The Business Roundtable

CONSTRUCTION TRAINING THROUGH VOCATIONAL EDUCATION

A CONSTRUCTION INDUSTRY COST EFFECTIVENESS PROJECT REPORT

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TABLE OF CONTENTS

I

SUMMARY

A study was made of the resources of the U.S. vocational education system to see if it could fill some unmet training needs for the construction industry. The study team found that:

- The U.S. vocational education system is little used to train craftsmen for the construction industry.
- State vocational education systems have organizations and facilities that could contribute much more to construction training than they have in the past.
- National education associations can assist coordination between the construction industry and education.
- State vocational systems are providing other industries a greater share of their trained or partly trained personnel.
- High school students being trained for construction are almost exclusively oriented toward home building or trades used in building small commercial structures.
- Some government and industry groups which historically have influenced construction training policies and methods are becoming more amenable to letting others serve in training capacities.

Some major problems impede an increase in construction-trades training via vocational education:

- Industry's inability to project its manpower needs on a long-term basis for specific localities.
- Lack of continuing communication between the construction industry and educators.
- Building trades unions and some large trade associations emphatically prefer the traditional craft apprentice programs.
- A continuing, though dwindling, attitude in our society that vocational training is an undesirable alternative to professional or technical training.
- A reluctance to finance training at state expense for students who may well leave that state to work elsewhere.

Current training programs are turning out only 50,000 craftsmen a year, at a time when the nation needs perhaps 240,000 a year - to replace retirees and fill anticipated growth in construction jobs. Because of the potential economic benefit of more use of state vocational education systems for construction training, efforts toward this goal should proceed. They should involve these major thrusts.

- A communications link involving all segments of the construction industry and vocational educators should be established. Participants need to better identify and explore areas where construction industry training might be improved. All parties should be represented by policy-making personnel.

- Separate studies should be made of programs for high school students and specialized training programs for adults. Each presents distinctively different problems and possibilities.

Locally, positive results may be obtainable within two to four years if a particularly favorable situation relative to locality, work load, industry representatives and construction users is developed. Indus-try-wide changes will take a lot longer. The pace of change will depend primarily on the effectiveness of the suggested communications link.

II

INTRODUCTION

Ineffective manpower training and entry into the construction industry work force, in both numbers and requisite skills, has presented continuing problems for industry employers and their customers for several decades. Many industry representatives blame industry fragmentation, parochialism and the fluctuation of demands for its work force for the absence of more effective training.

Study team members from the ranks of owners, construction trade associations and state vocational education systems provided background information and developed data about the possible expanded use of vocational education in construction.

In making the study, it was recognized that 1) some western and mountain states probably will have the greatest demand for construction workers in the 1980's; 2) a large amount of construction will probably continue in the southeastern and gulfcoast states; 3) each state has to be treated individually since we are, in fact, dealing with state vocational education systems; and 4) at a future date, decisions will have to be made as to which vocational-education-training possibilities deserve priority.

The study showed clearly that owners and contractors need to learn more about the U.S. vocational education system [1] and its products.

III

PUBLIC VOCATIONAL EDUCATION IN THE UNITED STATES

All 50 states have vocational education systems, which aim to help persons pick, prepare for, enter and progress in an occupation. Organizational structure and training abilities vary among states and among institutions within states. Local school boards generally have final control over the content of public educational offerings in their communities, although minimum requirements may be set by state boards of education. Public vocational education programs are normally financed by a combination of state and local taxes. States often

[1] It should be noted that there is no single U.S. vocational education system. Each state has its own system. For convenience or brevity, this report may refer to the U.S. vocational education system but, in all cases, this means the 50 state systems.

can tap federal funds for distribution to local districts to assist programs deemed important to the nation. Vocational education in recent years has received about 9% of its funding from Washington.

Many major organizations or agencies at national and state levels have an important impact on vocational education training. Some of the key organizations[2] are:

- Council of Chief State School Officers
- National Association of State Directors of Vocational Education
- National Vocational Education Professional Development Consortium
- Federal and State Departments of Education
- American Vocational Association
- American Association of School Administrators
- United States Department of Labor
- American Association of Community and Junior Colleges
- AFL-CIO Building and Construction Trades Department
- Contractors trade associations and individual employers

Sources of Vocational Training

Vocational education usually aims at three groups:

- ***Secondary-school students*** in grades 11 and 12 are offered courses stressing basic knowledge, attitudes, skills and habits required to get a job in a specific occupation.

- ***Post secondary-school students***, including high school graduates and non-graduates can pursue an organized program or curriculum -- usually one or two years in length; all ages may be represented.

