

A STUDY OF CURRICULUM UTILIZED IN THREE CARPENTER'S
APPRENTICESHIP PROGRAMS IN WISCONSIN AND MISSOURI

by

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ABSTRACT

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This study researched the evolving instructional trends within the Carpenters Apprenticeship Program in three Mid-Western cities of the United States (Madison and Milwaukee, Wisconsin and Kansas City, Missouri). The United Brotherhood of Carpenters (UBC), Wisconsin, is currently acting on a move to change the carpenter’s apprenticeship program from the present theory-based instruction format to a “Performance-Based Instruction” format. Following the state (Wisconsin Administrative Code, 1997), and federal standards from the Bureau of Apprenticeship

Training (BAT), the UBC is writing and creating curriculum that is evolving toward a performance-based instruction. At this point, the Bureau of Apprenticeship Standards, which is part of the Wisconsin Department of Workforce Development (DWD), is quite skeptical as to the validity of this curriculum change. By studying the differences and similarities of the three methods of instruction, we may be able to assess which curriculum may serve the apprentice and the employer in the most valuable fashion.

The research was accomplished by visiting the three mentioned schools while interviewing apprentices and instructors/coordinators. A written survey was distributed among the apprentices and instructors. This study was developed to better understand the success or failure in preparing the apprentice for the work force.

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CHAPTER I

INTRODUCTION

This study will examine three methods of instruction currently used in training for carpenter's apprenticeship programs. Two of them are located in Wisconsin and one in Missouri. Generally speaking, four years is allotted to complete the carpenter's apprenticeship program in each of these methods.

The majority of related instruction in apprenticeship training across the United States is comprised of a traditional curriculum method, which emphasizes theory-based training. This method, as utilized in the Madison, Wisconsin, program, develops the knowledge and understanding of the construction process in which the apprentice is engaged and is correlated with a planned training experience, usually on the job site. In determining the function of this program, 400 hours of classroom instruction is believed by the Bureau of Apprenticeship Standards (BAS) to supply enough theory to support the required 6200 hours of on the job training.

The second method is performance-based instruction as used in the Kansas City, Missouri, location. This program has performance goals that are very specific. The apprentice is held responsible, not for a certain grade, but for attaining a given level of competency in performing the essential tasks which pertain to the carpentry program. Theory is then put on the back burner, and "skills training" takes the front seat of the curriculum. The thought in this program is to teach the performance/skills with minimal theory and the apprentice will then be better trained and more prepared for the work site.

The third method is a 50/50 mix of theory and performance-based curriculum located in Milwaukee, Wisconsin. Supporters of this method feel that each skill will

be better understood with an equal amount of supporting theory.

The importance of this study lies in the assessment of the training that the carpenter's apprentices should be receiving through "related instruction". What one may learn from this study is a conceptual view of the successful components that make each method of instruction as good, or better than, the other two studied.

The first model of instruction being reviewed is the format utilized at Madison Area Technical College (MATC) in Madison, Wisconsin. The approach used in this program is of a theoretical nature (DWD, 1997). It promotes classroom instruction of 90% theory and 10% performance-based.

The second method of instruction in carpenter's apprenticeship training is utilized at the Kansas City Carpenter's Training Center located in Kansas City, Missouri. This is the Performance Evaluated Training System (PETS) (UBC, 1987). This approach emphasizes 90% performance-based and 10% theoretical. The Kansas City Training Center was chosen for this study because the PETS Program was implemented there six years ago.

The third program includes 50% theory and 50% performance in the curriculum and is utilized at the Milwaukee Training Center, located in Milwaukee, Wisconsin. The coordinator of this training center, John Brukbacher, stated that his program "is by far the most beneficial learning tool that the apprentices could use to accomplish their goals in the apprenticeship program" (personal communication, Jan. 14, 2001). He felt that the 50/50 balance of theory and performance that has been

developed to make up Milwaukee's program benefits both the apprentice and the employer.

Beginning in 1995, the United Brotherhood of Carpenters (UBC) and the Wausau Area Joint Apprenticeship Committee (JAC) suggested to North Central Technical College (NCTC) that the PETS program be implemented in their carpenter's apprenticeship program. For three years the Education Fund of the Northern Regional Council of Carpenters urged NCTC to change their program from a theoretical to a performance-based program. This brings up the often-debated question: Is the present program (theoretical) providing the opportunity for the apprentices to learn the needed skills in demand on the job today? Comments by area employers indicating the need for better skills training and safety training up front in the program are surfacing on the job and at JAC meetings. Employers are seeking "the ideal apprentice," one who has some basic skills to offer.

In response to NCTC refusing to change, the Wausau Area JAC and the Northern Regional Council of Carpenters have removed their apprentices from the confines of this technical school and have enrolled them in training at the Carpenters Training Center organized by the Carpenters Union and the local Wausau area JAC. The next step for the Carpenters Training Center was to have the new curriculum approved by the State of Wisconsin- BAT. The first year of the program was approved as a pilot, starting in September of 1999. Only the new incoming apprentices began with the revised curriculum (Drewes, 1982). The apprentices

already studying the theoretical method would complete their program in that mode.

This change in the method of instruction was intended to produce apprentices with better skills in safety and job performance, and a proficiency in carpenter skills that is needed on the apprentice's current job.

Statement of the Problem

The United Brotherhood of Carpenters – Wisconsin (UBC) is acting on a move to change the apprenticeship instruction from the present “Theoretical Instruction” to a “Performance-Based Instruction”. Following the state (Wisconsin Administrative Code, 1997) and federal standards from the National Bureau of Apprenticeship Training (BAT), the UBC is rewriting and creating curriculum that is evolving into a Performance-Based instruction. At this point, BAS is quite skeptical as to the validity of this curriculum change.

Purpose of the Study

The purpose of this study was to conduct an independent evaluation of the programs described. It compared technical and safety skills of the apprentices enrolled in the three different methods of instruction. The criteria used to compare these groups included safety, tool/use, attitude and basic knowledge of the current job. Controversy over the effectiveness of each method of curriculum for related instruction prompted this study. The carpenters union, contractors, technical colleges, BAT, and the construction industry in general have their own opinions regarding the most effective method of delivery of the day school curriculum in the

carpenters apprentice program. Apprenticeship programs across the country could be affected by the outcome of the evolving trend.

