

NEW TEACHER HANDBOOK FOR TRADE AND INDUSTRIAL EDUCATION



Trade and Industrial Education
Career and Technical Education Division
North Carolina Department of Public Instruction
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NORTH CAROLINA
DEPARTMENT OF PUBLIC INSTRUCTION
Career and Technical Education Division
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TRADE AND INDUSTRIAL EDUCATION

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Introduction

While this document is not intended to be an all inclusive source for the teacher of a trade and industrial education course, it does provide significant information for a successful instructional program. Further development of teaching skills is encouraged through the use of additional resources. For additional information about available resources contact Trade and Industrial Education, North Carolina Department of Public Instruction, Raleigh, North Carolina.

The primary purpose of this handbook is to provide new T&I teachers helpful information that they can use to enhance their classroom instruction and/or use to enhance their professional development. Of course, the experienced T&I teacher will also find this handbook to be an excellent resource. This handbook contains information about the overall purposes of Career and Technical education, licensure requirements, a history of Career and Technical education, future trends of Career and Technical education, safety concerns, teacher liability, and the development of lesson plans. This handbook is an excellent resource for teachers interested in upgrading program management skills, making the transition from traditional to individualized instruction, and for implementing new or revised curriculum materials.

Note: For complete information see the

CAREER AND TECHNICAL EDUCATION STANDARD COURSE OF STUDY GUIDE

from the North Carolina Department of Public Instruction (Revised 2002)

The Role of Trade and Industrial Education in North Carolina's Career and Technical Education Program

Career and Technical Education - Mission and Purpose

The mission of Career and Technical Education (CTE) is to help empower students for effective participation in an international economy as world-class workers and citizens.

Career and Technical Education fulfills this mission by:

1. Preparing students for postsecondary education in Career and Technical fields and lifelong learning.
2. Preparing students for initial and continued employment.
3. Assisting students in making educational and career decisions.
4. Applying and reinforcing related learning from other disciplines.
5. Assisting students in developing decision-making, communication, and problem-solving, leadership, and citizenship skills.
6. Preparing students to make informed consumer decisions and apply practical life skills.
7. Making appropriate provisions for students with special needs to succeed in Career and Technical education programs.

Competency-based courses are offered in eight program areas, with each area having school-based, work-based, or community-based learning opportunities.

- Agricultural Education
- Business & Information Technology Education
- Career Development Education
- Family and Consumer Sciences Education
- Health Occupations Education
- Marketing Education
- Technology Education
- Trade and Industrial Education

Combined with other academic offerings, Career and Technical education assists all enrollees with career goals and high school graduation requirements. Students are to have a career development plan outlining courses to be taken to meet a tentative career objective and obtain a high school diploma.

Common Goals for Career and Technical Education

All programs in Career and Technical education are designed to contribute to the broad educational achievement of students. These programs contribute to students being able to accomplish the following:

1. Identify, organize, plan, and allocate resources—time, money, materials, facilities, and human resources.
2. Work with others by participating as a team member, serving clients/customers, negotiating, and working with diversity.
3. Acquire and use information.
4. Work with and operate effectively within social organizations and technological systems.
5. Work with a variety of technologies.
6. Contribute to the development of reading, writing, listening, speaking, and mathematical skills.
7. Contribute to the development of thinking creatively, making decisions, solving problems, and

reasoning.

**These goals are based on the Secretary's Commission on Achieving Necessary Skills (SCANS) Report.*

Description of Trade and Industrial Education

Program Description

Trade and Industrial Education is a secondary program designed to prepare students for careers in all sixteen Career Pathways. While completing course sequences in these pathways, students participate in instructional units that educate them in standardized industry processes related to: concepts, layout, design, materials, production, assembly, quality control, maintenance, troubleshooting, construction, repair and service of industrial, commercial and residential goods and products.

Design

As a component of Career and Technical Education, Trade and Industrial Education provides students the opportunity to advance in a wide range of trade and industrial occupations. They are prepared for initial employment, further education at the community college or university level, and/or business ownership. The career pathways in Trade and Industrial Education are commercial and artistic production, construction, engineering, industrial, public service and transport systems technologies. A balanced program of classroom study and practical work experiences produce competent workers who can manage resources, work cooperatively, organize and use information, understand complex systems, and apply appropriate technology. Cooperative education, internship, and apprenticeship experiences are available through the Trade and Industrial Education program.

Opportunities to develop and apply interpersonal, leadership, social, civic, and business-related skills are provided through SkillsUSA, the Career and Technical student organization for Trade and Industrial Education students. As an integral part of the Trade and Industrial program, SkillsUSA activities enhance classroom instruction through leadership and teamwork activities. These activities directly relate to the major objectives of Trade and Industrial Education.

Major Program Outcomes

The major outcomes for Trade and Industrial Education are to:

- Develop basic manipulative and technological skills relative to industrial occupations through a combination of laboratory experiences and work-based learning experiences.
- Provide technical information (principles and theory) with emphasis on the application of communications, mathematics, design, economics, science, and computer skills pertinent to employment and success in an industrial occupation.
- Provide instruction in such areas as human relations, safety and health, positive work habits, and employability skills.
- Develop the skills needed to exercise and follow effective leadership in fulfilling occupational social and civic responsibilities.

STANDARDS AND INDICATORS FOR TRADE AND INDUSTRIAL EDUCATION TEACHERS

Teacher education at the university level in Trade and Industrial Education recognizes prospective teachers possessing occupational competency in a trade and industrial occupation. The competency level of teachers is verified through actual work experiences and/or successful completion of a validated occupational competency examination in a trade or industry occupation either prior to entering a teaching position or during the first year. The degree of occupational competency needed by teachers in Trade and Industrial areas depends on the type of program and course in which the instructor will teach. Additional work experience through cooperative internships and/or content courses will be offered through the teacher education program and other agencies to overcome any occupational deficiencies based on individual needs. The chart below lists the standards and indicators for Trade and Industrial Education teachers.

Standards and Indicators Trade and Industrial Education

Standard 1: Teachers demonstrate competence in a specific skilled trade area.

Trade and Industrial Education Teachers:

- Indicator 1: Demonstrate trade area competencies based on industry skill standards.
- Indicator 2: Analyze the factors that influence content and practice within the specific occupational area.
- Indicator 3: Adapt emerging technologies to existing trade and industrial skill standards.
- Indicator 4: Demonstrate the ability to plan a job or activity by identifying the cost, time, equipment, tools, materials, labor, and other factors.

Standard 2: Teachers design and implement an instructional program that prepares students for active participation as citizens and workers within the occupational area.

Trade and Industrial Education Teachers:

- Indicator 1: Provide for the development of manipulative skills and technical knowledge needed for employment in the occupational area.
- Indicator 2: Integrate the academic skills needed to be successful for emerging and current careers within the occupational area.
- Indicator 3: Examine our economic system from both a producer and consumer perspective.

Indicator 4: Adapt instructional strategies and assessment procedures to accommodate students with special needs, including the development of school-to-adult transition plans.

Indicator 5: Construct learning experiences that integrate classroom instruction with work-based learning.

Standard 3: Teachers analyze the need for Trade and Industrial Education programs, implement a program according to needs, and develop a means to evaluate program results.

Trade and Industrial Education Teachers:

Indicator 1: Understand the history, philosophy, and contemporary practices of Trade and Industrial Education.

Indicator 2: Analyze Trade and Industrial occupations and job trends using the concept of occupational analysis.

Indicator 3: Teach, monitor, and assess safe practices that conform with state and national safety regulations, and provide documentation of safety understanding among students.

Indicator 4: Maintain a Trade and Industrial classroom and laboratory facility that maximizes instructional effectiveness and addresses the needs of all learners.

Indicator 5: Develop an organizational system for the purpose of effectively managing the instructional and laboratory program, including budgets, materials, tools, equipment, and consumable supplies, as well as student tasks and activities.

Indicator 6: Network with trade associations and industries that can serve as a resource for the Trade and Industrial subject being taught.

Indicator 7: Develop a performance assessment plan based on program and industry standards.

Indicator 8: Develop training plans and agreements for students in work-based learning.

Indicator 9: Help students obtain jobs in fields related to the specific trade area.

Indicator 10: Demonstrate the positive value of the Trade and Industrial Education program to the school and the community.

Standard 4: Teachers engage in a continuous process of professional development.

Trade and Industrial Education Teachers:

- Indicator 1: Demonstrate competence in the skilled trade area through appropriate, documented occupational experience (internship or documented) within the trade.
- Indicator 2: Remain knowledgeable about industry trends that influence practice and employment in the field.
- Indicator 3: Modify teaching practice based on evolving understanding of how students learn in Trade and Industrial Education, and upon research of best practices in Trade and Industrial Education (e.g., High Schools that Work, the Journal of Industrial Teacher Education, Techniques).

Standard 5: Teachers demonstrate instructional and assessment methods that are appropriate for Career and Technical Education programs.

Trade and Industrial Education Teachers:

- Indicator 1: Demonstrate effective methods of instruction in the content area.
- Indicator 2: Demonstrate the CTE VoCATS Instructional Management System to:
- Develop and administer objective and performance-based assessments for pre-, interim, and post-instructional use.
 - Evaluate and monitor student progress.
 - Analyze and use data to determine instructional plans.
 - Develop curriculum and instructional materials.
 - Use instructional technology to enhance learning.
- Indicator 3: Formulate self-reflection practices to assess progress.
- Indicator 4: Integrate academic core content with workplace-based learning situations.
- Indicator 5: Apply methodologies that are appropriate for the grade level (middle school and/or high school).
- Indicator 6: Employ strategies that meet the needs of diverse learner populations.

