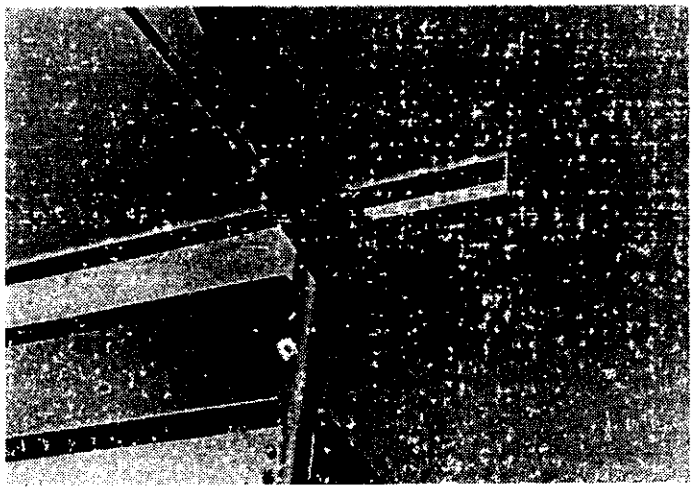
TECHNICAL PUBLICATION NO. 54

RECRUITMENT, TRAINING AND PLACEMENT OF RESIDENTIAL AND COMMERCIAL CARPENTRY PROGRAMS OFFERED THROUGH STATE SUPPORTED VOCATIONAL TRAINING CENTERS AND COMMUNITY COLLEGES

SPONSORED BY A GRANT FROM THE BUILDING CONSTRUCTION INDUSTRY ADVISORY COMMITTEE



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SUMMARY OF TECHNICAL REPORT NUMBER 54

RECRUITMENT, TRAINING AND PLACEMENT OF RESIDENTIAL AND COMMERCIAL CARPENTRY PROGRAMS OFFERED THROUGH STATE SUPPORTED VOCATIONAL TRAINING CENTERS AND COMMUNITY COLLEGES

BY
BENJAMIN J. BAFFER, ALI MARKUS, BRISBANE H. BROWN, Jr.,
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The School of Building Construction at the University of Florida, in conjunction with the Building Construction Industry Advisory Committee, has undertaken a study concerning a manpower crisis in the construction industry in the state of Florida. This is such a broad topic that several studies are being conducted on various segments of the construction industry. Once these studies have been completed, a comprehensive report will be made as a part of the research grant from the Building Construction Industry Advisory Committee. This report covers the segment of the study relating to state supported carpentry training programs offered at Community Colleges and Vocational Centers. Graduate students, under the close supervision of faculty, developed a number of surveys with the purpose of isolating the causes and effects of the shortage of skilled carpenters and identifying steps that may be taken in order to prevent, or at least minimize, such a shortage. This research report intends to address the obstacles faced by the construction industry, and to make specific recommendations as to the appropriate course of action to be pursued by the parties involved. This work reports the current state of carpentry training offered at Vocational Centers and Community Colleges throughout the state of Florida and how these training programs relate to the statewide shortage of skilled carpenters.

The respondents to this study are carpentry instructors and course administrators at Voc-Tech Centers and Community Colleges. The results therefore reflect the educator's perspective of the statewide carpenter shortage and how it relates to their respective programs. The attitudes and opinions of the educators will undoubtedly differ from those of labor, the employers, or any other group within the construction industry.

There are presently twenty-eight Voc-Tech Centers and three Community Colleges offering the two-year Residential and Commercial Carpentry course. All thirty-one of these programs responded to the survey. Of those, twenty-eight, or 90% of the respondents indicated that a shortage of skilled carpenters is projected for the coming years in Florida. Despite the impending shortage, enrollment in the state supported carpentry programs has declined dramatically over the last two years from 1086

students enrolled in 1985/86 to 594 students enrolled in 1987/88. The result of this enrollment decline is that the number of graduates from Community Colleges and Voc-Tech Centers is not enough to meet the needs of the construction industry.

In order for vocational training to make more of an impact on the supply of carpenters, it must first gain the support of the construction industry. This could be accomplished through more effective communication between the two parties, and by training carpenters with the skills sufficient to meet the needs of the industry. The key to effective training and communication is an active advisory board that meets regularly and continually reviews the program curriculum.

To keep pace with growing industry demands, Vocational Centers and Community Colleges must increase their enrollment by more active recruiting strategies and through efforts to lower the high attrition rate for carpentry students. Better placement of graduates will make carpentry programs more attractive to prospective students, and placement can be improved by programs' taking advantage of industry contacts with the professional trade organizations such as the AGC, ABC, FHBA, and others.

The high percentage of carpentry program graduates choosing not to enter the carpentry field is an issue that must also be addressed. The carpentry program administrators indicated that an that on the average 23% of the program graduates were choosing an alternate field. This was attributed primarily to low wages paid to carpenters. The average wage paid to a Residential and Commercial Carpentry program graduate is $5.56; with a low of $3.50 and a high of $12.40.

The combination of increased construction activity and declining enrollment in the state supported carpentry programs has Florida's construction industry facing the dilemma of a severe carpenter shortage. Preventative steps must be taken in order to lessen the impact of such a carpenter shortage, and although no simple solution exists, this report could be helpful to vocational programs in their efforts to keep pace with the growing demand for skilled carpenters throughout the state.

Copies of this report can be obtained by contacting:

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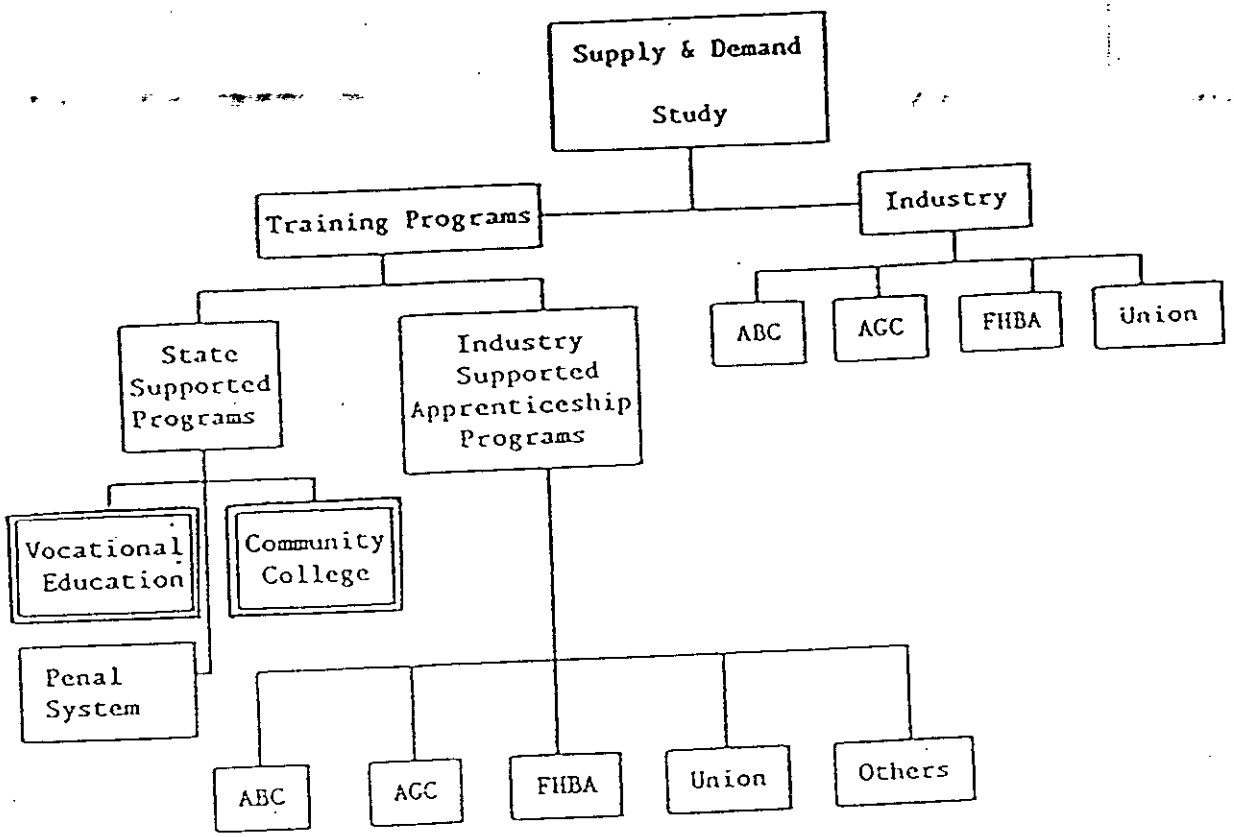
CHAPTER I: INTRODUCTION

OVERVIEW

The School of Building Construction at the University of Florida in association with the Building Construction Industry Advisory Committee (BCIAC) is conducting a major study to examine the shortage of skilled construction tradesmen in the State of Florida. For the purposes of this study, the carpentry trade was chosen as the study vehicle that will lead to the research of other trades. This research will determine why the conventional in-flow channels into the construction trades are not adequately fulfilling the growing demands of the industry. This will be accomplished by examining the programs that currently train construction craftsmen to determine the degree to which various program curricula meet the current needs of the industry. This study will also determine the relative effectiveness of the recruitment and placement strategies of the various programs and make recommendations based on its findings.

The overall project as shown in Figure 1-1 is divided into "Industry" and "Training Programs". Under "Training Programs" are "State Supported Programs" and "Apprentice Programs". The focus of this Research Report is on the "Vocational Education" and "Community College" components of the "State Supported Programs". Specifically, this report will address the carpenter shortage as it relates to the recruitment, training and job placement efforts of Vocational Education and Community College programs throughout the state.

SCOPE OF TOTAL RESEARCH PROJECT



LEGEND:

═══ - scope of research for this particular project

ABC - Associated Builders and Contractors

AGC - Associated General Contractors

FHBA - Florida Home Builders Association

Union - United Brotherhood of Carpenters and Joiners of America

Others - Any individual or group program which is non-union and does not belong to any one particular building organization.

Figure 1.1

NATIONAL LABOR SHORTAGE IN THE CONSTRUCTION TRADES

INDUSTRY GROWTH: According to the U.S. Department of Commerce, the inflation adjusted value of new construction increased by 5% in 1986 and will increase by another 1% in 1987.[1] Residential Construction increased by 10% in 1986 and will increase by 4% in 1987.[2] The Construction Labor Research Council estimates a 2% annual growth rate which translates to a national demand for 60,000 additional craftsmen to enter the construction field each year.[3]

The increase in construction activity will create a high demand for construction tradesmen. The U.S. Department of Labor predicts that 900,000 construction tradesmen will be needed to fill new jobs created by industry growth by 1990.[4]

In addition to the creation of new jobs in the construction industry, the U.S. Department of Labor has projected a need for 1.5 million tradesmen to replace those retiring or otherwise leaving the industry by 1990. The Construction Labor Research Council estimates an annual need for 180,000 new construction

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[1] U.S. Department of Commerce, 1987 U.S. Industrial Outlook, p.1.

[2] Ibid., p.1.

[3] Construction Labor Research Council, Meeting the Future Need for Construction Labor, 1990-1995, October 1985, (Washington D.C.), p.8.

[4] Ibid., p.8.

workers to fulfill the replacement demands of the industry through 1995.[5]

Efforts to replace workers leaving the construction industry over the next decade will be hampered by the phenomenon that workers in the industry are aging. Demographic trends, overall economic prosperity and the low birth rate of the 1970's will have an impact on the labor market of the 1990's.[6] The labor force is expected to expand at a rate of only 1% per year over the period of 1990-1995 compared to 1.6% in the 1980's and 2.6% in the 1970's.[7] The number of 18-24 year-olds will continue to decline through 1995, resulting in fewer young workers to replace those retiring.

The U.S. Department of Commerce fears that the combined impact of industry growth and a declining labor market to meet construction's replacement needs will result in major problems with labor shortages and poor labor quality.[8]

The present and future needs of the construction work force must be met with the existing, albeit dwindling labor pool. construction tradesmen, however, are highly skilled workers and sufficient training and preparation are required before one can be a productive worker in the field. Construction training has

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[5] Ibid., p.8.

[6] Ibid., p.2.

[7] Ibid., p.2.

[8] U.S. Department of Commerce, p.1.

traditionally followed one of two avenues; apprenticeship programs or vocational education.

Apprenticeship programs work through a sponsoring employer or union and provide a combination of on-the-job training with classroom instruction to teach the skills required to work in a specific trade. This ancient form of training was sufficient to fill the ranks of the construction work force until the late 1970's and early 1980's when the combination of a sharp decline in union membership and a sluggish construction economy severely weakened apprenticeship training programs. Due to the poor market conditions, the construction trades were no longer perceived as reliable, steady employment, and the construction unions who are the major proponents of apprenticeship training, began to play a less significant role in the construction industry. Although economically the construction industry has rebounded in recent years, as the industry grows more toward nonunion contractors, the open-shop organizations have not sufficiently responded to their responsibility to train construction tradesmen. According to Robert Graham, Executive Director of the Georgia chapter of the Associated Builders and Contractors (ABC), "nonunion contractors have started training programs, but they are only a drop in the bucket, and raiding has become commonplace".[9]

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[9] "Labor Shortages Grip Several Cities", Engineering News Record, September 25, 1986, p.10.

Vocational education is the other typical source of supply of construction tradesmen. These programs teach construction skills in the high schools, Community Colleges and Vocational Centers. These programs typically do not involve a sponsoring employer, and instruction is primarily given in the classroom rather than on the job.

Apprenticeship programs and vocational education are providing the industry with less than 50,000 workers per year. At this rate, a shortage of 1,900,000 construction tradesmen is projected by 1990.[10] See figure 1-2.

THE CARPENTRY TRADE: The carpentry trade was chosen as the study vehicle for this research since it is the largest skilled trade in the construction industry. In the breakdown of all construction labor; skilled and unskilled, the carpentry trade ranks second behind unskilled labor in terms of the number of persons employed.[11] Since carpentry is the largest skilled trade in construction, the greatest demand for skilled labor will be in the carpentry trade which is estimated to represent nearly 40% of the total demand for skilled workers.[12] The Construction Labor

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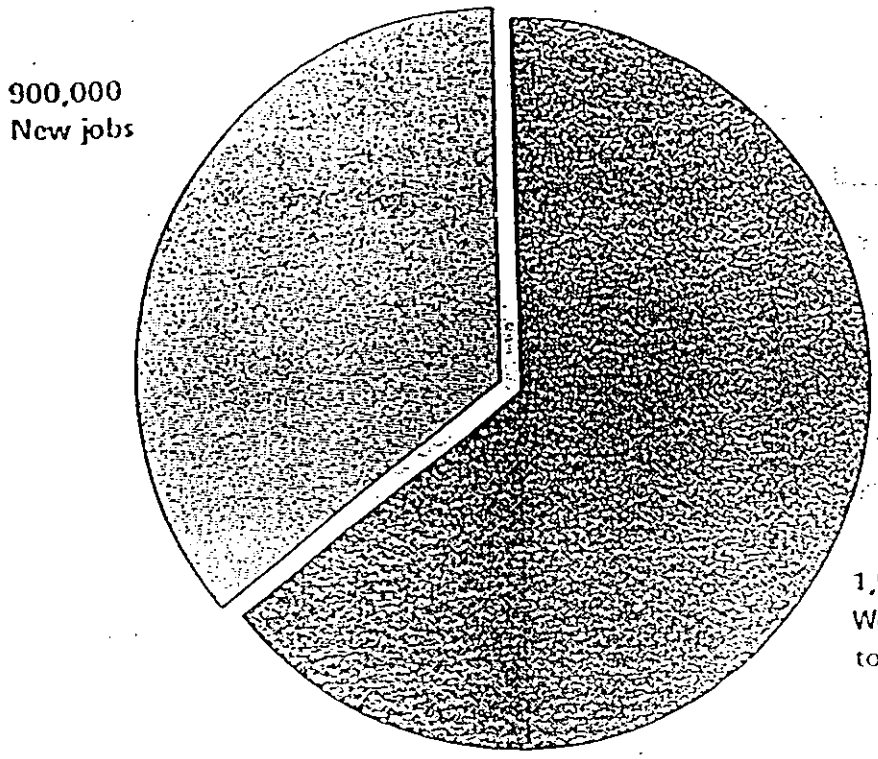
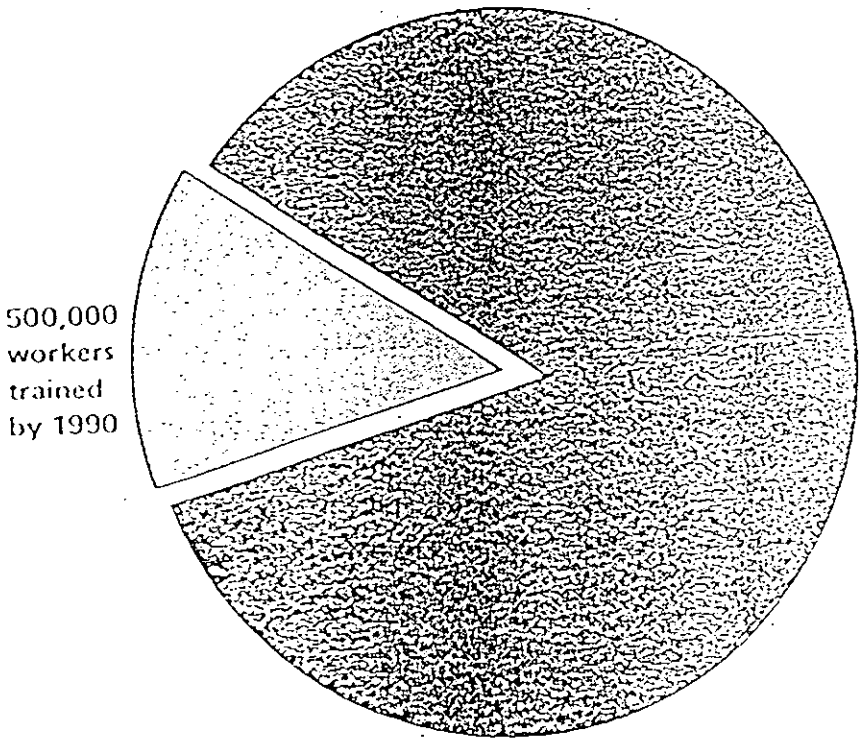
[10] "Training Problems in Open Shop Construction", The Business Roundtable, A Construction Industry Cost Effectiveness Project Report, Report D-4, September, 1982, p.5.

