Exploratory vocational course for special needs students

William Lee Huyssoon

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EXPLORATORY VOCATIONAL COURSE FOR SPECIAL NEEDS STUDENTS

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education: Vocational Education

by
William Lee Huyssoon
June 1999
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ABSTRACT

Education is the basis of a technical society's durability. Ensuring individual participation in the scholastic process is the responsibility of the didactic system. Intermingling curriculums of vocational and academic education, gender discrimination, and depriving special needs students of participation in occupational training have been controversial issues to many educators. Personal and literary research involved in this project have indicated positive results on interdisciplinary curriculums. This project presents the writing, implementing, and evaluating of an exploratory vocational education curriculum in a nonpublic school serving special needs students from seventh to twelfth grades.

The methods of research design for this project have been qualitative historical analysis and participant observations. These studies included conversations with males and females aspiring to attend non-traditional vocational education courses, tutoring individuals with special needs, instructing special education vocational courses, and listening to disputes among educators. Practical literary references were investigated through county libraries, guidebooks issued from the Regional Occupation Program of Riverside County, and college courses. Other sources were regulations, guides on special education, journals, and citations pertaining to vocational programs in the southeastern United States and Delaware.
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CHAPTER ONE

Introduction

In chapter one, the need for an interdisciplinary academic/vocational program is addressed. The project is significant for purposes of actually designing and establishing a workable vocational program in a special needs middle school and secondary educational environment. Cross gender enrollment and sensitivity issues will be considered. After addressing the predicament, limitations and delimitations will be examined. Definition of terms will be addressed in the last portion of chapter one.

Context of the Problem

Today's employers have major concerns pertaining to the scholastic and technical skill deficiencies of the work force (Bottoms, 1992). Fundamental academic skills seem to be lacking in technicians, and "common sense" tends to be an inadequacy of the "white collar" worker. All trades require critical thinking in math and communication skills, and the executive branches are in need of understanding artisan abilities.

The basic skills required in any employment setting are interpersonal skills, vocational skills, and functional academic skills. There is a "core of 28 mathematical skills, 27 communication skills, 20 interpersonal skills, and 28 reasoning skills" that are needed by employers in the technical fields (Sitlington, 1986, p. 9).

Russia's launching of Sputnik caused The National Defense Act of 1958 (Smith & Edmunds, 1995). After the national crisis of the "space race" subsided, the emphasis on vocational education declined. Vocational education should again become a secondary
school requirement for the purposes of maintaining a technically advanced society. The needs of America lie in educational preparation of its citizens today.

The Bureau of Labor Statistics reports that by the year 2000, seventy percent of the jobs will not require a bachelor's degree (Bottoms, 1992). Preparation courses should include basic academic and vocational skills, identification and response to unsafe conditions, and interpersonal skills. Every occupation, from clerical to aviation mechanics, calls for manipulative proficiency, tools used required for simple repairs, basic academic proficiency, and interpersonal skills.

Students have not always been allowed the opportunity to advance according to their learning abilities and style. Special education has been a label used on children being tested and identified as non-trainable in the normal academic environment. A boy needing special attention has been placed in vocational courses. As reflected by Baily in 1973, the attitude still seems to prevail by educators and parents that women should stick to women's jobs and should not compete for men's jobs. Regardless of gender, there may not be a learning disability at all, rather a child attempting to develop in such a manner as to fit his or her learning abilities. Shop classes, for both genders, has been an answer for many students in obtaining a satisfying occupation.

The concentration of this project will be focused on the occupational training and academic enhancement of the male and female student population defined as handicapped by Public Law 94-142 Education for all Handicapped Children Act of 1975 and PL 101-476, Individuals with Disabilities Education Act (IDEA) of 1990.
Purpose of the Project

The aspiration for the project of an exploratory vocational education curriculum was to enhance the survival opportunities for individuals that are considered handicapped. Additionally, this project will provide accessibility for those who want to cross the traditional gender barrier. An agenda will be developed that will fulfill the needs of occupational courses in basic tool usage, equipment, safety procedures, interpersonal relations, and fundamental academic skills that are necessary for individuals to progress into more advanced technical courses.

Significance of the Project

The training of report writing, simple numerical operations, and trouble shooting techniques have been time consuming endeavors for businesses. An exploratory course would benefit students prior to their entering into a specific technical course, apprenticeship program, or On the Job Training (OJT).

Limitations and Delimitations

There were quite a few limitations that became apparent during the inception and the implementation of this project. The limitations and delimitations are listed below.

Limitations The following limitations apply to the project:

1. The project is bound by the limits of reference materials available through textbooks, repair manuals, operator’s manuals, home repair and building books, and first aid booklets.

2. The author’s experiences and exposure to the vocational environments.
3. Exposure to a population of handicapped children from ages 12 to 19 has limited the case study to a little over 60 people in the Riverside County area.

4. The ability for males to become involved in nurturing professions has been limited by the mental volatility of some students and safety concerns for mentor students.

5. School attendance at the location of the vocational program, and the students’ behavior and presence at the vocational classes on a consistent basis, limits exposure to the curriculum.

6. Students attitudes towards females experimenting with “male” courses. Many males are afraid of being labeled as “weak” by their peers.

**Delimitations** The following delimitations apply to this project:

1. The project is designed to be useful to any exploratory vocational education student, or individual requiring a basic knowledge of hand tools and technical skills.

2. Although originally designed to fit a special education environment, the program can be adapted to fit the needs of any vocational education curriculum.

**Definition of Terms**

The following terms are defined as they apply to this project.

**Applied Learning** - Applied learning is the combining of the essential elements of college preparatory curriculum with effective learning and problem solving strategies in a broad technical or business field of study (Bottoms, 1992).
Cooperative Education - Refers to any program, or on-the-job training, that is either privately or publicly sponsored program for the purpose of training in a specific job (Smith & Edmunds, 1995).

Cruised through high school - Refers to the students enrolling in non-challenging courses just to meet the graduation requirements (Bottoms, 1992).

Developmentally Disabled - Handicapped youth and adults with disabilities such as mental retardation, cerebral palsy, autism, epilepsy, or behavioral disorders (Sitlington, 1986).

Disinstitutionalised - Disinstitutionalised refers to an individual being removed from an institution and place in the community (Meers, 1987).

Exploratory Vocational - Refers to any program or course that are applied instruction in the use and identification of tools and procedures prior to an individual attending a specific occupational course of study (Scarcella, 1998).

"Forgotten Half" or "Forgotten Others" - refers to the students that are not college bound (Bottoms, 1992).

Functionally academic skills - The 28 math, 27 communication, and 28 reasoning skills that employers are expressing a desire for the employees to hold (Sitlington, 1986).

Individualized Educational Plan - A plan that is developed for students with special needs by their therapist, teachers, and parents to help the student in their educational process (Sitlington, 1986).
Individualized Transition Plan - A plan that is developed by the team of educators that is directly involved with a student in setting transitional goals started at the students age of fourteen years old (Hardman, 1999).

Interpersonal skills - The human relationship skills that are requested by businesses for the employee to have. These are customer relations, ability to follow instructions, work ethics, and ability to work with others (Sitlington, 1986).

Learning Disabled - There is not one clear definition that has evolved for the definition of learning disabled, but the scope involves individuals that are physically, emotionally, or intellectually impaired for the purpose of learning (Meers, 1987).

Occupational Training - Refers to any course, on the job training, or apprenticeship program that has a direct relationship to work (Scarcella, 1998).

School-to-Work - This phrase is related to the School-to-Work Opportunities Act of 1998 that is meant to combine, coordinate, and improve occupational training, academia, and vocational or rehabilitation education toward preparation and employment obtainment upon successful completion in the United States (Scarcella, 1998).

Southern Regional Education Board - A state vocational education consortium founded in the southeastern United States on the premise that high schools can change what happens to the “other” (non-college bound) students (Bottoms, 1992).

 Severely Handicapped - Individuals that need constant attention (Meers, 1987).

Special Education - Specially designed instruction, at no cost to the parent, to meet the unique needs of a handicapped children (Meers, 1987)
Special Needs - Special needs students are individuals that require special programs due to their economic status, geographical barriers, or their educational or physical handicaps (Meers, 1987).

Vocational or Technical Education Student - Refers to a student that is taking more than six vocational education courses in high school (Bottoms, 1992).

Organization of the Project

This project is organized into four chapters. Chapter One contains the introduction, context of the problem, purpose of the project, significance of the project, limitations and delimitations, and definition of terms. Chapter Two consists of the literature review and experiences leading to the recognized need for such a project. Chapter Three is the methodology and evaluation of the project from the past semester in a non-public school. Chapter Four contains conclusions, recommendations and further evaluations that have risen during the practical application of the project. The curriculum, lesson plans, and helpful forms follow Chapter Four. The appendix includes administration systems, the curriculum, lesson plans, and forms used in the exploratory vocational course.
CHAPTER TWO

Introduction

Chapter Two consists of literature that describes a brief history of vocational education in America, gender barrier issues, integration of vocational/academic education curriculums, and the problems faced during the implementation of vocational education into the special needs populations. The last part of Chapter Two includes a historical look at case studies supplemented by the literary research that led to the creation of this project. Throughout chapter two, there is reference to experimental solutions that have been used by educators and didactic institutions.

A Brief History of Vocational Education in America

Franciscan Monks for Indian and white children started initial vocational education in the United States in the late 17th century. Later in 1797, John de la Howe donated a large tract of land in South Carolina for the purpose of agricultural schooling. Mr. de la Howe stipulated that the same curriculum was to apply to both boys and girls in exchange for the land. The school was operated “for the good of the students” until 1919 (Baily & Stadt, 1973, p. 172). In the early 1800’s, penal institutions started rehabilitation programs for prisoners, and there were schools that taught poor children and orphans vocational skills. Boys were encouraged to learn a trade in their community. Many would work part of the day in a factory while attending school (Baily & Stadt, 1973). Most of these programs were backed by private concerns.

Financial incentive programs sponsored by the federal government started with the Morrill Act of 1862. Land was granted to colleges that prepared individuals for
mechanical and agricultural arts (Smith & Edmunds, 1995). The Smith Hughes Act of 1917 appropriated $7.2 million annually for vocational teacher training in four vocational fields (Smith & Edmunds, 1995). However, the act stated that there was no need for vocational education to be funded for handicapped individuals (Meers, 1987). Most schools did not become serious about vocational programs until the 1960s (Snell & Wanat, 1995). Tax-based schools were compelled into special needs vocational education by the Manpower Development and Training Act of 1962, which stated that occupational training of poor children would be provided by public schools. In 1963, the federal government sanctioned vocational education training of common skills for individuals with special needs through The Vocational Education Act of 1963 (Smith & Edmunds, 1995). The states’ populations were considered during apportionment of money for vocational programs and the teachers. Big cities, with large schools, had the most allotted for their programs, however the cities with small schools were not always able to have a program (Bailey & Stadt, 1973).

Presently, School-to-Work programs have been claimed as a successful mechanism for educating youth. The preparation has helped people prepare for high-skill and high-wage careers. Students receive top quality academic instruction, and gain fundamental skills to pursue their education (Sitlington, 1986). Vocational education has been a major improvement to public education and was considered important during the period of 1917-1962, due to the assurance and improvement of the livelihoods of many people (Bailey & Stadt, 1973).
From 1958 to 1976, six major educational acts were passed which funded and delivered systems for vocational education from elementary schools to rehabilitation programs for adults, and special interests groups. Through all of these enactments the “Goals 2000: Educate America Act” evolved (Smith & Edmunds, 1995). In 1984, the Carl Perkins Act continued the movement to higher technical skills being available to all segments of the American population (Smith & Edmonds 1995). In 1990, the act was amended to include the students with special needs. “By The Year 2000-Significant gains will be achieved in the mathematics, sciences, and communications competencies of vocational education students” (Bottoms, 1992, p. xi).

The Gender Barrier

In the early stages of the American vocational evolution, women were taught the skills of homemaking. Females were not involved in any apprenticeship programs. Reading and writing skills for females in early America were learned outside the American education system (Meers, 1987).

Throughout the 19th century and until the 1960's, vocational education for women remained in the realm of homemaking careers and males were educated to become workers (Bailey and Stadt, 1973). In the 1970's, America was made aware of gender segregation. This led to an era of implementation of legislative acts in the 80’s (da Silva & da Silva, 1998). The only time prior to the 1980’s that the gender barrier in vocational education was dropped was during the 1940's (Renzetti & Curran, 1995).

Necessity dictates a time when prejudices are set aside for a common cause. Such was the case in World War II. Men were sent off to war and females had to perform jobs
that had been typically male dominated. The entire allied world depended on equipment
produced in American factories. Many "able bodied" workers, supervisors, test engineers,
and pilots were females. Still, the production rate was adequate to meet the requirements
of the allies and win the Great War. The female vocational force was as responsible for
the allied victory as the men were involved in battle. Even though 80 percent of the
women had wished that they could have kept their jobs, when the fighting men returned,
females returned to their roles as the home keeper until the 1970's (Renzetti & Curran,
1995).

