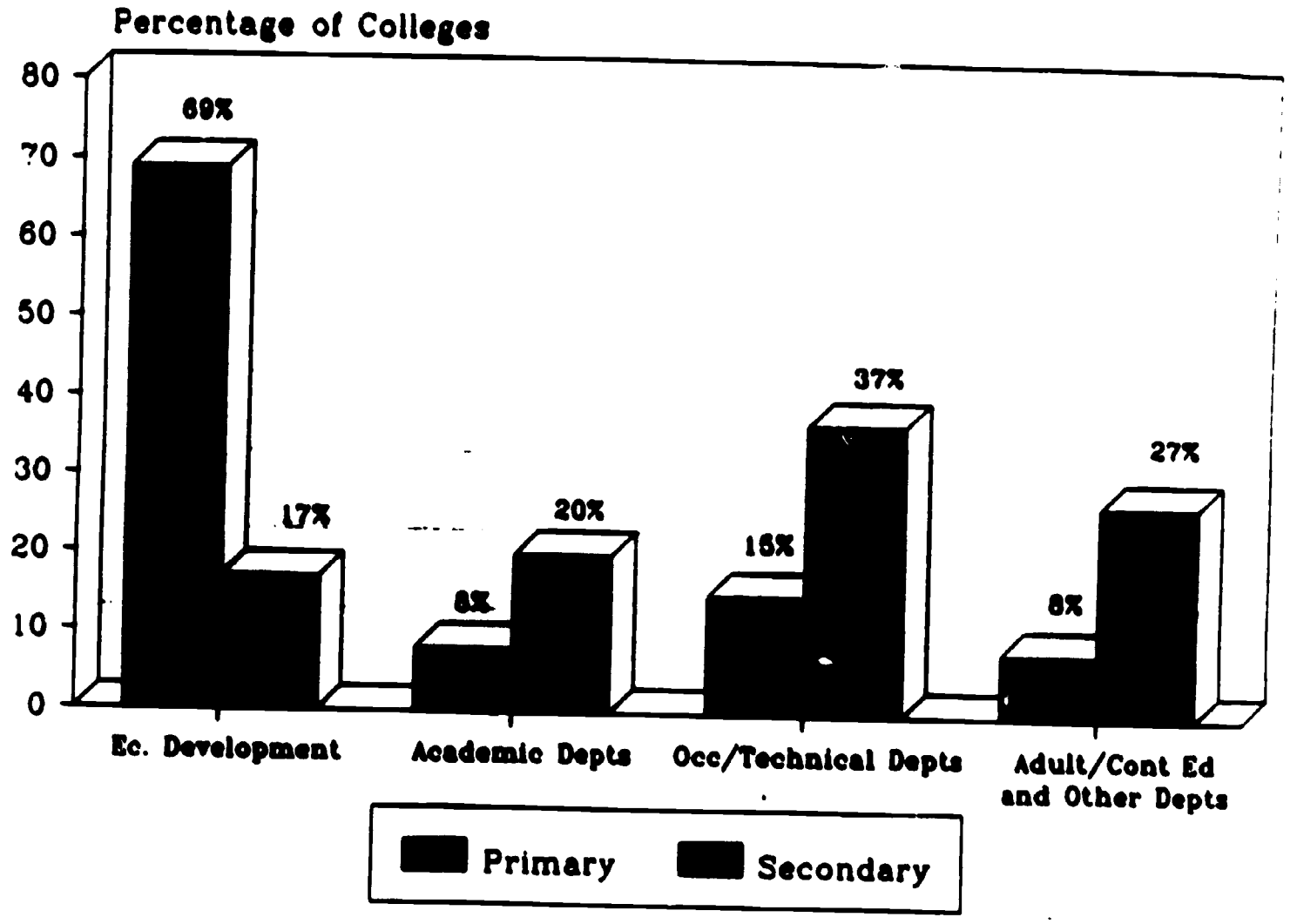

Figure 4. College units with primary and secondary responsibility for technology transfer