Objectives of the Study

This study addressed the following objectives:

1. What are the perceptions of the apprentices as to the effectiveness of their specific instructional programs?
2. What are the perceptions of the instructors/coordinators as to the effectiveness of their specific instructional programs?
3. Which method better prepares the apprentice for the current job market?

Significance of the Problem

The significance of this problem could indeed change the curriculum and the approach utilized to administer the curriculum in carpenter's apprenticeship programs across the United States. At this time, the Carpenter Education Committee of the Wisconsin United Brotherhood of Carpenters (UBC) seeks to gain control of the educational program for their apprentices. They would change instruction from a theoretical approach to a performance-based approach. Other significant changes would include an apprentice using his/her training to compliment the job and tasks at hand and flexibility within the apprenticeship program to accommodate what they may be working on at their workplace. Another significant change would be a self-paced program allowing the apprentice to move more quickly through the program at a pace in line with the schedule of the employer and the apprentice (Sholtz, 1999).

Limitations

The limitations of this study were as follows:

1. The apprenticeship programs studied are currently in place.
2. The MATC Group will represent a theory-based curriculum.
3. The KC Group will represent a performance-based curriculum.
4. The Milwaukee Group will represent a 50/50 ratio of theory-based and performance-based curriculum.

Definition of Terms

Apprentice - An individual bound by legal agreement to serve an apprenticeship for a certain time with the intent of learning a trade or craft.

Apprenticeship - A training system that involves a combination of classroom and hands-on training under the direction of a skilled worker.

Bureau of Apprenticeship Standards (BAS) - A branch of the Division of Employment and Training Policy in the Wisconsin Department of Industry, Labor and Human Relations (DILHR). The Bureau is responsible for setting apprenticeship training standards in the state of Wisconsin.

Bureau of Apprenticeship Training (BAT) - A division of the federal Department of Labor whose function is to develop and promote training in the apprenticeship program nationwide.

Carpenters Training Center (Wausau) - A training facility for apprenticeship training and Journey person upgrading, located in Wausau, Wisconsin, organized and paid for by members of the carpenters union.

Employer - A contractor who uses the services of the Carpenters Apprenticeship Program. The employer is a representative on the Joint Apprenticeship Committee.

Hands-on-training - Instruction which emphasizes a manipulative activity, the purpose being to provide the apprentice with the experience of using tools and materials of his/her trade.

Joint Apprenticeship Committee (JAC) - A local committee made up of labor, employers, and employee organization representatives to oversee the training of apprentices and ensure that all parties are satisfying the conditions of the indenture.

KC Group - Kansas City, Missouri carpenter apprenticeship training center.

MATC Group - Madison Area Technical College, location of carpenter apprenticeship training.

Milwaukee Group - Milwaukee WI area carpenter apprenticeship training center.

Modular Instruction - A method of training in which specific units are set up to satisfy particular manipulative projects and/or skills. Each unit may be related to the preceding one.

Northern Regional Council of Carpenters, Education Committee - A committee based in northern Wisconsin composed of UBC carpenters and representatives of area contracting firms, which manages and organizes training within the carpenters union.

Performance Evaluated Training System (PETS) - The performance-based approach to carpentry apprenticeship instruction, developed in 1951 by the United Brotherhood of Carpenters.

Related Instruction - Organized and systematic form of instruction designed to provide the apprentice with knowledge of the theoretical and technical subjects related to his/her trade. This instruction includes classroom and manipulative

instruction to reinforce on-the-job training.

United Brotherhood of Carpenters (UBC) - A national labor organization composed of carpenters and millwrights, whose function is to manage and promote the betterment of its members through collective bargaining.

Chapter II

REVIEW OF LITERATURE

Review of literature for this study provides an overview of the history of the apprenticeship program. We will look at the aspects and implications of the growth of the apprenticeship from medieval times through today. The research will discuss politics, law, philosophy and the educational direction in which today's apprenticeship program is headed. This study will engulf the controversial subject of education in the carpenter's apprenticeship program in the U.S. Who decides what, when, where and how?

For centuries, the method of apprenticeship training was a master-craftsperson passing on the craft of a particular trade to an apprentice. The trades were treated as "secret knowledge", only to be passed on through organized and legal binding of the indentured apprentice. Up until the Industrial Revolution, politics did not play a significant role in the program. The apprentice was usually indentured to the craftsperson for up to ten years. A bed was set up in the home of the employer and the apprentice worked grueling hours, seven days a week. The pay and reward was food, clothing, a bed and knowledge of the craft in very small increments. In order to collect his final pay, which was often a new set of clothes, the apprentice would have to complete his indentured contract to the very last day. Missing one day of work could nullify one's apprenticeship.

The indenture contract benefited the employer to a greater extent than the apprentice. Free labor for a long period of time encouraged an employer to enlist an apprentice. This type of contractual apprenticeship functioned as a work-based instruction up until the Industrial Revolution. At that point in history, the demand for

skilled labor was well beyond the supply. As early as 1880 there were a few private trade schools that introduced theory into the apprentice program (Hamilton, 1990). The demand coming from industry was for highly qualified/trained craftspeople. The economy was booming and the Industrial Revolution was leading the way.

Calvin Woodward was one of the earliest and most effective advocates of vocational training. Woodward's form of pedagogy was aimed at the masses to prepare them for a more immediate and relevant context, beginning in secondary school and progressing into post-secondary or vocational school. His idea was never implemented during his lifetime. Speaking to the National Teachers Association in 1883, his praise of the "fruits of manual training" included:

- 1) Larger classes of boys in the grammar and high schools;
- 2) Better intellectual development;
- 3) A more wholesome moral education;
- 4) Sounder judgments of men and things, and of issues;
- 5) Better choice of occupations;
- 6) A higher degree of material success, individual and social;
- 7) The elevation of many of the occupations from the realm of brute, unintelligent labor, to positions requiring and rewarding cultivation and skill (Miller & Smalley, 1963).

About 30 years later, the manual training movement was taken over by David Snedden and others. It was this group of educational designers that stimulated government participation in the apprenticeship program.

Vocational schools originated as a replacement for the existing apprenticeship program. The experts of that era, around 1913, including David Snedden and his

colleagues, described apprenticeship as maladapted to modern industry. They pointed out that "on the job" experience didn't provide for good observation and instruction. The apprenticeship program was being absorbed into the political arena. As a result of the Industrial Revolution, labor unions had become active advocates for the rights of working people.