Since 1970 single mothers have accounted for 99 percent of the poverty level
increase in the United States (da Silva & da Silva, 1998). Carl Perkins Legislation has
addressed the issues of sexual segregation in vocational education. Still, 44 percent of the
women in the labor force are in low paying jobs. Females staff 90 percent of the
secretarial and cosmetology jobs, while 90 percent of the skilled jobs are held by men (da
Silva & da Silva, 1998). With the poverty level of women on the increase and the gender
barrier not being breached, not only do females suffer, but also the children of single
mothers are experiencing a decrease in the standard of living.

The federal government has tried to remedy with gender discrimination by
enacting Public Law 94-482, the Educational Amendment of 1976. The law states that
there is additional funding for vocational education for "those subject to discrimina-
tion in job training and employment, and sex stereotyping in vocational education" (Snell &
Wanat, 1980, p. 59). Using the law could increase moneys available to many financially
deprived educational programs. Encouraging cross gender enrollment of occupations
would increase the availability of competent technicians and caregivers among both genders and allow for single mothers to sufficiently support their children.

In public education, learning disabilities have been believed to be more of a male problem. Medically speaking, there are about as many females as males diagnosed with attention deficit disorders (Renzetti, 1995). However more importance seems to be placed on the success of males. Special opportunities are commonly given males in vocational settings. Females are generally taught to be docile and submissive (Renzetti, 1995), however, this does not alleviate the need for the same special programs and vocational skills that males require. An enormous amount of talent is neglected as a result of ignoring girls with special needs. At the present rate of technological advancement, the price is excessive for this mistake. As other countries incorporate their best scholars independent of gender, the United States falls behind in the race for achievement in the engineering and science fields. Whether procedures are established for individual rights or for utilitarian purposes, the results of equal educational opportunities are instrumental for an advanced society.

There are females who apply for attendance in tactile programs and males for nurturing programs. Others succumb to peer, parental, or ad-ministrative pressures and deny themselves the opportunity to accelerate in the area of their desires (da Silva & da Silva, 1998). The vocational education "hook" has caught many misdirected children. It has motivated them to explore more academic endeavors, such as math for the application of construction, and language to enhance their survival skills in a diverse society (Bottoms, 1992). Many late bloomers agree that the reasons for learning should have
been explained earlier. Then the importance of academics would be better understood.

"The teacher has a responsibility to introduce learners to teaching tools that may trigger dimensions of their learning styles they may not have been aware" (Apps, 1991).

**Consolidating Academic and Vocational Education Curriculums**

Vocational education along with academics has been encouraged for all students in some educational districts. Still in many schools, vocational and academic education is separate. Some educators look to vocational education as an alternative for the unsuccessful. There are educational systems that do not realize how many people in society need to learn skills and graduate to a community ready to go to work. There are students that have learned through hands on skills along with academic skills, but little attention is given to these students. "Our schools need to provide all youth with an education that blends both types of learning" (Smith & Edmunds, 1995, p.19). Also in a study conducted in 1991, by the Secretary of Labor, several businesspersons stated that they needed employees with major competencies and foundation skills (Smith & Edmunds, 1995).

Vocational education provides well-planned instruction for the students to learn good communication skills and critical thinking. This instruction is job related and is specific to the students learning abilities. Students learn to communicate, listen, think creatively, make decisions, and solve problems. Critical thinking helps a person to learn how to become aware, explore alternatives, and work through a transition vocational education which is available to help troubled students to get back on track and gain
confidence (Apps, 1991). An alliance of academic and vocational instructors could be the answer.

There appears to be a controversy between vocational and academic educators when the answer to America's dilemma lies in cooperation of the two fields. When instructional guidance books for vocational teachers states "you will be called upon to defend the relevance of vocational education in the high schools" (Smith & Edmunds, 1995 p. 10), there is evidence of a conflict in the two facets of education.

Vocational education has also helped the social and emotional development of the students. There are some students that will graduate from high school or drop out and enter into an occupational program that changes their lives. They learn self-pride, confidence, and are involved in programs that dissuade them from boredom and street life, as demonstrated by the diminishing drop out rates. This paradigm was made evident in the southern United States during the implementation of curriculum integration of vocational and academic education from 1990 to 1992; the drop out rate declined from 23 percent to 12 percent (Bottoms, 1992). Major support and inspiration came from the vocational program, "Because the vocational educator is best equipped to identify occupational needs and desires" (Bottoms 1992, p. 18). A study done by Bailey and Stadt in 1973 found that students that had problems in their childhood and were successful as they grew older by learning how to support themselves through occupational training.

Employers are in need of competent technicians in our society. Vocational and academic education need to work together to provide students with the proper training in human relations and communication skills in the workplace (Bottoms, 1992).
A summary report submitted to Congress from Boesel and MCarland from the National Assessment of Vocational Education in 1994:

"At the secondary level, the development of cognitive skills seems to be pivotal, because it helps prepare students both for work and for post secondary education. Strong cognitive skills to facilitate learning occupations and specific skills, is the basis of lifelong learning. Broad technical competencies, such as computer literacy or mechanical and electronic knowledge, can help prepare students for a wide range of jobs; and because they include a sizable cognitive component they can also contribute to college prospects."

Source: (Imel & Ryan, 1998, Internet, School-to-Work Transition, par. 9)

The student’s performance begins at school. Public schools should prepare students to meet the needs of the community. Job skills require the knowledge of how to clean, proper tool usage, responsibility, and fundamental academic skills. Individuals are “exiting high school with a diploma that is practically worthless” (Bottoms, 1992, p. 2). It is the instructor’s responsibility to check the student’s discipline and attendance records. Appearance, customer relations, and integrity are also part of the learning process. This is important for a person's future career and personal life (Snell & Wanat, 1980).

Some regions of the United States realized the partnership of academic and vocational education would address these occupational needs. The southeastern United States was in an academic quandary in 1990. They were forced to raise the academic
standards of their region. The educational systems soon found that throwing more academia at the students was not the solution. In 1992, the Southern Regional Education Board implemented an integrated academic and vocational program that has resulted in an increase in student math and science scores in comparison to the national average (Bottoms, 1992).

Collaboration in vocational and academic education is an essential ingredient for teaching real life skills, critical thinking, responsibility for one's own actions, and learning. Teachers, whether vocational or academic, are the key to a society's progress and element of that accomplishment (Pendleton, 1991). Employers would have available to them individuals with the basic proficiencies required at all entry levels of employment, should vocational and academic education receive the same degree of emphasis.

With American students ranking near the bottom in international tests and America's economic growth stagnating in comparison to other nations, the need is defined by American businesses demanding a movement in non-baccalaureate educational equality serving all students (Bottoms, 1992). A 1990 report titled America's choice: High Skills or Low Wages! stated “The productivity of workers in jobs that do not require a college education will make or our economic future. America has no system capable of setting high academic standards for youth who do not plan to attend a four-year college or university” (Bottoms, 1992, p.11).
Vocational Education for Special Needs Students

Students with special needs are said to have little or no vocational counseling, lack specific vocational skills, and are not trained in specific occupation (Sitlington, 1986). As early as the 1830's, vocational training began for students with special needs. The trend for obstructing special needs students from vocational education started in 1917. The adopted policy was that vocational education was not meant for the "special populations" (Meers, 1987). The Developmental Disabilities Act of 1984 (Public Law 98-527) and the Carl D. Perkins Vocational Education Act of 1984 were enacted for the purposes of career education for 10 percent of the school age population identified as "special needs learners" (Benson & Hoachlander, 1981, as cited by Sitlington, 1986). Programs such as JTPA (Job Training Partnership Act of 1982 (P.L. 97-300) have been implemented to help in the transition of primarily economically disadvantaged adolescents and adults. Though the intentions are good, the JTPA Program has "two major limitations: (1) their emphasis is on short term training, which is not often extensive enough for the special needs learner; and (2) counselors have been trained to deal with the disadvantaged but not necessarily with the handicapped individual" (Sitlington, 1986, p. 16). As the children are classified and placed in limited learning circumstances they are hindered to grow to their full potential.

"The educational curriculum of the forgotten half is basically an unplanned program of study that fails to prepare young people for either college or work" (Bottoms, 1992, p. 1). Failure to change the trend of conventional education systems could have "economic and social consequences, causing America to fall behind" (Bottoms, 1992).
Special needs graduates receive less counseling and career training, but still get jobs at almost the same percentage rate as the regular high school graduates. Historically, special needs students have a harder time keeping their employment. The most prevalent reasons are interpersonal skills, job-related academics, and lack of entry-level specific vocational skills. The other skills required in any employment setting, are interpersonal skills, and functionally academic skills. There is a "core of 28 mathematical skills, 27 communication skills, 20 interpersonal skills, and 28 reasoning skills" that are required by employers in the technical fields. (Sitlington, 1986, p. 9).

**Case Studies and Supplemental Research Leading to the Project**

During the Vietnam War, induction into the military and advancement to higher ranks did not require any educational lower limits. As the war in Vietnam came to a close, educational and professional testing prerequisites for promotions became more stringent. The General Education Development (GED) was required for promotion to the enlisted level of sergeant in the US Army and proficiency testing was necessary for Non Commissioned Officers (Personnel Management Regulation for the United States Army/AR 600-200, 1974). In an attempt to rectify the problem, the researcher studied the task of preparing the soldiers for proficiency testing.

At the inception of the sessions the students were volunteers and highly motivated. Mathematics was fun for most of the troops. When word problems were undertaken, the soldiers’ dedication, volunteering, and the jovial mood vanished. Many attempts were made to rejuvenate the attitudes of the soldiers, and various instructional methods were tried. The attention spans of most students were short and they became
frustrated. Even though some of the students remained in the program, most dropped the whole idea by saying it was not worth their time.

Of the soldiers in the program, about twenty-five percent acquired their GED. One of the biggest problems encountered was their ability to read. Their comprehension was low even after they had been persuaded to read technical manuals. When they would read out loud, some words would come out as "brown" instead of "down." Marijuana was suspected as causing the unit's poor performance. However, an unannounced drug test was administered and the results were negative for every soldier in the training program.

Later, in April 1995, at an institution for "at risk" children, the researcher was hired to develop a vocational program for the special needs students of the school. The previous experienced enigma came into view again. Mechanical reasoning or mathematical equations seemed to be fun for the students, but when they attempted the word problems and reading, the students became frustrated, and evaded any involvement with the vocational agenda. Once they became trusting, they would read out loud. Students would misread the words. Some would have problems with spelling, reading, and writing (sometimes very sloppy), but their math skills were better. When asked to draw a line they would need a straight edge to assist them. Other problems encountered included written and spoken language, however the students were very proficient in tactile tasks.

Leonardo da Vinci was one of the greatest-minds in history, but was later assessed as having problems with written and verbal communication. Albert Einstein was also a late bloomer. Thomas Edison was kicked out of school because he was academically
incompetent. These people, and many, others seem so intellectually underdeveloped in their earlier lives, but turned out to be the great technological leaders of the world. These giants in history were said to have dyslexia (Davis, 1994, p. 4).

Similarly, conversations with teachers over the past five years, they assumed dyslexia was the problem of reading words and numbers backwards. Scientists, teachers, and psychologists have attempted, for almost a century, to define and explain dyslexia.

In an attempt to find a solution for helping the children of the residential school, personal research began in the realm of learning disabilities, mainly dyslexia. "The areas of difficulty pertaining to dyslexia are auditory, visual, kinesthetic-tactile, or a combination of any or all afflictions. Dyslexia is not a pure syndrome, not global in nature but instead is specific to language" (Dautrich, 1994, p. 755). James Kerr (1896) labeled the problem as "word blindness". Kerr realized that children with good vision could not read words. Karl Kussman (1898) called the enigma Dyslexia or difficulty with words (McCormick, 1984, p. 10).

In the mid 1920s, Dr. Orton performed a case study with a young man who scored extremely high on non verbal exa-minations, but on written tests, he could not read. His findings pertained to written and sometimes spoken language. The man would call cold days hot. He would look up and say "down there." Dr. Orton found there was a disassociation with oral expressions and the actual performance of the individuals. His research led to a three-pathway approach using auditory, visual, and kinesthetic-tactile learning (Cronin, 1994).
In a case study by this researcher, involving a sixth grade student, the individual could not memorize spelling words. There were several interventions that were attempted. The boy was asked to draw pictures with the words inside the drawings. He tried tracing over the word with different colors. The student became very frustrated.

Looking at some of the boy's positive learning experiences revealed that he could do single column math problems without error. When he was instructed to add double-digit numbers, he became confused and frustrated. The intervention that worked was having the student spell the assigned words longitudinally down on a piece of paper. He practiced each word five times in that manner and then five times horizontally. Over two weeks later he spelled all 6 of his assigned words correctly. His instructor was a vocational education teacher that understood there were different types of learning techniques and tried interventions relating to dyslexia.