[11] Construction Labor Research Council, p.10.

[12] Ibid., p.10



2,400,000 Additional trained workers needed by 1990



SOURCE: ANNUAL CONSTRUCTION INDUSTRY
REPORT DEPT OF LABOR 1/80

Currently training less than 50,000 workers per year

Fig. 2 Projected Shortage of Trained Construction Workers by 1990.

Research Council projects an annual need for 37,000 carpenters nationally, [13] while the Occupational Outlook Quarterly estimates a total need for 101,000 carpenters by 1995, an 11% increase over their previous figures.[14]

CONSTRUCTION TRENDS IN FLORIDA

SHIFT TO THE SUNBELT: "Employment in the construction industry, as well as in other industries, has shifted from the Midwest and Northeastern states to the Sunbelt states: Florida, Alabama, Mississippi, Louisiana, Texas, New Mexico, Arizona, and California."[15]

Of the Sunbelt states experiencing tremendous growth, Florida is perhaps one of the fastest growing, experiencing a phenomenal population increase of 1.5 million people, creating 850,000 new jobs and increasing income by 50% in the last five years alone.[16] The Census Bureau projects Florida's current population of 11,657,000[17] to grow to over 14,765,000[18] by the

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[13] Ibid., p.2

[14] "Job Outlook Cluster", Occupational Outlook Quarterly, Spring, 1986, p.26.

[15] John Lukasiewicz and John Tschetter, "Employment Trends in the Building Trades", Occupational Outlook Quarterly, Spring, 1983, p.4.

[16] "State Overview", Florida Trend, Yearbook 1987, vol. 29, no.13, p.46.

[17] Ibid., p.53.

[18] Anne H. Shoemyen and Susan S. Floyd, eds., 1986 Florida Statistical Abstract, (Gainesville, Florida: The University Presses of Florida, 1986), p.37.

turn of the century. Florida's projected growth rate is four times the national average which by the year 2000 will make Florida the third most populous state behind California and Texas.

This population increase will result in an increased demand for construction to accommodate the growing needs of the public. Florida currently accounts for 12% of the total building permit activity nationwide and this figure is expected to rise.[19]

Despite the fact that office vacancy rates in most Florida cities now exceeds 20%,[20] the economic future of Florida in the construction industry looks particularly bright with virtually every region of the state experiencing some degree of economic growth. The areas of the state that, according to top construction executives, will experience the greatest amount of growth over the next ten years include:[21]

-Tampa Bay (Hillsborough, Pinellas, Manatee and Sarasota Counties)

-Orlando Area (Orange, Osceola and Seminole Counties)

-Jacksonville Area (Duval County)

-Naples Area (Lee and Collier Counties)

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[19] Bureau of Economic and Business Research, College of Business Administration, University of Florida, 1986 Florida Statistical Abstract, (Gainesville, Florida: The University Presses of Florida, 1986), p.630.

[20] "State Overview", Florida Trend, Yearbook 1987, p.47.

[21] Tom P. Fronce, "Building Trends for the Rest of the Eighties", Florida Construction Industry, December 1986, p.19.

-Palm Beach / Ft. Lauderdale (Palm Beach and Broward Counties)

With these areas of the state as a catalyst, Florida will continue to experience unprecedented economic prosperity and growth over the next ten years. This economic prosperity and growth translates to increased demand for the construction of buildings as well as for the upgrading of the state's already overburdened infrastructure. These construction demands will produce a need for skilled construction workers. One source of skilled construction workers is the state's vocational education programs and it is the focus of this study to address these vocational education programs.

SCOPE OF THE STUDY

The purpose of this study is to address the statewide carpenter shortage as it relates to the effectiveness of state vocational education programs as a supply of skilled carpenters to the construction industry in Florida. This study will investigate:

1) The vocational education program course standards
2) Recruitment strategies of the various programs
3) Placement strategies of the various programs
4) Placement rates of the programs
5) Entry level wage rates of program graduates

6) Factors influencing graduates' decisions not to enter the carpentry trade

7) Curricula emphases of particular topics by various programs

8) The degree of communication between the various programs and the construction industry

CHAPTER II: VOCATIONAL EDUCATION

There are basically three popular methods of training carpenters in Florida; on-the-job training, apprenticeship training, and vocational education. On-the-job training is perhaps the most popular form of carpentry education despite the ambiguous use of the term. On-the-job training is exactly as its name implies; training received by an individual while actually performing the task to be learned, on the jobsite under the supervision of a skilled tradesman. This form of training can be a structured program set up by a contractor which ensures an individual will receive adequate instruction and task rotation while drawing from the experience of the journeyman. The more comprehensive on-the-job training programs will specify the minimum number of hours to be spent concentrating on each individual task. The on-the-job portion, also known as work experience, of the Associated General Contractors' Carpentry Apprenticeship program is shown as an example of on-the-job training and is presented in Appendix C. On the other hand, contractors will often consider on-the-job training to mean nothing more than an employee's ability to absorb information by his presence on the construction site without ever having any formal instruction. This creates the ambiguity surrounding the use of the term. Although on-the-job training is very popular, participants are given no certification of the fact that they have been trained, and because of the ambiguity, there can be no uniform recognition of an individual's level of training

throughout the industry.

Apprenticeship training combines on-the-job experience with formal classroom instruction. This four-year training program requires the participation of a sponsoring employer who is responsible for providing the appropriate work experience. Apprenticeship programs are typically sponsored by industry associations or trade unions, and apprentices who successfully complete the specified number of hours of classroom instruction and on-the-job training are awarded certificates of completion. The Associated General Contractors requires 600 hours of classroom instruction and 8000 hours on the job in its carpentry apprenticeship program. The in-class portion of the Associated General Contractors Carpentry Apprenticeship program is shown in Appendix D.

Compared to the apprenticeship system with its origins in the Middle Ages, vocational education is a relatively recent concept having its beginnings at the time of the industrial revolution. Up until that point, craftsmen were trained individually by a master craftsman, or typically one's father. With industrialization came an increased demand for skilled workers. The demand was more than that which could be supplied by the traditional apprentice system and tradesmen had to be trained on a large scale. Vocational education was the proper vehicle to facilitate this training need. Throughout the years vocational education in the United States has established itself as an acceptable source of supply of skilled workers to industrial

concerns. However, the popularity of vocational education has decreased significantly in recent years due to public perception of a vocational education as being inherently intellectually inferior to an academic college degree. According to the National Advisory Council on Vocational Education, high schools have emphasized an academic education aimed at preparing students for four-year colleges rather than preparing them to enter the job market.[22] This emphasis on a four-year college education is in part a reflection of the nation's movement toward an information-based society from an industrial-based society. Men and women who learned and practiced a trade are now sending their children to college as a response to the prevailing attitudes of the current society. Although the movement toward an information society is significant in terms of future employment needs, there still exists, and will continue to exist a large demand for skilled workers, and employers are looking to vocational education to supply these needed skilled workers.

The major objectives of vocational education have been to provide graduates with marketable skills and to place them in jobs for which they have been trained. In order for these objectives to be met, it is necessary for vocational training programs to anticipate the future needs of the industry. Therefore "the demand for vocational and technical education will increase faster than resources, thus the emphasis will be on

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[22] National Advisory Council on Vocational Education, Counseling and Guidance: A Call for Change, Sixth Report, 1972.

making the maximum, most effective use of every resource".[23] Budget constraints continue to be a primary concern of vocational program administrators. Since the resources allocated to vocational programs by the state Department of Education are quite limited, individual program officials are constantly faced with the challenge of providing a quality education at a minimum cost. As budget constraints tighten, programs are often eliminated and instructors laid off.

Because of limited funding, vocational programs must be able to justify their existence. Placement statistics are a convenient means by which to judge the effectiveness of individual programs. Since the overriding goal of vocational education is to provide marketable job skills, placement data show the degree to which a program is providing suitable job skills. The emphasis focused on job placement is evident in recent state legislation. Effective with the 1984-85 school year, any job preparatory vocational program that fails to attain a 70% placement rate for any given year is automatically reviewed by the Department of Education. Any program that fails to meet a 70% placement rate for three consecutive years becomes ineligible for future state funding. The three consecutive year rule takes effect over the 1984-85, 1985-86 and 1986-87 school years.[24]

The Florida Department of Education offers a two-year program

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[23] G. Bottoms, "Flexibility is the Key to Growth", Vocational Education, vol. 58, 1983, p.10.

[24] Florida Statute 229.551 (3) (g).

entitled "Residential and Commercial Carpentry", CIP No. IN46.020100. This program is taught through Community Colleges and Voc-Tech centers statewide. Regardless of whether the carpentry program is offered at a Community College or at a Vocational Center, the program conforms to the same course standards, and the Community College programs are considered to be identical to the Voc-Tech programs.

Residential and Commercial Carpentry requires a total of 900 hours of instruction. This is broken down into 675 hours of lab or "hands-on" instruction and 225 hours in the classroom. The laboratory instruction typically consists of building structures on the grounds of the educational facility. These structures are often temporary, and are torn down at the end of the course. There is no requirement for actual carpentry experience outside of the program.

The breakdown of the course into its various instructional units is done at the discretion of the individual programs, however several Residential and Commercial Carpentry programs reported using the Associated General Contractors' carpentry program outline as a guide. The complete AGC Apprenticeship outline is the combination of the on-the-job portion presented in Appendix C and the in-class portion presented in Appendix D. Most programs subscribe to competency based instruction and an individual may be awarded credit for specific units upon demonstration of his abilities on a written test and on a practical skills test.

Although the carpentry program offered at Vocational Centers is identical to that which is offered at Community Colleges, students enrolled in Residential and Commercial Carpentry at a Community College may apply their carpentry program coursework toward fulfilling the requirements of as Associate of Science Degree in Technical Management. Upon completion of Residential and Commercial Carpentry, a student can receive up to 45 semester hours of credit toward the Associate Degree. The student must then complete an additional 21 semester hours necessary to meet the degree requirements of the institution. This would result in a total degree requirement of 66 semester hours which could be completed in four semesters of study.

VOCATIONAL EDUCATION: Section 228.041 Florida Statutes defines vocational education as consisting of four categories or types of instruction:[25]

1. Exploratory courses designed to give students initial exposure to skills and attitudes associated with a broad range of occupations in order to assist them in making informed decisions regarding their future academic and occupational goals;

2. Practical arts courses designed to teach students practical generic skills which, though applicable to some occupations, are not designed to prepare students for entry into a specific occupation;

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[25] Florida Department of Education, Division of Vocational, Adult, and Community Education Bureau of Vocational Program and Staff Development Program and Staff Development Section, Foreword to Vocational Education Courses Standards: Industrial Education, July 1986, p.i.

3. Job preparatory programs designed to provide students with the competencies necessary for effective entry into an occupation;

4. Supplemental courses designed to enable persons who are or have been employed in a specific occupation to upgrade their competencies in order to re-enter or maintain stability or advance within their occupations.

The Residential and Commercial Carpentry program falls into both categories 3 and 4 form above. The program offers initial training to those wishing to enter the carpentry trade for the first time as well as supplemental training for those who are already in the trade and wish to upgrade their skills and knowledge. Because of this, Residential and Commercial Carpentry comes under the heading of industrial education.

INDUSTRIAL EDUCATION: The Department of Education defines industrial education as being comprised of instructional courses, programs, services, and activities at all educational levels for selected industrial occupations.[26]

According to the Introduction to the Course Standards, the Department of Education describes industrial education as:

> "...a component of vocational education which prepares persons for initial employment and offers opportunities for upgrading or retaining of workers in a wide range of occupational areas. Individuals completing industrial programs are qualified to function as skilled, semiskilled or technical level workers in

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[26] Florida Department of Education Division of Vocational, Adult, and Community Education Bureau of Vocational Program and Staff Development Program and Staff Development Section, Introduction to Vocational Education Program Courses Standards: industrial Education, July 1986, p.vii.

> activities including layout, design, production, construction; processing, assembling, testing, maintaining, servicing, or repairing products and commodities or rendering personal services. Industrial programs include classroom instruction providing technical related theory, safety, mathematics, and science; laboratory and shop instruction providing manipulative skills; and cooperative education providing on-the-job experiences. Instruction is provided for apprentices in apprenticable occupations or for journeymen already engaged in industrial occupations."[27]

In order to comply with the requirements of industrial education as established by the Department of Education, a planned sequence of study and extensive knowledge in a field of specialization is required for completion of a technical education program that prepares persons to work in direct support of professional engineers or scientists. Competency in the basic communication skills and related general education is also required.[28]

RESIDENTIAL AND COMMERCIAL CARPENTRY: There are 31 programs across the state which offer the two-year Residential and Commercial Carpentry course. Of these 31 programs, 28 are offered through voc-tech centers and three programs are taught at community colleges. These programs are geographically located as shown in Figure 2.1.

According to the Program Courses Standards, the purpose of Residential and Commercial Carpentry is to prepare students for

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[27] Ibid., p.vii.

[28] Ibid., p.vii.