- ***Adults*** can take short courses, not part of an organized, longer curriculum, either to prepare for entering an occupation or to upgrade skills in an occupation.

Curriculum Content

Vocational curriculum offerings are not standardized across state lines, and in many cases, are not standardized from school to school within states. Several state departments of vocational education have

[2] See Appendix for more information on organizations listed.

established curriculum and instructional-materials centers specifically to develop and disseminate materials for vocational programs. The benefits of such a system are that the materials are current and relevant to the needs of industry and that it encourages a degree of uniformity from school to school.

The content and duration of specific training programs are determined by studies made of actual workers and work assignments in each trade or occupation, by advice from local labor and management representatives thoroughly familiar with the occupation, and through advice of knowledgeable teachers and supervisors.

Most vocational training has three major phases. The first deals with basic trade terminology and simulation-type training. The second phase involves hands-on experience and the third phase consists of on-the-job training.

Enrollment Trends

Vocational schools seek to meet ***locally perceived needs*** in a multitude of areas varying from homemaking to agriculture, including trades and industry. Enrollment in vocational education has increased significantly over the past decade with the greatest increase in the post-secondary population.

About 40% of all secondary school students in grades 11 and 12 are enrolled in some vocational education curriculum. By states, the range is from 9% to 80%.

Enrollments and the Construction Industry

For the 1978-79 school year, the U.S. Department of Education's National Center for Education Statistics reported that 7,7 million persons were enrolled in all types of vocational training. Enrollment directly related to the construction industry approximated 430,000 or about 5% of the total. Skills taught included carpentry, electricity, masonry, plumbing and pipefitting, and sheet metal. ***Essentially all construction curriculums are oriented toward home building and small commercial work.***

IV

FINDINGS

Historical Influences

Vocational education training for construction has been shaped by a multitude of organizations, each tugging in disparate directions, either selfishly or in ignorance of wider perspectives.

Government Agencies: The U.S. Department of Labor and State Apprenticeship Councils (SAC's) have important responsibilities in vocational training. SAC's and the Labor Department's Bureau of Apprenticeship and Training (BAT) have been strong advocates of traditional apprenticeship programs.[3] However, recently BAT has been increasingly willing to approve management administered training programs incorporating competency-based time schedules.

Building Trades Unions: Individual craft unions have exerted considerable influence on construction vocational training in public schools. This influence has consisted primarily of technical advice about curriculum content, facilities, equipment, and state-of-the-art skills used in the trades.

Entrance into the construction industry's unionized work force has been both restrictive and unrestrictive in a bizarre way. Unions have demanded completion of Ions-term apprentice programs, yet at the same time they allow individuals with little or no formal training to become union members and be classified as journeymen. Unions have promoted an average four-year apprentice program, resisting competency-based training and acceptance of credit-for-training received from other sources. However, less than a third of all construction workers have learned their trades through apprenticeship.

According to the Department of Labor's annual construction industry report of April 1980, 900,000 new lobs will be created for construction craftworkers by 1990. In addition, 1.5 million vacancies will occur as workers leave the industry to retire or shift into other work. Thus a total of 2.4 million new construction craftworkers will be needed by 1990. Present training programs are graduating an average of only 50,000 craftsmen a year Based on these forecasts, if the present rate of training is maintained over the next 10 years, a severe shortage of

[3] For a more detailed study see Report D-2. ***"Government Limitations On Training Innovations" Business Roundtable,*** 1982

construction workers (1.9 million) will result. Up to now, the building trades unions have not viewed public vocational education as a suitable way to help meet the projected shortage of craftworkers. Rarely do we find a vocational education graduate being accepted for advanced standing in a union-sponsored apprentice program. Considering the possible cost effectiveness of vocational education for construction, the less-than-aggressive pursuit of the public education approach adds credence to claims that there has been an artificial control of the labor supply.

Construction Management: Construction industry management in the unionized sector has not influenced manpower development for the industry as effectively as labor organizations. Parochialism, fragmentation, and other factors have been cited to explain the comparative lack of united effort. Although some trade associations at both national and local levels have influenced manpower training, management in the main has permitted unions to dominate training whether or not it involved vocational education institutions or systems. Management has permitted unions, through collective bargaining agreements, to become the de facto employers of personnel.[4] The hiring hall is a prime example.

Construction management in the open-shop sector has exerted significant impact on training in several sections of the country. Individual large employers conduct in-house training augmented by vocational education institutions. Still, most employers in the open-shop sector train no one, relying on their ability to hire employees away from others who have provided training.