The method that worked for this one young boy may or may not work for others. Dyslexia has no single cure, remedy, or method of teaching (Dryden, 1993). "Work in small groups and utilize intensive tutoring. Other aides may help such as color overlays and vision therapy. These tools are interventions that balance holistic/meaning and analytic/phonetic approaches" (Fruth, 1975 p. 169).

In an attempt to peruse a career in vocational special needs education, this researcher accept a job of setting up and ad-ministering a vocational program at a non-public school for at risk children. Since the initial date of employment, the growth for the developmentally disabled students has progressed from the simple tasks of identifying safety issues, using hammers, writing their names in wood, nailing boards together, and
three students building boxes. Two students have been allowed to solder wires and circuit boards and one student is learning the basics of small engine repair. The vocational education program has allowed two students to improve and demonstrate their advanced mathematical aptitudes and their efficient abilities in problem solving techniques through applied learning. The students have been removed from the developmentally disabled class and are now in a 10th grade grouping on the campus. One of the students with behavioral problems has now volunteered to return as a peer mentor and has been doing quite well for three weeks.

The technology class has been involved in safety preparation, woodworking, electronics, and small equipment repair. The main emphasis has been in creative thinking, construction and repair. Presently the students have built toolboxes, measured with vernier calipers, learned basic electricity including circuits, reconditioned small motors with basic hand tools, and have designed electronic devices with the use of kits from Radio Shack. Two students have become interested in reading technical manuals pertaining to electronics, and are in the process of repairing and program-ming a computer. One student that has a history of severe abuse and who was denied public schooling for four years has been able to understand symbols and words through motivation of curiosity during the vocational education classes.

There have been several successes on behavioral issues in each of the classes and the program has been effective for students staying on task in the academic programs. Some of the students have learned social skills by being involved in the mentoring of
other students. The advanced students are put in charge of others and grade their protégés on a 20-item list of the interpersonal skills.

This researcher has taken a great interest in learning disabilities after studying dyslexia. People have become successful in vocational programs with manipulative activities to help them in their suppositional learning techniques. Learning does not happen until the students have the desire to overcome any challenges that they may encounter. Seeing an end result such as the building of a box or fixing a car may be all that is needed to motivate an individual to mature and attempt to overcome their disabilities in a scholastic setting. Discovery of the individual's best learning method is essential prior to instruction being accomplished. The quotation that "The dyslexic's differences are personal, the diagnosis is clinical, the treatment is educational, and the understanding scientific" (Cronin, 1994, p. 9) should pertain to all persons with learning disabilities. This project's intention is to challenge basic educational assumptions for establishing a treatment that will motivate special needs students to learn and continue their education for survival skills or self-enrichment.

The project has been implemented at a non-public school in the attempt to continue the endeavor for the vocational training of students with special needs. Evaluating the project will be accomplished through feedback from other teachers, the student's behavior during vocational classes, and progress on the problem-solving procedures performed during the course. The vocational experiences taught during the process of this project will be tested on individuals to enhance their abilities to earn a
living, improve their academic skills, and learn the interpersonal skills required in an occupational environment.

**Summary**

Education has been an on-going crisis of supplying the needs of society. The responsibility of competent technicians and self-reliant citizenry is the task that has been placed on administrators and teachers. Concern for effective teaching methods has been the object of consideration leading to Goals 2000, Educate America. The answer to the dilemma lies in an inter-disciplinary collaboration of vocational and academic education. The quest for helping special needs students to attain confidence and the community to gain useful citizens and competent technicians to fulfill the voids that have been predicted can be satisfied with a formal vocational curriculum in a special needs educational system. This project has the objective of serving as much of the special needs and general population as can be accomplished through initiating a win-win situation for all people involved.
CHAPTER THREE

Introduction

Chapter Three explains the initial steps leading to the structuring of a vocational program and the population served. Interpersonal skills will be incorporated along with academic skills of functional mathematics and the communication skills.

Population Served

The project is targeted for the special needs students of a nonpublic school. The initial students are mainly individuals diagnosed as Severely Emotionally Disturbed (SED) that are of high school age. The plan is for two years and it addresses the curriculum that will be used as an avenue for further progression for the students into higher functioning skills.

Project Development

The next section of the project provides an overview of the processes involved in the development and proposal of the project to a nonpublic school. Following the initial proposal in September of 1998, there will be an evaluation of methods involved in the program and any corrections that have been made to improve the effectiveness of the project.

Background of the Nonpublic school

The school which the project is being tested has been involved with the education of “at risk” children since its inception in 1977. During that time, vocational education has been considered, but not implemented as a preparatory tool for the students in the system. The Special Education Amendments in 1968 and 1976 to The Vocational Act of
1963 and the *Carl Perkins Act* of 1992 has placed an emphasis on people with disabilities and females desiring to train in non traditional occupations.

1. Students at the nonpublic school are qualified under amendments of *The Vocational Act of 1963*.

2. The school that the project is being tested at has searched for a viable vocational program to enhance the success of its students.

3. Establishments that have a cooperative environment between vocational and academic education have allowed students to use all of their learning abilities, audio, visual, and tactile.

**Project Design**

The following items will be addressed in this project.

1. At the present time there is a great emphasis in the campus to install a workable vocational program; the staff is extremely supportive of such desires. Problems of implementation and continuance of the program will be discussed and solutions will be presented.

2. Safety procedures will be discussed in respect to Occupational Safety and Health Administration (OSHA) and hazardous materials will be maintained in accordance with the (Hazardous Materials Management Systems (HAZMAT).

3. The aim of this project is to install an economical vocational program and to meet federal regulation requirements and the community's needs.
4. Evaluation should be made as to whether or not the vocational program is an effective curriculum and an instructional tool. The nonpublic school could benefit economically through federal aid and become the standard for nonpublic schools.

5. The vocational program will require constant evaluation through documentation of businesses and input from local public educational programs.

Statement of the Specific Problem

1. The nonpublic school has taken on the task of preparing disabled children to survive in the community, and needs an occupational skills program.

2. At the present time the facilities are basic and there are some safety and supply issues that need to be immediately addressed. They are as follows:

   A. There are no eye wash facilities.

   B. There is only one fire escape.

   C. There is no hazardous materials storage locker.

   D. Students should use facemasks when working with power tools.

   E. Garden tools should be stored in a manner as to not cause injury, i.e. there is wall space that is available and racks could be built with some of the materials on hand.

   F. Students' projects cannot be secured.

   G. Expendable materials were discarded items and are almost depleted.
Scope of the Project

The requirements of the project should allow the Riverside campus of the nonpublic school to be the pilot program for an integral occupational strategy for the entire nonpublic school system.

1. Initially the personnel requirement for the vocational program is one California Credential Designated Subjects or Technology Instructor.

2. The vocational program should include a job transition coordinator for the evaluation and matching of job skills training at the nonpublic school with the needs of the community.

3. All programs involving skill training should be administered by the initial vocational instructor to insure that safety and health regulations are met.

4. There should be at least one instructional aide or counselor who works directly with the vocational instructor at each physical location for the purpose of individual tutoring and assistance in specific vocational skill training.

5. The initial program for the first year should involve a safety course, technology course, a basic tool skill course, and a course in simple environmental skills at the Riverside campus. The 2 levels describe these in the Action Plan.

6. If the need arises, and there are vocationally qualified teaching aides or counselors available at other campuses, the program should be adaptable to expansion under the supervision and direction of the credentialed vocational instructor.
7. The vocational instructor of the Riverside Campus should report directly to the campus director of the school site.

8. After the first pilot year, primarily at the Riverside Campus, the staff and program should have resolved enough issues to expand the curriculum to initiate similar programs at other campuses in the Southern California District.

9. The entire integration of the district program should be complete within two school years. At that time the experiences on a district-wide vocational setting could be a basis for standard operating procedures for the company’s entire nonpublic school system.

**Action Plan**

The Objective of the initial two year program is to prepare Emotional Disabled (ED) students to enter advanced training programs, and Developmentally Disabled (DD) students’ basic hand tool skills and shop procedures.

**Level One**

This is the level that will initiate the student in simple environmental tasks. Safety issues and procedures in the shop atmosphere will be addressed and realistic applications and written and practical examinations will be administered. After all safety competencies have been met, instruction will refine motor skills through practice with hand tools, simple assembly tasks, such as building boxes, and use of simple measuring devices. All students will start at this level before being advanced to the second level Technology Course.
Second Level

Second level students will be exposed to industrial skills. These include woodworking, electricity, plumbing, basic food service occupations, gardening, and mechanical trades. The course will include construction of simple projects and elementary repairs. At the end of the course the student will have been exposed to many different facets of the occupational environment and have the chance to advance into the specific occupational classes.

As the Vocational program advances, the use of retired artisans would be advantageous to the schools and students, in learning and maintaining some of the forgotten skills in the crafts that the students have chosen. When the program becomes successful the students could be enrolled in Regional Occupational Programs for specialized training and inclusion.

Project Organization

At the beginning, the vocational instructor at Riverside campus, with the help of instructional staff the vocational instructor, will organize and instruct the occupational programs. In the event that the program expands to require additional staff, the position will become the title of vocational education campus coordinator.

Cost

The cost for the first year of the program to include expendable materials, safety equipment, construction of shop items, and training equipment and materials will be $6,500.00. For purposes of economic prudence and teaching basic skills, the students
have been working with training materials that were recycled items, so the program has no previous cost tracking record.

The salary of the teacher should match that of the special education instructor at the present school scale of $25,400.00 annually plus a 25 percent allowance for benefits. Coupled with the stipend of $50.00 per month for 12 or more credits of special education courses, the personnel expense for the instructor would be $32,350.00 per year.

Instructional aides would cost the school $5.75 per hour plus 25 percent allowance for benefits rated on a 40 hour work week for 44 week, or total cost of $12,650.00.

The average cost per student in the public school system for expendables used in vocational programs range from $25.00 per student to $50.00 per student and would be paid by the student. Fifty dollars a month for expendables would be what is necessary for the initial program at the school. At the nonpublic school the “lab fees” would have to be absorbed by the company and would amount to a total of $600.00 per month. The budget for full implementation of the curriculum including a 10 percent consideration of inflationary costs would be $57,310.00.

Schedule

The start of the two level program requiring two staff members will begin September 10, 1998. The first sessions should be the industrial education classes involving exposure to safety competencies, simple electrical, woodworking, and mechanical repairs.


Personnel

The Vocational Education Instructor should be a teaching position that involves instructional and administrative duties to facilitate in the coordination of the vocational program to fit the needs of the Campus Director’s educational curriculum, therapy plans, and Individual Educational Plans (IEP). The duties of the Vocational Education Campus Coordinator should include coordination and implementation of the occupational courses at the campus, determining the need for and requesting aides for the particular occupations, establishing the curriculum of the vocational program at that particular campus, ensuring that all safety federal and local regulations are adhered to, instructing at a minimum the initial technology courses or all courses pertaining to the vocational program at the campus, as constituted by non-public school system, submitting any changes required to the Campus Director, through the education coordinator. The minimum requirements should be a Designated Subjects Vocational Education Credential. Desirable education would be an Associates Degree in a human relations area.

The Occupational Instructional Aide will be responsible for the classroom safety, student practical skills knowledge, teaching, insuring that the safety procedures are maintained, reinforcement of basic skills, and assisting the Vocational Instructor in instruction and tutoring. It would be desirable for this individual to be a counselor and have Professional Assault Response Training (PART).

Further personnel requirements would be Community Coordinator and Job Placement Specialist, whom would work closely with the Vocational Education Instructor. The Job
Placement Specialist would ensure the community requirements are being met and the employers and local education agencies maintain a positive relationship with the nonpublic school.

Results

As a result of a consistent vocational program, the non-public school will have transition programs, work programs, and mostly avenues to give students better chance in their recovery process. At the end of two years, the school system should have the assets available to it to increase the vocational programs to a wider diversity of people and the experience to set standards for the combination of vocational and special education. Since the federal government has the requirement of a five-year plan for consideration of financial aid, the two-year program can be expanded to different age groups of special need students.

Evaluation

Evaluation would be in the form of academic testing results from policy makers, teachers, the non-confidential input from therapists, written reports from employers, ROP and JTPA evaluations, university professionals, follow up interviews with employers that have hired the graduates of the program, and regular reviews of transition portfolios.
Present Evaluation (first quarter, 5 months)

At the onset of the vocational program, until the end of the summer, students from the severely handicapped classes were trained by “one on one” instructional aides on the environmental and simple vocational skills of janitorial services and basic gardening. The vocational education program was no longer involved in the curriculum of the severely handicapped individuals. All aspects were administered and evaluated by the teacher of the severely handicapped classroom.

The specific skills courses were originally constructed as “pull-out” schedules. The effectiveness of such a program has been sporadic due to interruptions of different lunch schedules, truancy, and varying scholastic and medical treatment plans. With the co-ming of the new semester, there will be a new schedule. The new schedule will be full class participation, which will allow everyone the opportunity to attend the vocational course, regardless of their behavior evaluations during the day. Since the academic class behavior scores were the determining factor for allowing students to attend the vocational classes, the students needing the tactile learning were not be eligible to participate.