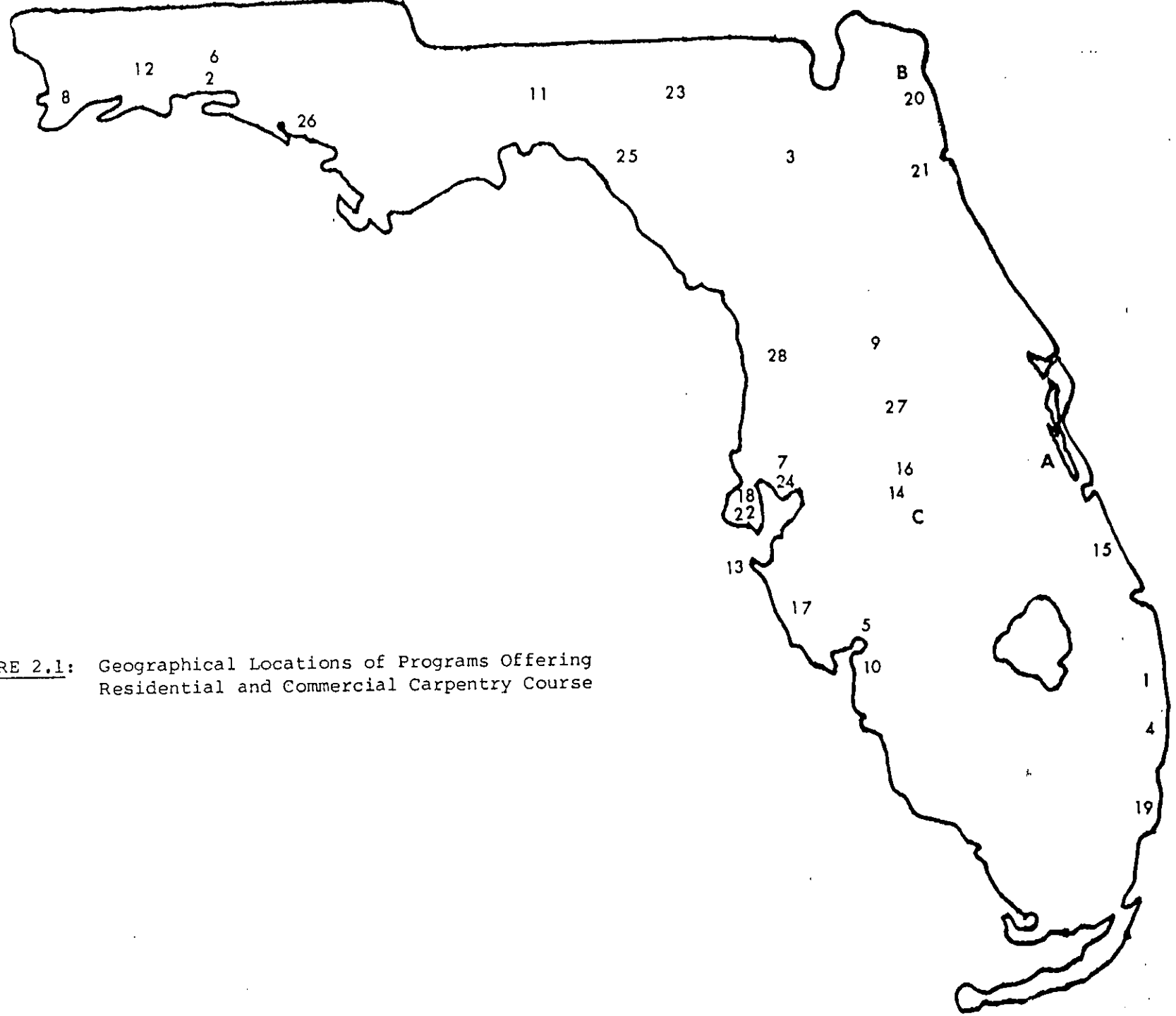

FIGURE 2.1: Geographical Locations of Programs Offering Residential and Commercial Carpentry Course

FIGURE 2.1 KEY

VOC-TECH PROGRAMS:

1. Atlantic Vocational Center
   Coconut Creek

2. Bay Area Voc-Tech Center
   Ft. Walton Beach

3. Bradford Union Voc-Tech Center
   Starke

4. Broward County Voc-Tech and Adult Education Center
   Ft. Lauderdale

5. Charlotte Voc-Tech Center
   Port Charlotte

6. Crestview Voc-Tech Center
   Crestview

7. Erwin Area Voc-Tech Center
   Tampa

8. George Stone Voc-Tech Center
   Pensacola

9. Lake County Area Voc-Tech Center
   Eustis

10. Lee County Area Voc-Tech Center
    Ft. Myers

11. Lewis M. Lively Voc-Tech Center
    Tallahassee

12. Locklin Voc-Tech Center
    Milton

13. Manatee Area Voc-Tech Center
    Bradenton

14. Maynard E. Traviss Voc-Tech Center
    Eaton Park

15. Pinellas Voc-Tech Institute
    Clearwater

16. Ridge Voc-Tech Center
    North Winter Haven

17. Sarasota County Vocational Center
    Sarasota

18. Seminole Vocational Education Center
    Seminole

19. South Florida Carpenters Apprenticeship Training
    Miami

20. Southside Skill Center
    Jacksonville

21. St. Augustine Tech Center
    St. Augustine

22. St. Petersburg Voc-Tech Institute
    St. Petersburg

23. Suwannee Hamilton Voc-Tech Center
    Live Oak

24. Tampa Bay Area Voc-Tech Center
    Tampa

25. Taylor County AVTC/General Adult Education Center
    Perry

26. Tom P. Haney Voc-Tech Center
    Panama City

27. Westside Voc-Tech Center
    Winter Garden

28. Withlachoochee Vocational Adult Education Center
    Inverness

COMMUNITY COLLEGE PROGRAMS:

A. Brevard Community College
   Cocoa

B. Florida Junior College at Jacksonville
   Jacksonville

C. South Florida Community College
   Avon Park

employment as carpenters: construction carpenters, maintenance carpenters, rough construction carpenters, concrete form builders, or to provide supplemental training for persons previously or currently employed in these occupations.[29]

The content of the course includes, but is not limited to

> "...communication skills; human relations and employability skills; safe and efficient work practices; use and care of hand tools, power tools, other equipment; selection, application and care of materials; interpretation of blueprints and specifications; laying, fabricating, erecting, installing, and repairing residential and commercial structures and fixtures using hand tools."[30]

Carpentry shop or laboratory activities are also included in this program. The laboratory activities emphasize the selection, use and care of tools and equipment; selection and use of materials; estimating and blueprint reading to construct or repair common systems of residential and commercial framing and concrete form building.[31]

The cooperative method of instruction, where an employer is involved in the training program, may be utilized although it is not a requirement of the course. Whenever the cooperative method is offered, the following is required for each student: a training plan, signed by the student, teacher and employer which

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[29] Florida Department of Education, Division of Vocational, Adult, and Community Education Bureau of Vocational Program and Staff Development Program and Staff Development Section, Vocational Education Program Courses Standards: Industrial Education, July 1986, p.797.

[30] Ibid., p.797

[31] Ibid., p.797.

includes instructional objectives and a list of on-the-job and in-school experiences; a work station which reflects equipment skills and tasks relevant to the occupation the student has chosen as a career goal.[32] In accordance with federal law, the student must be compensated for all work performed on the job.

The minimum basic skills grade level required for this post-secondary adult vocational program is: Mathematics 7.0, Language 4.0.[33] This grade level number corresponds to a grade equivalent score obtained on a state designated basic skills examination. Programs offer remedial skills courses in Math and English for those students who fail to meet the minimum basic skills requirements. These remedial courses do not count for credit toward the required hours of the carpentry program.

The Vocational Education Program Courses Standards for each program are composed of two parts: a curriculum framework and student performance standards. The curriculum framework includes four major sections: major concepts/content, laboratory activities, special notes, and intended outcomes. Student performance standards are listed for each intended outcome.

The course standards for Residential and Commercial Carpentry give a curriculum framework which identifies 35 intended outcomes that the student, after completing the course, will have mastered. Each of the 35 outcomes is further broken down into subtopics which identify specific tasks which are to be

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[32] Ibid., p.797.

[33] Florida Statute 233.0695.

taught in the course. The complete course standard for Residential and Commercial Carpentry is reproduced in Appendix A.

INTENDED OUTCOMES:

01. Demonstrate proficiency in safety and first aid practices.

02. Convey knowledge and identify values of the construction industry.

03. Demonstrate proficiency in appropriate and identified shop practices.

04. Convey knowledge of basic mathematics.

05. Demonstrate knowledge of the free enterprise system.

06. Read blueprints.

07. Set up and use the transit, level and laser.

08. Handle and store materials.

09. Use fasteners and hardware.

10. Conduct site preparation and layout.

11. Construct footing forms, wall forms, edge forms and curb forms.

12. Construct vertical piers, columns, horizontal beam forms, above grade slab forms, stair forms, and bridge deck forms.

13. Describe use of fireproof encasement forms.

14. Use tilt-up and precast construction.

15. Use scaffolding.

16. Set up and operate oxyacetylene welding equipment for cutting and burning.

17. Use structural shoring.

18. Frame floors and sills.

19. Frame partitions.

20. Frame roofs.

21. Build trusses.
22. Perform light framing.
23. Install structural timbers.
24. Install decking and sheathing.
25. Install exterior wall covering and trim.
26. Apply weatherstripping and caulking compounds.
27. Install doors, window frames and units.
28. Install interior drywall materials.
29. Install cabinets, fixtures, and shelving.
30. Construct interior stairs.
31. Hang interior doors including trim and hardware.
32. Install paneling, furring, soffitt and ceilings.
33. Install insulation and sound control materials.
34. Use plastic laminates.
35. Demonstrate employability skills.

Although the course standard is very specific in its descriptions of the curriculum, the standards do not prescribe how instruction should be delivered since decisions relative to the delivery of instruction must be made by school districts and community colleges within the context of local conditions.[34] The Division of Vocational, Adult, and Community Education, Florida Department of Education, supports the belief that competency-based vocational education is the most effective means of

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[34] Florida Department of Education, Foreword to Vocational Education Program Courses Standards, p.i.

providing programs and courses that conform to these established standards.

CHAPTER III: PROCEDURE

ORGANIZATION OF THE STUDY

Chapter I has provided background information about the problem of the shortage of skilled carpenters in the state of Florida along with the current and projected construction trends throughout the state. Chapter II describes vocational education as defined by the Department of Education and the course guidelines for Residential and Commercial Carpentry. Chapter III will describe the research methodology and instrumentation of the study. The data collection procedures, research design and data analysis procedures are also explained. Statistical results will be presented in Chapter IV. Chapter V will summarize the findings of the study and provide recommendations.

PROCEDURE

In order to canvass the entire population of programs offering Residential and Commercial Carpentry, it was determined that some type of mass survey instrument was appropriate. A mail questionnaire was found to be the most suitable instrument for collecting data for this study. The use of a mail questionnaire is advantageous since the questionnaire forces respondents to limit their answers to items included in the instrument rather than to submit extraneous or subjectively biased information. Respondents may, however, omit information by not responding to all questionnaire items.

The mail questionnaire has two fundamental disadvantages: possible lack of response from the potential sample; and the inability of the researcher to check the accuracy of the responses.[35] Furthermore, a mailed questionnaire cannot insure that the intended party is indeed the one who responds. The questionnaire was carefully designed to encourage sincere responses while not causing respondents to feel threatened or apprehensive about giving honest and factual information.

To assist in receiving responses, a personal visit was conducted to the Division of Vocational, Adult and Community Education in Tallahassee.[36] A detailed explanation of the study and its potential benefits was presented. A cover letter from the Department of Education was prepared to be included in the mailings. A cover letter from Dr. Brisbane Brown, Director, School of Building Construction, explaining the purpose of the study was also included in the mailing. The two cover letters, the questionnaire and a stamped, self-addressed envelope were sent to all 31 programs offering Residential and Commercial Carpentry. A copy of the entire mailing package is included in Appendix B.

Since the potential sample of the study is quite small, 100% response was sought by the researcher. Follow-up mailings were

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[35] F.N. Keringer, Foundations of Behavioral Research, 3rd Edition (1973).

[36] Meeting between Ali Markus and Talmadge L. Rushing, Director, Industrial Education Division of Vocational Education and Michael M. Brawer, Specialist, Industrial Education, August 18, 1986, Tallahassee, Florida.

made to non-respondents on October 18, 1987 and November 18, 1987. The follow-up package contained the original questionnaire and new cover letters from the Department of Education and the Director of Building Construction. Copies of the follow-up cover letters are in Appendix B. By December 18, 1987, responses were received from all 31 programs achieving the desired 100% response. The responses to every item on each questionnaire were then coded into the "Statistical Analysis System" or SAS computer program operating on the Northeast Regional Data Center mainframe computer system at the University of Florida. The responses were entered into the computer without any information identifying the respondent, therefore, all questionnaire responses can be considered as anonymous. The SAS system can perform various statistical functions, and these operations will vary depending on the type of question and the type of analysis desired.

The data is analyzed and reported in various tables and graphs. This statistical analysis is presented in the next chapter. The results are then synthesized into conclusions and recommendations. Figure 3.1 shows a diagram of the research procedure.

QUESTIONNAIRE DEVELOPMENT: Subsequent to reviewing the related literature, and meeting with the Department of Education representatives, survey questions were formulated and presented to a sample of three coordinators; one each from a community college, a vocational program and an apprenticeship program.

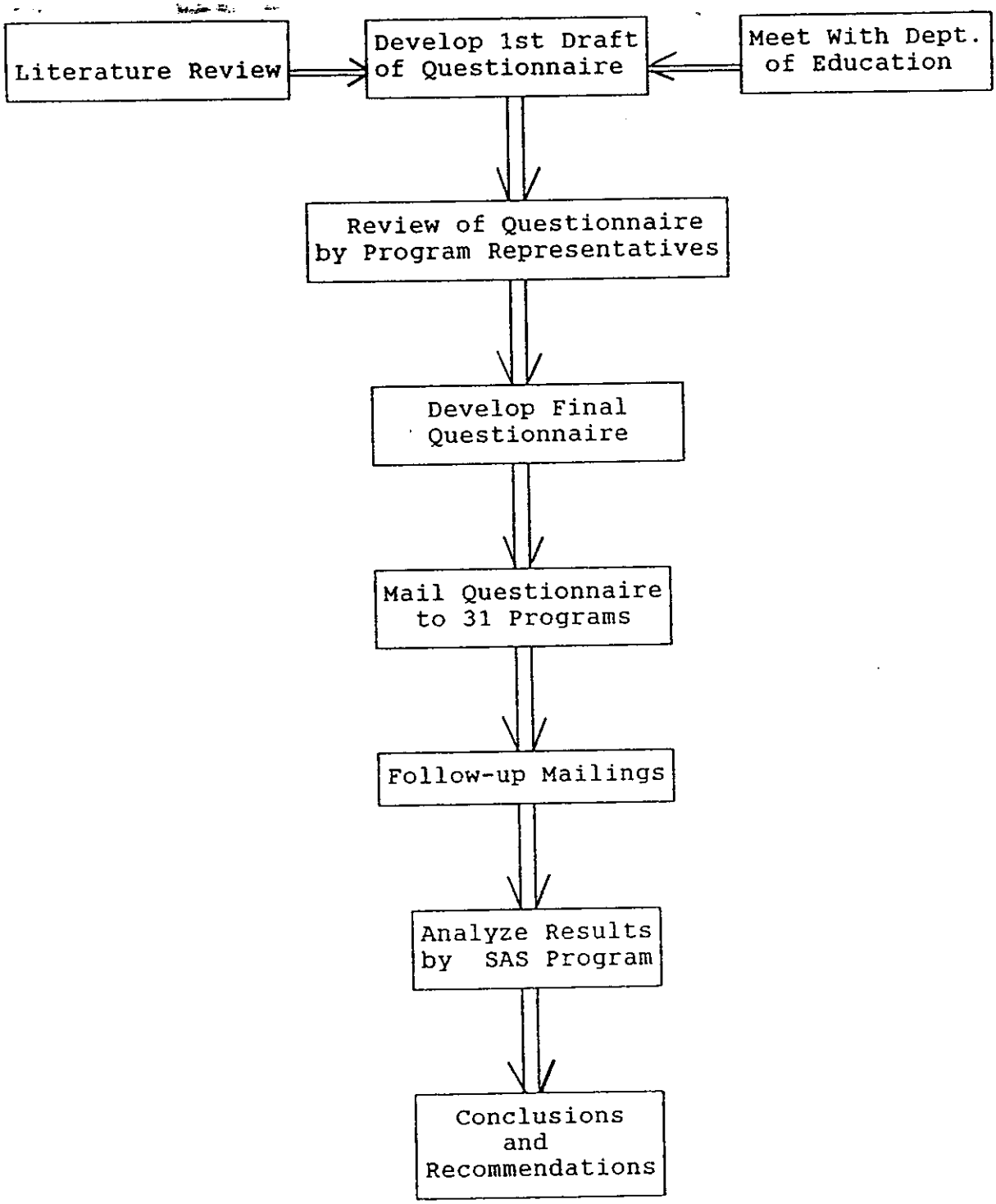

FIGURE 3.1: Research Procedure

The coordinators offered suggestions and recommendations to the initial survey questions, and helped to validate the final draft of the questionnaire that was ultimately sent to the training programs.