An integral part of this struggle was apprenticeship education. Even at the onset of this educational process there was competition for ultimate control, and it consisted of union vs. industry.

The first school in the United States dedicated to teaching the skilled trades was opened in New York City in 1881. J.P. Morgan, who declared that unions controlled the apprenticeship programs, founded this school. He thought that such control should not be in the hands of the unions.

The carpenters were the first construction trades to organize, doing so in 1881. They immediately wanted control of the curriculum as well as the fate of the apprentices. They also believed that the training was not keeping up with the demand (Zinn,1995).

This struggle continued into the 20th century - industry vs. labor vs. educators. Active educational reformers such as Charles Processor were forming the soon to be "vocational education" (Lazerson, 1989). The lack of consistency and organization led to government involvement of structuring in the apprenticeship program. In 1911, Wisconsin was the first state in the United States to take responsibility for administration of the apprenticeship program by passing Section 106 of the state statutes. It also authorized the establishment of trade schools sponsored by the state to provide related instruction (theory) for the apprentice's day-school (Industrial

Commission of Wisconsin, 1936).

The State of Wisconsin put itself in a position to set standards, provide the educational means to train the apprentices, and monitor both the responsibilities of the apprentice and the employer. The struggle for control in management of the apprenticeship program and the design and development of the curriculum now had another player. Of course, the state was getting involved to keep everyone on the same track, according to the state officials. Some of the organizations involved, such as organized labor and industry, were not happy with their new partner. The educational reformers and backers of vocational education supported the new laws, which gave the state total control of the apprentice program.

Over the next fifteen years, committees were set up across the state, representing labor, industry and the state of Wisconsin. They were called JAC committees (Joint Apprenticeship Committees). These committees were formed to implement the state guidelines and develop curriculum, as well as register apprentices and then monitor and move them through the program. These committees were local, covering the areas that the vocational schools encompassed. Still, the struggle for control persisted.

The Bureau of Apprenticeship Training was created in 1936 to manage the apprenticeship programs (Industrial Commission of Wisconsin, 1936). Members of this bureau recognized the need for cooperation between labor and industry to smoothly run the apprentice program and create a curriculum that would supply the needed skilled labor (Wisconsin Technical College Board-Gov. Report). The basic structure of the apprenticeship program has not changed in the past 65 years. Development of the curriculum in the carpenters program has also changed very little

in the same length of time. After research and analysis of industry, economy, and labor, the Wisconsin Bureau of Apprenticeship Standards (BAS) put together a curriculum that would satisfy the needs of the contractors. Specifying the various fields of work under the "umbrella" of the carpenters, BAS determined how many hours of work-based learning and hours of theory would suffice the apprentice in his/her program (Wisconsin Technical College Board-Gov. Report).

Theory-Based Instruction

In most apprenticeship programs across the United States, the related instruction is the primary vehicle for instructing apprentices in the theoretical and technical aspects of the carpenter trade. Wisconsin law requires a minimum of 400 hours of related instruction if the apprenticeship program exceeds two years. The current length of the carpenters program is approximately four years. The state suggests 144 hours of related instruction per year in the four-year program (DILHR). The Wisconsin Regional Council of Carpenters-Education Committee has chosen not to accept the long-standing related instruction currently used by most technical schools (BAT).

BAT takes the stand that a DACUM study is in order to determine if, in fact, the direction of curriculum needs to be changed. A DACUM study researches a specific problem and examines all concerned entities such as employers, educational experts, and customer demands, as well as investigates the existing structure in question at the time. The study could take two years to complete. Another one to two years may be required for curriculum development and implementation into the program. As an active educational leader in design of vocational curriculum, Paul Edelson (1999) noted, "As curriculum writers and designers, we must be diligent in

protecting the integrity of the curriculum and the excellence of the training we provide must be of paramount concern" (p.68). The carpenters union is unwilling to wait that long. They believe a study and analysis of the program and industry is unfounded.

It is the opinion of BAT that while some issues do exist with respect to the quality of instruction and the linkages with the technical schools, it must be kept in mind that the relationship between these schools and the apprenticeship program seems to function well in providing good quality related instruction for apprentices. To underscore this point, the results of a recent survey conducted of apprentices, employers and others involved in apprenticeship revealed that up to 82% of those responding thought that related instruction was of a very high quality (DILHR-Div. of Employment and Training, 1986). The controversy continues. BAT is working with the carpenter's union to accommodate their needs by reviewing and approving the "performance-based" curriculum that the carpenters union wants to use for replacement of the technical schools' "theoretical curriculum".

Performance-Based Instruction

The model of the Performance-Based Instruction that the carpenters union has developed is called Performance Evaluated Training System or PETS. This model was developed in the 1970's and revised in 1982 (UBC, 1982). Although most skills remain the same or similar, revision is an on-going process. This program was developed to replace the theoretical program that the Technical School and BAT had used in the past. The UBC has no doubt that this approach will satisfy the demand of

the industry for trained apprentices in basic skills of the work he/she is doing on their present construction site.

The PETS program in its idealized form consists of a series of learning experiences in which the apprentice progresses from his level of skill at the time of entry (whatever that level may be) to final competence in the skill required of the particular module. Each learning experience (the material which is packed in a modular form) requires successful completion and instructor-observed competent performance before the next module is begun (Bruce, 1975). The hands-on approach teaches basic skills and procedures. It also allows for a self-paced movement throughout the fifty-two skill blocks that are required in the four-year carpenter's apprenticeship.

Each module consists of required materials, specific blueprints and step-by-step instruction. Most projects also have an instructional video that compliments the specific project. When the apprentice enters the program, he/she starts with skill-blocks, which relate to the work they are doing at their present job. As their employment progresses from concrete to framing, they can move to the corresponding skill blocks. The apprentice can later finish the skill block that was started earlier.

Throughout the United States we know of only two apprenticeship-training centers that specifically utilize the PETS program. These programs are currently running in Minnesota and Kansas. Why hasn't this mode of curriculum caught on?