Standard 6: Teachers coordinate SkillsUSA, the Career and Technical student organization according to State and National Guidelines.

Trade and Industrial Education Teachers:

- Indicator 1: Link leadership activities, award programs, and competitive events to the curriculum.

- Indicator 2: Encourage and support student involvement in SkillsUSA.
- a. Recruit and retain members from diverse populations.
 - b. Inform students about the leadership, career, and personal development opportunities in SkillsUSA.
 - c. Ensure that members share responsibilities and participate in all aspects of the SkillsUSA and competitive events.
- Indicator 3: Manage an effective SkillsUSA.
- a. Identify the history and mission of SkillsUSA.
 - b. Formulate a chapter leadership plan that includes a constitution and bylaws.
 - c. Develop a challenging program of work and conduct well-planned, regularly scheduled meetings.
 - d. Establish and manage a budget and secure financing to support chapter activities.
 - e. Develop and maintain school and community support.
 - f. Maintain equipment and records.
 - g. Ensure that members have access to leadership and other opportunities, including training and guidance.
- Indicator 4: Identify and describe the process for establishing a chapter of SkillsUSA as an integral part of the Trade and Industrial Education program.
- Indicator 5: Apply principles, concepts, and activities needed for effectively managing and evaluating SkillsUSA chapters.
- Indicator 6: Integrate SkillsUSA competitive events into curriculum planning and instruction as a tool for reinforcing learning.

Standard 7: Teachers use strategies that facilitate student development of workplace knowledge and skills.

Trade and Industrial Education Teachers:

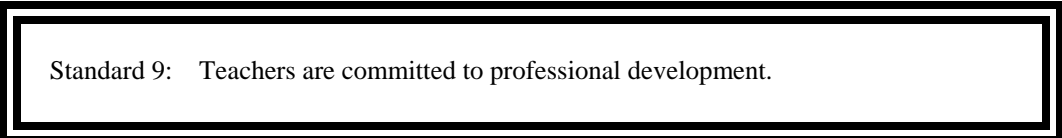
- Indicator 1: Implement and manage work-based learning experiences including apprenticeships, cooperative education, internships, school-based enterprises, job shadowing, community and service learning, field trips, and business ownership.
- Indicator 2: Develop collaborative working relationships with business and industry.
- Indicator 3: Identify legal, ethical, and safety issues in the workplace.
- Indicator 4: Develop employability skills appropriate to Career and Technical Education, including teamwork, information technology skills, problem-solving, decision-making, goal setting, and self-management.

Standard 8: Teachers integrate career development into the program, including career planning and readiness.



Trade and Industrial Education Teachers:

- Indicator 1: Develop student career decision-making.
- Indicator 2: Identify demands and responsibilities that are part of balancing work, family and life goals.
- Indicator 3: Describe career pathways and use them to develop career plans reflecting graduation requirements.
- Indicator 4: Identify continuing changes in gender roles and non-traditional career opportunities.
- Indicator 5: Facilitate student development of self-awareness, including:
 - a. Understanding relationships between personal qualities, education and training, and employment.
 - b. Developing confidence, character, leadership abilities, and teamwork skills.
- Indicator 6: Motivate students through real world connections.
- Indicator 7: Research career opportunities, employment trends, and industry standards to assist students in making career decisions.
- Indicator 8: Demonstrate the relationship between academic core content and experiences at work, home, and in the community.



Standard 9: Teachers are committed to professional development.

Trade and Industrial Education Teachers:

- Indicator 1: Participate in professional organizations for Career and Technical Education.
- Indicator 2: Create a program that reflects a changing workplace.
- Indicator 3: Engage in continual learning through formal and informal channels.
- Indicator 4: Integrate instructional technologies to enhance instruction.
- Indicator 5: Describe the historical significance of Career and Technical Education.
- Indicator 6: Interpret laws, regulations, and procedures that impact Career and Technical education.



Standard 10: Teachers conduct successful Trade and Industrial Education programs.

Trade and Industrial Education Teachers:

- Indicator 1: Maintain positive public relations within the community.
- Indicator 2: Establish, manage, and maintain an active advisory committee including community leaders.
- Indicator 3: Establish and manage appropriate budgets and secure financing from local, state and federal resources for classroom supplies, student organizations, and program equipment.
- Indicator 4: Develop a marketing/promotion program that will recruit and maintain enrollment.
- Indicator 5: Develop a program that promotes safety as identified by OSHA guidelines.
- Indicator 6: Design, manage and maintain instructional laboratories.
- Indicator 7: Use appropriate data from employment follow-up, community trends, and assessments to update program.
- Indicator 8: Work collaboratively with other teachers in the school for relevant integration.

The Professional Teacher

A Trade and Industrial Education teacher has accepted a unique challenge for himself/herself. You possess trade skills that are in demand. You are accustomed to filling the demand for your skills in the workplace. Now, you must prepare to fill the demand for your trade skills in the classroom. Teaching your trade skills to young people will require you to learn the “teaching” trade. Teaching is a new game and a new trade for you. Take the time to compare your personal knowledge of your respective trade with the course competencies that you have been hired to teach. It may be that you will discover that you will have as much to learn as you will have to teach.

Teaching requires a different set of skills from your trade skills. The teaching profession is as much a skilled trade as any of the trade areas that you represent. Just as it is important for your students to learn from you, it is even more important that you learn the teaching profession from “master” teachers. The important point in trade instruction is how the teacher must have mastery over both "trades". The trade preparatory instructor must know what is to be taught and how to deliver the content.

As a Trade and Industrial Education teacher you are representing two professions. The trade area that you know so well now becomes your second profession. Your new profession as a teacher must take the front seat. The effectiveness that you demonstrate in the classroom will determine how students, other teachers, and the community regard the trade that you represent. If you can be as skilled in the classroom as you are in your trade then you will be representing yourself as a true professional person dedicated to the quality teaching of your respective trade. The teaching trade is what this handbook is all about and good teaching habits can be learned. Just as a skilled technician can train an apprentice, a skilled instructor can teach a beginner how to teach. As you can well imagine, there are "teaching tricks" just as there are "tricks of the trade".

YOUR PROFESSIONAL ORGANIZATION

**THE NORTH CAROLINA ASSOCIATION
FOR CAREER AND TECHNICAL EDUCATION**

An important part of being a professional teacher is to be a member of your professional organization. Your professional organization is the North Carolina Association for Career and Technical Education (NCACTE). NCACTE provides you with a network of professional educators and business people who share a common goal of promoting Career and Technical education. As a professional educator you have a responsibility to be involved in a professional organization that supports your interests and is engaged in advocacy activities that keep your profession viable.

Your salary and benefits are paid by Career and Technical Education months of employment that are provided by state and federal monies controlled by the North Carolina State Legislature. In addition, the State Legislature provides money for local school systems to purchase supplies and equipment for the courses you teach. NCACTE is the only professional organization that is directly concerned and involved with issues that affect the funding for Career and Technical education.

A direct and tangible benefit of being a NCACTE member is that you are helping to fund a professional lobbyist that promotes our interests in the State Legislature and in the Governor's Office. NCACTE members receive a quarterly newsletter and a weekly NCACTE Legislative Newsletter. The Association has two professional development workshops a year and coordinates an "Exhibit Show" during the annual Career and Technical Education Summer Conference.

Every member of NCACTE is also a member of his/her program area division. This means that you must pay dues to the state association and to your T&I division. You have the option of joining the national association, which would qualify you to purchase professional liability insurance as an ACTE member. As of July 1, 2005, the dues are as follows:

State Association (NCACTE)	\$40.00
National Association (ACTE)	\$60.00
Trade and Industrial Ed. Division	\$16.00

Membership forms and information are available from your T&I Division President and/or Treasurer or from:

**Tom Jones, NCACTE Executive Director
P O Box G
Catawba, NC 28609
E-mail: tomhjones@earthlink.net
Phone: 828.241.3910**

Initial Licensure Program

The Initial Licensure Program (ILP), mandated by the State Board of Education, began in 1985 and was revised effective with the Excellent Schools Act in 1997. It is a three-year program that extends professional education preparation and offers the assessment and support necessary for an individual's professional growth. All beginning teachers are required to participate in an ILP.

Procedure

The initial licensing procedure begins when a person is assigned to work in an area for which he or she holds a license. Licensure of LEA employees will be automatically changed from inactive to active ILP status via the 408 personnel update process that usually occurs in January. LEAs should request an active ILP status only for individuals employed after the yearly automatic change has occurred. Non-public schools with an approved ILP plan must notify the Licensure Section of an employee's enrollment in an ILP. (Certain non-public institutions are included in the automatic personnel update process via direct computer access.)

Normally, a license with an active ILP status is issued for three years. If the license is in the last year of its cycle; it can be extended annually for up to two years. Automatic license extensions are not issued for individuals with an active ILP code, personnel administrators must make a written request to the Licensure Section for a one-year extension of the license.

An ILP participant must serve at least 50% of a day for three years in a teaching assignment appropriate to the area of initial licensure. Appropriate assignment follows in-field/out-of-field regulations that specify a match between license area and assignment. Individuals in positions inappropriate for validating the ILP evaluation criteria can have their initial licenses extended beyond the three-year period.

The ILP requires three years of participation. It is desirable, but not mandatory, that the three years be successive. However, the three years must be completed within a five-year period from the date of enrollment.

The initial license expires after three years of unsuccessful experience and a continuing license is not recommended by the LEA. The individual can return to an approved education program to correct deficiencies and earn a new initial license that allows him or her, when employed, another opportunity to meet the performance requirements.