The questionnaire is divided into four main categories: General Information, Recruitment, Placement, Training and Communication.

The first section of the questionnaire, General Information, is designed to gather background information on the respondent. This information includes: Name of the institution, contact person and position, number of students currently enrolled and the number of students enrolled over the last two years, number of students graduated and of those, the number placed into employment in the last two years.

The second section of the questionnaire is designed to examine how programs go about recruiting new students. This section solicits information regarding the local conditions which are relevant to recruitment of students, recruitment strategies of the program, and the relative effectiveness of these recruitment efforts. Section II also lists potential recruitment strategies and asks respondents to rate each of these.

Section III is concerned with placement. This section examines the placement strategies used by the various programs and it asks respondents to rate various factors which could influence placement efforts in their particular environment. The third section also asks for the average hourly wage received by

graduates of the carpentry program. Respondents were also asked in section III what percentage of their program graduates seek an occupation other than that for which they have been trained, and respondents were then asked to rate several potential factors that could contribute to one's choosing an alternate occupation.

The fourth and final section of the questionnaire looks for data relating to training offered in each program and the level of communication between the training program and the construction industry. Respondents are first asked to rate the relative importance of various carpentry skills that a journeyman carpenter might possess. This is intended to identify those skills that the carpentry educators consider to be the most important. Presumably, the carpentry educators will emphasize in their programs those skills they find to be important. The questionnaire also asks for the opinion of each respondent on whether or not better skilled carpenters would result from a requirement that the trade be licensed. The questionnaire then asks for responses that would indicate the level of communication between the individual training program and the construction industry, and to identify which industry organizations the program communicates with. The entire questionnaire is reproduced in Appendix B.

CHAPTER IV: STATISTICAL ANALYSIS

TOTAL POPULATION ANALYSIS

Responses were received from all 31 programs currently offering Residential and Commercial Carpentry, achieving the desired 100% response rate. The questionnaire responses were analyzed by the Statistical Analysis System on the Northeast Regional Data Center mainframe computer system at the University of Florida. This chapter presents the results of the statistical analysis of each questionnaire item.

PART I: GENERAL INFORMATION

The first section of the questionnaire is designed to determine the total number of students enrolled in each program, the number of students graduating from each program and of those graduating, the number finding employment related to their training.

NUMBER OF STUDENTS ENROLLED IN INDIVIDUAL PROGRAMS

ACADEMIC YEAR	AVERAGE	MEDIAN	LOW	HIGH
1985/86	42	29	15	300
1986/87	34	26	14	150
1987/88	23	21	9	30

TABLE 4.1a Number of Students Enrolled in Individual Programs

TOTAL NUMBER OF STUDENTS ENROLLED

ACADEMIC YEAR	COMMUNITY COLLEGES	VOC-TECH CENTERS	TOTAL
1985/86	72	1014	1086
1986/87	72	867	939
1987/88	31	563	594

TABLE 4.1b Total Number of Students Enrolled

In analyzing the enrollment data, the median values reflect the sample more accurately than the averages since one program showed an enrollment of 300 and 150 for the years 1985/86 and 1986/87 respectively compared to the next highest values of 90 and 50. Table 4.1 indicates that enrollment in Residential and Commercial Carpentry has dropped dramatically in the last two years showing a decrease of 13.5% from 1985/86 to 1986/87 and 36.7% from 1986/87 to 1987/88. This results in a total enrollment drop of 45.3% over the last two academic years. Table 4.1b shows that community colleges play a very insignificant role in the state's post-secondary carpentry training programs.

NUMBER OF STUDENTS GRADUATED

ACADEMIC YEAR	AVERAGE	MEDIAN	LOW	HIGH	TOTAL
1985/86	7	5	1	41	203
1986/87	9	7	1	43	229

TABLE 4.2 Number of Students Graduated

For the 1985/86 academic year, 203 of 1086 students graduated from Residential and Commercial Carpentry programs across the state. This translates to a graduation rate of 18.7%. In 1986/87, 229 of 939 graduated for a rate of 24.4%.

NUMBER OF STUDENTS PLACED

ACADEMIC YEAR	AVERAGE	MEDIAN	HIGH	LOW	TOTAL
1985/86	4	3	13	0	99
1986/87	9	6	41	1	197

TABLE 4.3a Number of Students Placed

143 of the 203 program graduates responded to the Department of Education's Follow Up Survey. Of those 143 graduates, 99

reported to having found employment in the carpentry field. This relates to a placement rate of 69.2% for 1985/86.

NUMBER OF STUDENTS PLACED 1985/86 - DEPARTMENT OF EDUCATION FOLLOW - UP SURVEY

NUMBER OF STUDENTS GRADUATING	203
NUMBER OF STUDENTS RESPONDING	143
NUMBER OF STUDENTS PLACED	99
NUMBER OF STUDENTS SEEKING FURTHER EDUCATION	36
NUMBER OF STUDENTS ENTERING THE MILITARY	2
NUMBER OF STUDENTS IN OTHER EMPLOYMENT	8

TABLE 4.3b Department of Education Follow-Up Survey

The placement data for 1986/87 indicate that 197 out of 229 graduates were successfully placed resulting in a placement rate of 86.0%. It must be noted, however, that the placement data for 1985/86 are from the Florida Department of Education's 1987 follow up survey.[37] Since the follow up data for 1986/87 graduates are not yet available from the Department of Education, the placement numbers reported on the questionnaires by the educational institutions were used. The placement rates reported on the questionnaires by program coordinators for the 1985/86

[37] Florida Department of Education, Division of Vocational, Adult and Community Education, FY 1985-86 Follow Up: Spring 1987 Final Report, Spring 1987.

academic year were significantly higher those found in the Department of Education survey. Therefore, one would suspect that the placement rates given for the 1986/87 academic year are somewhat inflated as well.

PART II: RECRUITMENT

The second part of the questionnaire investigates the strategies used by the various vocational centers and community colleges in their efforts to recruit new students into the Residential and Commercial Carpentry program.

IN YOUR OPINION, ARE THE CARPENTRY TRAINING PROGRAMS OFFERED IN THE COMMUNITY COLLEGES AND VOCATIONAL CENTERS FULFILLING THE DEMAND FOR TRAINED CARPENTERS?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	19	61.3
NO	12	38.7
NO RESPONSE	0	0

TABLE 4.4 Fulfilling the Demand for Carpenters

Table 4.4 indicates that the majority of the educators believe that the demand for skilled carpenters is being adequately met by the carpentry programs offered by vocational centers and community colleges.

IS STUDENT RECRUITING ADEQUATE?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	16	53.3
NO	14	46.7
NO RESPONSE	0	0

TABLE 4.5 Adequacy of Student Recruitment

The respondents were divided on their opinions regarding the adequacy of student recruitment with roughly half of the educators satisfied with their current recruitment efforts, and half feeling that recruitment is not adequate.

The next two questions were intended to find, in the opinion of the educators, the degree to which local contractors relied upon the vocational programs and community colleges as a source of skilled carpenters.

ARE LOCAL CONTRACTORS AWARE OF THE EXISTENCE OF YOUR PROGRAM?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	27	87.1
NO	4	12.9
NO RESPONSE	0	0

TABLE 4.6 Local Contractor Awareness

DO LOCAL CONTRACTORS LOOK TO YOUR PROGRAM TO SUPPLY THEM WITH TRAINED CARPENTERS?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	26	83.9
NO	4	12.9
NO RESPONSE	1	3.2

TABLE 4.7 Local Contractor Utilization

Tables 4.6 and 4.7 show that the overwhelming majority of the educators feel that not only are contractors aware of their programs, but that they look to the vocational programs and community colleges as a source of skilled carpenters.

The next four questions investigate the existence of any ongoing recruitment efforts at the educational facility.

IS THERE A CENTRAL RECRUITING OFFICE FOR THIS COMMUNITY COLLEGE OR VOC-TECH CENTER?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	23	74.2
NO	8	25.8
NO RESPONSE	0	0

TABLE 4.8 Central Recruiting Offices

DOES THE CARPENTRY PROGRAM PARTICIPATE IN THE CENTRAL RECRUITING OFFICE?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	23	74.2
NO	6	19.3
NO RESPONSE	2	6.5

TABLE 4.9 Participation in Central Recruiting Efforts

DOES THE CARPENTRY PROGRAM CONDUCT ITS OWN RECRUITING?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	23	74.2
NO	8	25.8
NO RESPONSE	0	0

TABLE 4.10 Independent Program Recruiting

DO YOU HAVE A BROCHURE FOR THE PROGRAM?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	26	83.9
NO	5	16.1
NO RESPONSE	0	0

TABLE 4.11 Program Brochure

According to Tables 4.8 - 4.11, vocational programs and community colleges do engage in some sort of ongoing recruitment effort. Three-fourths of the programs report that their institutions have a central recruiting office and that the carpentry program participates with that office. Three-fourths of the respondents indicate that their program engages in its own

recruiting efforts independent of the central office. The vast majority of the carpentry programs (84%) have a brochure advertising their specific courses.

The next item is intended to ascertain the current level of enrollment of the program with regards to the capacity of its respective facility and resources.

WHAT PERCENTAGE OF THE CAPACITY OF THE PROGRAM IS THE NUMBER OF ENROLLED STUDENTS?

ENROLLMENT LEVEL	NUMBER OF RESPONDENTS	PERCENT
LESS THAN 25%	2	6.9
25% TO 50%	4	13.8
50% TO 75%	8	27.6
OVER 75%	15	51.3

TABLE 4.12 Program Capacity

Despite the fact that program enrollment has dropped dramatically over the last two years, more than half of the respondents reported that their current enrollment is at a level of over 75% of the program's total capacity.

The relative importance placed on recruiting by the various programs can be determined by the amount of time spent by the respondents on recruitment efforts.

WHAT PERCENTAGE OF YOUR TIME IS DEVOTED TO RECRUITING?

TIME SPENT ON RECRUITING	NUMBER OF RESPONDENTS	PERCENT
LESS THAN 5%	17	54.8
5% TO 10%	6	19.4
10% TO 15%	6	19.4
OVER 15%	2	6.4

TABLE 4.13 Time Spent on Recruitment

Table 4.13 indicates that more than half of questionnaire respondents spend less than 5% of their time on recruiting new students.

Several potential strategies for increasing student enrollment were proposed on the questionnaire, and respondents were asked for their opinion of the degree of success of each strategy listed. Each strategy was rated on a scale of 1 to 4 with 4 = extremely successful, 3 = successful, 2 = partially successful, and 1 = not successful. For ease in comparison, the strategies are presented in order from most successful to least successful.

BELOW, SEVERAL POSSIBLE STRATEGIES ARE LISTED FOR INCREASING STUDENT ENROLLMENT. IN TOUR OPINION, WHAT IS THE DEGREE OF SUCCESS FOR EACH STRATEGY LISTED?

4 = EXTREMELY SUCCESSFUL
3 = SUCCESSFUL
2 = PARTIALLY SUCCESSFUL
1 = NOT SUCCESSFUL

PROPOSED STRATEGY	AVERAGE OF RESPONSES
Providing tours of the program for prospective students.	3.16
Utilization of local radio and T.V. stations to place public service announcements about the training program.	3.03
Encouraging high school students to take courses while completing graduation requirements at their high school.	2.97
Utilizing advisory committee activities in the recruitment processes.	2.94
Staff members seek opportunities to make recruitment presentations in local high schools.	2.90
Development of slide tape presentations for distribution throughout the region.	2.79
Allow students to enroll part time in a training program.	2.65
Advertising the program in local newspapers and journals.	2.45
Staff takes past and present students to feeder schools to provide honest, realistic information regarding the training program.	2.38

PROPOSED STRATEGY	AVERAGE OF RESPONSES
Mass mailings of the program schedule sent to prospective students.	2.37
Advertisements or flyers sent to parents.	2.31
Instructor takes a mobile carpentry workshop to conduct recruitment sessions in high schools and malls.	2.20

TABLE 4.14 Recruitment Strategies

Based on the responses to the various recruitment strategies, none were judged to be "extremely successful" and only two were rated as "successful" with the remaining strategies falling into the range between "partially successful" and "successful". From those recruiting strategies presented in the questionnaire, the educators felt that providing tours of the program for prospective students and the utilization of local radio and T.V. stations to place public service announcements about the training programs were the most effective. On the other hand, mass mailings of the program schedule sent to prospective students, advertisements or flyers sent to parents and taking a mobile carpentry workshop on recruitment sessions to high schools and malls were deemed the least effective.

The final question under the recruitment section asks respondents whether or not they would agree to the following statement:

A SHORTAGE OF SKILLED CARPENTERS IS PROJECTED FOR THE COMING YEARS IN FLORIDA.

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES, AGREE	28	90.3
NO, DO NOT AGREE	2	6.5
NO RESPONSE	1	3.2

TABLE 4.15 Carpenter Shortage

Ninety percent of the educators responded that they would agree with the statement that Florida faces a shortage of skilled carpenters in the coming years.

PART III: PLACEMENT

The third part of the questionnaire is concerned with investigating the strategies used by the vocational centers and community colleges to place program graduates into jobs related to their training. This portion of the questionnaire will determine the existence of ongoing placement efforts of the programs. It will then ask respondents to rate various placement strategies, and attempt to identify inhibitors to job placement.

The first three questions in this section are intended to ascertain the existence of any ongoing placement efforts at the training program.

IS THERE A PLACEMENT CENTER AT THIS COMMUNITY COLLEGE OR VOCATIONAL - TECHNICAL CENTER?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	27	87.1
NO	4	12.9
NO RESPONSE	0	0

TABLE 4.16 Central Placement Center

IS THERE A PLACEMENT CENTER IN THE DEPARTMENT THAT HOUSES THE CARPENTRY PROGRAM?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	10	32.3
NO	20	64.5
NO RESPONSE	1	3.2

TABLE 4.17 Departmental Placement Center

DOES THE CARPENTRY PROGRAM HAVE A PLACEMENT OFFICER?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	13	41.9
NO	18	58.1
NO RESPONSE	0	0

TABLE 4.18 Departmental Placement Officer

The responses to these three questions show that the vocational centers and community colleges do indeed offer some type of ongoing placement service. Nearly 90 % of the programs utilize a centralized placement office at the institution and 64% have a placement office within the carpentry department. The majority of carpentry departments, however, do not utilize a placement officer.

The next series of questions are designed to determine the effectiveness of various placement strategies. Respondents were asked to rank from 1 to 10, with 10 = extremely influential, and 1 = no influence, which of the following factors had the most influence on the placement of program graduates in jobs related to their training. For ease in comparison, the factors are listed in descending order from most influential to least influential.

IN YOUR OPINION WHICH OF THE FOLLOWING FACTORS HAD THE INFLUENCE ON THE PLACEMENT OF YOUR GRADUATES IN JOBS RELATED TO THEIR TRAINING?

PLEASE USE A SCALE OF 1 TO 10:

10 = EXTREMELY INFLUENTIAL
1 = NO INFLUENCE

PLACEMENT FACTORS	AVERAGE OF RESPONSES
The quality and adequacy of training provided to the students.	8.61
An individual effort and personal contacts of the instructor.	8.03
Relationship between program personnel and local contractors.	7.90
Cooperation between instructor and placement officer.	7.17
Providing information on local employment opportunities.	7.13
Help from students' friends and relatives to get job contacts.	7.10
Students had previous on - site experience.	6.87
Counseling students on job opportunities and requirements.	6.63
Showing up at construction sites and asking for work.	6.48
Actively contacting contractors and inviting them to visit the program and interview the students.	6.43
Existence of an advisory or craft committee for the program.	6.32
The central placement office for the vocational center or community college.	5.90

TABLE 4.19 Placement Factors

Table 4.19 reveals that the educators regard the quality and adequacy of training as having the greatest influence on placement. This factor was rated highest by a rather large margin, followed by the individual's effort and personal contacts of the instructor. The relationship between program personnel and local contractors also ranked high, therefore, based on the top three responses to this question, the carpentry educators feel that they are personally responsible to a large degree for the successful placement of their students. It is interesting to note that although nearly 90% of the programs reported to having a central placement office at their facility, the central placement office ranked last in terms of placement factors indicating that the carpentry programs have little confidence in the placement office and it would seem that participation with a centralized placement program would be somewhat under utilized by carpentry programs.