Table 5

Extent of agreement with statements about barriers to technology transfer

Barriers to technology transfer	Strongly Disagree %	Disagree %	Undecided/ No opinion %	Agree %	Strongly Agree %
Business unaware of tech transfer programs	0	10	2	71	17
Lack of funding	0	14	14	57	14
Lack of equipment or facilities	0	24	12	43	19
Difficulty in making personnel assignments	0	33	14	36	14
Outdated policies of the college system	5	31	19	29	14
Faculty lack expertise provide tech transfer	0	41	7	41	10
Technology transfer not viewed as legitimate	2	39	15	32	12
Lack of business/industry in the area	14	38	19	19	10
Lack of a point of contact for tech transfer	14	46	12	24	2
College cannot respond quickly	17	51	10	17	2
Lack of administrative time and support	15	54	17	10	2
Inability to compete	19	57	14	10	0

Note. The rows may not add to 100% due to rounding.

Table 6

Types of evaluators and evaluation methods used for technology transfer

	Type of evaluator			Evaluation methods		
Outcomes of technology transfer	College %	B/I %	Consultant %	Informal comm. %	Survey/ interview %	Formal studies %
Profit/revenue and costs	86	5	7	38	43	31
Efficiency and effectiveness	83	50	10	67	62	17
No. of technology transfer programs	79	17	0	48	36	29
Benefits to business/industry and economy	76	38	14	45	55	29
Benefits to students and graduates	64	31	0	45	50	17
Benefits to college personnel	52	2	2	55	10	5
Benefits to college facilities, equipment	50	12	7	50	14	12

Note. The rows do not add to 100% because respondents could check any or all of the categories.

Table 7

Professional development offered for faculty to enhance technology transfer

Types of professional development	Colleges offering professional development	
	No.	%
Internal professional development & in-service	35	83
Quality Assistance Program funds	35	83
Vocational Instructional Program funds	33	79
Business/industry staff employed as part-time faculty	28	67
Training through business/industry vendors	26	62
Tuition reimbursements and waivers for coursework	25	60
Sabbatical leaves to enhance knowledge and skills	22	52
Arranged leave to work in business and industry	22	52
Faculty/staff exchanges with others	12	29
Job trading/sharing with business/industry personnel	3	7

Effective Leadership Strategies for Planning and Implementing Tech Prep

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EFFECTIVE LEADERSHIP STRATEGIES FOR PLANNING AND IMPLEMENTING TECH PREP

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An innovative approach to education was authorized by the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 called Technical Preparation (Tech Prep). State educational agencies, community colleges, secondary schools, business/industry/labor, and other organizations are forming partnerships to ensure that Tech Prep initiatives develop successfully. The evolving focus of Tech Prep places it in a pivotal position for reforming education at the secondary and postsecondary education levels, possibly at the elementary level eventually. The Illinois State Board of Education (ISBE, 1991), describes Tech Prep as an educational path that integrates academic and technical content through an articulated sequence of courses from the secondary to the postsecondary level, leading to a two-year degree. Nationwide, Tech Prep is viewed as an opportunity to bring work-relevant content and instruction into the mainstream of American education. Repeatedly, those interviewed for our research described Tech Prep as an opportunity for improving education across disciplines and levels.

As Tech Prep evolves, there is a growing need to understand approaches used in its planning and implementation. Increasingly, we learn of approaches to educational reform that result in effective educational processes and outcomes for students and programs (Odden, 1991; Fullan, 1991). What lessons can educational leaders take from these reform efforts? What unique lessons can be learned from educators involved in planning and implementing Tech Prep? This presentation is designed to address these questions by describing planning and implementation strategies used in establishing Tech Prep initiatives. While it is much too early to declare any strategies *successful*, it is possible, we believe, to share what those involved in initiating Tech Prep perceive to be leading to successful accomplishment of state and local goals.