Completion of ILP requirements in one teaching area satisfies the ILP requirement for all other teaching areas. Once continuing licensure has been earned in one teaching area, additional teaching areas do not require an ILP experience.

Initial Licensure Program Plans

ILP guidelines require the assignment of a mentor to each initially licensed person to facilitate a smooth and effective transition into the profession. The local school system designates a mentor for the beginning teacher. Additionally, the principal or designee shares the responsibility for providing support.

State law requires a minimum of four formal classroom observations per year, one of which must be for at least one instructional period. One observation should be preceded by a pre-conference and followed by a post conference. The other observations may be announced but must be for at

least one instructional period and followed by a post-conference. All observations must be conducted by personnel trained to assess the critical function areas of the appropriate performance appraisal instrument. One of the four observations must be conducted by a peer. The other three observations are required to be conducted by the principal and his/her designee.

An individual growth plan (IGP) that identifies goals, strategies, and progress in improving professional skills must be prepared for each initially licensed person. The plan should systematically address areas of professional development related to the INTASC Standards.

When an employee completes three full years of an ILP, the LEA must decide whether that person qualifies for continuing licensure. The decision to recommend or not recommend continuing licensure must be based on documentation of the competency level demonstrated on each critical function area. No later than April 15th of the participant's third year of employment, the locally designated official decides whether the employee will be recommended for continuing licensure. An individual must receive a minimum of "at standard" performance on all critical function areas of the performance appraisal instrument at the final observation prior to April 15th of the third year of employment.

Initial Licensure Program Timetable

<p>Year 1</p>	<p>The initially licensed teacher:</p> <ul style="list-style-type: none"> ▪ is assigned a mentor ▪ is provided an orientation ▪ develops an Individual Growth Plan ▪ is observed at least four times culminating with a summative evaluation on or before April 15
<p>Year 2</p>	<p>The initially licensed teacher:</p> <ul style="list-style-type: none"> ▪ continues to have a mentor teacher ▪ updates the Individual Growth Plan ▪ is observed at least four times culminating with a summative evaluation on or before April 15
<p>Year 3</p>	<p>The initially licensed teacher:</p> <ul style="list-style-type: none"> ▪ continues to have a mentor teacher ▪ updates the Individual Growth Plan ▪ is observed at least four times culminating with a summative evaluation on or before April 15

Career and Technical Education Licensure

The preferred route for earning career and technical education (vocational) licensure is from a college or university program approved by the State Board of Education. Provisional regulations outlined in this section may be used when there is the following:

- a critical shortage of teachers in the field
- limited number of college programs
- unique requirements for a career and technical education (vocational) area.

Provisional regulations specify the degree requirement, work experience, and/or course work for establishing licensure.

The table that follows lists the codes and descriptions for T&I career and technical education license areas.

Code	Description
740	Trade and Industrial Education
	• 74010 Collision Repair
	• 74015 Automotive Service
	• 74020 Cabinetmaking/Furniture
	• 74025 Carpentry
	• 74030 Cosmetology
	• 74035 Electrical Trades
	• 74040 Electronics
	• 74045 Printing and Graphics
	• 74050 Electro-Mechanical Maintenance
	• 74055 Masonry
	• 74060 Mechanical Systems-HV AC or Plumbing
	• 74065 Metals Manufacturing
	• 74070 Drafting
	• 74075 Textiles
	• 74080 Welding
	• 74085 Work Development (formerly Industrial Cooperative Training)
	• 74095 Specialized (Any other area of T&I that is not listed above)

Requesting provisional career and technical education licenses

Your LEA should request a career and technical education license using the appropriate forms.

To add provisional career and technical education (vocational) areas to an existing license use the following:

- Form I (Application to Add In-Field Licensing) and
- Form E (Verification of Experience) if applicable
- Form NE (Verification of Non-Teaching Experience) and form RN, if applicable.

To request an initial career and technical education license in areas that do not require the completion of an approved program, submit the following:

- Form CT
- FormA
- supporting documentation (for example: transcripts, etc.)
- \$85.00 process fee.

General Provisional Licensure Requirements

Work Experience

Qualifying for a provisional license may require specified degrees, or work experience, and course work depending on the program area. Evaluations for career and technical education areas are made by the Licensure Section at the request of the employing school system. If a license is provided as a result of a Licensure Section evaluation, a **Restricted License** is issued. This license limits the teacher to assignments in the specific career and technical education area on the license and is coded with a second program code digit of 5. Career and technical education teachers can earn **non-restricted licenses** by completing approved teacher education programs in the areas in which they exist.

Degree Requirements

A baccalaureate degree or an associate degree in the related field in which the teacher will be licensed is preferred in Trade and Industrial Education, but neither is required. Work experience can be used in place of education to get the initial license. Coursework is required of anyone not possessing a teaching degree.

Work Experience

Creditable work experience in a technical field appropriate to the career and technical education licensure area (preferably within the past five years) is required to qualify for provisional licensure. Work experience earned after age eighteen can be considered for either the work experience requirement or salary purposes.

In some cases, a 300-hour directed work experience/internship from an approved teacher education program can be substituted for a work experience requirement. In calculating non-teaching work experience credit, eligible experience is expressed in total number of full-time months, divided by twelve. If the quotient has a remainder of six months or more, it is rounded to the next full year.

Work experience beyond that required for licensure can be used to calculate experience for salary purposes. All eligible nonteaching experience can be used to calculate experience for salary purposes.

Note: In order to be creditable towards teaching experience for salary purposes, the non-teaching experience must be directly related to the career and technical development area. Experience is calculated on a calendar month basis and cannot be combined with other types of experience (for example, teaching assistant, teaching).

Calculating non-teaching experience

To be credited, non-teaching experience must be recommended by the employee's designated personnel administrator and is contingent on employment in the area.

Calculate the non-teaching experience by doing the following:

- total the full-time calendar months of experience
- divide the total months by 12 to determine the non-teaching work experience (if a remainder of 6 months round up by 1 year)

Note:

- If an individual holds more than one career and technical education area with qualifying experience, experience is credited only for the area with the highest experience. For example: A trades preparatory teacher has six years of carpentry experience and four years of electrician experience. The experience credited is based on the carpentry experience only.

Course work

Individuals must complete a minimum of six semester hours or the equivalent each year from the total list of requirements until all hours are completed. A maximum of 5 years is allowed to complete course work. Course work earned must be specifically applicable to meeting the requirements as specified.

If a test is required for the license area, individuals must meet the specified score by the time all course work is completed.

Clearing Alternative Route Licensure Requirements

To clear the provisional area the following general requirements must be completed based upon level of education at the point of hire.

CTE Work Experience Alternative Route License

Trade and Industrial Education CTE Work Experience Alternative Route License

Effective July 1, 2007

Career and Technical Ed Program Area Choose one of the three levels of academic preparation:	Eligibility Requirements for Employment	License Requirements																										
Trade and Industrial Education ✓ Bachelor's Degree	<p>Degree</p> <ul style="list-style-type: none"> Bachelor's Degree in field of certification <p>Work Experience</p> <ul style="list-style-type: none"> Two years work experience within past five years <p>Credential</p> <ul style="list-style-type: none"> Industry Certification/Credential »For the following courses, the listed exams are required before employment: <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credential.</u></td> </tr> <tr> <td>Auto Service Tech</td> <td>ASE Brake & Electrical/ Electronics</td> </tr> <tr> <td>Cosmetology</td> <td>Cosmetic Arts Board Instructor License</td> </tr> </table> <p>»For the following courses training in the certification area is required before employment:</p> <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credentials</u></td> </tr> <tr> <td>Networking I</td> <td>NET+ OR CCNA</td> </tr> <tr> <td>NET II, III</td> <td>CCNA</td> </tr> <tr> <td>CET I, II</td> <td>A+ (CompTIA)</td> </tr> </table>	<u>Courses</u>	<u>Credential.</u>	Auto Service Tech	ASE Brake & Electrical/ Electronics	Cosmetology	Cosmetic Arts Board Instructor License	<u>Courses</u>	<u>Credentials</u>	Networking I	NET+ OR CCNA	NET II, III	CCNA	CET I, II	A+ (CompTIA)	<p>Coursework *(21 hours --- 6 hours per year)</p> <ul style="list-style-type: none"> Curriculum, Instructional Planning and Assessments in Trade and Industrial Education OR INTRODUCTION TO TRADE AND INDUSTRIAL EDUCATION {required} Instructional Methods in Trade and Industrial Education OR INSTRUCTIONAL METHODS (required) [this requirement can be met by the 80 hour induction program] Reading in the Content Area Methods OR READING AND WRITING METHODS (required) Teaching Diverse Learners OR Special Populations OR SPECIAL POPULATIONS (required) . Classroom Management OR Learning Theory; Learning Styles; Motivation; How Adolescents Learn OR GENERAL PSYCHOLOGY (required) Environmental Safety and Health OR ENVIRONMENTAL SAFETY AND HEALTH (required) CAREER AND TECHNICAL STUDENT ORGANIZATION(required) <p>Induction</p> <ul style="list-style-type: none"> 80-hour T & I Teacher Induction Program sponsored by Career- and Technical Education, State Department of Public Instruction is required, [not required if instructional methods has been completed] <i>See attached 80 hr Induction requirement listing.</i> <p>Credential</p> <ul style="list-style-type: none"> Industry Certification/Credential: »For the following courses, the listed exams are required: <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credentials</u></td> </tr> <tr> <td>Networking I</td> <td>NET+ (CompTIA) or CCNA (CISCO)</td> </tr> <tr> <td>NET II, III</td> <td>CCNA (CISCO)</td> </tr> <tr> <td>CET I, II</td> <td>A+ (CompTIA)</td> </tr> </table> <p>»For the following courses, the listed exams are recommended:</p> <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credentials</u></td> </tr> <tr> <td colspan="2">See attached T&I Credential Matrix</td> </tr> </table>	<u>Courses</u>	<u>Credentials</u>	Networking I	NET+ (CompTIA) or CCNA (CISCO)	NET II, III	CCNA (CISCO)	CET I, II	A+ (CompTIA)	<u>Courses</u>	<u>Credentials</u>	See attached T&I Credential Matrix	
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** Prior to third year of teaching