The gender barrier in the school has been completely abolished. Of the females attending the non-public school there, is 100 percent participation of females in the non-traditional courses. Males are volunteering to work with the severely handicapped and developmentally disabled students in teaching and care-giving positions.
The vocational program as been through many changes in scheduling, concepts, administration, and delivery to the students. Due to the novelty of the program, there have been many adjustments in the procedures and scheduling of the classes. Since the clientele of the program have not been involved in such an endeavor and there are no guidelines in the design of such a venture, there will be many other changes to fit the educational and social needs of the intended student population. Lesson plans and curriculums are placed in a three-ring binder and there is a 3.5-inch disk that is included in the lesson plan book at the physical location of the school.

Summary

During the planning and implementation of the vocational program, many changes have been made to accommodate the students' needs. This is the philosophy of the vocational program and should be the goal of any educational curriculum involving individuals with different learning abilities, emotional states, and modalities. There is encouragement to succeed through different learning styles and allowing the students prevail in personal accomplishments. Applied learning techniques have been in the past and could be in the future the key to a better learning experience for all students. The vocational education program, ad-ministered properly, has already shown some progress for the individuals involved. Teachers, ad-ministrators, therapists', and students show great enthusiasm for the learning achievements that have been accomplished.
CHAPTER FOUR

Introduction

Included in Chapter Four is the presentation of conclusions and changes that have been made during the execution of the project. Even though changes have been made, there will be more recommendations that are addressed in this chapter.

Conclusions

The conclusions extracted from this project follow:

1. The program has been extremely motivational for the students to enhance their academic skills.

2. Many of the students have improved their behavioral patterns to meet the requirements to attend the vocational program.

3. There is a 100 percent enrollment of females in the non-traditional courses at the school campus and the females are very motivated to attend and learn hands-on skills.

4. Some of the students who have been truant from the school in the past come to school for their attendance in the vocational program.

5. Contracts and safety issues have become extremely important to each student in the vocational program. Learning disabled students are able to recite and explain the rules coherently.
6. With the open-ended attendance of the program, the students that have missed some of the classes are allowed to be successful through the tutoring efforts of their peers.

7. Constant evaluation from the administration team and support from the staff has adjusted the project to the point of being pertinent to the needs of the students to become successful in the workforce.

Recommendations

As mentioned previously, through the summer school and the start of this school year, the students have been working with discarded items, tools that have been purchased through a discount freight store, and equipment brought in by the staff. At Riverside Campus the students have enrolled and taught the basics of their chosen and required vocational classes. Materials are running low for building wood projects, and the first phase of small engine repair is missing most of the essential tools for the repair of small motors. The basic electronics course has the rudimentary equipment and training aides are available, but simple electronic components are still essential for student projects. Computers for the basic computer course are non-existent and an avenue to obtain used and discarded computer equipment is significant. The attitude of the students, staff, and community has been one of extreme excitement and there is forward progression regardless of the availability of equipment.

With a few adaptations to meet safety standards, in accordance with OSHA and the governmental agencies, an expendable materials account, and basic equipment and
training aides, the first semester of the initial one-year program has been very successful in the Riverside Campus of the nonpublic school. Further advancement of the project depends on the fulfillment of the requested equipment needs.

The recommendations resulting from the project follow:

1. Scheduling should not be based on a pull-out basis, but the course should be a requirement for all students in the school to explore their occupational options and learn the fundamental skills required of each individual in the home and the workforce.

2. At a later time, when the initial programs are completed, the specific occupational courses should be addressed and considered in the budget.

3. Retired artisans should be hired as aids in the specific occupational courses.

4. Coordination with the Regional Occupational Programs should be made accessible to transitioning students.

5. Transitional programs with community businesses should be initiated to allow students to participate in real work programs. There should be a coordination with group homes and the school for students sixteen years old and older to work in apprenticeship programs once they have been trained in basic skills in the school and have learned to adhere to the interpersonal skill list.
**Future Personnel Recommendations**

By the end of two years, the project will require a Director of Technical Education at district level, Vocational Education Campus Coordinator at the individual campus, Community Coordinator and Job Placement Specialist at each individual campus, and an Occupational Instructional Aid at individual campuses.

The Director of Technical Education will be responsible for the establishing and adjustment of curriculum, implementation of industrial preparation courses, individual occupational courses, adherence to governmental standards in the vocational education mandates, acquisition of special funding for the vocational programs, cooperative systems between the academic and vocational agendas, the updating of materials used for training, safety, and environmental issues and changes, and coordination of the students to enter occupations or more advanced training programs such as ROP or JTPA. The director will also be involved in the constant evaluation of the vocational program to ensure that the students’ individual and collective needs are met, and the local community’s employment standards are a focal point in the curriculum. The Director of Technical Education should be responsible for informing the main District Education Coordinator on the progress of the vocational and technical programs. Experience of such an individual should be a minimum of 5 years in the occupational field, practical knowledge of the requirements regarding “at risk” students, and appropriately certified in vocational or technical education and be at least on a waiver for special education. A desirable educational requirement would be Bachelor of Vocational Education degree.
Summary

Working with "at risk" children, the requirement for therapeutic programs and skill training becomes apparent when examining the need for these children to succeed. Success is not gauged on the aspect of graduation; it is based on the accomplishments of the individual in the community. Self confidence, the ability to adapt, and feelings of usefulness are key elements in one being able to cope with the crisis and struggles of everyday life.

The vocational education path at the start-up school could fail. The cost would not be more that $6,500.00 plus the staff's salary, $50,810.00 annually. However if the program were to succeed, the returns in federal aide, community acceptance, and advertisement of a competent reputation would be rewards that would far outweigh any repercussions of failure. As we teach our students, it wasn't failure that happened, just a learning experience to make life better.

As in any other investment, the considerations are of profit, the return of initial capital, and the risk involved in the implementation of such a program. As made evident in the passing of The National Defense Education Act Title VII in 1958, vocationally oriented programs should succeed. The technology of the world and the demand for technicians to maintain the equipment are dependent on such a program. As to this date there have been many programs tried and most have not met the needs of employers or the students. This project could be the pioneer to fulfill the gaps left by educators with college bound tunnel vision. The risks are great for starting new ideas, but leaving the
void of vocational education unfilled in the special education spectrum could be even more disastrous to society as youth are sent out in the community with no manipulative or survival skills. These students already have many strikes against them. Why not increase their chances for survival instead of giving them a reason to return to the ways that labeled them as Special Ed?
APPENDIX
Vocational Course Curriculum

For Special Needs Students

by

William L. Huyssoon
Forward

There have been many concepts that evolved throughout the last century in the educational system. Most of the philosophies that have remained consistent relate to the individuality of the learner. The pupils are in charge of their understanding agenda and the instructor is in charge of the edification. The common denominator that evolves through the personal experiences of instruction of individuals, classes in public schools, and special needs environments is that pace of learning is set by the student and the intention of the instructor appears to be focused on a general population.

At times educators appeal to the needs of parents, demanding that children are prepared for college, while the students are yearning for more practical knowledge. The intent of the following curriculum is to adapt to the different learning modalities and goals to as many students as can be reached, while preparing people for entry into the higher establishments of learning. Flexibility is the objective in the method of delivery in the subsequent program. As the learners become more receptive to education, the program will accommodate their needs for more data, evaluation of acquired information, and application of understanding through a peer tutoring program.

Procedural due process, equal protection, zero reject, assessment and labeling, Free and Appropriate Education (FAPE), least restrictive environment, parent participation, and shared decision making are the concerns of PL 101-476 (Individuals with Disabilities Act of 1990) and the aim of this curriculum. To insure the ideologies of IDEA are held, the program contains individual evaluations, connections with
(Individual Education Plan (IEP), and aims toward the goals of the Individual Transition Plan (ITP) during the entire process.

The instructional lesson plans addressed in the curriculum are intended to be guidelines for mentors to allow students to set the pace of learning and the instructor to facilitate the dissemination of information. Fundamental academic skills, vocational skills, and interpersonal skills are the essential ingredients of the program. The attainment of these proficiencies can be evaluated on a daily, weekly, and monthly basis through use of the lesson plans.

Personal experience and research, formal and informal, have been the key elements of devising the agenda set forth in the following program. The aforementioned concept of learning individualities have been examined, time-tested, and incorporated throughout the writing of this plan over the past 25 years in the military and civilian educational systems. The objective of the implementation of the curriculum is to meet the needs of the ever-changing education strategies and satisfy the needs of public and nonpublic schools, in the educational goals of society.

Practiced as a guideline, the curriculum could be useful in the collaboration of academic and vocational education in the training of special needs students in the survival skills required of an ever-advancing technological society. The components of the course are systems, lesson plans, forms, and examinations. The basic outline would alleviate the necessity for new teachers to design a system applicable to a vocational course that would include academic, vocational, and interpersonal skills. Adaptability is the goal of education, so is the intent of this curriculum.
Mission Statement

The student and the communities needs are the key elements of the course. Consideration and sensitivity to the diversities of society and the students is the mode of teaching the course. The ideologies of FAPE (Free and Appropriate Education Act) and IDEA (PL 101-476, Individuals with Disabilities Education Act of 1990) are the intended commitment involved in the curriculum. Self discipline through creativity, structure, and self actualization is the mechanical design to motivate students for self improvement. Positive student experiences are essential to the fruition of the course.
Files are of extreme value to the instructional society. The following filing system has been adapted through the format of the United States Army, but the structure is outlined in consideration of the needs of a classroom.

**100-Administration**

101-Policy

102-Safety

103-Inventory
   103.1-Equipment Inventory
   103.2-Tools Inventory
   103.3-Expendable Inventory

104-Hazardous Materials

105-Inspection

106-Equipment Manuals

107-Correspondence

108-Requests
   102.2a-Equipment
   102.2b-Expendable
   102.2c-Work Orders
   102.2d-Text Books

109-Financial
   109.1 Estimates
109.2-Purchase Orders

109.3-Receipts

200-Vocational Education Program

201-Curriculum

201.1-Vocational Education Objectives

201.2-Skills

201.2a-Basic Vocational Skills

201.2b-Pre Vocational

201.2c-Electronics

201.2d-Small Equipment Repair

201.2e-Woodshop

201.2f-Computers

201.2g-Other Curriculum

201.3-Lesson Plans

202.3a-Basic Vocational Skills

202.3b-Electronics LP

202.3c-Small Equipment Repair LP

202.3d-Woodshop LP

300-Blank Forms

301-Company Advocate

301.1-Incident Reports
301.2-Point Sheet
301.3-Injury
301.4-IEP Input Form

302-Shop Forms
302.1-Sign Up Sheet
302.2-Shop Safety Tests
   302.2a Initial Safety Test
   302.2b First Aide Test
   302.2c Fire Safety Test
   302.2d Shop Safety Corrections Test
302.3-Vocational Education Contract
302.4-Voc Ed Class Time Card
302.5-Work Time Cards
302.6-Competency Sheets
302.7-Student Goal Sheets
302.8-Vocational Education Policy Forms

400-General Student Informational
401. Class information
   401.1-Class Rosters
   401.2-Student Grades
402-Student File
   402.1-Basic Vocational Competency
402.2-Pre Vocational Competency
402.3-Electronics Competency
402.4-Small Equipment Competency
402.5-Wood Shop Competency
402.6-Computers Competency

500-Projects

501-Class Projects
   501.1-Elec. Projects
   501.2-Small Equip. Projects
   501.3-Wood Shop Projects
   501.4-Computers Projects

502-Shop Projects

503-School Projects

504-School District Projects

505-Commercial Projects

506-Private Projects
Fundamental Skills Abbreviation Chart For Lesson Plans

Purpose

The purpose of this curriculum is to prepare a structure that will introduce special needs individuals to the initial occupational proficiencies that have been requested by the trades industry. The list of competencies has been identified through the research performed by the Southern Regional Education Board (Bottoms, 1992). These competencies have been a major cause of special needs education graduates not getting or keeping their jobs. Skills included in the list are fundamental academic skills, reasoning skills, safety issues, and mostly interpersonal skills. The courses will be designed to include some educational interventions to help students with reading, writing, and mathematical learning disabilities.

Through the entire curriculum there will be references to individual needs of students to help them understand the information. “Peer tutoring” and “mentor tutoring” will be major instructional methods to help students in many aspects of interpersonal skills, the reinforcement of lessons, and an evaluation process that can be observed during practical exercises. All written tests will be open book and the pupil teachers will be the ones to assist their fellow students.