The controversy surrounding PETS relates to the amount of theory in this curriculum. BAT reiterates this statement as does John Brukbacher from the Milwaukee program (personal communication, July 14, 1999). Asked what his program's curriculum consists of, he will tell you it is “50% theory and 50% performance-based. And it really works!!!”

Summary

The future of the carpenter’s apprenticeship program is in a state of change. BAT is in favor of the status quo while the union faction continues to develop changes. The technical schools are supporting the idea of a theory-based instruction during the day school and the night school classes. The UBC, for the most part, is developing a curriculum that is a competency-based system. They believe that a hands-on approach is in order along with bringing most of the evening safety classes to the first year apprentices during the day classes. The result of this change could affect the carpenter’s apprenticeship programs throughout the country.

CHAPTER III

METHODOLOGY

The purpose of this study was to compare the technical and safety skills of the apprentice produced by the three different methods of instruction between MATC Group (theory-based), KC Group (performance-based), and the Milwaukee Group (50/50 of theory and performance). MATC Group will consist of the apprentices who have studied under the theoretical-based method. KC Group will consist of the apprentices that have studied under the performance-based method. The Milwaukee Group will consist of the apprentices who have studied under a curriculum that mixes theory and performance at 50/50%. Controversy over the effectiveness of each method of curriculum for related instruction has prompted this study. Various groups that have a concern for the success of the apprenticeship program such as the carpenters union, contractors, technical schools, BAT, and the construction industry in general each have an opinion of the most effective method of delivery of the day school curriculum in the carpenters apprentice program.

Objectives of the Study

This study addressed the following objectives:

1. What are the perceptions of the apprentices as to the effectiveness of their specific instructional programs?
2. What are the perceptions of the instructors/coordinators as to the effectiveness of their specific instructional programs?

3. Which method better prepares the apprentice for the current job market?

Research Design

The research design used for this study was both qualitative and comparative. The information gathered was a comparison of three carpenter apprenticeship programs that utilize different methods of instruction. These schools are located in the mid-west section of the United States, in Wisconsin and Missouri. The information for the research was gathered from two areas. Surveys were distributed to apprentices and instructors in the three programs (Appendix A). Also, instructors/coordinators and apprentices were interviewed to obtain their perceptions of the particular programs (Appendix B).

Sample Selection

The subjects for this study were students from three schools which each utilize a different method of instruction in the carpenter's apprentice program. MATC Group, located in Madison, Wisconsin and managed by the Madison Area Technical College (MATC), utilizes the theoretical based approach for instruction of the carpenter apprentice. KC Group, located in Kansas City, Missouri, is managed and owned by the carpenter's union and utilizes a performance-based curriculum. Milwaukee Group is located in Milwaukee, Wisconsin and utilizes an equal combination of the other two curriculums.

The methods of evaluation used were written surveys and personal interviews. A survey was administered in the classroom to measure the perceived

successes/failures in each training center.

The results of the survey indicated the effectiveness of the related instruction of each program. Areas of concern included safety, attitude, adequate tools/use and basic knowledge of the work being performed on the job.

Procedures

The laboratory observations and instructor interviews were conducted as follows:

The researcher contacted carpenter's apprenticeship training centers from each of the three study groups and asked if they would participate in a study of the curriculum method used in their apprenticeship training. At that time, they were informed of the general format of the study and of sample questions they and their apprentices would be asked on the written survey.

The researcher observed the performance-based classes for one day. The instructors and apprentices were interviewed and the written surveys were distributed.

With the two remaining training centers, telephone interviews were conducted with instructors. The written surveys were distributed to the apprentices at these locations and completed.

Data Analysis

In analyzing the three carpenters training centers, an Ordinal Scale was used in the survey to measure apprentice/instructor attitudes with regards to their individual training centers. Percentages were gathered from responses of data collected from the

survey. The percentages that were analyzed have allowed us to compare attitudes and learning levels about the method of curriculums used at the particular training centers.

CHAPTER IV

RESULTS OF THE STUDY

This study compared the technical and safety skills of apprentices who have experienced the three different methods of instruction in MATC Group, KC Group and the Milwaukee Group. The criteria used to compare these groups included safety, tool/use, attitude and basic knowledge of the present job. Controversy over the effectiveness of each method of curriculum for related instruction has prompted this study. The carpenters union, contractors, technical schools, BAT, and the construction industry in general all have a view of the most effective method of delivery of the day school curriculum in the carpenters apprentice program. Apprenticeship programs across the country could be affected by the outcome of the evolving trend.

Population

The population for this study was students from three schools that utilize different methods of instruction in the carpenters apprentice program. MATC Group is located in Madison, Wisconsin and is managed by the Madison Area Technical College (MATC), and utilizes the theoretical based approach for instruction of the carpenter apprentice. KC Group, located in Kansas City, Missouri, is managed and owned by the carpenter's union and utilizes a performance-based curriculum. Milwaukee Group is located in Milwaukee, Wisconsin, and utilizes an equal

combination of the other two curriculums.

The methods of evaluation were surveys and interviews. A survey to measure the success/failure in each training center was administered in the classroom. The result of the survey indicted the effectiveness of the related instruction of each program as indicated by the apprentices and instructors. Areas of concern included safety, attitude, adequate tools/use and basic knowledge of the work being performed on the job.

Table 1

School	# of Apprentices	# of Instructors
MATC Group	76	2
KC Group	69	6
Milwaukee Group	64	4

Research Objective One

Research Objective One asked: What are the perceptions of the apprentices as to the effectiveness of their specific instructional programs?

Averaging the three groups, 65% of all apprentices surveyed from all three schools agreed that their day school prepared them to be an efficient worker on the job.

MATC Group – This group consists of students in a theory-based curriculum (Madison). Only 63% answered that their day school program helped them with their

daily tasks. When asked if they thought that there was enough “theory” in the classroom, most replied that there was. Two of the apprentices suggested that there was too much theory and that there should be more “hands on” projects at school.

KC Group – This group consists of students in a performance-based curriculum. For the most part, they believed that their program was somewhat helpful in preparing them for the daily tasks on the job. Their reply was a bit higher than the previous group’s score, with 74% in agreement. When the question was asked if they thought that there was enough “theory” in the classroom, most of these apprentices answered yes. Again, however, there were two negative replies. Both of these apprentices felt that more theory was needed to back up the assigned projects. They stated that if they better understood “why”, they then would have a stronger foundation for long-term memory of the process.