Respondents were asked to follow up their rankings of placement factors with their opinion of what one factor had the most effect on the placement of their graduates. Of those educators who chose to comment, the vast majority listed instructor contacts in the industry as being most influential. Several comments were also made referring to student contacts, personal attitude and ability, contractor participation, and students' previous experience. Two respondents made a particularly pertinent observation noting that the successful performance of former students from their specific program has a

strong influence on future placement efforts. One educator reported that placement from his program was not difficult since he currently has more requests for graduates than he can fill.

The next series of questions are intended to examine the issue of individuals choosing not to enter the carpentry field. Respondents were asked to report the average hourly wage paid to program graduates, and an estimation of the percentage of program graduates seeking an alternate occupation after completing carpentry training.

WHAT IS THE AVERAGE HOURLY WAGE OF AN INDIVIDUAL WHO HAS JUST GRADUATED FROM YOUR CARPENTRY PROGRAM?

AVERAGE WAGE	LOW	HIGH
$5.56	$3.50	$12.40

TABLE 4.20 Average Wages

IN YOUR VIEW, WHAT PERCENTAGE OF GRADUATES OF CARPENTRY TRAINING PROGRAMS ARE SEEKING AN ALTERNATE OCCUPATION?

AVERAGE	MEDIAN	LOW	HIGH
23.1%	15.0%	1.0%	85.0%

TABLE 4.21 Percentage of Graduates Seeking Alternate Occupations

Table 4.21 indicates that 15% of the carpentry program graduates are choosing not to enter the carpentry trade. In order to determine the reasons why this is occurring, the carpentry educators were asked to rank several potential reasons using a scale of 1 to 10, with 10 = very important reason and 1 = no reason at all.

IN YOUR OPINION, WHICH OF THE FOLLOWING FACTORS HAS MOST INFLUENCE IN CAUSING GRADUATES OF CARPENTRY TRAINING PROGRAMS TO SEEK AN ALTERNATE OCCUPATION?

PLEASE USE A SCALE OF 1 TO 10:

10 = VERY IMPORTANT REASON
1 = NO REASON AT ALL

FACTORS CAUSING GRADUATES TO SEEK ALTERNATE OCCUPATIONS	AVERAGE OF RESPONSES
Low wage rates.	6.50
Students' preference.	5.44
Characteristics and conditions of the job.	5.22
Students feel they have not acquired the training necessary to perform on the job.	2.57
No jobs available for carpenters in the area.	2.33

TABLE 4.22 Factors Causing Graduates to Seek Alternate Occupations

Table 4.22 indicates that although carpentry jobs are available in the area, low wages paid to carpentry program graduates cause many to seek another occupation.

PART III: TRAINING AND COMMUNICATION

The third and final portion of the questionnaire is intended to identify those carpentry skills emphasized by the vocational programs and community colleges, and to determine the level of communication between the training programs and the construction industry.

The first question under Training and Communication asks educators to rank various carpentry skills on a scale of 4 to 1, where 4 = absolutely necessary, 3 = necessary, 2 = desirable and 1 = unnecessary. For ease in comparison, the skills are ranked in descending order from absolutely necessary to unnecessary.

BELOW ARE A LIST OF VARIOUS SKILLS WHICH A JOURNEYMAN CARPENTER MIGHT POSSESS. PLEASE CIRCLE THE NUMBER WHICH IN YOUR OPINION, STUDENTS OF CARPENTRY TRAINING PROGRAMS SHOULD POSSESS AT THE COMPLETION OF THEIR TRAINING. USE THE FOLLOWING RATING SYSTEM:

4 = ABSOLUTELY NECESSARY
3 = NECESSARY
2 = DESIRABLE
1 = UNNECESSARY

CARPENTRY SKILL	AVERAGE OF RESPONSES
Frame partitions	3.87
Frame roofs	3.68

CARPENTRY SKILL	AVERAGE OF RESPONSES
Install decking and sheathing	3.61
Frame floor and sills	3.55
Read Blueprints	3.45
Install exterior wall covering and trim	3.45
Install door, window frame units	3.29
Install paneling, furring, soffit ceiling	3.23
Construct forms (footing, walls, edge, curb)	3.07
Apply weather stripping and caulking	3.07
Conduct site preparation and layouts	3.00
Construct forms (piers, columns, beam, slab, bridge, deck)	2.94
Install cabinets, fixtures and shelving	2.94
Install insulation and sound control material	2.94
Construct interior stairs	2.90
Install structural timber	2.87
Build trusses	2.77
Install drywall material	2.71
Preplan future activities	2.68
Issue instructions to crew members	2.65

TABLE 4.23 Carpentry Skills

According to the ranking of the various carpentry skills by carpentry educators at voc-tech centers and community colleges,

the greatest emphasis is placed on traditional framing skills with frame partitions, frame roofs and frame floor and sills rated first second and fourth respectively. Formwork construction skills were ranked particularly low with construct forms (footing, walls, edge, curb), and construct forms (piers, columns, beam, slab, bridge, deck) finishing ninth and twelfth respectively. This could suggest a bias toward residential construction carpentry skills. Somewhat significant is the fact that the construction educators felt that the least important skills of a journeyman carpenter are those skills that could be categorized as management or supervisory skills. Preplan future activities and issue instructions to crew members were rated the two least important skills of a journeyman carpenter despite the fact that a large percentage of construction superintendents worked through the carpentry trade before reaching the level of superintendent.

The next two items on the questionnaire are designed to solicit the opinions of carpentry educators regarding the specialization of skills within the carpentry trade. Respondents are asked the degree to which they feel the carpentry trade is becoming specialized, then they are asked to rate various carpentry tasks with respect to whether that task will become broader or narrower in the future.

TO WHAT DEGREE DO YOU FEEL THAT SPECIALIZATION HAS ENTERED THE FIELD OF CARPENTRY?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
LARGE DEGREE	26	83.9
SOME DEGREE	5	16.1
SMALL DEGREE	0	0
NO DEGREE	0	0

TABLE 4.24 Degree of Specialization

WILL THE FUTURE CARPENTER BE PERFORMING A BROADER VARIETY OF TASKS? USE THE FOLLOWING RATING SYSTEM:

4 = MUCH BROADER
3 = BROADER
2 = NO CHANGE
1 = NARROWER

	AVERAGE OF RESPONSES
Finish Carpenter	2.90
Framing Carpenter	2.83
Form Carpenter	2.50
Other	3.00

TABLE 4.25 Future Task Specialization

Table 4.25 discovers an interesting contradiction. According to the responses to the question presented in Table 4.24, the carpentry educators agreed nearly unanimously to the fact that specialization has entered the carpentry field. However, an inspection of table 4.25 reveals that respondents feel that the three major types of carpenters will be performing a broader variety of carpentry tasks. This contradicts the notion that as the carpentry trade becomes more specialized, individual carpenters will perform a narrower variety of tasks. This apparent contradiction could mean that due to specialization, carpenters will perform a broader variety of tasks within the range of finish, framing or formwork, but not cross from one type of carpenter to another. Or the contradiction could mean that respondents did not fully understand the question and responded according to which type of future carpenter they felt would become more specialized. If this is indeed the case, it is interesting to note that again the carpentry educators showed an apparent bias toward residential construction by rating finish and framing carpenters above formwork carpenters in terms of variety of tasks.

The questionnaire now addresses the somewhat controversial issue of whether or not to require carpenters to become licensed.

IN YOUR OPINION, WOULD THERE BE BETTER SKILLED CARPENTERS IF THEY WERE REQUIRED TO BE LICENSED?

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
YES	14	45.2
NO	17	54.8
NO RESPONSE	0	0

TABLE 4.26 Licensing Requirement

The carpentry educators were nearly perfectly divided over whether or not to require carpenters to be licensed with not licensing taking the majority vote by a narrow margin. In addition to stating yes or no to the licensing issue, respondents were asked to state why they would or would not favor a licensing requirement. Since the questionnaire responses showed no clear, consistent opinion, the respondents' comments are quite valuable to this study and therefore presented here with those responding in the affirmative first followed by the negative responses.

Of those favoring a licensing requirement, several felt that a license would help to insure competency throughout the carpentry trade.

> "Yes, it would weed out the incompetent ones who float from job to job."
>
> "Yes, because this would stop alot of people from going out and doing jobs they have no training in that area."
>
> "Yes, the trade would not be a catch all for those who are unskilled."
>
> "Yes, they would have to prove their worth before they go to work."

Some others favor a licensing requirement as they see it as a learning experience.

> "Yes, more knowledge would be required to take a test thus giving them more skills and knowledge."
>
> "Yes, they must prove themselves in training and again when applying for their license."
>
> "Yes, they would have the knowledge and be more likely to apply it."

Three respondents felt that licensing would help to standardize the carpentry trade.

> "Yes, standardize the trade requirements to be called a carpenter, standardize training programs."
>
> "Yes, would give frame of reference."
>
> "Yes, it would provide credibility of skill groups and provide some measure of wage differential."

Two respondents favored licensing but had reservations.

> "Yes, that would depend on license requirements."
>
> "Yes, but you can't even get them interested in the field because of wages let alone get a license."

One more simply favored a licensing requirement in principle.

> "Yes, our graduates could certainly meet license requirements - I think all tradesman should be licensed."

Of those respondents who disagreed with a licensing requirement for carpenters, some were afraid that a licensing requirement would create an unnecessary burden on the trade.

> "No, no need to add to the bureaucracy."
>
> "No, a license is only a tax has no influence on skill."
>
> "No, licensed carpenter would cause politics to be more involved and destroy small contractors."
>
> "No, low salary and people would not come into the field of carpentry."

Three were concerned that licensing does not always assure competency.

> "No, other trades that are licensed still do not guarantee competency."
>
> "No, the passing of a written test <u>does not</u> tell me how good his hands on skills are."
>
> "No, it does not take a supervisor long to find out if a person is qualified. You can buy a drivers license, that does not make you a good driver."

Two respondents indicated that specialization of the carpentry trade would prevent the effective administration of a licensing requirement.

> "No, because of specialization."

"No, today everything is becoming specialized 'ie' forming carpenter framing carpenter finish carpenter cabinet makers etc."

The majority of those respondents opposed to the licensing requirement, however, felt that assuring a skilled and competent carpentry trade is not the responsibility of a licensing bureau.

"No, contractor, subcontractor, or inspector assures quality."

"No, vocational or apprentice training provides an excellent background for the trade. A course requirement would be sufficient."

"No, Journeyman carpenters should have completed a training or apprenticeship program with a state approved institution at a salable level of success and be issued a certificate of completion, with the institution being held accountable for certificates issued based upon initial performance of trainees."

"No, but should enforce apprentice ship programs."

"No, interest in quality and the ability and patience requires basic character which comes, by way of, thru a good and strong family teachings especially a solid father input."

And this last comment, well, draw your own conclusions.

"No, A licensed carpentry may are may not do better are be a better skilled workers."

The final three items on the questionnaire are intended to determine the level of communication between the carpentry training programs and the potential employers in the construction industry. Respondents are asked to rate various education to industry linkages, then they are asked to offer one single factor that could provide a closer relationship between the training

programs and the industry. Finally, the questionnaire asks respondents to identify which industry organizations with which they have the greatest amount of communication.

RANK THE FOLLOWING AS TO THE BEST METHOD OF ESTABLISHING AN EDUCATION / INDUSTRY LINKAGE. USE THE FOLLOWING SYSTEM:

4 = MOST IMPORTANT
1 = LEAST IMPORTANT

LINKAGE	AVERAGE OF RESPONSES
Advisory Committee	3.52
Formal meeting of the two groups	3.48
Attending industry functions	3.13
Written Contact	2.62
Other	3.86

TABLE 4.27 Education / Industry Linkages

The Advisory Committee was rated as the most important linkage between the training programs and the construction industry, and written contact between the two parties was seen as the least important. Of those linkages described as "other", several respondents listed "personal contact" between contractors and instructors or students as being an important channel of communication to the industry.

When asked what one factor could provide more effective involvement with the construction industry and provide carpentry programs with a closer working relationship with industry, the overwhelming response was to somehow develop confidence on the part of the contractor in the vocational carpentry programs. From the suggestions made by the educators to achieve contractor confidence, most listed communication as being the key. Several respondents believed that better communication could be achieved through an active and involved Advisory Committee. Others felt that inviting contractors to inspect the program facilities, and allowing students and instructors to visit job sites would strengthen the ties between the training programs and the industry. In these regards, one respondent noted that the cooperative program goes a long way toward establishing a good rapport with local contractors. Perhaps most significantly, one educator so succinctly identified the underlying factor of the education to industry relationship as being an understanding the basic needs of the other party.

The next question identifies those construction industry trade associations that have the most contact with the carpentry training programs across the state.

WHAT LEVEL OF COMMUNICATION DO YOU HAVE WITH THE FOLLOWING INSTITUTIONS? CHOOSE ONE OF THE CHOICES USING THE FOLLOWING SCALE:

4 = VERY CLOSE
3 = CLOSE
2 = REMOTE
1 = VERY REMOTE

INSTITUTION	AVERAGE OF RESPONSES
Construction Industry (contractors, generally)	3.10
Florida Home Builders	2.26
Associated General Contractors (AGC)	2.17
Associated Builders and Contractors (ABC)	1.90
United Brotherhood of Carpenters AFL-CIO	1.70

TABLE 4.28 Communication With Specific Institutions

Although the educators report a "close" level of communication with the construction industry in general, Table 4.28 reveals the fact that communication between vocational programs and recognized construction industry organizations is "remote" at best.

Some respondents made general comments at the end of the questionnaire referring to a broad range of topics. Of the more pertinent comments, one educator mentioned the fact that the need for instructors' periodic upgrading of skills and their keeping abreast of changes in technology, materials and techniques is not being met. One respondent mentioned that employers should realize that carpentry training program graduates still require training once they get on the job and not to expect "a finished product - especially at such low wages." Several respondents indicated that they could not understand the disparity in wages between carpentry and other construction trades.

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Of all the findings of this study, perhaps the most significant is the dramatic decline in enrollment in Residential and Commercial Carpentry programs throughout the state. This one particular statistic would indicate problems in the recruitment, training, and placement functions of the Community College or Voc-Tech Center. Enrollment in the carpentry program has shown a 45.3% drop over the last two academic years. Currently there are only 594 students enrolled in Residential and Commercial Carpentry statewide compared to 1086 two years ago. The decline in enrollment has caused several programs across the state to drop their carpentry programs. This precludes potential students the opportunity of having a carpentry program taught locally.

Compounding the problem of decreasing enrollment in the carpentry program is the high attrition rate for students. Each year, the carpentry programs graduate roughly 20% of their total enrollment. Assuming that for a two-year program half of the students are in the second year, and that all students take two years to graduate, one can reasonably assume that about 40% of those eligible to graduate actually complete the program. Taking into consideration the fact that some students will need more than two years to complete the program, one can express the drop out rate to be somewhere of the magnitude of one-half of all students. The reasons for this high rate of attrition are beyond the scope of this particular study, however, its existence is significant.

Of the students who graduate from Residential and Commercial Carpentry programs, the data indicate that only 69.2 find employment in jobs related to their training. Over the last two years, Florida Community Colleges and Voc-Tech Centers have contributed 315 carpenters to the state's labor pool. A contribution nonetheless, the fact remains that Community Colleges and Voc-Tech Centers are not making a significant impact on the current, and projected need for carpenters in Florida.