Methods of instruction will be in such a manner as to create a work environment. The students’ goals and learning modalities will be the first considerations prior to their starting the course. Written tests and practical exams will allow the students to verbally and non-verbally express their styles of learning and immediate desires. The instructor should take these into consideration prior to implementation of any formal instruction.
With the mentor program in place and the learning styles considered, the individualized instruction could be more meaningful to each student. The instructor should allow time for positive reinforcement and behavioral counseling, since social skills are the main focal points of the vocational exploratory course. Hands on experimentation and use of functional academics are important factors for the student to advance into the specific field of their choice.

At the completion of the vocational exploratory course, the student will have had the opportunities to experiment with different adaptive manual techniques in facilitating their use of tools. They will have the opportunities to use their learning styles to accommodate their academic needs in the work force. Working with a diversity of personalities will enhance their abilities to get along with others in their jobs. The curriculum guideline is placed in a loose-leaf binder and copied on a disk to be adaptable to individual class and personal needs. This program is not definite, but very adaptable to the instructor’s methods and the students’ learning capabilities. Creativity can not be written into a lesson plan, just preceding successful interventions.
Academic Skills

The curriculum will include fundamental academic skills. Each class will involve some of the academic skills and the following list the symbols used. The list of fundamental skills has been taken from the Handbook of Vocational Special Needs Education by G. Meers published in 1987.

Mathematics Skills

Whole Numbers

MA-1. Read, write, and count single multiple digit whole numbers.

MA-2. Add and subtract single and multiple digit whole numbers.

MA-3. Multiply and divide single and multiple whole numbers.

MA-4. Use addition, subtraction, multiplication, and division to solve word problems with single and multiple digit whole numbers.

MA-5. Round off single and multiple digit whole numbers.

Fractions

MA-6. Read and write common fractions.

MA-7. Add and subtract common fractions.

MA-8. Multiply and divide common fractions.

MA-9. Solve word problems with common fractions.

Decimals

MA-10 Carry out arithmetic computations involving dollars and cents.

MA-11 Read and write decimals in one or more places.

MA-12 Round off decimals to one or more places.
MA-13 Multiply and divide decimals in one or more places.

MA-14 Add and subtract decimals in one or more places.

MA-15 Solve word problems with decimals in one or more places.

**Percent**

MA-16 Read and write percents.

MA-17 Compute percents.

**Mixed Operations**

MA-18 Convert fractions to decimals, percents to fractions, fractions to percents,

- Percents to decimals,
- Decimals to percents,
- Common fractions or mixed numbers

- To decimal fractions,

- And decimal fractions to common fractions

- Or mixed numbers.

MA-19 Solve word problems by selecting and using correct order of operations.

MA-20 Perform written calculations quickly.

MA-21 Compute averages.

**Measurement and Calculation**

MA-22 Read numbers and symbols from time, weight, distance and volume measuring scales.

MA-23 Use a measuring device to determine an object's weight, height, or volume

- In standard (English) units.

MA-24 Use a measuring device to determine an object's weight, height, or volume

- In metric units.

MA-25 Perform basic metric conversions involving weight, distance and volume.
MA-26 Solve problems involving weight, distance, and volume.

MA-27 Use a calculator to solve basic arithmetic problems.

**Estimation**

MA-28 Determine if a solution to a mathematical problem is reasonable.

**Communications Skills**

**Words and Meaning**

CO-1 Use plural words appropriately in writing and speaking.

CO-2 Use appropriate contractions and shortened forms of words by using an apostrophe in writing and speaking.

CO-3 Use appropriate abbreviations of words in writing and speaking.

CO-4 Use words appropriately, which mean the same as other words, but are spelled differently.

CO-5 Use words correctly, which sound the same as other words, but have different meanings and spellings.

CO-6 Use words appropriately which are opposite of each other.

CO-7 Use appropriate word choices in writing and speaking.

CO-8 Add appropriate beginnings and endings to words that change their meaning.

CO-9 Punctuate one's own correspondence, directives, and reports.

**Reading**

CO-10 Read, understand, and fine information or gather data from books, manuals, directories, or other documents.
CO-11 Restate or paraphrase a reading passage to confirm one's own understanding of what was read.

CO-12 Read and understand forms.

CO-13 Read and understand short notes and letters.

CO-14 Read and understand graphs charts, and tables to obtain factual information.

CO-15 Understand the meanings of words and sentences.

CO-16 Use a standard dictionary to obtain the meaning, pronunciation, and spelling of words.

CO-17 Use the telephone book and look up names, telephone numbers, and other information in a telephone directory to make local and long distance calls.

**Writing**

CO-18 Review other's correspondence, directives and reports.

CO-19 Compose logical and written correspondence, directives, memos, short notes, or reports.

CO-20 Write logical and understandable statements, phrases, or sentences to accurately fill out forms.

**Speaking**

CO-21 Speak fluently with individuals of groups.

CO-22 Pronounce words correctly.

CO-23 Speak effectively using appropriate behaviors, such as eye contact, posture, and behavior.
Listening

CO-24 Restate or paraphrase a conversation to confirm one’s own understanding of what is said.

CO-25 Ask appropriate questions to clarify another’s written or oral conversation.

CO-26 Attend to non-verbal cues such as eye contact, posture, and gestures for meanings in other’s conversations.

CO-27 Take accurate notes, which summarize the material, presented from spoken conversations.

Interpersonal Skills

Work Behaviors

IP-1 Work effectively under different kinds of supervision.

IP-2 Work without need of close supervision.

IP-3 Work cooperatively as a member of a team.

IP-4 Get along and work effectively with people of different personalities.

IP-5 Show up regularly and on time for activities and appointments.

IP-6 Work effectively when time, tension, or pressure are critical factors for successful performance.

IP-7 See things from another’s point of view.

IP-8 Engage appropriately in social interactions and situations.

IP-9 Take responsibility and be accountable for the effects of one’s own judgments, decisions, and actions.

IP-10 Plan, carry out, and complete activities at one’s own initiation.
Instructional and Supervisory Conversations.

IP-11 Instruct or direct someone in the performance of a specific task.

IP-12 Follow directions or instructions in the performance of a specific task.

IP-13 Demonstrate to someone how to perform a specific task.

IP-14 Assign others to carry out a specific task.

IP-15 Speak with others in a relaxed and self-confident manner.

IP-16 Compliment and provide constructive feedback to others at the appropriate time.

Conversations

IP-17 Be able to handle criticism, disagreement, or disappointment during a conversation.

IP-18 Initiate and maintain task focused or friendly conversations with another individual.

IP-19 Initiate, maintain and draw others into a task focused or friendly conversation.

IP-20 Join in task focused or friendly conversations.

Reasoning Skills

RS-1 Generate or conceive of new or innovative ideas.

RS-2 Try out or attempt to use previously learned knowledge and skills in a new situation.

RS-3 Understand and explain the main idea in another’s written or oral communication.

RS-4 Recall ideas, facts, theories, and other information accurately from memory.

RS-5 Organize ideas and put them into words rapidly in oral or written conversation.
RS-6 Interpret feelings, ideas, or facts in terms of one's own personal viewpoint or values.

RS-7 State one's point of view, opinion, or position in written or oral communication.

RS-8 Defend one's point of view, opinion, or position in written or oral communication.

RS-9 Distinguish between fact and opinion in one's own or others written or oral communication.

RS-10 Identify the conclusions in other's oral or written communication.

RS-11 Identify the reasons offered by another and evaluate their relevance and strength of support for a conclusion.

RS-12 Compile one's own notes taken on several written sources into a single report.

RS-13 Compile ideas, notes, and materials supplied by others into a single report.

RS-14 Carry out correctly written or oral instructions given by another.

RS-15 Observe another on a task to identify whether the performance is satisfactory or needs to be improved.

RS-16 Ask questions about another’s performance on a task to identify whether the performance is satisfactory or needs to be improved.

**Problem Solving**

RS-17 Recognize or identify the existence of a problem given the specific facts.

RS-18 Ask appropriate questions to verify or identify the existence of a problem.

RS-19 Enumerate the possible causes of a problem.

RS-20 Use efficient methods for elimination of the causes of the problem.
RS-21 Judge the credibility of the source of information.

RS-22 Identify important information needed to solve the problem.

RS-23 Identify others and one's own assumptions relating to the problem.

RS-24 Generate or conceive alternative solutions to the problem.

RS-25 Describe the application and the likely consequences of possible alternative problem solutions.

RS-26 Compare the application and likely consequences of alternative problem solutions and select a solution that represents the best course of action to pursue.

Planning

RS-27 Sort objects according to physical characteristics including shape, color and size.

RS-28 Estimate weight of various objects of different shapes, sizes and makeup.

RS-29 Estimate length, width, height, and distance between objects.

RS-30 Use senses of touch, sight, smell, taste, and hearing.

RS-31 Set priorities or the order in which several tasks will be accomplished.

RS-32 Set the goals or standards for accomplishing a specific task.

RS-33 Enumerate a set of possible activities needed to accomplish a task.

RS-34 Determine how specific activities will assist in accomplishing a task.

RS-35 Select activities to accomplish a certain task.

RS-36 Determine the order of activities or step-by-step process by which a specific task can be accomplished.

RS-37 Estimate the time required to perform needed to accomplish a specific task.
RS-38 Locate information about duties, methods, and procedures to perform the activities needed to accomplish a specific task.

RS-39 Locate information and select the tools, materials, equipment, and other resources to perform the activities needed to accomplish a specific task.

RS-40 Revise or update periodically plans and activities for accomplishing a specific task.
Curriculum For Exploratory Vocational Course

I. Learning Modalities and Student Goals.

A. Entry safety test.

B. Vocational contracts.

II. Safety Lessons.

A. Shop procedures.

B. Fire safety.

C. First Aid.

D. HAZMAT.

E. Shop Lay out

F. Power tools.

III. Basic mechanical knowledge.

A. Basic law of physics

1. Force times Distance equals Work

2. For Every Action there is a reaction

B. Simple Machines

1. Lever

   a. Fulcrum, (Pivot point)

   b. Effort arm (The one receiving pressure)

   c. Resistance arm (Part doing the work)

   d. Mechanical advantage = effort arm / resistance arm

   e. Mechanical advantage.
2. Wedge

3. Incline Plan
   a. Screw
   b. Mechanical Advantage.

4. Wheel and axle
   a. Mechanical advantage.

5. Pulleys
   a. Mechanical advantage.

C. Combustion

D. Thermodynamics.
   1. Heat dissipation.
   2. Cooling materials.

D. Friction and lubrication.
   1. Safety hazards
   2. Types of lubricants.
   3. Theory of lubricants.

IV. Record keeping
   A. Accountability
   B. Shop tasks

V. Hand Tools
   A. Measuring devices
      1) Length
         a) Wooden rule.
         b) Steel rule.
c) Types and accessories.

1) Folding rule.

2) Retractable steel tape.

3) Pocket caliper.
   a)) inside measurements.
   b)) outside measurements.
   c)) Depth measurement.

4) Vernier calipers.
   a)) inside measurements.
   b)) outside measurements.
   c)) Depth measurement.

5) Mortise gauges.

6) Accurate angles.
   a)) Try square
   b)) Combination square.
   c)) Rafter or steel square
   d)) Protractor square.

B. Saws

1. Wood
   a. Types and their uses.
      1) Design of teeth.
      2) Number of teeth per inch.
      3) Practical use of a cross cut saw.
      4) Storage and care.

2. Metal (Hacksaws)
a. Types and their uses.
   1) Design of teeth.
   2) Number of teeth per inch.
   3) Practical use of a cross cut saw.
   4) Storage and care.

C. Hammers
   1. Safety.
   2. Types and uses.
      a. Parts of a hammer
   3. Use of a straight claw hammer.
   4. Practical use of a straight claw hammer (practice).

D. Chisels
   1. Woodworking.
      a. Types and uses.
      b. Maintaining and repair.
         1) Storage.
         2) Sharpening.
            a) Angles.
            b) Hand.
            c) Grinder.
      b. Practical Use
         1) Deep Cut.
         2) Fine cutting.
         3) Square edges.
         4) Concave and concave curves.
5) Bevel position.

2. Metal
   a. Maintaining
      1) Storage.
      2) Sharpening.
         a) Hand.
         b) Grinder.

E. Files
   1. Types and their uses.
      a. Shape
      b. Cut.
      c. Length.
      d. Coarseness.

F. Abrasives.
   1. Types and their uses.
      a. Papers.
      b. Metal wools.
      c. Powders.
   2. Coarseness and uses.

G. Screw drivers
   1. Safety.
   2. Types and their uses.
      a. Repairing and dressing.
      b. Storage.
H. Pliers

1. Safety.

2. Types and their uses.
   a. Gripping.
   b. Adjustable.
   c. Cutting.
   d. Locking.

I. Clamps.

1. Safety.

2. Types and their uses.
   a. C-clamps.
   b. Adjustable hand screws.
   c. Spring clamps.
   d. Band and web clamps.
   e. Pipe and bar clamps.
   f. Improvised clamps.