Milwaukee Group – This group consists of students in a 50% theory-50% performance based curriculum. Of this group, 63% of the apprentices believe that their schooling prepared them for daily tasks on the job. When these apprentices were asked if there was enough “theory” supporting their hands on experiences in class, the majority answered yes.

Concerning safety issues, approximately one quarter of all the apprentices answered that they had filed an accident report on the job since the beginning of their apprenticeship program. This number indicates that a problem exists with the safety program. The three different apprenticeship programs offer the OSHA training in evening classes only and they allow four years to complete the this training.

MATC Group – Theory-based apprentices report that 71% of them had their OSHA safety training at the beginning of the program (first year). They also said that

30% of them had reportable accidents since the beginning of their program.

KC Group – Performance-based apprentices report that 86% had their OSHA safety training at the beginning of the program (first year). Twenty four percent of them indicated reportable accidents since the beginning of their program. The reduced number of accidents may correspond with having their safety training at the beginning of their program.

Milwaukee Group – These apprentices report that 91% of them had their OSHA safety training at the beginning of the program (first year). Thirty-six percent of these apprentices had reportable accidents since the beginning of their program. This is quite a high number considering most apprentices began their apprenticeship program with the OSHA safety training. There seems to be no correlation between starting the safety classes at the beginning of the program and the recorded accidents of the apprentices in their first year.

With regards to adequate opportunities for project assignments, each apprentice was asked if they felt enough time was given to complete “activities” and thoroughly cover the subject. There was quite a variation in replies to this question, with 70% as the average for all apprentices agreeing that they had enough time to cover the subject and complete the activities.

MATC Group – 87% of these apprentices responded with yes. They said that enough time was given to thoroughly cover the subject being studied.

KC Group – The performance-based apprentices replied with a lower response of 74%.

Milwaukee Group – The 50/50 group replied with a low response of 54%. Only about half of these apprentices believe that they have enough time to thoroughly

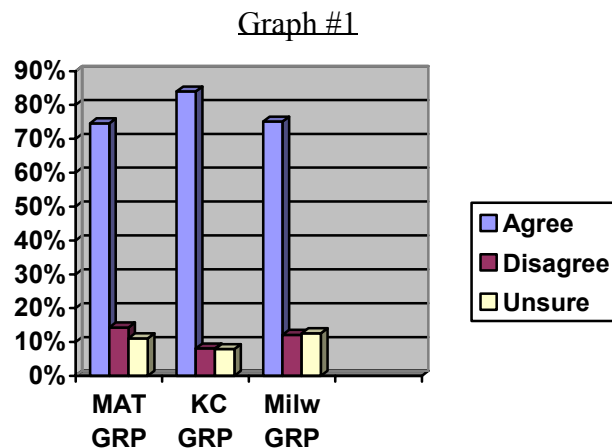
cover the presented material.

The apprentices were asked if their instructors were available when they needed assistance and if they had the knowledge and experience to answer their questions.

MATC Group – 90% of these apprentices agreed with both statements. They felt that the instructors were available when needed, and had the knowledge and experience to give adequate direction.

KC Group – 92% of these apprentices felt that their instructors were available when they needed assistance and 61% agreed that the instructors had the knowledge and experience to answer their questions.

Milwaukee Group – 81% of these apprentices agreed with both statements.



Apprentice Surveys: Summary of responses to survey questions pertaining to their perception of the effectiveness of their particular instructional program.

Research Objective Two

Research Objective Two asked: What are the perceptions of the instructors/coordinators as to the effectiveness of their specific instructional program?

This knowledge was gained through interviews and a survey. There are some areas that all three training center instructors agree on. When an apprentice is working out of town, the instructors give them the opportunity to make-up hours missed. They also agree at 100% that safety is emphasized in each area of study. In regards to OSHA training being taught at the beginning of the apprenticeship program, the only training center that didn't seem to emphasize this was the Kansas City performance-based program. Only 67% of the apprentices agreed that they received OSHA training at the beginning of their program.

MATC Group – Asked if there was enough time allotted for each activity in school, the instructors totally agreed that there was plenty. Generally speaking, they said that no one had a problem with finishing their classroom projects on schedule.

KC Group – Our performance-based group agreed at 83% that their apprentices had time to finish their projects in class. It was noted that it took longer for some students to complete the projects assigned to them than it did for others.

Milwaukee Group – At this training center, half of the instructors said that their apprentices had time to finish the projects assigned to them. One instructor mentioned that at times, class sizes are larger and this may impede the pace of the project.

The question was asked of the instructors if their apprenticeship program sufficiently prepares the apprentices for skills and knowledge used each day on the job.

MATC Group – The theory-based instructors said that their program only prepared half of the apprentices for skills and knowledge used each day on the job. They suggested that their program gave the apprentice an overall education of carpentry, not necessarily a skill or knowledge that could be used on the job.

KC Group – The performance-based instructors agreed at 67% that their program prepares the apprentice for skills and knowledge used each day at the job.

Milwaukee Group – This group of instructors rated their apprentices as adequately prepared for work at 75%. They feel that the program they are involved in offers the apprentice the opportunity to use the skills and knowledge learned each day on the job.

In regards to the flexibility of allowing the apprentices to make-up missed hours while working out of town during school hours, the various programs differed on their school policy.

MATC Group – The instructors totally disagree with the above philosophy. Their program has a fixed schedule and will not deviate with the apprentice's work schedule. MATC completes their fixed schedule, step by step. When an apprentice steps into the program, he/she steps into the schedule where it is currently operating. This could be anywhere from start to finish of the curriculum.

KC Group – The performance-based instructors indicate that they operate differently than the MATC Group. As the apprentice works on the job, he/she may change the project at school to match the skill being used on the job. Thus, this system is very flexible. The instructors indicate that this is a self-paced program to cater to the changing skills needed by the apprentice on a daily basis.

Milwaukee Group – This training center’s instructors indicate no flexibility in their schedule to match what the apprentice is doing on the job. As with the MATC Group, this group is on a fixed schedule and will not deviate to match skills being used on the job.

Observations of the instructors as to the depth of study in specific areas are stated in the following discussion. One area that all three training center instructors agree on is that all areas of study emphasize safety. The instructors should have the knowledge and understanding to make a judgment in regards to the program they teach. In many cases, the instructors don’t have a role in structuring the program as they do in teaching the course. Again, all of the instructors agree that their safety program is adequately covered.