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Trade and Industrial Education ✓ Associate's Degree	<p>Degree</p> <ul style="list-style-type: none"> Associate's Degree in field of certification <p>Work Experience</p> <ul style="list-style-type: none"> Four years work experience within past eight years. Two years experience is held in escrow and released for pay purposes if four year degree is completed. <p>Credential</p> <ul style="list-style-type: none"> Industry Certification/Credential »For the following courses, the listed exam s are required before employment: <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credential.</u></td> </tr> <tr> <td>Auto Service Tech</td> <td>ASE Brake & Electrical/ Electronics</td> </tr> <tr> <td>Cosmetology</td> <td>Cosmetic Arts Board Instructor License</td> </tr> </table> <p>»For the following courses training in the certification area is required before employment:</p> <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credentials</u></td> </tr> <tr> <td>Networking I</td> <td>NET+ OR CCNA</td> </tr> <tr> <td>NET II, III</td> <td>CCNA</td> </tr> <tr> <td>CET I, II</td> <td>A+ (CompTIA)</td> </tr> </table>	<u>Courses</u>	<u>Credential.</u>	Auto Service Tech	ASE Brake & Electrical/ Electronics	Cosmetology	Cosmetic Arts Board Instructor License	<u>Courses</u>	<u>Credentials</u>	Networking I	NET+ OR CCNA	NET II, III	CCNA	CET I, II	A+ (CompTIA)	<p>Coursework *(21 hours --- 6 hours per year)</p> <ul style="list-style-type: none"> Curriculum, Instructional Planning and Assessments in Trade and Industrial Education OR INTRODUCTION TO TRADE AND INDUSTRIAL EDUCATION {required} Instructional Methods in Trade and Industrial Education OR INSTRUCTIONAL METHODS (required) [this requirement can be met by the 80 hour induction program] Reading in the Content Area Methods OR READING AND WRITING METHODS (required) Teaching Diverse Learners OR Special Populations OR SPECIAL POPULATIONS (required) . Classroom Management OR Learning Theory; Learning Styles; Motivation; How Adolescents Learn OR GENERAL PSYCHOLOGY (required) Environmental Safety and Health OR ENVIRONMENTAL SAFETY AND HEALTH (required) CAREER AND TECHNICAL STUDENT ORGANIZATION(required) <p>Induction</p> <ul style="list-style-type: none"> 80-hour T & I Teacher Induction Program sponsored by Career- and Technical Education, State Department of Public Instruction is required, [not required if instructional methods has been completed] See attached 80 hr Induction requirement listing. <p>Credential</p> <ul style="list-style-type: none"> Industry Certification/Credential: »For the following courses, the listed exams are required: <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credentials</u></td> </tr> <tr> <td>Networking I</td> <td>NET+ (CompTIA) or CCNA (CISCO)</td> </tr> <tr> <td>NET II, III</td> <td>CCNA (CISCO)</td> </tr> <tr> <td>CET I, II</td> <td>A+ (CompTIA)</td> </tr> </table> <p>»For the following courses, the listed exams are recommended:</p> <table border="0"> <tr> <td><u>Courses</u></td> <td><u>Credentials</u></td> </tr> <tr> <td colspan="2">See attached T&I Credential Matrix</td> </tr> </table>	<u>Courses</u>	<u>Credentials</u>	Networking I	NET+ (CompTIA) or CCNA (CISCO)	NET II, III	CCNA (CISCO)	CET I, II	A+ (CompTIA)	<u>Courses</u>	<u>Credentials</u>	See attached T&I Credential Matrix	
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** Prior to third year of teaching

Career and Technical Ed Program Area Choose one of the three levels of academic preparation:	Eligibility Requirements for Employment	License Requirements																										
Trade and Industrial Education ✓ High School Diploma	<p>Degree</p> <ul style="list-style-type: none"> High School Diploma <p>Work Experience</p> <ul style="list-style-type: none"> Six years related work experience within past ten years is required. Four years experience is held in escrow. Two years experience is held in escrow and released for pay purposes when complete associate's degree and the additional two years will be released if complete bachelor's degree.. <p>Credential</p> <ul style="list-style-type: none"> Industry Certification/Credential »For the following courses, the listed exam s are required before employment: <table border="0"> <tr> <td>Courses</td> <td>Credential.</td> </tr> <tr> <td>Auto Service Tech</td> <td>ASE Brake & Electrical/ Electronics</td> </tr> <tr> <td>Cosmetology</td> <td>Cosmetic Arts Board Instructor License</td> </tr> </table> <p>»For the following courses training in the certification area is required before employment:</p> <table border="0"> <tr> <td>Courses</td> <td>Credentials</td> </tr> <tr> <td>Networking I</td> <td>NET+ OR CCNA</td> </tr> <tr> <td>NET II, III</td> <td>CCNA</td> </tr> <tr> <td>CET I, II</td> <td>A+ (CompTIA)</td> </tr> </table>	Courses	Credential.	Auto Service Tech	ASE Brake & Electrical/ Electronics	Cosmetology	Cosmetic Arts Board Instructor License	Courses	Credentials	Networking I	NET+ OR CCNA	NET II, III	CCNA	CET I, II	A+ (CompTIA)	<p>Coursework *(21 hours --- 6 hours per year)</p> <ul style="list-style-type: none"> Curriculum, Instructional Planning and Assessments in Trade and Industrial Education OR INTRODUCTION TO TRADE AND INDUSTRIAL EDUCATION {required} Instructional Methods in Trade and Industrial Education OR INSTRUCTIONAL METHODS (required) [this requirement can be met by the 80 hour induction program] Reading in the Content Area Methods OR READING AND WRITING METHODS (required) Teaching Diverse Learners OR Special Populations OR SPECIAL POPULATIONS (required) . Classroom Management OR Learning Theory; Learning Styles; Motivation; How Adolescents Learn OR GENERAL PSYCHOLOGY (required) Environmental Safety and Health OR ENVIRONMENTAL SAFETY AND HEALTH (required) CAREER AND TECHNICAL STUDENT ORGANIZATION(required) <p>Induction</p> <ul style="list-style-type: none"> 80-hour T & I Teacher Induction Program sponsored by Career- and Technical Education, State Department of Public Instruction is required, [not required if instructional methods has been completed] See attached 80 hr Induction requirement listing. <p>Credential</p> <ul style="list-style-type: none"> Industry Certification/Credential: »For the following courses, the listed exams are required: <table border="0"> <tr> <td>Courses</td> <td>Credentials</td> </tr> <tr> <td>Networking I</td> <td>NET+ (CompTIA) or CCNA (CISCO)</td> </tr> <tr> <td>NET II, III</td> <td>CCNA (CISCO)</td> </tr> <tr> <td>CET I, II</td> <td>A+ (CompTIA)</td> </tr> </table> <p>»For the following courses, the listed exams are recommended:</p> <table border="0"> <tr> <td>Courses</td> <td>Credentials</td> </tr> <tr> <td colspan="2">See attached T&I Credential Matrix</td> </tr> </table> <p>Care Academic Competence (prior to 2nd year of teaching)**</p> <ul style="list-style-type: none"> Praxis I Pre-professional skills Test OR Asset Test OR Accuplacer Test OR Work Keys 	Courses	Credentials	Networking I	NET+ (CompTIA) or CCNA (CISCO)	NET II, III	CCNA (CISCO)	CET I, II	A+ (CompTIA)	Courses	Credentials	See attached T&I Credential Matrix	
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** Prior to third year of teaching

Career and Technical Ed Program Area	Eligibility Requirements for Employment <i>Continued</i>	License Requirements																						
High School Diploma Teacher Requirement*		<p style="text-align: center;">Choices</p> <p>1. Praxis I Pre-Professional Skills Assessments (PPST)</p> <table border="0"> <thead> <tr> <th style="text-align: left;"><u>TESTs</u></th> <th style="text-align: right;">Scores</th> </tr> </thead> <tbody> <tr> <td>Reading</td> <td style="text-align: right;">176</td> </tr> <tr> <td>Mathematics</td> <td style="text-align: right;">173</td> </tr> <tr> <td>Writings</td> <td style="text-align: right;">173</td> </tr> <tr> <td colspan="2" style="text-align: center;">OR</td> </tr> </tbody> </table> <p>2. Asset</p> <table border="0"> <thead> <tr> <th style="text-align: left;"><u>TESTs</u></th> <th style="text-align: right;">Scores</th> </tr> </thead> <tbody> <tr> <td>Writing</td> <td style="text-align: right;">40</td> </tr> <tr> <td>Numerical Skills</td> <td style="text-align: right;">40</td> </tr> <tr> <td>Reading Skills</td> <td style="text-align: right;">40</td> </tr> <tr> <td>Elementary Algebra</td> <td style="text-align: right;">40</td> </tr> <tr> <td colspan="2" style="text-align: center;">OR</td> </tr> </tbody> </table> <p>3. Accuplacer: Scores are calculated by conversion to 40 aligned with Asset</p> <p><u>TESTs</u></p> <p>Reading Comprehension Sentence Skills Arithmetic Elementary Algebra College Level Mathematics</p> <p style="text-align: center;">OR</p> <p>4. Work Keys: Scores are calculated by conversion to 40 aligned with Asset</p> <p><u>TESTs</u></p> <p>Applied Math Locating Information Reading Technical Writing</p>	<u>TESTs</u>	Scores	Reading	176	Mathematics	173	Writings	173	OR		<u>TESTs</u>	Scores	Writing	40	Numerical Skills	40	Reading Skills	40	Elementary Algebra	40	OR	
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<p><u>Core Academic Competence</u> The Core Academic Assessment is required for Trade and Industrial Education teachers with the high school diploma being their highest degree in education. Teachers must pass one of the following assessments prior to their second year of teaching</p>																								

Teachers with a four year degree or two year associate degree in Trade and Industrial Education are not required to take the listed core academic competence assessment.