RECRUITMENT

Ninety percent of the respondents agreed with the fact that a shortage of skilled carpenters is projected for the coming years in Florida, and despite the fact that they have supplied the construction industry with only 315 carpenters over the last two years, 61.3% of the carpentry educators felt that the carpentry training programs offered in the Community Colleges and Vocational Centers were fulfilling the state's demand for skilled carpenters.

The majority of respondents felt that student recruiting is adequate. Three-fourths of the programs reported to having a central recruiting office at the Community College or Voc-Tech Center, and the same number indicated that the carpentry program participates in the functions of the central recruiting office. Three-fourths of the respondents also indicated that the carpentry program conducted its own recruiting independent of the

central recruiting office, and the majority of the carpentry program administrators spend less than 5% of their time on recruiting.

Providing tours of the program to prospective students and utilization of local radio and T.V. stations to place public service announcements about the training program were listed as the two most successful strategies for increasing enrollment, and although 83.9% have a brochure advertising their program, these brochures are not used for recruiting since respondents rated advertisements or flyers sent to parents as the second least successful recruiting strategy.

The majority of the carpentry programs reported that they are currently operating at over 75% of the capacity of the facility. This in spite of the fact that enrollment across the state has declined 45.3% over the last two years. One has to wonder at what level of capacity were these programs operating at two years ago? A possible explanation for this apparent contradiction is that as program enrollment declines, instructors are reassigned and resources are diminished to a level to reflect the current enrollment.

Sixty-one percent of the carpentry educators perceive Community Colleges and Voc-Tech Programs as fulfilling the need for carpenters in the construction industry. It has been shown, however, that the Community Colleges and Voc-Tech programs are falling short of fulfilling the industry's needs. The first step toward increasing the number of skilled carpenters provided by

Vocational Centers and Community Colleges is to gain the support of the industry and potential carpentry employers.

The next step would be to recruit more students and increase enrollment. Although the carpentry educators believe that the current level of recruiting is adequate, the dramatic decline in enrollment in the last few years indicates that recruitment is indeed unsatisfactory.

PLACEMENT

The placement rates of Vocational Programs and Community Colleges are extremely important as they are the primary criteria used by the Department of Education in evaluating the success of an individual program. In many cases, the future of a carpentry program is determined by its placement rates since according to state law any program failing to place 70% of its students for any given year is automatically reviewed by the Department of Education. If a program fails to achieve 70% placement for three consecutive years, the program becomes ineligible for future state funding. This concept of self preservation would seem to motivate program administrators to place a large emphasis on student placement. The data indicate, however, that this is not necessarily the case as statewide only 69.2% of the carpentry program graduates found employment in jobs related to their training. Therefore, the statewide placement rate is just slightly lower than the rate set for individual programs.

The issue of low placement must be examined from two perspectives; graduates unable to find employment in the carpentry field, and graduates choosing not to enter the carpentry field. Since the data shows that graduates' inability to find employment is not due to a lack of jobs available in the area, part of the problem of low placement can be attributed to inadequate marketing of the program to potential employers. The inability of the state's Voc-Tech Programs and Community Colleges to place graduates in employment in the construction industry is due in part to the construction industry's perception of vocational training as being inferior to the training offered by apprenticeship programs or on-the-job training.[37] Furthermore, program administrators are not taking full advantage of their available resources to place graduates. Nearly 90% of the carpentry programs reported that there is a placement center at the Community College or Voc-Tech Center, but the central placement office was rated as the least influential factor in student placement. This would indicate that the carpentry programs have little confidence in the ability of the central placement office and therefore do not fully participate in the placement office's functions. Furthermore, respondents rated the individual student's personal contacts as the second most influential factor affecting placement. It seems program

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[37] Anthony A. Cardinale, "Effects of the Shortage of Skilled Carpenters on the Associated General Contractors of Florida: Impediments and Recommendations," Technical Publication No. 50, School of Building Construction, University of Florida, 1987, p.94.

administrators are leaving it up to the individual student to find his own job.

The high percentage of carpentry program graduates choosing not to enter the carpentry field is an issue which must be addressed, given the severe shortage of carpenters facing the construction industry. The carpentry program administrators indicated that on the average 23% of the carpentry program graduates were choosing an alternate field. This was attributed to low wages paid to carpenters. The average wage paid to a Residential and Commercial Carpentry program graduate is $5.56; with a low of $3.50 and a high of $12.40. This wage disparity is most likely due to the changing market conditions throughout the state.

TRAINING AND COMMUNICATION

In addition to poor program marketing, low placement rates could also be an indication that the Vocational Centers and Community Colleges are not producing a carpenter with skills consistent with the needs of the employers in the construction industry.

The carpentry program administrators felt the most important skills for a carpenter to possess at the completion of his training were traditional framing skills, specifically framing partitions and framing roofs. The skills rated as least important by the administrators are those that could be described as management skills; preplan future activities and issue

instructions to crew members. It is interesting to note that the carpentry programs feel that management skills are the least important skills possessed by a carpenter when many carpenters eventually progress to the level of superintendent.

An overwhelming majority of carpentry educators agreed that the future carpenter will become more specialized and will perform a narrower range of tasks. The carpentry trade will become divided into well defined disciplines of framing carpenter, formwork carpenter, and finish carpenter. The current Residential and Commercial Carpentry curriculum, however, does not reflect this trend.

In order for the carpentry programs to produce a carpenter with skills consistent with the needs of the employer, interaction between the training programs and the construction industry is essential. An involved advisory committee is seen as the most effective linkage between the training programs and the industry. Although the carpentry program administrators claim to have a "close" association with the construction industry in general, the level of communication with any recognized contractor association is described as "remote"

When asked whether a licensing requirement would result in better skilled carpenters, the respondents indicated that requiring carpenters to obtain a license would not result in improved skills. Furthermore, a licensing requirement would severely inhibit potential carpenters from entering the field

thus compounding the problem of a carpenter shortage. A licensing requirement could cause the wages paid to carpenters to rise. The increase in wages, however, would come as a result of the diminished supply of carpenters, not from any improvement in quality. The net result of requiring carpenters to become licensed would be to exacerbate the carpenter shortage increase the wages paid to carpenters without any significant improvement in quality.

RECOMMENDATIONS

This study has shown that the state's Voc-Tech Programs and Community Colleges are not making significant contributions toward meeting the construction industry's increasing need for skilled carpenters. The reasons for this are quite complex and involve factors for which no simple solution exists. There are, however, measures which may be taken in order for the training programs to more effectively recruit, train, and place students into jobs as carpenters, thereby helping to alleviate the current and projected carpenter shortage in Florida. The first step toward effective recruiting, training and placement, however, is to communicate with the industry. The development of an effective vocational training program will come only as a result of a joint effort between the educators and the industry. Cooperation between these two parties will result in the

development of a curriculum suitable to the industry, and it will go a long way toward changing industry's negative perception of vocational training.

1. Gain industry support through more effective communication and by providing carpenters with skills sufficient to meet the demands of the industry. The most effective placement strategy is to produce a quality carpenter with those skills needed by the contractor. The Residential and Commercial Carpentry programs must be continually aware of the specific needs of the industry and tailor the training to be consistent with these industry demands. This would be quite effective in bolstering the contractor's confidence in the abilities of graduates of Community Colleges and Vocational Training Programs.

2. The key to effective training is communication with the industry. Ensure that the advisory board is active and that it continually supports interaction between the training institution and the industry. Establish scheduled meetings where the curriculum is reviewed. Encourage local contractors to become active in the training program by inviting them to visit the facility to offer their input, and if appropriate, encourage the contractor to participate in the training by sharing his expertise with the students.

3. Encourage students to remain in the carpentry program. Alternate schedules may have to be developed to allow individuals to work while participating in the program.

4. In order to better meet the construction industry's increasing demand for skilled carpenters, training programs need to increase enrollment. This can be accomplished through more active recruiting by individual programs. The carpentry programs can be promoted through the use of direct mailing of program brochures to prospective students, and by taking advantage of local television and radio station public service announcements.

5. The carpentry programs should take advantage of the resource provided by the central placement office at the Vocational Center or Community College.

6. Establish a placement officer for all building trades programs at the Voc-Tech Center or Community College. The placement officer would contact local contractors and make them aware of the building trades programs and encourage them to hire the program's graduates.

7. Take advantage of contacts with the professional trade organizations such as the AGC, ABC, FHBA, and others, to establish potential employers of program graduates.

RECOMMENDATIONS FOR FUTURE RESEARCH

During the course of this research, issues arose that although significant, were not appropriate to be included under the specific scope of this study.

1. Since this study was conducted from the perspective of the carpentry educator, a survey of Voc-Tech and Community College students and recent graduates would provide further insight into the adequacy of training by ascertaining the relative satisfaction with regard to training expressed by current students and program graduates, and it could investigate the individual's ability to compete on the job market with students and graduates of other types of carpentry training programs. This study could further investigate reasons for the low placement rate of carpentry program graduates by establishing the correlation of low placement to the following demographic factors:

A. Age of students

B. Financial situation of students

C. Student's ability to relocate

D. Does the student come from a family engaged in the construction industry ?

E. Is this the first vocational training of the student ?

2. A study could be conducted examining the wage disparity between the various construction trades and the effect this has on the shortage of carpenters.

3. An investigation into the reasons why students leave a carpentry program before completion would be useful in developing strategies to lower the attrition rate of the programs.

4. A study needs to be conducted analyzing the impact that a licensing requirement would have on the carpentry trade and how that would affect the shortage of carpenters.

5. A study identical to this examination of carpentry should be conducted for the other building trades within the state of Florida. This could then be expanded to evaluate the shortage of skilled construction tradesmen nationwide.

6. A study should be conducted that would investigate the degree of specialization within the carpentry field. Such a study would look into the breakdown of carpentry into the subfields of Framing, Formwork, and Finish Carpentry, and determine whether or not carpentry training is adequate to meet this degree of specialization.

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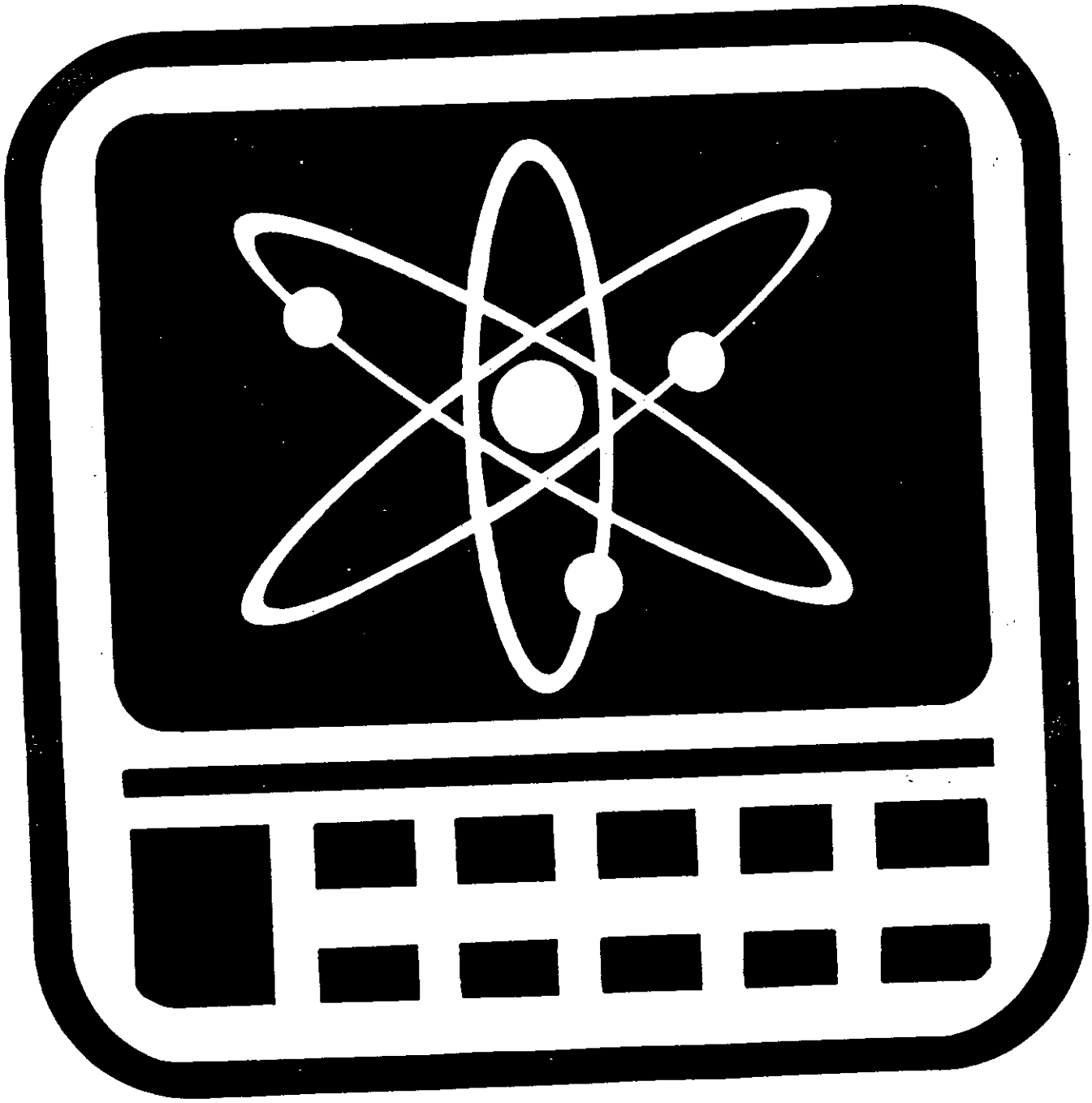
APPENDIX A: RESIDENTIAL AND COMMERCIAL CARPENTRY COURSE STANDARDS

VOCATIONAL EDUCATION PROGRAM COURSES STANDARDS

July, 1986

Industrial Education



VOCATIONAL EDUCATION

PROGRAM COURSES STANDARDS

INDUSTRIAL EDUCATION

July, 1986

FLORIDA DEPARTMENT OF EDUCATION
Division of Vocational, Adult, and Community Education
Bureau of Vocational Program and Staff Development
Program and Staff Development Section
Tallahassee, Florida 32301

(904) 488-0484

FOREWORD

Section 228.041 Florida Statutes defines vocational education as consisting of four categories or types of instruction:

1. Exploratory courses designed to give students initial exposure to skills and attitudes associated with a broad range of occupations in order to assist them in making informed decisions regarding their future academic and occupational goals;

2. Practical arts courses designed to teach students practical generic skills which, though applicable to some occupations, are not designed to prepare students for entry into a specific occupation;

3. Job preparatory programs designed to provide students with the competencies necessary for effective entry into an occupation;

4. Supplemental courses designed to enable persons who are or have been employed in a specific occupation to upgrade their competencies in order to re-enter or maintain stability or advance within their occupations.

This document contains vocational education program courses standards (curriculum frameworks and student performance standards) for exploratory courses, practical arts courses and job preparatory programs offered at the secondary or postsecondary level as a part of Florida's comprehensive vocational education program. Vocational education program courses standards are established pursuant to Section 233.0682, Section 240.355, Section 233.011, and Section 232.2454, Florida Statutes, for school districts and community colleges. State Board of Education Rule 6A-6.571, Criteria for Qualification for Special Vocational-Technical Education Program Courses, provides the basis for the development and dissemination of this document.

Each program courses standard is composed of two parts: a curriculum framework and student performance standards. The curriculum framework includes four major sections: major concepts/content, laboratory activities, special notes, and intended outcomes. Student performance standards are listed for each intended outcome. For secondary job preparatory programs, courses have been designated with student performance standards listed for each course.

The standards do not prescribe how instruction should be delivered since decisions relative to the delivery of instruction must be made by school districts and community colleges within the context of local conditions. The Division of Vocational, Adult, and Community Education, Florida Department of Education, supports the belief that competency-based vocational education is the most effective means of providing programs and courses that conform to these established standards.