Objectives

The primary goal of this presentation is to describe the strategies employed by educational leaders, most of whom work in postsecondary settings, in planning and implementing Tech Prep. Within that goal, the presenters plan to discuss the following:

- critical phases of Tech Prep planning
- selected Tech Prep planning strategies
- strategies for overcoming barriers to Tech Prep planning and implementation
- leadership skills, knowledge, and attibutes perceived to be crucial in planning Tech Prep

Perspectives and Methods

Information presented in this paper is based on two descriptive research studies conducted to examine factors influencing planning and implementation of Tech Prep. The first study was conducted in a Midwest state with all seventeen of its Tech Prep planning grant consortia sites during the 1990-1991 school year (Bragg, Huffman, Hamilton & Hlavna, 1991). Multiple methods were used to collect data over a six-month time period including using a two-page mail questionnaire to ascertain baseline planning

information; one- or two-day site visits, observations, and personal interviews with individuals involved with the ten consortia sites; and telephone interviews with project leaders of the remaining seven consortia sites. All instruments were pilot tested before being used in actual data collection. After each site visit or telephone interview, descriptive data were analyzed and preliminary findings were developed and sent to key respondents for verification. Finally, a one-page profile of critical planning and implementation strategies for each consortium site was developed with input from local consortia project leaders.

The second study is underway to provide information pertinent to the objectives of this presentation. This second study is a two-year multi-phased effort designed to obtain better understanding of factors that influence Tech Prep planning and implementation at the state and local level. An initial phase of the study involved telephone interviews and document analysis regarding planning strategies used by state agencies for implementation of the Tech Prep Education Act. These telephone interviews, averaging 30 to 40 minutes, were conducted with the designated state leader for Tech Prep in all 50 of the United States and the District of Columbia. Based on this information, a purposive sample of state- and local-educational organizations is being identified for in-depth case studies to be conducted October 1991 to March 1992. Information collected from state agencies regarding planning strategies used at both the state and local levels has been incorporated into this presentation.

Findings

Critical Phases of Tech Prep Planning

The sequence of steps used in planning Tech Prep appear to be typical of those used in planning almost any new educational initiative. Educators interviewed for this study were usually well-versed in educational program development approaches. Overal, they seemed cautiously enthusiastic about laying out plans for developing Tech Prep initiatives and involving key individuals representing the consortium partners and other stakeholders in the process. Probably due to the early stage in Tech Prep policy implementation, few interviewees had developed detailed plans for evaluating Tech Prep. However, many recognized the need to tie Tech Prep outcomes to federally-mandated assessments and performance standards and discussed their intention of addressing evaluation more thoroughly in the future.

A consistent and important message from those interviewed was the importance of having the flexibility of moving through the planning process at a pace that makes sense for local consortium partners. Decisions about where to start and progress through each Tech Prep initiative requires input on local needs by those individuals involved in the planning process. Many interviewees spoke about the planning phases being interrelated and ongoing, rather than discrete steps occurring on a one-shot basis. They spoke about strategies used to plan, develop, implement, and eventually evaluate Tech Prep (Table 1).

Selected Tech Prep Planning Strategies

While it is too early to declare any Tech Prep planning practices *exemplary*, there were a number of approaches that were described by interviewees as leading them to their desired outcomes for Tech Prep.

Table 1

Tech Prep Planning Phases and Strategies

Phases	Planning Strategies
Planning	• Initiating a Tech Prep project • Involving consortia partners in substantive planning for Tech Prep • Developing a local philosophy about Tech Prep • Selecting planning strategies and developing an overall planning philosophy • Selecting individuals to be involved in planning • Developing an organizational structure for planning • Developing and using planning teams • Devising and revising timelines
Development	• Developing local policies • Conducting staff development • Developing articulated and integrated curriculum • Writing articulation agreements • Providing guidance and counseling for Tech Prep • Marketing Tech Prep • Ensuring meaningful collaboration with business/industry/labor
Implementation	• Initiating each component of the initiative • Monitoring the initiative as it evolves • Maintaining day-to-day processes and programs • Anticipating possible barriers • Overcoming barriers with problem solving • Developing contingency plans
Evaluation	• Documenting and evaluating Tech Prep planning • Assessing learner outcomes • Determining the broader impact of Tech Prep • Establishing ongoing, systematic evaluation processes • Ensuring continuous quality improvement of Tech Prep • Ensuring the use of evalution results

Strategies for Getting Started. Knowing exactly where to start planning a Tech Prep initiative can be difficult. Many interviewees stated that they had so much to do in the first few months of the project that they felt overwhelmed. However, several individuals who had primary responsibility for leading a local Tech Prep initiative stated

that they were able to move the planning process forward by undertaking the following steps:

- gathering information about Tech Prep to help educate themselves and their project staff
- gaining support from top leaders of the consortium by involving them in planning for Tech Prep
- creating a local Tech Prep philosophy and planning approach
- involving individuals representing the consortium partners and other key groups in planning for Tech Prep
- creating an effective and efficient planning structure
- developing and involving planning teams in meaningful activities
- setting realistic timelines

Creating a Local Tech Prep Philosophy and Planning Approach. Several interviewees spoke of the importance of adopting a local philosophy about Tech Prep and clarifying how federal and state definitions are to be used at the local level. These individuals frequently made statements beginning with the following kinds of phrases: *In our school, Tech Prep means...* or *We're a little different from the rest, we think about Tech Prep as...* These individuals had thought strategically about the purpose of Tech Prep and how it could be used to improve educational opportunities for students in their institutions. By making their goals explicit, interviewees shared that they were able to provide direction for their projects. When the local philosophy was developed collaboratively with other consortium partners, there seemed to be greater commitment to Tech Prep and conducting a systematic planning approach for it. Some important questions interviewees asked to formulate a local Tech Prep philosophy included: What is the purpose of the local Tech Prep initiative? Who should participate in the Tech Prep initiative? How will we know when Tech Prep is working? What kinds of outcomes are expected of students with different ability levels, career aspirations, and personal needs?

Recruiting Key Groups to Participate in Planning. Why involve stakeholders in planning? Inviting stakeholder groups that have a keen interest in the development and implementation of Tech Prep has several benefits, according to interviewees. Involvement of groups results in shared ownership in Tech Prep, potentially improving the ultimate effectiveness of the initiatives. Interviewees also shared that increased involvement helps prepare people for change--an inevitable consequence of Tech Prep.

Knowing which stakeholders to involve in planning may not be apparent in the early stages. Interviewees advised that it is important to select those individuals, groups, and organizations that are directly impacted by Tech Prep and likely to be interested in ensuring its success. Selecting key groups that have a stake in Tech Prep's future typically means identifying:

- educational institutions to be partners in secondary/postsecondary articulation (e.g., secondary schools, community colleges, and four-year institutions)
- employers to be partners with education in designing work-based learning and providing viable work experiences and job placements
- academic and technical program areas that can be integrated into meaningful and practical curriculum

- individuals who can be *champions* for Tech Prep and lead local planning activities, including community leaders, board members, and parents

- educators (e.g., administrators, faculty, counselors, EFE system directors, and university faculty) who offer enthusiasm and energy to developing Tech Prep

- students and parents who can benefit from Tech Prep

Developing Tech Prep Planning Teams. Much can be done to continually build a healthy working environment for planning teams, according to interviewees. Seven strategies were identified to provide ideas for developing effective planning teams.

- Gain commitment and needed resources from top leaders to carry out a team planning approach.
- Formalize the team planning agenda and procedures.
- Conduct or obtain training in team planning.
- Provide ample opportunity to practice team planning.
- Observe Tech Prep planning teams in action.
- Monitor team planning and intervene when teams are not productive
- Celebrate team accomplishments at key milestones in the project (e.g., the end of the planning phase, when students first enroll in the program)

Strategies to Overcome Barriers

Successful implementation requires employing the proper strategies and resources to ensure that Tech Prep functions effectively. Several interviewees shared information about potential barriers they are dealing with in implementing their Tech Prep initiatives. Many of these observations focused on the inevitable dilemma associated with resistance to change. Several barriers were identified by more than one interviewee along with recommended implementation strategies for overcoming them (Table 2).