Trade and Industrial Education Credentials for High School Degree Candidates

CREDENTIALS REQUIRED BEFORE EMPLOYMENT		
Licensure Code	Licensure Description	Industry Credential
74015	Automotive Service Technology	Two ASE Certifications: Brakes and Electrical/Electronics
74030	Cosmetology	Cosmetic Art Board Certified Instructor
CREDENTIALS REQUIRED BEFORE LICENSE GRANTED		
Licensure Code	Licensure Description	Industry Credential
	Computer Engineering Technology	A+ (CompTIA)
	Networking I Network Engineering Technology II, III	Net+ (CompTIA) or CCNA CCNA
CREDENTIALS RECOMMENDED		
Licensure Code	Licensure Description	Industry Credential
74010	Collision Repair Technology	I-CAR ¹ or minimum of two ASE ² Certifications
74020	Cabinetmaking/Furniture	NCCER ³ Cabinetmaking Assessment or Woodlinks Certification
74025	Construction Technology/Carpentry	NCCER ³ Instructor Certification Training Program and either a Contractor's License or the Carpentry Assessment (NCCER ³)
74035	Electrical Trades	NCCER ³ Instructor Certification Training Program and either an Electrical Contractor's License or the Electrician's Assessment (NCCER ³)
74040	Electronics	NOCTI ¹⁰ , or ETA - 1 ⁴ , or IS CET ⁵
74045	Printing and Graphics	NOCTI ¹⁰ - Graphic Imaging Technology (Test #0137) or GAERF Certification ⁶
74050	Electro-Mechanical Maintenance	NCCER ³ Instructor Certification Training Program and Industrial Maintenance Assessment (NCCER ³)
74055	Masonry	NCCER Instructor Certification Training Program and either a Masonry Contractor's License or the Masonry Assessment (NCCER ³)
74060	Mechanical Systems - HV AC or Plumbing	NCCER ³ Instructor Certification Training Program and either an HV AC Contractor's License or the HV AC Assessment (NCCER ³)
74065	Metals Manufacturing	NIMS ⁷ Level I
74070	Drafting	NOCTI ¹⁰ - Drafting Occupations (Test #0360)
74080	Welding	NCCER ³ Instructor Certification Training Program and either the Welding Assessment (NCCER ³) or AWS ⁸ Certified Welding Educator
74085	Trade and Industrial Cooperative Training	Completion of credential in primary T & I certification BS degree in T & I area required
74095	Specialized	Determined by Specialized Request

I-CAR¹ - Inter-Industry Conference On Auto Collision Repair

ASE² - Automotive Service Excellence

NCCER³ - National Center for Construction Education Research

ETA-1⁴ - Basic Electronics Associate (ETA) International. Journeyman Certified Electronics Technician.

IS CET⁵ - Certified Electronics Associate Technician. Journeyman Certified Electronics Technicians

GAERF⁶ - Graphic Arts Education and Research Foundation

NIMS⁷ - National Institute for Metalworking Skills

AWS⁸ - American Welding Society

CompTIA⁹ - Vendor neutral certification organization for the IT Industry.

NOCTI¹⁰ - National Occupational Competency Testing Institute

NATEF¹¹ - National Automotive Technician's Education Foundation

80 Hr Induction Program for Trade and Industrial Education

Plan for 2007 – 2008

DESCRIPTION:

East Carolina University Continuing Education Division has developed, and will administer, 30 hrs of the required 80 hour T&I Induction program. ECU's courses consist of three 10 hr online modules. Teachers will contact ECU for enrollment and will work through them for completion of 30 hrs of **Core Components**. CareerSafe will provide the 10 hrs of online safety training. In addition to the 40 hours of Core Components, teachers must complete 40 hrs of **Additional Components** listed below. Each year substitutions are announced by the DPI Trade and Industrial Education. Upon completion of a module the participant will be provided with a CEU certificate. This certificate should be kept on file by the participant and their LEA's licensure department. Each participant is required to maintain records to complete the induction process to meet licensure certification.

CORE COMPONENTS (40 hours): Contact East Carolina University Division of Continuing Studies for Online Modules (Contact info: Ivan Wallace, Chair College of Education, 252-328-6983) and go to www.careersafeonline.com for the safety module.

Module	Topic	Dates	Hours Credit	Times	COST	Location
1	Safety	Available now via CareerSafe	10	Asynchronous	\$18	Online
2	Assessments using CMS	Available via ECU Aug 1, 2007	10	Asynchronous	\$100	Online
3	Instructional Management	Available via ECU Jan. 11, 2008	10	Asynchronous	\$100	Online
4	Classroom Management	Available via ECU Jan. 11, 2008	10	Asynchronous	\$100	Online

ADDITIONAL COMPONENTS (Select 40 hours):

Conference / Contact info	Dates	Hours Credit	Times	COST	Location
SkillsUSA Fall Leadership Conference <i>www.SkillsUSAnc.org</i>	Sept 2007	15	Sunday 3pm to Tuesday 1pm	\$150 (includes meals, materials and lodging)	Camp Dixie, Fayetteville NC
Fall NCACTEITE Conference <i>www.SkillsUSAnc.org</i>	Nov 2007	15	Thursday 3pm to Saturday 12pm	\$100	Atlantic Beach NC
SkillsUSA State Conference <i>www.SkillsUSAnc.org</i>	Apr 14-16 2007	15	Monday 1pm to Wednesday 12pm	\$60	Greensboro NC
SkillsUSA National Conference <i>www.SkillsUSAnc.org</i>	Jun 2008	20	Tuesday 8am to Friday 9pm	\$165	Kansas City MO.
CTE Summer Conference <i>www.ncpublicschools.org/cte/</i>	July 2007	20	Tuesday 1pm to Friday 12pm	\$135	Greensboro NC

Substitutions: Up to 20 hours of the following staff development opportunities may be used to substitute for the **Additional Components** listed above:

1. 10 hours credit for the R&R for New CTE Teachers Workshop offered annually by the Career and Technical Education Regional Coordinators. Interested participants may contact their local CTE administrators for further information.
2. Teacher certification requirement training for specific program area.
(Examples: NATEF, CISCO, NCCER, CET, NET, QTL, etc..)

Interested participants must contact NCDPI T&I program area consultant for further information.

Teacher Licensure Renewal

Upon completion of initial licensure requirements, a continuing professional license, valid for a period of five years from the effective date, is issued. A teaching certificate or license must be renewed every five years. Fifteen (15) units of renewal credit are required to be earned during the five year renewal period. Teachers must maintain a professional growth plan in accordance with Department of Public Instruction guidelines. Activities that may qualify for renewal credit should be aligned with the teacher's professional growth plan. Renewal credits may be earned by participating in the following types of activities:

1. Teaching experience (one unit for every year);
2. College or university credit activities;
3. Local in-service courses or workshops which carry at least one unit of renewal credit and which meet the following criteria:
 - A. Ten clock hours of direct training by the instructor will equal one unit of renewal credit;
 - B. Content and instructional activities designed in a sequential manner to develop specified competencies of a specific population;
 - C. Activity must be led by qualified instructional personnel and directly supervised by the sponsoring school unit;
 - D. Credit is granted on the basis of program completion and achievement of specified individual performance which is determined by individual evaluation of specified competencies;
 - E. Enrollment limited to assure accountability of credit granted;
4. Independent study of no more than five units of renewal credit per five-year renewal period which meets the following criteria:
 - A. Teachers and other licensed personnel help to develop local independent study procedures which the superintendent keeps on file and periodically send to each licensed employee;
 - B. The employee and the superintendent or his or her designee plan the experience in advance, including identification of competencies to be acquired and an evaluation to determine satisfactory achievement of those competencies; and
 - C. The amount of credit awarded is related to the complexity of the competencies to be achieved; and
5. Activities approved by the Department of Public Instruction.

Each LEA (local education agency-local school unit) and approved governing boards are responsible for assuring that all local courses and workshops and independent study activities meet the standards contained in the following regulation:

- ***Department of Public Instruction agencies authorized to administer renewal requirements locally shall adopt a procedure to determine the appropriateness of credit in advance of the renewal activity. In determining appropriateness the agency must consider direct relationship to critical job responsibilities, suitability of the content level and properly established credit for the activity. Each agency must report on participation in and effectiveness of renewal activities as the Department of Public Instruction requests.***

Persons who hold a North Carolina teaching certificate but who are not currently employed in the public schools may earn renewal credit in college or university credit activities, or local courses and workshops or activities approved by the Department of Public Instruction. The Department of Public Instruction will determine the appropriateness of the credits based on the direct relationship to the certificate field, the suitability of the content level and properly established credits for the activity. Additionally, persons who are not currently employed but wish to renew their license may do so by sending in their renewal credits, appropriate forms and required fees. All paperwork must be received by the Department of Public Instruction one month in advance of the license expiration date.