Social Philosophy: Perhaps one of the strongest influences on vocational training for the construction industry was referred to by the National Advisory Council on Vocational Education in its sixth report, ***"Counseling and Guidance: A Call for Change"*** in 1972. The report contended that academic education aimed at preparing students for four-year colleges has dominated our public education system and that high schools have emphasized preparation for college at the expense of preparation for employment. This philosophy permeated our schools as a fallout from societal attitudes that developed in the wake of Soviet advances in space technology, dramatized by Sputnik.

These philosophies have moderated in the past decade but still have significant effect on what is taught.

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[4] See "***Coming to Grips With Some Major Problems in the Construction Industry - Restoring the Management Role***", Vol. 1. Revised 1981. The Business Roundtable.

Specific Experiences and Relationships

Interviews with qualified representatives of the industry and vocational education revealed that in the past:

- A lack of ongoing contacts and understanding of each other's capabilities and problems are major reasons for minimal use of vocational education systems in construction craft training.
- Contacts, except for open-shop contractor efforts in some areas, have been primarily spurred by immediate needs for specific types of skills which were difficult to locate.
- Vocational education systems respond to identified community needs and anticipate immediate placement of program graduates. They seek to train for continuing requirements in local communities.
- With few exceptions, industrial construction contractors have not provided for or made a commitment to either short or long-term manpower needs in specific geographical areas.
- In many areas building trades unions control training of craft prospects through adequately funded apprenticeship programs to the exclusion of employer and/or vocational education training programs.

From the contractors' viewpoint, schools have exhibited these shortcomings:

- Courses of study were not available for specific trades or were oriented toward another segment of the industry. Sometimes where the requisite curriculum existed supportive facilities did not, and funds were unavailable to establish them.

- Qualified instructors were not available.

- Some education administrators were unwilling to work with sponsoring employers in curriculum planning, facility utilization, time requirements, etc.

- Construction vocational education training is oriented almost exclusively to home building and small commercial construction.

From the educators' standpoint, the industry has exhibited these shortcomings:

- Contractors have not assumed their proper role in development of training programs.

- Fluctuations in employment and the mobility required of construction employees have not been given enough consideration when dealing with training needs.

- Industry has not provided occupational analyses for many crafts, complicating curriculum development.

- Contractors' support of locally negotiated training funds has encouraged establishment of training centers that compete with vocational education systems.

- A lack of ability to forecast future work-force needs.

V

CONCLUSIONS

- Contractors not committed to union agreements can increase vocational education training on their own but they can be much more effective working jointly with others.

- Employers committed to union agreements must assume their full responsibility for manpower training and entry into the work force.

- Unions' long-term commitment to and control over training procedures must be recognized. Unions must be convinced that greater use of vocational education training need not be a threat to their membership or long term objectives.

- In most states, properly planned, expanded use of vocational education would be welcomed by state education officials even if this required states to spend more money for facilities and administration.

- Some contractors and trade associations have had reasonable success in developing craft training in conjunction with representatives from education. The results of their efforts should provide considerable help in expanding industrial-construction vocational education.

- Given a favorable local situation involving committed owners, contractors and state officials, a local program for increased vocational training could be developed. Two to four years would be needed for results to show.

- Broad based improvement in vocational education for construction will require long term coordinated efforts by owners, contractors, unions and national and state education agencies.
- Expanding and improving vocational education construction training in secondary schools and among adults will require primarily changes in methods and logistics, although in secondary schools, attitudes remain a significant consideration.
- The beginning of a strong communications link between the construction industry and vocational education has been established as a result of coordinated effort during the study.[5] That link needs to be expanded and improved by the addition of other participants.

- Philosophical changes as well as changes in training methods must be considered. If a strong continuing communications link between the construction industry and vocational education is to be developed and vocational institutions are to expand construction training, changes in attitudes by some members of almost all groups involved will be required. A catalyst is needed to accomplish these changes. Purchasers of industrial construction can fill this role. No other group has quite the same incentive to improve all elements of the industry.

VI

RECOMMENDATIONS

An ***Implementation Team*** is needed to coordinate the efforts to expand vocational education for construction. Dealing with all aspects of the subject will require a large number of personnel with diverse areas of expertise. The formation of subgroups to concentrate on ***communications, secondary schools,*** and ***adult training*** appear desirable.

- Since improved communications is the most promising route to more and better construction training, especially in secondary schools, a ***Communications Improvement***

[5] Representatives of the Associated General Contractors (AGC) and of the National Association of State Directors of Vocational Education have established a joint task force to explore areas of mutual concern and interest.

Subgroup should be formed. It will require representation at the executive level from owners, construction trade associations, and various state and national vocational education groups. They should develop more specific information on the positions of all who have an impact on construction training. Resolution or accommodation of philosophical differences will be needed before broad-based national developments are possible. Over time, this group could be expanded to include more employers, union representatives, and educators, as specific items to be treated at the national level are more sharply defined.