Program and course standards are based upon competencies required for entry, advancement, and upgrading in occupations in the vocational program areas of Agriculture, Business, Diversified, Health Occupations, Home Economics, Industrial Arts, Industrial, Marketing, and Public Service Education. Standards or courses designed for handicapped, disadvantaged, and other special needs persons are also provided. The standards are reviewed annually and revised as needed based upon changes in occupations utilizing input from business and industry employers, licensing and credentialing agencies, professional associations, state technical committees, and other representatives of the private sector.

INDUSTRIAL EDUCATION

Industrial Education is comprised of instructional courses, programs, services, and activities at all educational levels for selected industrial occupations.

Industrial Education is a component of vocational education which prepares persons for initial employment and offers opportunities for upgrading or retraining of workers in a wide range of occupational areas. Individuals completing Industrial programs are qualified to function as skilled, semiskilled or technical level workers in activities including layout, design, production, construction, processing, assembling, testing, maintaining, servicing, or repairing products and commodities or rendering personal services. Industrial programs include classroom instruction providing technical related theory, safety mathematics, and science; laboratory and shop instruction providing manipulative skills; and cooperative education providing on-the-job experiences. Instruction is provided for apprentices in apprenticeable occupations or for journeymen already engaged in industrial occupations.

Industrial programs at the technical level include classroom and laboratory experiences, usually at the postsecondary level, to prepare students for specific technician level occupations or for a cluster of job opportunities in a specialized field of technology. The programs of instruction normally include the study of related sciences and mathematics inherent in a technology as well as methods, skills, materials, and processes commonly used and services performed in the technology. A planned sequence of study and extensive knowledge in a field of specialization is required for completion of a technical education program that prepares persons to work in direct support of professional engineers or scientists. Competency in the basic communication skills and related general education is also required.

Vocational Industrial Clubs of America (VICA) provides additional opportunities to develop leadership, civic responsibilities, free enterprise system concepts and an understanding of the world of work in industrial occupations. Such organized activities, under appropriate supervision, are considered an integral part of the instructional program.

Reinforcement of basic skills in English, Mathematics, and Science appropriate for the job preparatory program is provided through vocational classroom instruction and applied laboratory procedures or practices.

CURRICULUM FRAMEWORK

PROGRAM AREA: Industrial

FLORIDA DEPARTMENT OF EDUCATION

EFFECTIVE DATE: July, 1986

PROGRAM TITLE: Residential and Commercial Carpentry

CODE NUMBER: Secondary _____ Postsecondary BCT0181

Florida CIP IN46.020100

SECONDARY SCHOOL CREDITS _____ COLLEGE CREDITS _____ POSTSECONDARY ADULT VOCATIONAL CREDITS _____

APPLICABLE LEVEL(S): _____7-9 _____9-12 _____Postsecondary Adult Vocational

_____ Postsecondary Vocational _x_ Other 13-17

CERTIFICATION COVERAGE: TEC CONSTR @ 7 CARPENTRY 7 BLDG CONST @ 7

I. MAJOR CONCEPTS/CONTENT: The purpose of this program is to prepare students for employment as carpenters (50020201), construction carpenters (860.381-022), maintenance carpenters (860.281-010), rough construction carpenters (860.381-042), construction form builders (860.381-046), or to provide supplemental training for persons previously or currently employed in these occupations.

The content includes, but is not limited to, communication skills; leadership skills; human relations and employability skills; safe and efficient work practices; use and care of hand tools, power tools, equipment; selection, application and care of materials; interpretation of blueprints and specifications; laying out, fabricating, erecting, installing, and repairing residential and commercial structures and fixtures using hand and power tools.

II. LABORATORY ACTIVITIES: Carpentry shop or laboratory activities are an integral part of this program and include selection, use and care of tools and equipment; selection and use of materials; estimating and blueprint reading to construct or repair common systems of residential and commercial framing and concrete form building.

III. SPECIAL NOTE: The Vocational Industrial Clubs of America, Inc., is an appropriate vocational student organization for providing leadership training experiences and reinforcing specific vocational skills. When provided, these activities are considered an integral part of this instructional program.

The cooperative method of instruction may be utilized for this program. Whenever the cooperative method is offered, the following is required for each student: a training plan, signed by the student, teacher and employer which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills and tasks relevant to the occupation the student has chosen as a career goal. The student must receive compensation for work performed.

In accordance with Section 233.0695 F.S., the minimum basic skills grade level required for this postsecondary adult vocational program is: Mathematics 7.0, Language 4.0. This grade level number corresponds to a grade equivalent score obtained on a state designated basic skills examination.

The typical length of this program for the average achieving student is 1800 hours.

IV. INTENDED OUTCOMES: After successfully completing this program, the student will be able to:

01. Demonstrate proficiency in safety and first aid practices.
02. Convey knowledge and identify values of the construction industry.
03. Demonstrate proficiency in appropriate and identified shop practices.
04. Convey knowledge of basic mathematics.
05. Demonstrate knowledge of the free enterprise system.
06. Read blueprints.
07. Set up and use the transit, level and laser.
08. Handle and store materials.

09. Use fasteners and hardware.
10. Conduct site preparation and layout.
11. Construct footing forms, wall forms, edge forms and curb forms.
12. Construct vertical piers, columns, horizontal beam forms, above grade slab forms, stair forms, and bridge deck forms.
13. Describe use of fireproof encasement forms.
14. Use tilt-up and pre-cast construction.
15. Use scaffolding.
16. Set up and operate oxyacetylene welding equipment for cutting and burning.
17. Use structural shoring.
18. Frame floors and sills.
19. Frame partitions.
20. Frame roofs.
21. Build trusses.
22. Perform light framing.
23. Install structural timbers.
24. Install decking and sheathing.
25. Install exterior wall covering and trim.
26. Apply weather stripping and caulking compounds.
27. Install doors, window frames and units.
28. Install interior dry wall materials.
29. Install cabinets, fixtures, and shelving.
30. Construct interior stairs.
31. Hang interior doors including trim and hardware.
32. Install paneling, furring, soffitt and ceilings.
33. Install insulation and sound control materials.
34. Use plastic laminates.
35. Demonstrate employability skills.

STUDENT PERFORMANCE STANDARDS

EFFECTIVE DATE: July, 1986

PROGRAM AREA: Industrial Education

SECONDARY NUMBER: _____

PROGRAM TITLE: Residential and Commercial Carpentry

POSTSECONDARY NUMBER: BCT0181

01.0 DEMONSTRATE PROFICIENCY IN SAFETY AND FIRST AID PRACTICES--The student will be able to:

01.01 Demonstrate the ability to work safely.
01.02 Demonstrate the ability to keep a clean, orderly and safe work area.
01.03 Operate a fire extinguisher.
01.04 Qualify in and apply basic first aid procedures.
01.05 Demonstrate safe use of hand and power tools.
01.06 Recognize and identify common safety hazards.

02.0 CONVEY KNOWLEDGE AND IDENTIFY VALUES OF THE CONSTRUCTION INDUSTRY--The student will be able to:

02.01 Interpret the importance of the construction industry to the national economy.
02.02 Identify the employment opportunity in the construction industry.

03.0 DEMONSTRATE PROFICIENCY IN APPROPRIATE AND IDENTIFIED SHOP PRACTICES--The student will be able to:

03.01 Identify hand tools.
03.02 Select correct tool according to job.
03.03 Demonstrate safe and proper use and care of hand tools.
03.04 Identify power tools.
03.05 Select the correct power tool according to the job.
03.06 Demonstrate safe and proper use and care of power tools.
03.07 Identify special tools.
03.08 Select the correct special tool according to the job.
03.09 Demonstrate safe and proper use and care of special tools.
03.10 Demonstrate safe and proper use and care of special tools requiring OSHA certification.

04.0 CONVEY KNOWLEDGE OF BASIC MATHEMATICS--The student will be able to:

04.01 Read and interpret measuring devices (rules and tapes).
04.02 Add 100 addition combinations.
04.03 Add two-digit numbers.
04.04 Add three digit numbers.
04.05 Subtract 100 subtraction combinations.
04.06 Subtract two, three and four digit numbers.
04.07 Solve one-digit divisor problems.
04.08 Solve two-digit divisor problems.
04.09 Solve two and three-digit divisor problems.
04.10 Solve multiplication facts.
04.11 Multiply by a one-digit factor.
04.12 Multiply by a two-digit factor.
04.13 Identify parts of a fraction.
04.14 Identify fractional parts.
04.15 Solve fractional word problems.
04.16 Classify types of fractions.
04.17 Illustrate equivalent fractions.
04.18 Convert fractions.
04.19 Reduce fractions.
04.20 Solve decimal notations.
04.21 Solve number word problems.
04.22 Round to nearest whole number.
04.23 Add decimals.
04.24 Subtract decimals.
04.25 Multiply decimals.
04.26 Divide a decimal by a decimal.
04.27 Divide a whole number by a decimal.
04.28 Write fractions as decimals and percents.
04.29 Write percents as fractions and decimals.
04.30 Solve percent problems.
04.31 Find percent problems
04.32 Compute board feet.
04.33 Compute cost of materials.
04.34 Calculate amount of wire mesh for a job.
04.35 Solve basic ratio and proportion problems.
04.36 Operate single hand-held calculators.

04.37 Convert board feet to linear feet and vice versa.
04.38 Read, interpret, and apply metric conversion tables.

05.0 DEMONSTRATE KNOWLEDGE OF THE FREE ENTERPRISE SYSTEM--The student will be able to:

05.01 State the importance of the free enterprise system to the economy.
05.02 State the role of the construction industry within the free enterprise system.

06.0 READ BLUEPRINTS--The student will be able to:

06.01 Read architect's scale using quarter scale or 1" = 1'.
06.02 Read architect's scale using eighth scale or 1/8" = 1'.
06.03 Read architect's scale using full scale or 12" = 1'.
06.04 Read architect's scale using half scale or 6' = 1'.
06.05 Read architect's scale using one-fourth scale or 3" = 1'.
06.06 Read architect's scale using one-eighth scale or 1-½" =1'.
06.07 Read engineer's scale using scale of 1" = 1'.
06.08 Read engineer's scale using scale of 1" = 30'.
06.09 Read engineer's scale using scale of 1" = 50'.
06.10 Identify architectural elevations.
06.11 Identify architectural schedules.
06.12 Identify lines and symbols.
06.13 Identify mechanical symbols.
06.14 Identify electrical symbols.
06.15 Identify topographic symbols.
06.16 Read and interpret blueprints and specifications.

07.0 SET UP AND USE THE TRANSIT, LEVEL AND LASER--The student will be able to:

07.01 Set up and adjust the builder's level.
07.02 Set up and adjust the over-point and establish lines with two points.
07.03 Read the self-reading rod (positive reading and direct reading).
07.04 Perform differential leveling jobs.
07.05 Use transits.
07.06 Use builder's levels.
07.07 Use lasers.

08.0 HANDLE AND STORAGE OF MATERIALS--The student will be able to:

08.01 Receive material and store properly at job site.
08.02 Identify defects and blemishes that affect durability and strength of lumber.
08.03 Strip wood, patented, and metal and fiberglass forms.
08.04 Handle material safely in order to avoid damage to yourself and material.
08.05 Attach accessories for load lifting.
08.06 Attach types of hitches for load lifting.
08.07 Tie types of knots used in rigging.

09.0 USE FASTENERS AND HARDWARE--The student will be able to:

09.01 Identify assortments of fasteners.
09.02 Identify assortments of hardware.
09.03 Install appropriate fasteners according to job.
09.04 Install appropriate hardware according to job.

10.0 CONDUCT SITE PREPARATION AND LAYOUT--The student will be able to:

10.01 Identify building layout.
10.02 Erect batter boards and locate building lines.
10.03 Locate building line points on batter boards using a transit.
10.04 Locate building lines on a plot plan from a set of datum.
10.05 Lay out a building using batter boards.
10.06 Square a building using the 3-4-5 rule.
10.07 Square a building using the diagonal method.

11.0 CONSTRUCT FOOTING FORMS, WALL FORMS, EDGE FORMS AND CURB FORMS--The student will be able to:

11.01 Identify the parts of a form.
11.02 Identify types of forms.
11.03 Install inbeds for various forms.

11.04 Identify styles of footings.
11.05 Construct and set forms for a continuous form.
11.06 Construct and set forms for a pile cap.
11.07 Construct and set a pier footing form.
11.08 Strip a pier footing form and prepare it for erection at another location.
11.09 Construct straight wall with representative patented forms.
11.10 Construct gang forms for battered wall.
11.11 Construct circular wall forms built in place.
11.12 Construct panel forms.
11.13 Construct slip forms.
11.14 Remove forms and prepare for storage.
11.15 Construct edge forms for a floor without foundation walls.
11.16 Construct edge forms for a floor with foundation walls.
11.17 Construct edge forms for a stoop.
11.18 Identify types of curbs or curbs and gutters.
11.19 Identify types of median forms.
11.20 Identify a curb and gutter form.
11.21 Construct a curb and gutter form.
11.22 Construct forms for catch basins.

12.0 CONSTRUCT VERTICAL PIERS, COLUMNS, HORIZONTAL BEAM FORMS, ABOVE GRADE SLAB FORMS, STAIR FORMS, AND BRIDGE DECK FORMS--The student will be able to:

12.01 Identify column shapes.
12.02 Identify types of column corners.
12.03 Construct form for a round, fluted column.
12.04 Construct form for a square column.
12.05 Erect patented column forms.
12.06 Identify parts of beam forms.
12.07 Construct a spandrel beam form.
12.08 Construct an interior beam form.
12.09 Construct an inverted beam form, post-tensioned.
12.10 Identify parts of a slab forming system.
12.11 Identify types of slabs.
12.12 Construct forms for a two-way joist system.
12.13 Construct forms for a one-way joist system.
12.14 Construct flying forms for a flat slab.
12.15 Strip a two-way joist form system.
12.16 Set concealed void tubes.
12.17 Identify parts of stair forms.
12.18 Construct forms for suspended stairs.
12.19 Construct forms for stairs on earth.
12.20 Construct forms for short flights of stairs.
12.21 Identify parts of bridge deck forms.
12.22 Construct forms for bridge deck.

13.0 DESCRIBE USE OF FIREPROOF ENCASEMENT FORMS--The student will be able to:

13.01 State the differences in the erection of fireproof encasement for and structural concrete forms.
13.02 Construct fireproof encasement forms for columns and beams.

14.0 USE TILT-UP AND PRE-CAST CONSTRUCTION--The student will be able to:

14.01 Describe the bracing of tilt-up panels.
14.02 Describe the erection of tilt-up panels.
14.03 Describe how to form, erect and install pre-cast wall panels using rolling metal forms.
14.04 Describe the setting pre-cast beams.
14.05 Describe setting pre-cast slabs (i.e., single or double "T").
14.06 Describe forming of spandrel beams between columns.
14.07 Describe the forming of deck using span-all metal shoring.
14.08 Describe the installation of pre-cast parapet wall sections.

15.0 USE SCAFFORDING--The student will be able to:

15.01 Set up, tie off and inspect sections of scaffold with safety rails.
15.02 Construct double pole scaffold.

16.0 SET UP AND OPERATE OXYACETYLENE WELDING EQUIPMENT FOR CUTTING AND BURNING--The student will be able to:

16.01 Apply safety standards for cutting and burning.
16.02 Set up equipment for oxyacetylene cutting.

16.03 Turn on, light, adjust to a neutral flame, and turn off oxyacetylene cutting equipment.
16.04 Make ninety-degree cuts on mild steel and restart a cut.
16.05 Cut round stock.
16.06 Braze weld a square groove butt joint.

17.0 USE STRUCTURAL SHORING--The student will be able to:

17.01 Erect patented design shoring.
17.02 Construct, erect conventional shoring.
17.03 Erect safety shoring for excavation.

18.0 FRAME FLOORS AND SILLS--The student will be able to:

18.01 Identify framing numbers.
18.02 Build box sill and install floor joint.
18.03 Install bridging.
18.04 Lay subfloor.
18.05 Install floor joists for cantilever floor.

19.0 FRAME PARTITIONS--The student will be able to:

19.01 Identify framing members used in wall and partition construction.
19.02 Identify types of partition "T's".
19.03 Lay out wall and partition locations on floor.
19.04 Cut studs, trimmers, cripples and headers to length.
19.05 Cut fire stops.
19.06 Build "t's", corners and headers.
19.07 Lay out and assemble wall sections.
19.08 Install sheathing.
19.09 Lay out and install ceiling joists.