****History Note: Authority NC Constitution, Article IX, Sec. 5: G. S. 115C-12 (9) a; Effective July 1, 1986; Amended Effective March, 1990.***

Evolution of Career and Technical Education

It is important to understand the history of Career and Technical education. As a professional educator one needs an understanding of how one's profession developed. A good historical perspective helps a new teacher to develop a sense of pride in his/her profession. It also helps a teacher to understand more fully the importance teaching a career - technical education subject.

The name "Career and Technical" education has evolved over the years. It has evolved from "vocational" to "vocational and technical" to "career and technical" to Career and Technical education. One may hear all of these terms used to refer to our educational area. The use of one term or the other is often far more important to the professional educator than it is to anyone else. Changing terminology is a frequent occurrence in the education arena. It is important for the teacher to understand the significance of these changes, but it is also important for the teacher to understand how the world outside of education may have difficulty keeping up with our new terms.

Early Historical Development - The first major legislation for Trade and Industrial Education was the Smith Hughes Act of February 23, 1917. This act provided 7.2 million dollars annually to states for the promotion of Career and Technical Education. As a result of the act, a Federal Board of Vocational Education was established.

1917 -- 1963 - During the years of 1917 through 1963 there were numerous acts for funding of Career and Technical Education at the national level requiring state input in

order to receive federal dollars. These acts included many different fields of Career and Technical Education and served many special interest groups.

1963 -- 1997 - The Vocational Education Act of 1963 and 1968 authorized federal grants to the states for assisting them in developing new Career and Technical Education programs, and maintaining, extending, and improving those already in existence. In 1968, a specialized amendment was approved and greater flexibility in using Career and Technical education dollars was given to the states. These two authorizations placed Career and Technical Education as one of the major goals of the nation and were implemented to hopefully resolve major unrest of our nation. Unfortunately, as with most social problems, education is only part of the answer. In 1984, the Carl D. Perkins Vocational Education Act was passed and since that date to the current year, extensions of the Carl D. Perkins Act have been passed by the federal government. This act has provided special funding for handicapped and special needs populations.

1997 -- Present - The Carl D. Perkins Act is currently being considered for renewal. The Perkins Act is important because it provides special funds to serve special needs students enrolled in career - technical education courses. It further provides funds to support Tech Prep initiatives, career development initiatives, and assessment strategies. Without funds generated by the Perkins Act, North Carolina would lose substantial and critical funding for many specialized programs and for many services delivered to students who need special equipment and extra instructional support. In addition, North Carolina would lose most of the program area consultants employed by the Department of Public Instruction.

Career and Technical Education in North Carolina

Planners and decision makers in North Carolina determined some years ago that Career and Technical Education should be made accessible to all citizens within the State. Therefore, they designed a comprehensive network of schools which made Career and Technical education accessible to virtually every adult and youth within the state in a variety of Career and Technical education course and program offerings. Depending on the population and manpower needs of the area, these were made available through secondary and post-secondary programs. Several types of schools were designed to provide these programs.

1. Secondary Schools

- A. Comprehensive High School-Designed to meet the academic needs of all the community's students. These schools usually include some traditional career & technical curricula.
- B. County or Area Career Center-The career center operates independently of non-Career and Technical education programs which are offered in the comprehensive high schools. The school is generally located centrally, within a school district, where it can serve the occupational needs of several high schools. Students are usually bused to the school for two hour blocks of instruction and then returned to the home school for their traditional non-career - technical educational requirements.
- C. Several LEA's within the state, because of sparsely populated areas, cannot support the types of program designs suggested above. For this reason some exceptions exist which use a portion or a combination of those designs. Some

schools serve a dual purpose. As an example, a certain school may serve as a comprehensive high school for students within the system but serve as career center for students in another LEA.

2. Post-secondary Schools

- A. Community College and Technical Institutes - The North Carolina plan for post-secondary Career and Technical education is provided through public two-year institutions located strategically throughout the state. The curriculum offered is based on community needs. These schools offer a combination of career - technical education job preparatory courses and college parallel programs.
- B. Public Universities - There are several four-year state universities which offer career - technical education certification and degree programs. Individual inquiry should be made for specific requirements, admissions and registration information.

3. Administration of Career and Technical Education

All new instructors are anxious to know who is in charge and the structure of the appropriate chain of command with the school. There are certain rules and regulations within the school which govern the actions of Career and Technical education instructors. A brief explanation of the instructor's role within the school administration should provide some valuable insight as to their responsibilities.

Administration at the Local Level

- 1. The board of education is a non-partisan elected body which sets local education policies and standards. The local board may not countermand established state or federal school statutes.
- 2. The local superintendent is the chief administrator in the LEA and as such carries out the policies of the board of education.
- 3. The Career and Technical education director coordinates the Career and Technical education program.
- 4. The building principal and designated vice-principals are responsible for education problems arising within their school building.
- 5. The department chairperson is responsible for specific departmental matters.
- 6. The secondary instructor is responsible for specific area curricular matters and delivery. A job description should be available concerning the role and responsibility of the instructor. Often, however, questions or concerns of the instructor fall outside of the limits of the job description. If this occurs, the immediate administrator is the logical beginning source within the chain of command for concerns about job responsibilities. It is always wise to consult job description statements and to become familiar with their implications.

Administration at the State Level

The **State Board of Education** in North Carolina is composed of the Lieutenant Governor (ex officio), the State Treasurer (ex officio), and eleven (11) members; (one [1] per educational region and three [3] at large). The members are appointed by the governor and serve staggered, overlapping terms.

The **Department of Public Instruction** carries out the educational policies as laid down by the State Board of Education. The State Superintendent of Public Instruction is the chief administrative officer. This is an elected position with a four-year term.

The **NC Commission on Workforce Development** is responsible for recommending policies and strategies that will enable the state's workforce to compete in the current and future global economy. The Commission's mission is: "To establish and guide a world class workforce development system for North Carolina. This system will be comprehensive, integrated, relevant, and effective. It will produce well-educated, highly skilled workers who perform at high levels and work in economically viable enterprises that provide good jobs at good wages".

For additional information contact: Beth Lucas, Senior Policy Associate, N.C. Commission on Workforce Development, New Education Building, Room 598, Raleigh, NC Phone(919)715.3300

The **North Carolina State Superintendent's** staff is composed of a Deputy, Associates and Assistants to the State Superintendent, and Division Directors. Included among these divisions is one for Instructional Services. Career and Technical Education is a part of Instructional Services. Career and Technical Education is managed by Section Chiefs for the program areas in Career and Technical Education. The educational areas are: Agriculture, Business, Career Development, Family and Consumer Sciences, Health Occupations, Marketing Technology, and Trade and Industrial.

Safety

Every year accidents take their toll in industry and in the school laboratory. Injuries during shop class account for 7% of injuries at school (Knight, Junkins, Lightfoot, Cazier, Olson. *Injuries Sustained by Students in Shop Class*; Pediatrics 2000;106:10--3). Because of the serious nature of accidents teacher should have a comprehensive safety program that includes: communication, instruction, evaluation, documentation, and enforcement.

Communication

1. Develop a comprehensive school safety policy.
2. Develop a set of classroom and equipment safety rules.
3. Inform the parents and students of school and classroom safety policy and rules.
4. Inform the administration of classroom and equipment safety rules.
5. Post safety rules.

Instruction

1. Provide instruction that includes all the senses.
2. Safety rules and operational procedures should be:
 - a) in writing (handouts),
 - b) read and discussed in class,
 - c) demonstrated by the instructor,
 - d) assessed in writing, and
 - e) assessed by student performance.

Evaluation

1. The student should pass a written general shop safety test and a written safety test on each major piece of equipment with a 100% score.
2. If the student is unable to pass a written test with a 100% score after two or three times, have them write the information or questions on the back of the test with the correct answers.
3. The student should pass a teacher observed performance assessment of specific operations in a safe manner.
4. If the student cannot pass the assessments, they should only be allowed to work under direct teacher supervision.

Documentation

1. Keep accurate attendance records.
2. Provide makeup instruction to students for any discussions or demonstrations missed by the students.
3. Provide makeup assessments for any written tests or performance assessments missed by the students.

Enforcement

1. Develop a system of enforcement with realistic rewards and punishments.
2. Communicate your system to the administration, students, and parents.
3. Enforce safety rules in a fair and consistent manner.

A safety program will only be as good as you make it. However, administrators, instructors, purchasing agents, students, school committees, maintenance personnel, and parents must take an active role in the safety effort.

Remember

SAFETY IS AN ATTITUDE!!!

Personal Protective Equipment

A major component of safety is Personal Protective Equipment (PPE) which includes such items as helmets, gloves, goggles, respirators, special foot wear and other items that guard students against such hazards as flying particles, noise, dangerous chemicals, and electric shock. However, it is important to work safely at all times and not let PPE devices create a false feeling of security.

Quality is an important factor to keep in mind when purchasing PPE devices: Make sure that the device carries an American National Standards Institute (ANSI) label or a NIOSH or Mine Safety and Health Administration (MSHA) label. Quality pays for itself.

The process of selecting PPE devices is to first, identify the hazard, then second, to determine the degree of hazard. Select the PPE device that meets or exceeds the requirements set up by federal, state, or local regulations.