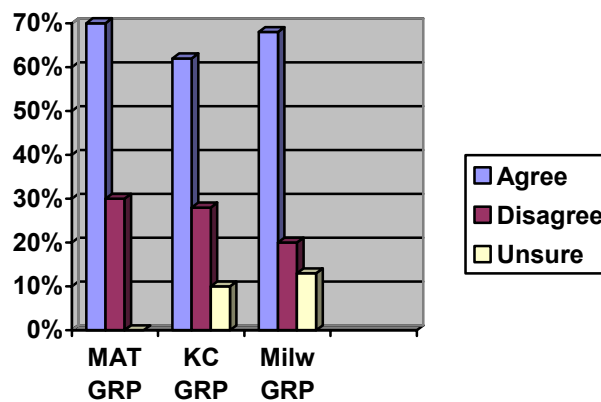
MATC Group – Theory-based curriculum instructors unanimously agree that their program adequately covers each unit of study. They tend to believe that the apprentices have an understanding of the process behind their projects.

KC Group – 67% of the performance-based instructors believe that each unit studied is adequately covered in the program. Considering that this program has a

self-paced curriculum, each apprentice has control over how well they cover any given area.

Milwaukee Group – Only half of the instructors believe that each unit is adequately covered. Follow up interviews may bring some reasons to light as to why they don't believe their material is appropriately covered.

Graph #2



Instructor Responses: Summary of responses to survey questions as to the effectiveness of their specific instructional program.

Research Objective Three

Research Objective Three asked: Which method of study better prepares the apprentice for the current job market?

The research has shown that each program has its positive and negative aspects. In the following investigative statements, we will detail some of the feelings and outcomes derived from the individual programs. 65% of all the apprentices

surveyed agreed that the program they were in sufficiently prepared them to be an efficient worker on the job. They felt that the day school portion of their apprentice program complimented their jobs at work and they were more efficient than if they would not have had the day school.

MATC Group – In the theory-based program, 63% of the apprentices feel that their program has sufficiently prepared them to be an efficient worker on the job.

KC Group – Of the three study groups, KC group has the highest percentage of agreement (75%) with this topic.

Milwaukee Group – This group agrees with KC group in how they feel about their program and how it has prepared them to be an efficient worker on the job.

The majority of apprentices in all three programs did not agree with the survey statement that their activities in class usually correspond with the projects they are doing at work. It seems quite obvious that none of the programs cater to matching classes with the work at the job.

MATC Group – Apprentices scored a 29% in agreement with the statement that activities in class correspond with projects they are doing at work.

KC Group – The performance-based training center scored the highest (46%) in agreement with the statement of class projects corresponding with work projects.

Milwaukee Group – Milwaukee apprentices agreed least with the statement (38%).

Asked if the “hands on projects” in class have given them enough experience

to perform similar projects on the job, most of the apprentices answered positively.

MATC Group – The response from our theory-based school was 66% agreement that the hands-on projects at school provided enough experience to perform similar projects on the job.

KC Group – The response from our performance-based school was 76% agreement that the hands-on projects at school provided enough experience to perform similar projects on the job.

Milwaukee Group – This training center came in with the lowest agreement of 61%.

From all apprentice surveys, the average is 74% indicating encouragement from employers to attend school. On the whole, this figure reflects support from the contractors for the apprentices to attend day school. These figures reflect speculation on the part of the apprentice as to the support and satisfaction of his/her employer.

MATC Group – 79% of apprentices agreed that their employer encourages them to attend their related instruction.

KC Group – 77% of apprentices agreed that they receive this support.

Milwaukee Group – 65% of apprentices responded they had employer support to attend school. There may be other variables contributing to this lower percentage rate, such as a large amount of work and a small work force. It is possible that the contractors need the apprentices on the job.

Overall, the apprentices feel that their contractors are not satisfied with the

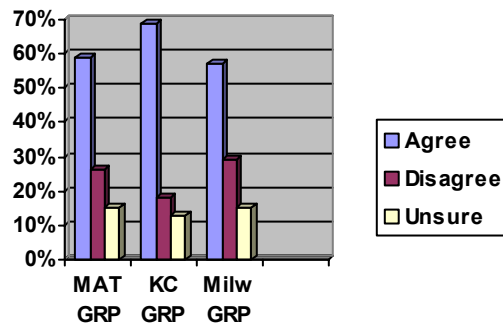
quality of education they are receiving from the three training centers. Only 48% of all the apprentices think that their employer is satisfied with what they are learning at school.

MATC Group – 53% of these apprentices believe that the contractors are not satisfied with what they are learning at day school.

KC Group – Of the performance-based apprentices, 39% feel their contractors are not happy with the training they are receiving at school. This is the lowest percentage of the three schools.

Milwaukee Group – 54% of apprentices agreed with this statement.

Graph #3



Apprentice Responses: Summary of responses to survey questions as to how well their instructional program prepares them for the current job market.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The following summary will briefly discuss the statement of the problem in this study. The methods and procedures used to gather data and report the major findings will also be discussed. Following the procedures and findings the study will review the conclusions and recommendations as a result of this study.

Statement of the Problem

The United Brotherhood of Carpenters – Wisconsin (UBC) is acting on a move to change the apprenticeship instruction from the present “Theoretical Instruction” to a “Performance-Based Instruction”. Following the state (Wisconsin Administrative Code, 1997) and federal standards from the National Bureau of Apprenticeship Training (BAT), the UBC is rewriting and creating curriculum that is evolving into a Performance-Based instruction. At this point, the Bureau of Apprenticeship Standards is quite skeptical as to the validity of this curriculum change.

Methods and Procedures

The methods of evaluation were written surveys and personal interviews. A survey to measure the success/failure in each training center was administered in the classroom. The results of the survey indicted the effectiveness of the related instruction of each program as perceived by the apprentices and instructors. Areas of

concern included safety, attitude, adequate tools/use and basic knowledge of the work being performed on the job.

Major Findings

Our first objective asks the apprentices how they feel about the method of instruction used in school and how effective it may be as they accomplish their goals in the apprenticeship program. Overall, the KC Group rated their program highest with 84% agreement with statements regarding the effectiveness of their program, followed by the Milwaukee Group and MATC Group with 75% agreement.