J. Wrenches

1. Safety.

2. Types and their uses.
   a. Fixed wrenches.
      1) open end.
      2) Boxed end.
      3) Nut drivers.
   b. Adjustable wrenches
      1) Monkey wrench.
2) Pipe wrench.
3) Multi-wrench.
c. Ratchet wrenches and sockets.
   1) Size and types of drivers.
   2) Types and construction of sockets.
   3) Practical use.

K. Heating Devices

1) Butane torch.
   a) Safety.
   b) Heating metal.
   c) Soldering.

2) Soldering iron.
   a) Safety
   b) Wire and insulation.
   c) Practical application.

3) Pneumatic heating guns.
   a) Safety.
   b) Practical application.

L. Power Tools

1. Hand held power tools

A. Safety.

   1) Visual inspection electrical.
      a) Power cord.
      b) equipment serviceability
      c) Safety of the area to be used in.
2) Pneumatic.
   a) Air hose.
   b) equipment serviceability
   c) Safety of the area to be used in.

B. Power drills and bits
   1) Drill types.
   2) Bit types.
   3) Other attachments.

C. Saws
   1) Safety.
   2) Types and uses.
      a) Circular
      b) Saber
      c) Reciprocating.

D. Router
   1) Safety

E. Sanders.
   1) Safety.
   2) Belt.
   3) Finishing

2) Fixed station power tools
   A. Safety.
   B. Drill Press.
   C. Table saw.
   D. Miter saw.
E. Grinder.
F. Lathe.
G. Milling Machine.
H. Combination machines.

VI. Element of Materials.

A. Fastening devices

1. Nuts, Bolts and screws.
   a. Standard
      1) Grade.
      2) Threads & shank
   b. Metric
      1) Grade.
      2) Threads & shank
   c. Applications.
      1) Bolts.
      2) Nuts
      3) Washers.
      4) Screws
         a) Machine.
         b) Sheet metal
         c) Wood.
         d) Other.
   d. Causes of damage
      1) Tension
      2) Elasticity
3) Distortion
4) Tensile Strength
5) Residual Strength
6) Compression
7) Cold flow and heat.

e. Torque.
f. Proper removal.
g. Repair of damaged fasteners.

B. Nails
1. Types and uses.
2. Sizes.
3. Practical use and application.

C. Adhesives
1. General Purpose.
2. Special Purpose.
3. Practical use.

D. Materials
1. Wood
   a. Types and grades.
      1) How to determine grade.
      2) Softwood.
      3) Hardwood.
      4) Plywood.
      5) Particle Board.
   b. Determining how to place the wood in a project
4) Battery.

5) Basic Motor.

6) Basic Generator.

7) Troubleshooting with a volt, and ohmmeter

6) Standard Electrical System
   a) Transformers
   b) Primary, and secondary
   c) Automatic switches.
   d) Spark Plugs
   e) Diodes
   c) Regulator
   d) Trouble shooting with a Multimeter

VIII. Engines
   A. Types
      1. Design and components.
      2. Power Plants
         a. Basic Components
            1) Piston
            2) Connecting Rod
            3) Crank Shaft
            4) Flywheel
            5) Cylinder
         b. Cam train
            1) Cam.
            2) Lifter
3) Pushrod
4) Rocker Arm
5) Valve springs
6) Valve
7) Valve Seat

2. Operation
   a. Cycles

3. Fuels
   a. Delivery
      1) Carburetion
      2) Fuel injection

4. Cooling System
   a. Air
   b. Liquid

5. Electrical
   a. Battery
   b. Starting system
   c. Charging System
   d. Ignition System

6. Cooling system
   a. Liquid
   b. Air

7. Lubricating system
   a. Oil Pump
   b. Oil filter
c. Oil Passages

IX. Resume fundamentals.
Lesson Plans For Exploratory Vocational Course

Purpose

The purpose of the exploratory vocational course is to allow special needs students the opportunity to explore a variety of occupational areas, adapt academic skills to a tactile environment, and learn social and interpersonal skills. The initial element that distinguishes this course from a typical vocational course is the introduction of adaptive analysis to create a productive learning environment for each special needs student. Materials and other types of interventions will be explored for the students’ individual learning modalities, learning disabilities, and physical limitations.

The flexibility of the lesson plans is engineered in the ability of the instructor to change pages in the curriculum book to match the needs of the students. Documentation of changes could be useful in the adjustment of IEP and augmentation of the ITP. Lessons are meant to be as remedial as needed, but other students that are more advanced or understand the concept, are placed as peer tutors.

Initial materials, used in the class, will be to aid in the students’ reading abilities. Examples are colored transparencies and paper to help people with reading disabilities, different colored dry erase pens including markers, visual aids and pictures, and devices to allow tactile learning modalities the opportunity to manipulate objects while learning.

The lesson plans are structured guidelines for the teacher to coach students in their accumulation of knowledge. The task of learning the individual student’s needs, abilities and methods of learning is still the chore of the mentor.
Lesson Plan for Shop Safety and Rules (Comp 1)

Objective: The student will be able to:

A. identify the rules of the shop and is able to recite the consequences of non-compliance.

B. identify the safety procedures and the required responses.

C. show where the fire escape plans, first aid kit, and the fire extinguishers are located.

D. keep their area clean and avoid confusion and hazards.

E. to recite the ABC's of shop safety (Always Be Careful)

Purpose: The purpose of the lesson is to prepare the student for the shop environment and the safety procedures.

Content:

A. The student will be instructed on shop procedures and the consequences for non-compliance (30-min).

1. No Horseplay, Dismissal 0 points.

2. Follow Directions, 1st time, time out 5-minutes, earn 3 points. Second time, and dismissal 0 points.
3. Non use of safety equipment, 1st time, earn 3 points time
out 5-minutes, second time, dismissal 0 points.

4. Threatening with or without tool, Dismissal until allowed to
return by the ad-ministrative team, 0 points.

5. Non-cleanup of area, Non attendance of the next voc-ed
class, earn 2 points.

6. Leaving the shop without permission, Dismissal 0 points.

B. The student will be instructed on safe lifting procedures and transporting
of equipment (5-min).

C. The student will be taught the escape routes for the fire evacuation (5-
min).

D. The student will be taught to organize the tools in such a fashion as
to be organized and safe. The best way to keep tools organized is in
a toolbox (10-min).

E. The Student will be taught the proper shop clean up procedures (20-min).

Materials:

Student;

Pencil
8 1/2 " X 10" piece of paper.

Small note book binder.

Instructor:

Brooms.

Flat nosed shovel or dust pan.

Fire Escape plan.

Blank shop plan.

Miscellaneous tools and equipment for demonstration.

Shop bench or table.

Colored transparencies.

Colored paper.

Colored dry erase pens.

**Evaluation:** The student will be tested on the 6 basic shop rules and be required to draw the escape routes, fire extinguisher location, and first aide kit location on a shop map. Shop should be cleaned up with no dirt left on the floor.
Answers to the Test:

1. Dismissal for the day, 0 points.

2. 5-minute time out the first time, lose of 1 point, dismissal for the day and 0 points.

3. 5-minute time out the first time, lose of 1 point, dismissal for the day and 0 points.

4. The person or class will not return the next class session.

5. Dismissal from the program until a new contract is signed by all parties.

Fundamental Skills Addressed:

Shop Rules and Consequences Competency 1

Basic Vocational Skills. Name: __________________________
Class: __________________________
Period: __________________________
Date: __________________________

Write a short paragraph in response to each of the following questions.

1. What will be the consequences for horse play or leaving the shop without permission?

2. What will not following directions cause to happen to you?

3. What are the consequences of not using safety equipment?

4. What are the consequences of not cleaning your area or the shop when you are finished?

5. What are the consequences for threatening another student or staff?
Lesson Plan for Fire Escape Plan and Extinguisher Usage (Comp 2)

Objective: The student will be able to:

A. show where the fire escape plans and the fire extinguishers are located.

B. verbally recite and tell items to be checked for a serviceable fire extinguisher.

C. tell the difference between the different type of chemicals in the ABC fire extinguishers.

D. verbally recite the PASS acronym and identify the type of fire extinguisher to be used.

E. use a fire extinguisher in different types of fires.

Purpose: The purpose of the lesson is to prepare the student for the shop environment and the safety procedures during a fire

Content:

A. The student will be instructed on shop fire escape plan and be shown the location of the fire extinguishers and electrical junction box. (10-min).

B. The student will be taught the escape routes for the fire evacuation and the method of escape, on hands and knees. (10-min).
C. The student will be taught ABC letters on the fire extinguishers and the fires that can be put out by the different types of chemicals (15-min).

A = Wood, paper, and any substance made from vegetation.

B = Oils, gasoline, and petroleum products.

C = Electrical fires.

D. The student will be taught the items to be inspected for the serviceability of the fire extinguisher (10-min).

1. Gauge to insure the needle is not in the red.

2. The seal on the fire extinguisher is not broken.

3. The hose and nozzle is not broken.

4. inspect the fire extinguisher for any oil.

E. The student will be taught the PASS method for extinguishing a fire, Pull Aim Squeeze, and Sweep the base of the flame (20-min).

Materials:

Student will have:

Pencil.
81/2 “X 10” piece of paper.

Instructor will provide:

Fire escape plan.

Fire extinguishers.

**Evaluation:** The student will orally recite the PASS and what the letters designate on the types of fire extinguishers.

The student will take the competency test of fire safety.

The student will demonstrate the proper way to put a fire out with the fire extinguisher.

**Answers to the Test:**


**Fundamental Skills Addressed:**

Fire Safety Test

Vocational Education Name: ____________________________

Class: ____________________________

Period: ____________________________

Date: ____________________________

Read each question carefully, then print the letter of the correct answer on the line next to the question.

1. _____ The fire extinguisher is used when:
   a. You want to play around, so when there is a fire every one will die.
   b. In case of rain.
   c. Only when your life is not in danger and you can safely put the fire out.

2. _____ PASS means:
   b. Passively Aggressive Simple Solution.
   c. Pull, Aim, Squeeze, Sweep at the base of the flame.

3. _____ You should check a fire extinguisher for safe operation:
   a. Daily to see if there is a seal tie, and the needle is in the green
   b. When there is a fire so when you need it there won’t be any “stuff.”
   c. Let some one else do it, cause no one plays with the thing.
4. _____ What is the correct letters for the type fire extinguishers to be used?
   a. 1, 2, 3, look at me
   c. A is apple for the teacher, B is for ball in the shop, and C is for cute.

Practical Application

5. ____ Demonstrates the fire escape route.

6. ____ Demonstrates the inspection of an extinguisher, and the PASS method with a fire extinguisher and points to the base of the fire (without pulling the pin).
Lesson Plan for First Aide (Comp 3)

Objective: The student will be able to:

A. identify the five unstable accident scenes that should be avoided.

B. define "Standard Care."

C. define the first rule of safety, self-preservation.

D. recite the ABC’s of first Aide.

E. stop the bleeding with a sterile bandage.

Purpose: The purpose of the lesson is to prepare the student emergencies that can occur in the a shop environment.

Content:

A. The student will be instructed on the definition of “Standard Care” (5-min).

Standard Care - The manner an individual must act or behave that is established by local custom. Are you qualified to give the attention required by the victim.

B. The student will be instructed the five situations to avoid in the concept of self-preservation (10-min).
1. Fires.

2. Poisonous gas.

3. Downed electrical lines.


5. Civil disturbances.

6. Touching someone without barriers (Barriers are gloves or protective devices that will be used if there is vomit, blood, or any other body fluids).

B. The student be taught the location of the first aide Kit (5-min).

C. The student will be taught the contents of the first aide Kit (15-min).

D. The Student will be taught the ABCs of first aide (20-min).

A = Airway, clear the airway.

B = Breathing, is the person breathing?

C = Circulation, is there a pulse?

E. The student will instructed on how to prevent further injury to a fallen victim (15-min).
Stop, Look and Listen.

Stop what you are doing and attend to the victim.

Look for a rising of the chest.

Listen for breathing.

SECOND CLASS SESSION

F. The student will be instructed in the procedure for calling for help and the procedures to follow to insure safety of the Victim (45-min).

1. Point directly at someone, or call their name for them to go get help.

2. If the victim has fallen or is unconscious stabilize the head, DO NOT move the head or any broken limbs.

3. If there is any bleeding, put on gloves, find a sterile compress or bandage and put pressure directly over a wound on the limbs. DO NOT touch the main part of the body.

G. The student will be instructed on the use of sterile bandages when stopping the bleeding (30-min).

Materials:

Student:
Pencil.

8½ " X 10" piece of paper.

Instructor:

First Aide Kit.

Bandages (4 X 4)

Rubber medic Gloves.

References:


Evaluation:

The student will orally recite the ABC's of first aide. The student will demonstrate then proper procedure for checking the breathing. The student will demonstrate the proper way to attend to a victim on the floor, or that is unconscious. The student will name the 6 hazards that should be avoided.

The student will explain the procedures that will occur in the case of a fallen or unconscious victim. The student will take a written test on the ABC's and 6 hazardous conditions that will be avoided.
Answers to the Test:


Functional Skills Addressed:

Safety Test for First Aide

Vocational Education

Name: __________________________

Class: __________________________

Period: __________________________

Date: ____________________________

Read each question carefully, then print the letter of the correct answer on the line next to the question.