The teacher or supervisor who is aware of the health hazards created by the biological, physical, and chemical agents found in the laboratory must take the first steps to limit these hazards. By applying control measures one can limit the dangers and provide sufficient opportunity for work to take place.

Eye Safety

North Carolina General Assembly General Statutes govern eye safety in Career and Technical Education programs. The eye safety law in its entirety is shown below.

NCGA General Statutes - Chapter 115C. Elementary and Secondary Education
Chapter 115C.

Elementary and Secondary Education.

SUBCHAPTER I. GENERAL PROVISIONS.

Article 10.

Vocational and Technical Education.

Part 3. Eye Safety Devices Required.

§ 115C-166. Eye protection devices required in certain courses.

The governing board or authority of any public or private school or educational institution within the State, wherein shops or laboratories are conducted providing instructional or experimental programs involving:

- (1) Hot solids, liquids or molten metals;
- (2) Milling, sawing, turning, shaping, cutting, or stamping of any solid materials;
- (3) Heat treatment, tempering, or kiln firing of any metal or other materials;
- (4) Gas or electric arc welding;

- (5) Repair or servicing of any vehicle; or
- (6) Caustic or explosive chemicals or materials,

shall provide for and require that every student and teacher wear industrial-quality eye protective devices at all times while participating in any such program. These industrial-quality eye protective devices shall be furnished free of charge to the student and teacher. (1969, c. 1050, s. 1; 1981, c. 423, s. 1.)

§ 115C-167. Visitors to wear eye safety devices.

Visitors to such shops and laboratories shall be furnished with and required to wear such eye safety devices while such programs are in progress. (1977, c. 1050, s. 2; 1981, c. 423, s. 1.)

§ 115C-168. "Industrial-quality eye protective devices" defined.

"Industrial-quality eye protective devices", as used in G.S. 115C-166, means devices meeting the standards of the U.S.A. Standard Practice for Occupational and Educational Eye and Face Protection, Z 87.1-1968 approved by the U.S.A. Standards Institute, Inc. (1969, c. 1050, s. 3; 1981, c. 423, s. 1.)

§ 115C-169. Corrective-protective devices.

In those cases where corrective-protective devices that require prescription ophthalmic lenses are necessary, such devices shall only be supplied by those persons licensed by the State to prescribe or supply corrective-protective devices. (1969, c. 1050, s. 4; 1981, c. 423, s. 1.)

Generally there are two reasons for eye injuries in the laboratory. The first and most obvious reason is not wearing eye protection. The second is wearing the wrong eye protection. The industrial/vocational laboratory is full of a variety of hazards: flying objects, splashes of corrosive liquids, molten metals, rust, and harmful radiation. In almost 70 percent of the accidents that result in eye injury, the cause is a flying or falling object. Three-fifths of these objects were smaller than a pin head. One-fifth of the eye injuries are caused by chemicals.

How can eye injuries be prevented? **ALWAYS WEAR EFFECTIVE EYE PROTECTION.** To be effective, the eye protection must be the correct type and properly fitted. A second and more important aspect of preventing eye injuries is to educate the student to use the proper type of eye protection at all times. Require eye protection to be worn. Do not compromise on this requirement. As a teacher you must model the wearing of eye protection and enforce the rule that requires the wearing of appropriate eye protection!

For additional assistance with your eye safety program, contact Prevent Blindness North Carolina at 919-755-5044. The agency is located at 4011 West Chase Blvd, Suite 225, Raleigh, NC 27607. They can provide you with excellent audio visual aids, posters, and brochures on eye safety and especially eye safety in the school laboratory. Some of the aids are free of charge while some are available for a small fee.

In addition to protecting the eye from physical and chemical damage, they also need to be protected from radiation. Infrared, visible, and ultraviolet radiation are manifestations of the same kind of electromagnetic radiation differing only in frequency, wave length, or

energy level. The following paragraphs will describe the effects of the three types of radiation on the eye and explain what one can do to work safely with these levels of radiation.

Infrared radiation (IR) does not penetrate below the superficial layer of the skin. Its only effect is to heat the layers of the skin and tissue below it and damage the eye. Infrared radiation presents a negligible health hazard except to the eye.

In the laboratory we could find IR in or near drying and baking ovens, around electric arc and flame cutting devices, and dehydrating units. Low doses of IR over the years may not be felt, but may cause serious permanent damage to the cornea, iris, retina, and lens of the eye. It can produce "heat cataracts"-- an opacity of the rear surface of the lens. This problem is found frequently among glassblowers and persons who work near industrial ovens and furnaces.

Ultraviolet radiation (UV) is the portion of the sunlight that causes sunburn. Extended exposure to UV has been identified as causing skin cancer. Many welding processes, especially electric arc, produce UV radiation which can damage the eye or burn the skin. Many arc welders are aware of a sensation of sand in the eyes, commonly called "arc-eye". This painful condition occurs six to eight hours after exposure and is the result of excessive exposure to UV rays.

The best protection from infrared and ultraviolet radiation is to wear goggles or a welding helmet with the appropriate shade lens, wear gloves, and cover all skin with appropriate clothing when working with processes that produce IR and UV rays. It is also important to take precautions to shield other persons in the area by using screens or other means of blocking the radiation. When it is not possible to completely screen other persons from the radiation have them wear tinted safety glasses with tinted side shields and protective clothing.

The most common form of radiation encountered in the school setting is visible radiation. Visible radiation comes from the sun, artificial light, arc welding processes, and highly incandescent bodies. The physiological responses to visible light include adaptive, pupillary reflex, partial and full lid closure and shading of the eyes to prevent excessive brightness from being focused on the retina. Studies have shown that too much light and/or too little light can be hazardous to the students in the classroom and laboratory.

Too much light causes glare and causes the eyes to become tired. Too little light forces the eyes to work very hard to see and causes fatigue. A tired or fatigued person is less efficient and more prone to accidents. It is recommended that you consult one of the many studies available through OSHA, NIOSH, the National Safety Council, or any number of safety texts for the recommended light levels for your particular activities.

Other radiation forms that are making their way into the laboratory that may need some special attention are laser, radio frequency waves, microwaves, and radar. If your laboratory uses devices that produce these radiation forms, you should consult your nearest safety office for information about how to handle these types of radiation.

Hearing Safety

The first question to be addressed when discussing hearing safety is, "What is noise?" Essentially, noise is defined as unwanted sound. Of course, noise is defined differently by various individuals. To some the sound of children is noise, to others, noise is rock music. Noise isn't noise until one's brain makes that distinction.

It is very difficult to make a definite statement about how much noise it takes to destroy the hearing because there are just too many variables involved. The four most important variables are:

- The level of the sound as measured in decibels.
- The length of time one is exposed to sound.
- The number and length of quiet (recovery) time between periods of sound
- Personal sensitivity to or tolerance for sound.

If students are exposed to high decibel levels of sound for even short periods, it would be prudent to furnish them earplugs to protect their hearing.

Protection from Toxic Materials

In order for a hazardous material to exert its toxic effect, it must come in contact with the body cells. There are three ways toxic materials such as liquids, gases, mists, dusts, fumes and vapors can enter the body: ingestion (through the mouth), skin absorption, and inhalation (through the lungs). Of the three modes of entry, ingestion is the least common. A harmful quantity of toxic material can be swallowed accidentally, but this is not common.

The second mode of entry for hazardous materials is through skin absorption. Some substances are absorbed by way of the openings for hair follicles; others dissolve in the fats and oils of the skin. Of all occupational diseases, skin ailments are the most frequent. Five important causes of occupational dermatoses are plants, biological agents, physical agents, mechanical agents, and chemical agents.

The third mode of entry is inhalation. This is an important mode of entry because of the rapidity with which toxic materials can be absorbed into the lungs, passed into the blood stream, and reach the brain. Inhalation hazards arise from excessive concentrations of mists, vapors, gases, and solids that are in the form of dusts and fumes.

Welding operations in particular produce toxic fumes as a result of heating or UV exposure of the many chemicals and materials that are used to protect and clean metals. Substances such as lead, cadmium, zinc, and chlorinated hydro-carbons are used in paints, plating materials, cleaning materials, and refrigerants.

When students work with toxic materials it is important to educate them about the dangers of the materials, protective measures, and first aid treatments for the specific materials being used. This instruction should include information on Material Safety Data Sheets (MSDS) and how to use them. The best way to prevent skin contact with offending agents is to isolate the operations as much as possible and to use appropriate protective clothing including footwear. Also make eye-washing and dousing showers readily available. To prevent inhalation of toxic fumes isolate the activities and provide

adequate ventilation. If it is not possible to ventilate an area properly, breathing protection should be used. When it is necessary to use high level toxic agents, require the students to do frequent and thorough washing with appropriate cleaners.

Foot Safety

Many of the Trade and Industrial Education programs require the movement of heavy tools, equipment, and materials. It is important to advise students of the danger of injury to the feet and toes when working with heavy and/or sharp objects. Advise students to wear footwear that will protect their feet. This may include wearing all leather and/or safety toe boots or shoes.

First Response

Accidents will occur in the laboratory. Regardless of how carefully one prepares the facility, gives proper instruction, provides for a safe environment, and selects appropriate tools and equipment, there will be accidents in the laboratory. As the person in charge of the facility and the one there when the program is in operation, you will most likely be the first person on the scene when the accident occurs. What will you do? How will you react? The teacher must realize that the anxiety level of the other students and, more importantly, the anxiety level of the injured student will be affected by the manner in which you handle the emergency situation.