The second objective asks the instructors how effective they feel their specific program is. The MATC Group rated their program the highest at 70% agreement with survey statements. The Milwaukee Group and the KC Group both responded at 68%. From all three programs, almost one third of the instructors felt that their program was not very effective.

The third objective asks the apprentices if their program prepares them for the current job market. 69% of the KC Group replied that their program prepared them for the current job market. 59% of the MATC Group replied that their program prepared them for the current job market and 57% of the Milwaukee Group replied that their program prepared them for the current job market.

Conclusions and Recommendations

The results of this study were formulated by conducting an independent

evaluation of the impact of the programs studied. It compared the technical and safety skills of the apprentices produced by the three different methods of instruction between MATC Group, KC Group and the Milwaukee Group. The list of criteria used to compare these groups includes safety, tool/use, attitude and basic knowledge of the present job. Controversy over the effectiveness of each method of curriculum for related instruction prompted this study. The carpenters union, contractors, technical schools, BAT, and the construction industry are concerned groups that have an interest in the most effective method of delivery of the day school curriculum in the carpenters apprentice program. Apprenticeship programs across the country could be affected by the outcome of the evolving trend.

Research Objective One

Research Objective One: What are the perceptions of the apprentices as to the effectiveness of their specific instructional programs?

The analysis of the data for this objective reveals that, as a whole, the three training centers are somewhat effective in preparing the apprentices for their daily jobs at work. Each method of curriculum had its own degree of success and/or satisfaction about the program. All three of the programs, according to the apprentices, had problems with the safety records of the apprentices.

MATC Group (theory-based curriculum) - The research indicated 63% of the apprentices believed that the program they were in prepared them for tasks on the job. There were comments by several of the apprentices that there was too much theory

and not enough hands-on projects. This group also thought that there was plenty of time allotted to complete their projects in class. They were also very satisfied with the knowledge and experience the instructors displayed in the classroom. The instructors were always available when needed in the classroom. Even though the OSHA training was scheduled for the beginning of the program, there was a high rate of accidents in the first year of their program.

KC Group (performance-based) – The research indicated that 74% of the apprentices believed that their day school prepared them for daily tasks on the job. There were some comments that indicated more theory was needed to support the hands-on projects at school. Asked if they were given enough time to complete their projects at school, 74% agreed that there was sufficient time allotted. This group was very satisfied with the knowledge and experience the instructors displayed but was unhappy with the time the instructors had to spend with them. Most of the apprentices agreed that their OSHA training was completed at the beginning of the program and the results showed that they had fewer accidents in the first year of school.

Milwaukee Group (50% theory/50 %performance) – The majority of apprentices were satisfied with the amount of theory/performance in their program. Only 63% thought the program prepared them for the daily tasks they performed at work. One half of these apprentices believed that they were given ample time to complete the activities at school. The apprentices were very satisfied with the time

spent by the instructors helping them and the students thought that the instructors were experienced and knowledgeable in their area. Ninety-one percent of the apprentices said their OSHA classes were at the front end of the program but they had a high rate (36%) of accidents the first year.

Based on the conclusions, recommendations for objective one are:

MATC Group

1. Incorporate more hands-on projects in class to compliment the theory curriculum that is already in place. The hands-on projects would help familiarize the apprentices with job related duties.
2. Improve the safety record of the 1st year apprentices.
3. Implement a requirement that apprentices completed OSHA training in the first year of their apprenticeship. The curriculum could possibly incorporate more specific safety training in each study area.

KC Group

1. Incorporate more theory to support the hands-on projects in the class- room.
Many of the apprentices completed the projects but lacked the knowledge (theory) as to why it was done that way.
2. Supply a higher ratio of instructors to give the apprentices more assistance.
3. Strive to lower the rate of accidents in the first year of the program.

Milwaukee Group

1. Improve the related instruction that would help prepare the apprentices for daily

tasks on the job.

2. Change scheduling/curriculum to accommodate the apprentice with more time for completing projects at school.
3. Lower the rate of apprentice accidents in the 1st year of the program.

Research Objective Two

Research Objective Two asked instructors: What are the perceptions of the instructors as to the effectiveness of their programs?

Overall, the research indicated that the instructors employed in the three modes of curriculum used in the carpenter's apprenticeship program had somewhat different ideas as to the effectiveness of their particular program. There are a couple of areas that all three training center instructors agree on. The research indicated that when the apprentice is working out of town, the instructors give them the opportunity to make-up hours missed. The instructors also agree at 100% that safety is emphasized in each area of study. The research pointed out that the MATC Group and the KC Group always targeted the OSHA classes for the beginning of the program. Not all of the instructors in the KC Group agreed that they did this. Research also pointed out that the instructors in all three groups were not in agreement that their program sufficiently prepares the apprentices for skills and knowledge used each day on the job. The research showed that the KC Group was the only curriculum that allowed the apprentice to change school projects to match the work being done on the job. The research also showed the agreement among these instructors in the program that

their programs adequately cover safety.

Based on the research, recommendations for objective two are:

MATC Group (theory-based instructors)

1. Revise the curriculum to emphasize skills that are needed on the daily job.
2. Increase flexibility within the program schedule.

KC Group (performance-based instructors)

1. Improve the curriculum to prepare the apprentice for skills and knowledge used each day at the job.

Milwaukee Group (50/50 instructors)

1. Increase time for finishing projects at school.
2. Reduce class sizes.

Research Objective Three

Research Objective Three: Which method of study better prepares the apprentice for the current job market?

The analysis of the research revealed various problems that arose from each of the three programs. The research indicated that only 63% of all apprentices surveyed feel that their program has sufficiently prepared them to be an efficient worker on the job. The results also indicated that the activities in class for all three groups usually did not correspond with the activities at work. When the question was asked, “Has the hands-on projects in class given me enough experience to perform similar projects on the job?” the responses indicate that the Milwaukee Group has the lowest

favorable response to this question. On the whole, survey analysis shows that most of the apprentices in all of the programs believe their employers encouraged them to attend school. The research also shows that the employers in all of the curriculum areas are not happy with what is learned by the apprentices.