20.0 FRAME ROOFS--The student will be able to:

20.01 Identify roofing members.
20.02 Identify roof styles.
20.03 Identify roof framing units.
20.04 Compute length of common rafters.
20.05 Compute length of hip rafters.
20.06 Compute length of jack rafters.
20.07 Lay out rafter location on plate and ridge on two-foot centers.
20.08 Lay out, cut and erect rafters.
20.09 Apply roof sheathing.
20.10 Install asphalt-composition strip shingles.

21.0 BUILD TRUSSES--The student will be able to:

21.01 Identify main parts of truss.
21.02 Identify pieces of hardware used in truss construction.
21.03 Construct trusses.
21.04 Brace trusses.

22.0 PERFORM LIGHT FRAMING--The student will be able to:

22.01 Lay out wall lines.
22.02 Install metal door bucks.
22.03 Install steel studs.

23.0 INSTALL STRUCTURAL TIMBERS--The student will be able to:

23.01 Identify components in structural timber construction.
23.02 Identify connecting devices with structural timbers.
23.03 Identify hardware items used in structural timber construction.
23.04 Install heavy structural timber.

24.0 INSTALL DECKING AND SHEATHING--The student will be able to:

24.01 Identify types of decking or planking.
24.02 Install sheathing.
24.03 Install wood splice plate.
24.04 Install metal splice plate.
24.05 Install metal hangers.
24.06 Install metal shoe connection.
24.07 Install column cap.
24.08 Install metal strap and shear plate connection.

24.09 Install lateral ties and split rings.

25.0 INSTALL EXTERIOR WALL COVERING AND TRIM--The student will be able to:

25.01 Identify styles of cornice.
25.02 Identify types of cornice molding.
25.03 Identify styles of siding.
25.04 Build a box cornice.
25.05 Install siding and trim.

26.0 APPLY WEATHER STRIPPING AND CAULKING COMPOUNDS--The student will be able to:

26.01 Install weather stripping.
26.02 Apply caulking.

27.0 INSTALL DOORS, WINDOW FRAMES AND UNITS--The student will be able to:

27.01 Install window units.
27.02 Install exterior door frames and hang doors.
27.03 Identify parts of door frame.
27.04 Identify parts of window unit.

28.0 INSTALL INTERIOR DRY WALL MATERIALS--The student will be able to:

28.01 Install gypsum wallboard.
28.02 Apply laminated gypsum wallboard.

29.0 INSTALL CABINETS, FIXTURES, AND SHELVING--The student will be able to:

29.01 Identify parts of cabinet or fixture.
29.02 Identify types of cabinet door installations.
29.03 Identify cabinet hardware.
29.04 Install cabinet hardware.
29.05 Install custom-built cabinet.
29.06 Install fixtures.
29.07 Install shelving.

30.0 CONSTRUCT INTERIOR STAIRS--The student will be able to:

30.01 Identify parts of staircase.
30.02 Calculate the number of risers and treads for a stair.
30.03 Lay out, cut and assemble a stair (rough and finish).

31.0 HANG INTERIOR DOORS INCLUDING TRIM AND HARDWARE--The student will be able to:

31.01 Identify parts of interior door unit.
31.02 Identify parts of window installation.
31.03 Identify types of molding.
31.04 Install a door frame, hand, lock and trim.
31.05 Trim a window.
31.06 Case a door frame.
31.07 Install a pre-hung frame.

32.0 INSTALL PANELING, FURRING, SOFFITT AND CEILINGS--The student will be able to:

32.01 Install paneling.
32.02 Install ceiling materials.
32.03 Install curtain walls.

33.0 INSTALL INSULATION AND SOUND CONTROL MATERIALS--The student will be able to:

33.01 Install rigid installation material.

34.0 USE PLASTIC LAMINATES--The student will be able to:

34.01 Fit laminates to area.
34.02 Cut laminates.
34.03 Glue laminates.
34.04 Trim laminates for proper fit.

35.0 DEMONSTRATE EMPLOYABILITY SKILLS--The student will be able to:

35.01 Conduct a job search.
35.02 Secure information about a job.
35.03 Identify documents which may be required when applying for a job interview.
35.04 Complete a job application form correctly.
35.05 Demonstrate competence in job interview techniques.
35.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor or other employees.
35.07 Identify acceptable work habits.
35.08 Demonstrate knowledge of how to make job changes appropriately.
35.09 Demonstrate acceptable employee health habits.

APPENDIX B: QUESTIONNAIRE PACKAGE

I. GENERAL INFORMATION

Name of Educational Institution _____

Contact Person _____ Position _____

Number of Students Enrolled 1985/86 _____ 86/87 _____ 87/88 _____

Number of Students Graduated 1985/86 _____ 86/87 _____

Number of Students Placed in Employment related to their training 85/86 _____ 86/87 _____

II. RECRUITMENT

		yes	no
1.	In your opinion, are the carpentry training programs offered in community colleges and vocational centers fulfilling the demand for trained carpenters?	_____	_____
2.	Is student recruiting adequate?	_____	_____
3.	Are local contractors aware of the existence of your program?	_____	_____
4.	Do they look to your program to supply them with trained carpenters?	_____	_____
5.	Is there a central recruiting office for this community college/voc-tec center?	_____	_____
6.	Does the carpentry program participate in the central recruiting office?	_____	_____
7.	Does the carpentry program conduct its own recruiting?	_____	_____
8.	Do you have a brochure for the program?	_____	_____

9. What % of the capacity of the program is the number of enrolled students?
   a. less than 25% b. 25% - 50% c. 50% - 75% d. over 75%

10. What % of your time is devoted to recruiting?
    a. less than 5% b. 5 - 10% c. 10 - 15% d. over 15%

11. Below, several possible strategies are listed for increasing student enrollment. In your opinion, what is the degree of success for each strategy listed?

    4 - extremely successful
    3 - successful
    2 - partially successful
    1 - not successful

		Degree of Success			
a.	Encouraging high school students to take courses while completing graduation requirements at their high school	4	3	2	1
b.	Advertising the program in local newspapers and journals.	4	3	2	1
c.	Instructor takes a mobile carpentry workshop to conduct recruitment sessions in high schools and malls.	4	3	2	1
d.	Mass mailings of the program schedule to prospective students.	4	3	2	1
e.	Staff members seek opportunities to make recruitment presentations in local high schools.	4	3	2	1
f.	Advertisements or flyers sent to parents.	4	3	2	1
g.	Development of slide tape presentations for distribution throughout the region.	4	3	2	1
h.	Providing tours of the program for prospective students.	4	3	2	1
i.	Utilization of local radio and T.V. stations to place public service announcements about the training program.	4	3	2	1
j.	Allow students to enroll part time in the training program.	4	3	2	1
k.	Staff takes past and present students to feeder schools to provide honest, realistic information regarding the training program.	4	3	2	1
l.	Utilizing advisory committee activities in the recruitment process.	4	3	2	1

12. A shortage of skilled carpenters is projected for the coming years in Florida. Do you agree with this?

    Yes _____ No _____

III. PLACEMENT

		yes	no
13.	Is there a placement center at this community college/Vocational-Technical Center?	_____	_____
14.	Is there a placement center in the department that houses the carpentry program?	_____	_____
15.	Does the carpentry program have a placement officer?	_____	_____

16. In your opinion which of the following factors had the most influence on the placement of your graduates in jobs related to their training?

    Please use a scale of 1 to 10: 10 - extremely influential 1 - no influence

		Rank
a.	Counseling students on job opportunities and requirements.	___
b.	The quality and adequacy of training provided to the students.	___
c.	Students had previous on-site experience.	___
d.	Existence of an advisory or craft committee for the program.	___
e.	The central placement center for the Voc-Tech/Community College.	___
f.	An individual effort and personnel contacts of the instructor.	___
g.	Cooperation between instructor and placement officer.	___
h.	Help from students' friends and relatives to get job contacts.	___
i.	Relationship between program personnel and local contractors.	___
j.	Providing information on local employment opportunities.	___
k.	Actively contacting contractors and inviting them to visit the program and interview the students.	___
l.	Showing up at construction jobs and asking for work.	___

17. In your opinion what one factor had most effect on the placement of your graduates?

_____

_____

_____

18. What is the average hourly wage of an individual who has just graduated from your carpentry program? $ _____

19. In your view, what percentage of graduates of carpentry training programs are seeking an alternative occupation?

_____ %

20. In your opinion, which of the following factors has most influence in causing graduates of carpentry training programs to seek an alternative occupation:

Please use a scale of 1 to 10 10 = very important reason 1 = no reason at all

Rank

____ a) Low wage rates.
____ b) Characteristics and conditions of the job.
____ c) Students preference.
____ d) Students feel they have not acquired the training necessary to perform on the job.
____ e) No jobs available for carpenters in the area.

IV. TRAINING AND COMMUNICATION

21. Below are a list of various skills which a journeyman carpenter might possess. Please circle the number which in your opinion, students of carpentry training programs should possess at the completion of their training. Use the following rating system:

4 = absolutely necessary 3 = necessary 2 = desirable 1 = unnecessary

a. Read blueprints	4	3	2	1
b. Conduct site preparation and layouts.	4	3	2	1
c. Preplan future activities	4	3	2	1
d. Construct forms (footing, walls, edge, curb)	4	3	2	1
e. Construct forms (piers, columns, beam, slab, stairs, bridge, deck)	4	3	2	1
f. Frame floor and sills.	4	3	2	1
g. Frame partitions.	4	3	2	1
h. Frame roofs.	4	3	2	1
i. Build trusses	4	3	2	1
j. Install structural timber.	4	3	2	1
k. Install decking and sheathing.	4	3	2	1
l. Install exterior wall covering and trim.	4	3	2	1
m. Apply weather stripping and caulking.	4	3	2	1
n. Install door, window frame and units.	4	3	2	1
o. Install drywall material	4	3	2	1
p. Construct interior stairs.	4	3	2	1
q. Install cabinets, fixtures and shelving.	4	3	2	1
r. Install paneling, furring, soffit ceiling.	4	3	2	1
s. Install insulation and sound control material.	4	3	2	1
t. Issue instructions to crew members.				

22. To what degree do you feel that specialization has entered the field of carpentry? Please circle one of the following:

4 = large degree 3 = some degree 2 = small degree 1 = no degree

23. Will the future carpenter be performing a broader variety of tasks? Use the following rating system?

4 = much broader 3 = broader 2 = no change 1 = narrower

framing carpenters	4	3	2	1
form carpenters	4	3	2	1
finish carpenters	4	3	2	1
other _____	4	3	2	1

24. In your opinion, would there be better skilled carpenters if they were required to be licensed?

Yes _____ No _____ Why? _____

_____

25. Rank (1, 2, 3, 4; 4 being the most important) the following as to the best method of establishing an education/industry linkage

Formal meeting of the two groups	4	3	2	1
Advisory committee	4	3	2	1
Attending industry functions	4	3	2	1
Written contact	4	3	2	1
Other _____	4	3	2	1

26. In your opinion, what one factor could provide more effective involvement with the construction industry and provide carpentry programs with a closer working relationship with industry?

_____

_____

27. What level of communication do you have with the following institutions? Choose one of the choices using the following scale:

4 = very close
3 = close
2 = remote
1 = very remote

a. Construction industry (contractors, generally)	4	3	2	1
b. Florida Home Builders	4	3	2	1
c. Association of General Contractors (AGC)	4	3	2	1
d. Associated Builders and Contracors (ABC)	4	3	2	1
e. Union Brotherhood of Carpenters	4	3	2	1

FLORIDA DEPARTMENT OF EDUCATION
Betty Castor
Commissioner of Education

July 28, 1987

Dear Vocational Educator:

The School of Building Construction at the University of Florida is conducting a study of the opportunities and impediments affecting the recruitment, training, and employment of construction carpenters in Florida. This comprehensive undertaking will provide valuable insights into the upgrading and improvement of our state construction trades programs. Several associations such as Associated Builders and Contractors, Associated General Contractors, Florida Home Builders, and unions have already provided their input with almost 100% participation.

Please take a few moments to complete the attached questionnaire as it is vital to completion of the data collection effort. We at the Florida Department of Education fully endorse this activity as it promises to provide a basis for significantly improved program support.

If you have questions or concerns, please feel free to contact this office. Again, your cooperation is greatly appreciated.

Sincerely,

Talmadge L. Rushing
Director, Industrial Education

TLR:lv

Attachment

SCHOOL OF BUILDING CONSTRUCTION
UNIVERSITY OF FLORIDA
GAINESVILLE, 32611

PHONE 904 392-5965
904 392-0202
SUNCOM 622-0202

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Jack W. Martin
Anthony Soction
Luther J. Strange
Don F. Taylor
G. Arlan Toy
J. Morris Trimmer, DBA
Howard I. Underberger

Loys A. Johnson, FAIC
Emeritus

Thomas E. Martin,
Emeritus

C. Dawson Zeigler, Jr.
Emeritus

October 18, 1987

Dear Vocational Educator:

Approximately three weeks ago a copy of the enclosed questionnaire was mailed to you. As of this date, we have not received a response. Your input is essential in order for our research to be valid and useful to carpentry vocational programs.

If you have already sent your original questionnaire we thank you for your input. If you have not responded to the questionnaire, please take a few minutes to complete the enclosed questionnaire and return it as soon as possible. If you have any questions concerning this study or the questionnaire, please contact Ali Markus at (904) 392-6755.

Sincerely,

Brisbane H. Brown, Jr.
Professor

BHB/bh

FLORIDA DEPARTMENT OF EDUCATION
Betty Castor
Commissioner of Education

October 26, 1987

Dear Vocational Educator:

Recently, you were mailed a survey which is being conducted by the University of Florida, Department of Building Construction Technology. The information being gathered in this survey is integral in the continued improvement of vocational programs in building trades.

We urge you to take a few moments to complete and return the survey. The Florida Division of Vocational, Adult, and Community Education fully supports this activity and is looking forward to reviewing the results.

Your cooperation is greatly appreciated.

Sincerely,

Talmadge L. Rushing
Director, Industrial Education

TLR:lv

Tallahassee, Florida 32399

Affirmative action/equal opportunity employer

RECRUITMENT, TRAINING AND PLACEMENT OF RESIDENTIAL AND COMMERCIAL CARPENTRY PROGRAMS OFFERED THROUGH STATE SUPPORTED VOCATIONAL TRAINING CENTERS AND COMMUNITY COLLEGES

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Cocoa, FL 32922

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225 E. Las Olas Boulevard
Ft. Lauderdale, FL 33301

Building Construction Program
Central FL Community College
P.O. Box 1388
Ocala, FL 32670

Building Construction Program
Chipola Junior College
Marianna, FL 32446

Building Construction Program
Daytona Beach Community College
P.O. Box 1111
Daytona Beach, FL 32015

Building Construction Program
Edison Community College
Fort Myers, Florida 33907

Building Construction Program
FL. Jr. College/Jacksonville
210 N. Main Street
Jacksonville, FL 32202

Building Construction Program
Gulf Coast Community College
5230 W. Highway 98
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P.O. Box 22127
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Building Construction Program
Indian River Comm. College
3209 Virginia Avenue
Fort Pierce, FL 33450

Building Construction Program
Manatee Junior College
5840 26th Stree- West
Bradenton, FL 33507

Building Construction Program
Palm Beach Junior College
4200 Congress Avenue
Lake Worth, FL 33461

Building Construction Program
Pasco-Hernando Comm. College
2401 State Highway 41, North
Dade City, FL 33525

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Pensacola Junior College
1000 College Boulevard
Pensacola, FL 32504

Building Construction Program
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P.O. Box 13489
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Building Construction Program
Santa Fe Community College
P.O. Box 1530
Gainesville, FL 32602

Building Construction Program
Seminole Community College
Sanford, FL 32771

Building Construction Program
Valencia Community College
Distr. Office-1 W. Church St.
P.O. Box 3026
Orlando, FL 32802

Building Construction Program
FL Agr. & Mech. University
South Boulevard Street
Tallahassee, FL 32307

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