1. ______ When you see an individual on the floor you should:
   a. Shake the person real hard, cause if there is a neck injury they die.
   b. See if the person is breathing and tell a specific person to get help.
   c. Fold your arms and say “Never met the Guy.”

2. ______ When are you authorized to give CPR?
   a. After certification by an authorized instructor of CPR.
   b. Two days after you get to Advocate School.
   c. After you get Hepatitis 3 or AIDS, you are an honorary member.

3. ______ What are the 6 hazards that you should avoid?
   a. Teachers, counselors, ad-ministrators, therapists, aides, and Voc. Ed.
   b. Fire, poisonous gas, electrical lines, hazardous material, civil disturbances, and body fluids.
   c. Math, English, science, history, Voc Ed, and PE
4. _____ If someone has fallen and/or broken a bone you should remember:
   a. Don’t move them.
   b. Slap the kid on the back and say let’s play some b-ball.
   c. Panic, why not everyone else panicking.

5. _____ What should you do before you touch an injured person?
   a. Put on rubber gloves.
   b. Eat your lunch.
   c. Call the Voo-Doo doctor to remove all evil spirits.

Practical Application:

6. _____ Demonstrates how to hold the neck in the case of a fallen person with a possible neck injury.

8. _____ Shows where the first aid kit is located.

9. _____ Demonstrates the use of gloves or protective clothing.

10. _____ Demonstrates how to apply a pressure bandage on limbs only and does not touch the main body.

11. _____ Describe the “Standard of Care” principle.
Lesson Plan for HAZMAT and Chemicals (Comp 4)

Objective: The student will be able to:

A. identify the hazards in a shop that will cause a fire.

B. identify the hazards that could cause poisoning.

C. be able to properly store materials that are chemical hazards.

D. read the triangular labels on containers and describe the hazards involved with the chemicals.

E. perform the first aide procedures in case of a chemical accident.

Purpose: The purpose of the lesson is to prepare the student the shop environment and the safety procedures for chemical hazards.

Content:

A. The student will be instructed concerning storage of materials containing chemical hazards (30-min).

1. Oily rags are placed in a red metal container with a lid.

2. Flammable liquids are stored outside and/or in a fire resistant cabinet.

3. Saw dust-containing oil is placed in a metal container that has a lid.
4. All storage areas that have flammable or toxic chemicals will are a well-ventilated area.

B. The student will learn the proper locations and methods of using chemicals (30-min).

1. Well ventilated areas.

2. Not around open flames.

3. Wearing goggles, gloves, and in the case of corrosive acids a leather apron.

4. Use brushes and other devices that are provided with the chemical.

5. When using a spray can to be sure to aim the spray orifice in the direction away from the face and towards the project.

C. The student will be taught to read the label of the can to follow directions and read for first aide procedures (10-min).

D. The student will be taught the definition of HAZMAT (5-min).

Definition: Any substance that will cause fire and explosion, physical reaction, or become a health hazard to any living thing.
SECOND LESSON

E. The student will be taught the definition and use of a MSDS sheet (30-min).

F. The student will be taught to read the diamond hazard sign on cans and containers and the reaction that is necessary to those signs.

Red = Volatility

Blue = Stability

White = Environmental Impact

Yellow = Reactivity

Materials:

Student:

Pencil

8 1/2 " X 10" piece of paper.

Small note book binder.

Instructor:

MSDS SHEET.
Several different containers with the HAZMAT Diamond.

Evaluation:

The student will be tested on the 6 basic shop rules and draw the escape routes, fire extinguisher location, and first aide kit location on a shop map. Shop will be cleaned up with no dirt left on the floor.

Answers to the Test:


5. RED = Volatility
    YELLOW = Reactivity
    BLUE = Health
    WHITE = Environmental

6. B.

Fundamental Skills Addressed:

Read each question carefully, then print the letter of the correct answer on the line next to the question.

1. _____ When you feel your eyes start to burn in a room, you should:
   a. Stick around and go blind.
   b. Get everyone else so they can go blind.
   c. Clear the area, yell “Clear the area, Chemical Accident” as you leave.

2. _____ Before using a chemical you should read:
   a. The instructions on the can and the MSDS sheet
   b. The Sunday comics.
   c. Your homework assignment.

3. _____ Where should you throw oily rags?
   a. In the garbage can so the can explode.
   b. In a metal container with a lid.
   c. On the floor so every one can slip.
4. ___ If a chemical gets in you eye what should you do?
   a. Rub it and possibly go blind.
   b. Have some one else rub it so they can help you go blind.
   c. Flush your eyes for 20-minutes with fresh cold water.

5. ___ What are the colors of the warning diamond and what do they mean?
   a. __________________________
   b. __________________________
   c. __________________________
   d. __________________________

6. ___ When you see a spill on the floor, what do you do?
   a. Build a fire around it and start a rain dance.
   b. Put sawdust on it sweep it up, or wipe it up.
   c. Let the other guy get it or fall on it.
Lesson Plan for Shop Layout and Hazards (Comp 5)

Objective: The student will be able to:

A. identify the hazards of an unplanned shop layout.
B. identify the safety concerns in a shop plan.
C. identify hazards of a presently established shop.
D. identify the concerns of ergonomics in planning a shop layout.
E. find and research OSHA regulations.

Purpose: The purpose of the lesson is to prepare the student for the shop environment and for shop safety awareness.

Content:

A. The student be instructed in the identification of hazardous conditions (60-min).

   1. Cluttered areas.

   2. Location of items that could be hazardous to people in the shop.

      a. Electrical outlets.
b. Storage areas;

tools.

parts.

equipment being worked on.

chemicals.

safety equipment.

personal belongings.

c. Air compressor

d. Saws

e. Drill Presses.

f. Lathes.

g. Devices causing carcinogen material dispersal.

h. Water heaters and heaters.

i. Welding equipment

3. Waste disposal.
4. Lighting.

5. Types of exits.

6. Tables and benches.

B. The student will be taught how to plan escape routes for the fire evacuation (5-min).

C. The student will be taught to organize the tools and equipment in such a fashion as to be secure, organized and safe (20-min).

D. The student will be taught the proper clean up procedures for the shop and waste disposal (5-min).

E. The student will be instructed on the procedures for acquiring rules and regulations for Occupational Health and Safety Administration (OSHA) (10-min).

Materials:

Student:

Pencil

8 1/2 " X 10" piece of paper.

Small note book binder.
Instructor:

Shop.

Evaluation:

The student will draw a shop layout plan and evaluate the locations of the equipment and identify fire routes, power sources, equipment placement, and locations of hazardous materials.
The student will be tested on the placement of equipment and devices to facilitate safe and convenient working conditions.

Answers to the Test:


Fundamental Skills Addressed:

Read each question carefully, then write T (true) or F (false) on the line next to the question.

1. _____ Electrical wall sockets should be close to water pipes.

2. _____ It is okay to store equipment within 3 feet from the circuit breaker box.

3. _____ Proper lighting is extremely important for safe working conditions.

4. _____ Locations of fire extinguishers should be on either end of the shop.

5. _____ The safest place to put a table saw is in the middle of the room so several people can get hurt.

6. _____ A light switch should be within arm’s reach of all entry doors.

7. _____ Tool storage areas should be close to the door so people can take tools with them.

8. _____ All safety equipment should be locked up and hidden so no one can use it.
9. Power tools should be placed in such a fashion as to not encourage crowding.

10. Draw the floor plan of the shop that you now work in and put the following items in the most logical place in your plan.

1. Entry door.  
2. Fire Extinguishers.  
3. Tool storage area.  
4. Eye wash and sink.  
5. Table Saw.  
6. Combination lathe.  
7. Work benches.  
8. Lighting.  
9. Classroom.
Lesson Plan Basic Machines (Comp 7)

Objective: The student will be able to:

A. define Mechanical Advantage, and calculate the formula,

B. identify a lever and perform the calculations of the mechanical advantage.

C. identify the wedge and name some of the tools that are wedges.

D. identify the incline-plane and be taught the mechanical advantage of the incline plane and the modified incline plane called the screw.

E. identify the wheel and axle and calculate the mechanical advantage.

F. identify the pulley and calculate the mechanical advantage.

G. use the combination of the machines to calculate the mechanical advantage of the composite of the units.

Purpose: The purpose of this lesson is to prepare the students for the use of different tools of the occupational trade in order for them calculate and operate the tools machines and use math skills in a “real life” environment.

Content:

A. The student will be instructed on the definition of mechanical advantage through the formula of Force X distance = Work (F X D =W) (5-min).
B. The student will be shown the hammer and instructed on the uses of a lever. (20-min).

1. Pound a nail half way into the wood, and have the students attempt to pull it out with their hand.

2. Issue all of the hammers to each student and have them pull the nail out with the hammer.

3. Instruct the students on the mechanical advantage of a lever.
   a. Mechanical Advantage = Length of effort arm divided by the length of the resistance arm.

      \[ MA = \frac{E}{L_r} \]  
      (Show Example by using figure 7.1).

   b. Instruct the students on the 1st, 2nd, and 3rd classes of levers (See Figure 7.2)

C. The student will be instructed on the use of a wedge. (15-min).

1. Pound a nail, with a flat head all the way into the wood and have the student attempt to pull the nail out with the claw end of the hammer.
2. Issue the rubber mallets to the students and have them pound the claw end of the claw hammer under the nail and pull the nail out.

D. The student will be taught use and mechanical advantage of an inclined plane (20-min).

1. Get two boards (2” X4” X6 or more feet), place them on a platform approximately 1 ft. high and have the student first try to lift a heavy object onto the platform (using the proper lifting techniques.

2. Have the students push the same object up the ramp that was placed on the 1 foot platform.

3. Have the student calculate the MA of the incline plane using a 100 pound weight.

   a. \[ MA = \frac{L}{H} \] (effort distance/resistance distance).

E. The student will be taught uses and mechanical advantage of the wheel and axle (20-min).

1. Get 2 round objects and place them on a flat surface.

3. Get a heavy object and have the students push the object across the floor.
4. Place a heavy weight on top of the two round objects and have the student roll the object back and forth.

5. Instruct the students on the MA of the wheel and axle.
   a. Reinforce the student on the definition of the radius of a circle.
   b. Show the formula of Mechanical Advantage equals Radius of the wheel divided by the radius of the axle (MA = Raw/Rae).

D. The student will be instructed mechanical advantage of the pulley sets (10-min).

1. Mechanical Advantages;
   a. Mechanical Advantage of one pulley is MA = 1
   b. Mechanical Advantage of one movable pulley is MA = 2
   c. Mechanical Advantage of Block and Tackle, four movable pulleys is MA = 4

Materials:
Student:

Pencil

8 1/2 " X 10" piece of paper

Instructor:

Wood, 2X4’s and broken broom handles.

Nails

Hammers

Saws, Cross Cut.

Evaluation:

The student will be given a written test to do the mathematical calculations of four of the basic machines. The lever, incline plane, wheel and axle, and pulley sets. The students will also be evaluated on the proper use of the hammer and chisel.
Test on Levers and Wedges with the use of Hammers and Chisels

I. Title: Hammer used as a lever.

II. Purpose To calculate the Mechanical Advantage of a lever and the use of a hammer.

1. Name the basic parts of a hammer.
2. Circle the place where you will put your hand when driving or prying nails.
3. Label the fulcrum, effort, and the resistance portions of the hammer.
4. Place an X over the wedge that is on the hammer.
5. What is the Mechanical Advantages of the hammer.

III. Types of Levers

<table>
<thead>
<tr>
<th>Resistance</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fulcrum

Class of Lever
IV. Use of Chisels.

Type of Cut


8. Perform a fine and deep cut with a chisel.
Fundamental Skills Addressed:

Lesson Plan on Design and Construction 2

Objective: The student will be able to:

A. use a ruler to draw a straight line.
B. use a protractor to determine angles.
C. draw a right angle and 45 degree angle using the protractor.

Purpose: The purpose of the lesson is to prepare the student for the designing of their projects.

Content:

A. The student will be introduced and taught to use the mechanical pencil, “gummy” eraser, 12” ruler, 180-degree protractor, and paper design (15-min).

B. The student will be taught to use the ruler to draw a straight line and the protractor to draw a right (90 degree) angle, and 45-degree angle (15-min).

C. The student will be taught to use the “gummy “ eraser instead of the pencil hard eraser (5-min).
D. The student will draw a rectangle using the protractor ruler and pencil

(15-min)

Materials:

12” ruler with steel edge.

180 degree protractor.

“Gummy” eraser.

Mechanical pencil.

81/2 “ X 10” piece of paper

Practical Exercise:

Student will draw two shapes, one will be a 5” square, and the other will be a 45-degree triangle with 5” bases.