Based on the research, recommendations for objective three are:

MATC Group

1. Revise curriculum to better prepare the apprentice to be an efficient worker on the job.
2. Align curriculum to correspond with daily work on the job.
3. Expand the “hands-on” portion of the classroom.

KC Group

1. Align curriculum to correspond with daily work on the job.
2. Improve contractor satisfaction of what the apprentices are learning.

Milwaukee Group

1. Revise curriculum to better prepare the apprentice to be an efficient worker on the job.
2. Expand projects in the classroom to include skills that can be performed on the job.
3. Improve contractor satisfaction of what the apprentice is learning and encourage the contractor to support the apprentice to attend day school.

Recommendations for Further Study

Recommendations for further study include the following:

1. A follow-up study comparing the effectiveness of each of the three different teaching strategies
2. A follow-up study on carpenter's apprenticeship instructor's thoughts about their methods of teaching in the apprenticeship program.
3. A follow-up study on what is happening in training centers using a revised curriculum five years after implementation.
4. A follow-up study tracking the safety records of first-year apprentice programs.

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APPENDIX A

APPRENTICESHIP TRAINING SURVEY INSTRUCTOR/COORDINATOR

*I understand that by returning this questionnaire, I am giving my informed consent as a participating volunteer in this study. I understand the basic nature of this study. I am aware that the information is being sought in a specific manner so that only minimal identifiers are necessary and so that confidentiality is guaranteed.

For the following questions, please read each statement carefully. Circle the number that best describes how each statement applies to you and /or your apprenticeship-training program in school. There are no correct or incorrect answers. Be honest!

	<u>Agree</u>	<u>Disagree</u>	<u>Unsure</u>
1. OSHA safety classes are targeted for the beginning of the apprenticeship program.	1	2	3
2. There is enough time allotted for each activity in school.	1	2	3
3. Each unit of study is adequately covered.	1	2	3
4. Our apprenticeship program sufficiently prepares the apprentice for skills and knowledge used each day at the job.	1	2	3
5. Leadership training is emphasized in our apprenticeship program.	1	2	3
6. The ratio of students to instructor is adequate enough to satisfy all students' needs.	1	2	3
7. Each area of study emphasizes safety.	1	2	3
8. Our program allows the apprentice flexibility to chose an activity in class that corresponds with the work he/she may be doing on the job.	1	2	3
9. Our activities in the shop (school) are supported by an adequate amount of theory in the class	1	2	3

10. When the apprentice is working out of town, our program allows flexibility to allow them to make-up hours missed. 1 2 3

Thank you for taking the time to complete this survey. Confidentiality will be honored.

APPRENTICE TRAINING SURVEY

*I understand that by returning this questionnaire, I am giving my informed consent as a participating volunteer in this study. I understand the basic nature of this study. I am aware that the information is being sought in a specific manner so that only minimal identifiers are necessary and so that confidentiality is guaranteed.

Signature: _____

INTRODUCTION

For the following questions, please circle the number of the correct response.

1. Your age group:
1) 17-21 2) 22-26 3) 27-31 4) 32-Above
2. Your gender:
1) Male 2) Female
3. How long have you been in the apprenticeship program?
1) less than 1 yr 2) 1-3 yr 3) more than 3 yrs
4. Have you had training in the construction trades before your apprenticeship?
1) none 2) 0-1yr 3) 1-2 yrs 4) more than 2 yrs
5. Throughout your apprenticeship, most job experiences have been with:
1) specialty (ceilings, fixtures, drywall, etc.) 2) concrete
3) various other jobs
6. In which city do you attend school?
1) Milwaukee 2) Madison 3) Kansas City, MO
7. Have you been injured (reportable) on the job since the beginning of your apprenticeship?
1) Yes 2) No

For the following questions, read each statement carefully. Circle the number that best describes how each statement applies to you and/or your *apprenticeship training in school*. There are no correct or incorrect answers. Be honest!

OVERALL PROGRAM

	Agree	Disagree	Unsure
1. The program I am in, or was in, has sufficiently prepared me to be an efficient worker on the job.	1	2	3
2. My activities in class usually correspond with the project I am doing at work.	1	2	3
3. There is a sufficient amount of theory (classroom work) in the program.	1	2	3
4. Each “activity” presented was supported by enough time and material to thoroughly cover the subject.	1	2	3
5. My employer encourages me to attend school.	1	2	3
6. My employer is satisfied with my learning at school.	1	2	3
7. The framework of curriculum allows for activities in school to correspond with “on the job” activities.	1	2	3

Hands on Learning

1. The “hands-on” projects in class have given me enough experience to perform similar projects on the job.	1	2	3
2. I believe we have a wide variety of work-related projects in class.	1	2	3

Theory

1. Each area of study has sufficient applicable reading material (resource).	1	2	3
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- | | | | |
|--|---|---|---|
| 2. Our classroom instruction supports our shop activities at school. | 1 | 2 | 3 |
| 3. We have an ample amount of classroom related instruction. | 1 | 2 | 3 |

Safety

- | | | | |
|---|---|---|---|
| 1. Most of my OSHA- related safety training at school was at the beginning of my apprenticeship training. | 1 | 2 | 3 |
| 2. Each unit that we studied at school covered the safety aspects related to it. | 1 | 2 | 3 |
| 3. Safety was emphasized throughout my program in school. | 1 | 2 | 3 |
| 4. The safety program at school helped me become a “safety minded” construction worker. | 1 | 2 | 3 |

Teamwork/Leadership

- | | | | |
|--|---|---|---|
| 1. My program at school provided opportunities for and encouraged teamwork throughout the program. | 1 | 2 | 3 |
| 2. There was always an instructor available to help me when I needed assistance. | 1 | 2 | 3 |
| 3. The instructors at school usually had the knowledge and experience to answer my questions. | 1 | 2 | 3 |

APPENDIX B

Apprentice Interview Questions

1. Do you believe that there is enough theory taught in your day school?
2. Have you filed an accident report on the job in the first year of your apprenticeship?
3. Would it be helpful to have more hands on in the classroom?
4. Is what you are learning at school relevant on the job?

Instructor Interview Questions

1. Do you believe that there is enough theory taught in your day school?
2. Do the apprentices adequately understand the process behind their projects?
3. Do the apprentices have a problem completing projects on time?
4. Do you feel that the apprentices are learning the basic skills needed to be effective on the job?