Leading the Tech Prep Initiative

The job of managing a local Tech Prep initiative can be very complex. Sometimes this job is shared by members of a project leadership team, however more often it seems to be undertaken by one individual. Interviewees who were project leaders shared their perceptions about skills and knowledge required to be successful in managing Tech Prep. In addition, others involved in Tech Prep planning were asked about their impressions of the skills and knowledge required to undertake the job of Tech Prep project leader. First and foremost, interviewees described the importance of having expertise in the field of education. Interviewees described the importance of project leaders having expertise in the following education-related areas:

- curriculum development
- program planning and evaluation
- marketing and student recruitment
- specific school and college systems
- state and local educational systems
- vocational and technical education
- secondary/postsecondary education articulation processes
- academic and technical education integration concepts

Table 2

Potential Tech Prep Barriers and Implementation Strategies

Barriers	Implementation Strategies
Lack of focus	• Communicate a vision for Tech Prep clearly, honestly, and enthusiastically • State the benefits of Tech Prep to all key groups • Know the territory • Plan for Tech Prep from a solid conceptual base • Build and maintain relationships with constituencies
Lack of commitment to Tech Prep	• Explain and sell the concept repeatedly • Build support among respected leaders • Involve key stakeholders • Listen and share • Empower people through team building and staff development • Celebrate milestones (e.g., first class days graduations) • Develop strategies for handling opponents
Fear of losing vocational education programs and students	• Allow time for roles, policies, and attitudes to adjust • Expect some conflict • Allow time for team building • Monitor enrollments and course-taking patterns
Lack of clear implementation strategies	• Distribute a written action plan • Specify what, why, who, and when in the implementation plans • Determine supplies, equipment, and other resources needed • Anticipate possible problems • Make contingency plans • Implement gradually • Be willing to fine tune and refocus
Communication problems	• Develop mechanisms to share accurate and consistent information • Share progress reports regularly • Schedule staff development regularly • Schedule group discussions regularly • Assign a person to troubleshoot problems • Build in procedures to handle problems • Intervene in serious problems • Provide joint planning time for instructors

Table:

Potential Tech Prep Barriers and Implementation Strategies (Cont.)

Barriers	Implementation Strategies
Lack of resources (time, people, materials)	• Outline resource needs early • Delegate duties • Set priorities • Start one program at a time • Use existing services, people, and materials • Solicit funding from business/industry, government agencies, or others
Difficulties articulating in large diverse areas	• Use site-based planning teams • Schedule centralized staff development for team leaders who, in turn, train local planners • Maximize input from local planners • Ensure review and feedback as initiatives are developed
Lack of credibility	• Allow time for Tech Prep to become established • Demonstrate top leader commitment • Publicize the benefits of Tech Prep • Carefully market the initiative • Assist students with support services to ensure their success

In addition to these areas, interviewees stated that Tech Prep project leaders must possess skills and knowledge in the processes of leading and managing an educational innovation project. Three project leader roles evolved from our study along with multiple responsibilities for each (Table 3).

Summary

This presentation has focused on the planning strategies used by educators to initiate new Tech Prep initiatives. Research conducted on factors influencing Tech Prep planning and implementation in the Midwest and nationwide reveals useful information about how leaders can approach Tech Prep program development. These findings indicated that specific planning strategies can be employed to develop Tech Prep initiatives that maximize the accomplishment of program goals. Some of these strategies involve gaining top leader support, developing a local philosophy, recruiting stakeholders to participate in planning, and organizing a team planning approach. The challenge we face is in determining to what extent Tech Prep stimulates educational reform across the board, resulting in a truly integrated and life-centered approach to education. Without a doubt, Tech Prep represents one of education's greatest leadership challenges today.

Table 3

Roles and Responsibilities of Project Leaders

Roles	Responsibilities
Change leader	• Initiate start-up of Tech Prep • Recruit key groups for Tech Prep • Instill enthusiasm and commitment to Tech Prep • Stimulate the planning process • Create and recommend alternative approaches
Facilitator	• Search for and interpret information • Educate others about Tech Prep planning • Organize and guide planning teams • Help groups develop positively • Establish a climate of trust • Resolve conflicts • Link people with information and resources • Keep teams moving • Communicate (written and verbal) and listen carefully • Give formal and informal presentations • Disseminate information about the project • Conduct follow-up visits with participating sites
Manager	• Organize and coordinate planning meetings • Coordinate data collection and analysis • Organize and carry out regular project activities • Select, orient, and supervise project staff • Acquire resources and manage budgets • Maintain project records • Conduct grant writing • Juggle multiple management responsibilities

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