Evaluation:

The shapes will be measured and checked with a drafting set and the lengths will be within 1/4” and the angles will be with in 5 degrees.
Fundamental Skills Addressed;

Lesson Plan on Design 3

Objective: The student will be able to:

A. use a ruler and protractor to draw a triangle and a straight line.

B. draw a rectangle that using fractional measurements.

C. perform an initial design that will include measurements and tolerances.

Purpose: The purpose of the lesson is to prepare the student for the designing of their projects.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).

B. The student will be instructed on the use of measurements of the ruler to draw 45/45 and 60/30-degree triangles (15-min).

C. The student will be made aware of the existence of tolerances +/- in inches (5-min).

D. The student will draw a circle using the protractor (15-min)

E. The student will draw a plan for a box including tolerances, and the proper form of measurement (15-min)
Materials:

12” ruler with steel edge.

180 degree protractor.

“Gummy eraser.

Mechanical pencil.

81/2 “ X 10” piece of paper

Practical Exercise:

Student will design and label a simple drawing for building a box and then be introduced to three-dimensional, length, width, and height.

Evaluation:

The shapes will be measured and checked with a drafting set and the lengths will be within 1/8” and the angles will be with in 2 degrees.

Fundamental Skills Addressed;

Lesson Plan on Design 4

Objective: The student will be able to:

A. design a three-dimensional box.

B. transfer measurements from the paper drawing to the wood required to build the box.

C. use the carpentry measuring tools.

Purpose: The purpose of the lesson is to have the student transfer real projects from drawings.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).

B. The student will draw a three dimensional drawing using the simple drafting tools. (15-min).

C. The student will measure the wood to fit the measurements on paper (5-min).

D. The student will cut the wood using hand tools (15-min).
E. The student will check his/her work using carpentry measurement tools (15-min).

Materials:

12” ruler with steel edge.

180 degree protractor.

“Gummy eraser.

Mechanical pencil.

8½ “ X 10” piece of paper

Wood, enough for all projects.

Hand saws to cut the wood

Combination square

Carpenter’s square

Practical Exercise:

Student will transfer the measurement from his/her drawing to wood and cut the wood to fit.
Evaluation:

The real projects will be measured and checked with and the lengths will be within 1/8” and the angles will be within 2 degrees.

Functional Skills Addressed:

Objective: The student will be able to:

A. cut the wood until the project is finished.
B. check the work and the cutting of their wood.
C. assemble their finished product.

Purpose: The purpose of the lesson is to have the student transfer real projects from drawings.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).
B. The student will measure the wood to fit the measurements on paper (5-min).
C. The student will draw shapes and lines on the wood piece and cut to fit the design. (45-min).
D. The student will cut the wood using hand tools (15-min).
E. The student will check work using carpentry measurement tools (15-min).
Materials:

12” ruler with steel edge.

180 degree protractor.

“Gummy eraser.

Mechanical pencil.

81/2 “ X  10” piece of paper

Wood, enough for all projects.

Hand saws to cut the wood.

Combination square.

Carpenter’s square.

Practical Exercise:

Student will transfer the measurement from their drawing to wood and cut the

wood to fit.

Evaluation:

The real projects will be measured and checked with and the lengths will be
within 1/8” and the angles will be with in 2 degrees.

**Fundamental Skills Addressed:**

Lesson Plan on Design  6

Objective: The student will be able to:

A. cut the wood until the project is finished.
B. will check the work and the cutting of their wood.
C. assembly their finished product.

Purpose: The purpose of the lesson is to have the student transfer real projects from drawings.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).

B. The student will continue to measure and cut the wood (5-min).

C. The student will draw shapes and lines on the wood piece and cut to fit the design. (45-min).

D. The student will assemble the box using hand tools (45-min).

E. The student will check their work using carpentry measurement tools (15-min).
Materials:

12” ruler with steel edge.

180 degree protractor.

“Gummy” eraser.

Mechanical pencil.

81/2 “ X 10” piece of paper

Wood, enough for all projects.

Hand saws to cut the wood.

Combination square.

Carpenter’s square.

Practical Exercise:

Student will transfer the measurement from their drawing to wood and cut the wood to fit.

Evaluation:

The real projects will be measured and checked with and the lengths will be
within 1/8" and the angles will be within 2 degrees.

**Fundamental Skills Addressed:**

Lesson Plan on Design 7

Objective: The student will be able to:

A. design and plan for a major project (shelves and rack for pipe cutting Job)
B. be able to use a tape measure.
C. be able to correct mistakes using patching methods and documentation.

Purpose: The purpose of the lesson is to have the student transfer real projects from drawings.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).

B. The student will assist in the designing and building of the Pipe storage shelf and the cutting area (95-min).

Materials:

12” ruler with steel edge.

180 degree protractor.

“Gummy” eraser.
Mechanical pencil.

81/2 " X 10" piece of paper

Wood, enough for all projects.

Hand saws to cut the wood

Combination square

Carpenter’s square

Tape measure, 16 foot

**Practical Exercise:**

The student will transfer the measurement from their drawing to wood and cut the wood to fit.

**Evaluation:**

The real projects will be measured and checked with and the lengths will be within 1/8” and the angles will be within 2 degrees.

**Fundamental Skills Addressed:**

MA-1 to 4, MA 6 to 9, MA19 to 20, MA-22, CO-1, CO-2, CO-3, CO-5, CO-6, CO-8, CO-10, CO-11, CO-12, CO-14, CO-15, CO-21, CO-22, CO-23, CO-24,
Lesson Plan on Design 8

Objective: The student will reinforce the following skills:

A. design and plan for a major project (shelves and rack for pipe cutting Job).
B. be able to use a tape measure.
C. be able to correct mistakes using patching methods and documentation.
D. and be able to safely use the table saw.

Purpose: The purpose of the lesson is to have the student transfer real projects from drawings.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).
B. The student will assist in the designing and building of the Pipe storage shelf and the cutting area (65-min).
C. The student will be taught to use the table saw to cut board ends and ripsaw. (30-min)

Materials:

Gummy eraser.
Mechanical pencil.

8½ “ X 10” piece of paper

Wood, enough for all projects.

Hand saws to cut the wood

Combination square

Carpenter’s square

Tape measure, 16 foot

Table Saw

Practical Exercise:

Student will transfer the measurement from their drawing to wood and cut the wood to fit.

Evaluation:

The real projects will be measured and checked with and the lengths will be within 1/8” and the angles will be within 2 degrees.

Fundamental Skills Addressed:

MA-1 to 4, MA 6 to 9, MA19 to 20, MA-22, CO-1, CO-2, CO-3, CO-5, CO-6, CO-8, CO-10, CO-11, CO-12, CO-14, CO-15, CO-21, CO-22, CO-23, CO-24,
Lesson Plan Electronics 1

Objective: The student will be able to:

A. define conductor and insulator.

B. define the four basic components of electricity.

C. define alternating and direct Current.

D. define open and closed circuit

Purpose: The purpose of the lesson is to prepare the student for the principle of electronics to further their knowledge of electricity.

Content:

A. The student will be introduced to the theory of the electron (15-min).

B. The student will be taught the theory of volts, amps ohms, and watts (30-min).

C. The student will be taught the elements of a basic safe controllable circuit (30-min).

D. The student will be taught the difference of an open and close circuit (5-min).

Materials, student:
Mechanical pencil

8 1/2 " X 10" piece of paper

Practical Exercise:

The student will draw and identify the components in a basic circuit.

Evaluation:

The student will be able to identify on paper the four elements of electricity, their function, and draw a basic circuit identifying the power source, fuse, switch, user, and grounds.

Fundamental Skills Addressed:

Lesson Plan on Electronics 2

Objective: The student will be able to:

A. use the formulas in the calculations of the electrical theory.

B. be able to calculate the voltage use in a circuit.

C. determine the amperage of fuses of the circuit.

Purpose: The purpose of the lesson is to prepare the student for the use of measuring devices.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).

B. The student will be instructed on Ohms law, and Watts law (45-min).

C. The student will draw a basic circuit and determine the voltages required to operate the users (30-min).

D. The student will use the ohms law to determine the amperage of a fuse (15-min).

D. The student will use watts law to determine the wattage and then the amperage of a circuit (15-min).
Materials:

Mechanical pencil.

8½” X 10” piece of paper

Practical Exercise:

Student will design and label a simple circuit and calculate the voltage drop at the

user and the amperage of the fuses.

Evaluation:

The student will be able to identify the components of a basic safe controllable
circuit, and calculate the electrical component needs to 80 percent accuracy.

Reinforcement will come in a later lesson.

Fundamental Skills Addressed:

MA-1 to 4, MA 6 to 9, MA 19 to 20, MA-22, CO-1, CO-2, CO-3, CO-5, CO-6, CO-8, 
CO-10, CO-11, CO-12, CO-14, CO-15, CO-21, CO-22, CO-23, CO-24, CO-25, CO-26, 
IP-1, IP-3, IP-4, IP-5, IP-8, IP-11, IP-12, IP-15, IP-19, RS-3, RS-4, RS-5, RS-9, R3-14, 
Lesson Plan on Electronics 3

Objective: The student will be able to:

A. calculate the electrical differences of the parallel and series circuit.

B. design of a circuit and the electrical requirements of circuit.

C. use a multimeter on Ohms only.

Purpose: The purpose of the lesson is to have the student measure the resistance of a circuit and identify the ohms setting on a digital multimeter.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).

B. Draw a basic safe controllable circuit, and add another circuit indentifying parallel instructed (45-min).

C. Trained on the use of a multimeter in the resistance mode online series (30-min).

D. The student will draw a thick line on a piece of paper and measure the resistance (15-min).

Materials:
Mechanical pencil.

8 1/2 " X 10" piece of paper

Multimeter

**Practical Exercise:**

Student will draw a thick line and measure the resistance of the circuit

**Evaluation:**

The student will be able to read the resistance of the pencil mark on the paper and record the findings on the paper.

**Fundamental Skills Addressed:**

Lesson Plan Electronics 4

Objective: The student will be able to:

A. isolate circuits and trouble shoot opens and shorts.

B. identify the differences between ac circuit wiring and dc circuit wiring.

Purpose: The purpose of the lesson is to have the student trouble shoot solve simple circuit problems.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).

B. The student will measure the resistance of the light sockets and switches of the AC systems (45-min).

C. The student will identify the difference of an open and closed circuit using an Ohmmeter. (45-min).

Materials:

Multimeter.

AC incandescent light sockets.

AC light switches.
Mechanical pencil.

81/2 " X 10" piece of paper

**Practical Exercise:**

Student will measure the resistance of different AC components

**Evaluation:**

The observation of the student measuring and calculating the difference between an open and closed circuit

**Fundamental Skills Addressed:**

Lesson Plan Electronics 5

Objective: The student will be able to:

A. be reinforced on the isolation circuits and trouble shoot opens and shorts.
B. identify the differences between ac circuit wiring and dc circuit wiring.

Purpose: The purpose of the lesson is to have the student trouble shoot solve simple circuit problems.

Content:

A. The student will be reevaluated by a performance test of the previous lesson (15-min).
B. Be instructed on the different components of a circuit to changing current and voltage (60-min).
C. The student will identify the different symbols that are users and current adjusters. (45-min).

Materials:

Multimeter.

Mechanical pencil.

81/2 “ X 10” piece of paper
Practical Exercise:
The student will use a digital and analog multimeter to measure the resistance of a pencil mark on a piece of paper.

Evaluation:
The student will verbalize the different components in the cover of the text used in the course.

Fundamental Skills Addressed:
Lesson Plan on Small equipment repair 1

Combustion

Objective: The student will be able to:

A. identify the elements required in combustion.

B. identify the four cycles of an internal combustion engine.

C. identify the 5 basic components of a reciprocating engine.

Purpose: The purpose of the lesson is to prepare the student be able to identify the basic theory of the internal combustion engine.

Content:

A. The student will be re-minded of the elements of combustion. Fuel, air, and ignition (15-min).

B. The student taught the four cycles of the internal combustion engine (30-min).

C. The student will be taught the basic components of the reciprocating engine, piston, cylinder, cylinder head, connecting rod, crankshaft, and flywheel (25-min).
Materials:

Pencil

8 1/2 " X  10" piece of paper

one used lawn mower engine

Tools for small engine repair

Practical exercise:

The students will disassemble a used lawn mower engine and identify the parts as they are removed. The lessons will include piston operations and the cam timing of a small engine.

Evaluation:

The student will draw and identify the four cycles of the internal combustion. engineered identify the elements involved in combustion to 100% percent accuracy.

Materials:

Pencil

8 1/2 " X  10" piece of paper.

one used lawn mower engine.
Phillips screw drivers, #1 & #2.

Common Tip Screw, from cabinet to 1/4”.

Open-end wrench set metric and standard.

Evaluation:

The student will disassemble the lawn mower engine using the hand tools mention in the lesson plan, and identify the basic components of an internal combustion reciprocating motor.

Fundamental Skills Addressed:

CURRICULUM REFERENCES


REFERENCES