Toward that end, contractor trade associations and other segments of the industry should present specific information to educators at national and state levels about the opportunities industrial construction can offer to young people entering the work force. There should be planned presentations at educators' conferences, to state education representatives, government and union groups. Educators, in turn, should inform industry representatives regarding their organizational and physical assets, including the possibilities of expansion.

Educators and industry representatives should develop programs aimed at improving owners' understanding of the problems related to craft training.

- ***A Secondary Schools Subgroup*** should be formed to study and recommend ways to interest more young people in careers in construction. It should deal with such topics as:

  - Social attitudes toward craft training.
  - Promotional programs aimed at teenagers.
  - Appropriate curriculum.
  - How the industry can develop reliable work force forecasts.
  - Ways of adapting existing vocational education programs to the needs of industrial construction.

Along with this effort, a special effort should be made to identify one or more local areas with significant long-range needs for more manpower. In those localities work should begin to expand vocational education training, giving priority to curriculum development, work force forecasting, and coordination among interests involved.

- ***An Adult-Age Training Subgroup*** should deal primarily with how specialized short courses, usable in all states, can be developed for skills most often in short supply. There is considerable training of this type now, but most of it appears to be local in nature. This group is likely to be primarily concerned with specific logistics problems such as which states need quick development of short-term programs to relieve anticipated shortages of highly specialized skills in the major industrial-construction trades, Adult training probably presents the best possibility for quick gains, especially in those localities where long-term manpower needs have been identified.

VII

APPENDIX

Organizations and agencies having a significant impact on vocational education training:

- ***Council of Chief State School Officers:*** These chief educational officers usually administer all elementary and secondary educational programs. In some states, they also control higher education programs.

- ***National Association of State Directors of Vocational Education and The National Vocational Education Professional Development Consortium:*** These are organizations formed by state directors of vocational education for the professional improvement and nationwide development of vocational education programs and services. Their leaders influence the kinds, amount and quality of vocational education provided by local school boards.

- ***State Departments of Education:*** Control the distribution of state funds for education, set minimum standards, and provide assistance to local districts.
- ***American Vocational Association****:* A professional organization of some 5,5,000 teachers and administrators. AVA is committed to the growth and development of vocational education.

- ***Department of Labor:*** Through the Bureau of Apprenticeship and Training and State Apprenticeship Councils, the Labor Department influences the type and amount of training done through, and in addition to, apprenticeship programs

- ***Federal Department of Education:*** Controls the distribution of federal funds for vocational education
- ***American Association of Community and Junior Colleges:*** This is the organization of two-year colleges, many of which have extensive programs of vocational and technical education for adults

- ***A.F. of L. - C.I.O. Building and Construction Trade Department.:*** *This* group represents craft workers in the unionized sector of the construction industry

- ***Construction Trade Associations and Individual Employers****:* Trade associations represent various types of contractors such as electrical, mechanical, general, etc.

CICE REPORTS

The Findings and Recommendations of The Business Roundtable's Construction Industry Cost Effectiveness project are included in the Reports listed below. Copies may be obtained at no cost by writing to The Business Roundtable.

Project Management -- Study Area A

- A-1 Measuring Productivity in Construction
- A-2 Construction Labor Motivation
- A-3 Improving Construction Safety Performance
- A-4 First and Second Level Supervisory Training
- A-5 Management Education and Academic Relations
- A-6 Modern Management Systems
- A-7 Contractual Arrangements

Construction Technology -- Study Area B

- B-1 Integrating Construction Resources and Technology into Engineering
- B-2 Technological Progress in the Construction Industry
- B-3 Construction Technology Needs and Priorities

Labor Effectiveness -- Study Area C

- C-1 Exclusive Jurisdiction in Construction
- C-2 Scheduled Overtime Effect on Construction Projects
- C-3 Contractor Supervision in Unionized Construction
- C-4 Constraints Imposed by Collective Bargaining Agreements
- C-5 Local Labor Practices
- C-6 Absenteeism and Turnover
- C-7 The Impact of Local Union Politics

Labor Supply and Training -- Study Area D

- D-1 Subjourneymen in Union Construction
- D-2 Government Limitations on Training Innovations
- D-3 Construction Training Through Vocational Education
- D-4 Training Problems in Open Shop Construction
- D-5 Labor Supply Information

Regulations and Codes -- Study Area E

- E-1 Administration and Enforcement of Building Codes and Regulations

Summaries - More Construction For The Money

- CICE: The Next Five Years and Beyond

Supplements - The Workers' Compensation Crisis…Safety

- Excellence Will Make A Difference (A-3)