It is highly recommended that every teacher that teaches in a laboratory setting have a current American Red Cross first aid certificate or an equivalent level of first aid training. Teachers unfamiliar with first aid procedures should enroll in an in-service program as soon as possible. However, no matter how well trained the teacher is in first aid, only immediate temporary care should be administered. It is recommended that the following be implemented to assure proper channels of communication during an emergency:

- Procedures should be adopted by every school and regularly reviewed to set methods of communication in event of an emergency.
- The order of notification under the following condition:
If serious injury (UNCONTROLLABLE situation)
 - 1-school nurse
 - 2-ambulance
 - 3-principal
 - 4-parentsIf serious Injury (CONTROLLABLE situation)
 - 1-school nurse
 - 2-principal
 - 3-parents
- Telephone: Each department should have communication with the office. Emergency telephone numbers should be conspicuously posted with the procedure for dialing an "outside" line in clear and easy view.
- A file card should be maintained in each school for all students. This card should include the names and telephone numbers of parents or guardians to be notified in case of an emergency.

Emergency aids for laboratories might include first aid equipment and as indicated earlier, emergency phone numbers. A portable first aid kit should be provided in each laboratory

for aid to minor cuts, burns, and abrasions. This first aid kit should be located in a wall cabinet and designated with a green cross.

The American Red Cross recommends the following immediate procedures when an accident occurs.

- Obtain the needed help
- Keep the person lying down. Do NOT move!
- Control any bleeding
- Apply Coronary Pulmonary Resuscitation (CPR) (if breathing and heart has stopped).
- Prevent or treat for shock.
- Dress and cover wounds properly.
- For specific poisons, administer the prescribed antidotes.

Parents should be notified immediately in all cases of illness or injury. If the student is to be sent home or elsewhere, the parents should arrange for transportation. The principal should be notified and is responsible for seeing that action is taken that is in the best interest of the student.

If the injury is serious, do not attempt to move the student except for first aid procedures until professional help arrives.

Treat cuts, burns, or bruises, however minor, by the school nurse or another qualified person designated by the school administration. Never attempt to treat or remove particles from the eye in any manner other than those prescribed by first aid procedures.

**Note: The school nurse is not the teacher of a Health Occupations course.*

FILL OUT AN ACCIDENT REPORT FOR EVERY ACCIDENT!!!

Teacher Responsibility and Liability

The Law

As indicated earlier, safety is the responsibility of everyone in the school setting. However, as the manager of learning activities in the instructional program, the teacher is primarily responsible for the safety of each person in the program. Safety instruction cannot be taught in one or two easy lessons and forgotten, but should be a way of life in every person's living and working day.

When a teacher signs a contract to teach in a school setting he/she assumes a contractual responsibility to deliver quality instruction and to be liable for the activities, conditions, and individuals that enter his/her classroom and/or laboratory. To be liable is to be responsible.

In the past, school districts have been protected from suit for negligence because of common law, governmental, and sovereign immunity. In recent years; however, the courts have begun to change these rules. Today, teachers and administrators are liable in most states for personal acts of negligence under the general provisions of tort law. The concept of liability is always in effect in that being liable means being responsible. It is

when an injury is caused as a result of an individual's failure to act as a reasonable and prudent person would act under similar circumstances that we see teachers and administrators in courts defending their actions.

Negligence is usually the key to any liability tort. Negligence can be described as the lack of due diligence and care or the failure of an individual to act as a reasonably prudent and careful person. It should be understood that the fundamental law governing the teacher-student relationship requires the avoidance of "negligent" conduct which might produce harm and/or injury to the student. This is extremely important with the increased activities in the modern school curriculum and the complexities of Career and Technical education laboratories where more laboratories, more tools, more equipment, and more people are adding to teacher responsibility.

Approximately one out of every eight school accidents happen in a school laboratory area. For this reason alone, the instructor assigned to teach in a laboratory setting needs to be aware of the concepts that separate the different aspects of responsibility versus negligence. In order that instructors may eliminate or curtail the charge of negligence, they should bear in mind some of the basic elements of negligence. The basic elements of negligence are:

- Failure of any individual to act so as to protect others from necessary risks.
- Failure to act as a reasonably prudent and careful person would act under the circumstances involved.
- Lack of due diligence or care.
- Permitting a person to use an object or to engage in an activity when the teacher is aware he is not knowledgeable and may cause injury to himself or others.

General agreement among authorities on school law is that teachers will likely be considered negligent under the following conditions, should an accident to a student occur:

- Absence of the teacher from the teaching area while pupils are in the teaching area.
- Teacher leaving the teaching area with an unqualified person in charge.
- Pupils using equipment in the laboratory which has not been approved by the board of education. (Some teachers bring in personal equipment to the school laboratory.)
- Permitting pupils to work in the laboratory without acceptable supervision.
- Permitting pupils not enrolled in laboratory class to use power equipment.
- Pupils being sent outside the laboratory to perform hazardous duties.
- Making the use of power tools compulsory.
- Allowing pupils that may need special assistance to use power equipment without any assistance. Some physical and some mental conditions should make a pupil ineligible insofar as the use of some power tools is concerned.
- Failure to keep written reports of **EACH and EVERY ACCIDENT** occurring in the school laboratory regardless of injury.
- Failure to get written statements from witnesses in case of an accident.
- Failure to administer safety tests and then to retain the tests as evidence of a student's adequate knowledge of safety related to specific pieces of equipment.

- Failure of the teacher to keep in mind the fact that students are children and the actions of children are guided by childish impulses.
- Failure to realize that the case mentioned above is defined by law as greater caution when dealing with children than with adults.
- Allowing pupils to work in the laboratory environment without proper personal protective equipment (i.e. safety glasses, face shields, gloves, etc.) as required by law.
- Allowing poor housekeeping practices that can result in hazardous conditions.
- Striking students.

Negligence consists in the failure to act as a reasonable, prudent and careful person would under the circumstances involved. The presence or absence of care demonstrated by a teacher is usually a question for the jury. Another point to keep in mind is the teacher has professional and parental responsibility with regard to student behavior. The teacher's duties and rights are equal to, or greater than, those of the parent insofar as negligence is concerned.

Effective Teacher Training

The state of North Carolina adopted the Effective Teacher Training model in 1987. Until recently this course was required of all teachers employed in North Carolina's public schools. This requirement is now at the discretion of each LEA. The Effective Teacher Training course can provide some very critical training for new teachers. The following is an overview of the course, "Effective Teacher Training".

The effective teacher training program model consists of five (5) skill areas: Planning Skills, Instructional Skills, Behavior Management Skills, Human Relations Skills, and Professional Growth Skills. Each of the five skill areas have support components which when implemented fully lead to teacher effectiveness. The components that support planning skills are learning expectations, time management, and instructional preparation. The components that support instructional skills are instructional feedback, presentation and monitoring. The component that supports behavior management skills is student interaction. The component that supports human relations skills is social interaction. The components that support professional growth are work-related activities and learning evaluation.

Effective schools have the following: Strong instructional leadership of a principal, clear instructional focus, positive school climate conducive to teaching and learning, teacher behaviors that convey high expectations and program improvement based on measurement of student achievement. The principal's leadership in instructional tasks, expectations of teachers and students, visibility and communication skills is vital to the effectiveness of the school. Instructional personnel who are knowledgeable, caring, and actively involved create learning environments that are cooperative, positive, and successful.

Ongoing assessment of the total program including student assessment provides growth, revision, and improvement of the program based on identified goals.

Teachers need to provide feedback regarding corrections or incorrectness of both in-class work and out-of-class work as promptly as possible. Teachers should maintain clear, firm and reasonable work standards and due dates and circulate during class work to check on students' performance.

Teachers need to be willing to carry out non-instructional duties as assigned or as the need is perceived as well as have a plan for professional development that is carried to its fulfillment. Each LEA assures the completion of the Effective Teacher Training course for all teachers in its system.

Principles of Learning

Effective learning takes place in the Career and Technical education programs of North Carolina where programs exemplify excellence of instruction. The principles of learning which underlie effective instruction and key teaching components are presented as part of a comprehensive whole.

Learning has been defined as "the process of gaining knowledge and/or skills". This definition is frequently expanded to include the concept that learning also "changes one's behavior". These are the two operational elements for the learning process. Therefore, one of the major functions of the teacher is to structure and manage the learning environment so that the learner will gain selected cognitive and psychomotor skills which will result in the desired behavioral changes. The following is a brief overview of certain principles of learning.

- 1. Learning occurs within the learner.**
 - * Learning is not imposed from the outside.
 - * The learner must want to learn and activate the learning process.
 - * Teaching facilitates learning. The ability to learn may be enhanced through appropriate learning strategies.
 - * Good teachers help students discover their own needs and goals. Teaching provides many avenues for meeting these needs and goals and assists with motivating the student.
- 2. Learning is the direct consequence of experience.**
 - * Experience is the best teacher.
 - * Personal involvement in the activity is invaluable.
 - * We learn what we do. Therefore, hands-on and on-the-job training are valuable learning tools.
 - * The learning environment should be realistic, that is, it should replicate the real world as much as possible.
- 3. Learning is a highly unique and individual process.**
 - * No two people are exactly alike, not even in their learning styles.
 - * Some people learn best by doing, others by hearing, and still others by seeing.
 - * The effect of sensory experiences varies with the individual.
 - * Learning rates vary with individuals. This rate may change with the nature of the subject matter and/or the physical development of the learner.
 - * Students need help in analyzing their style of learning so they can find the most effective way to pursue learning at their own rate.
- 4. Learning is emotional as well as intellectual.**
 - * Behavior is affected by how a person feels about a thing.

- * It is true that new knowledge can affect attitudes, thus bringing about changes in behavior toward a person or thing.
 - * Learners need to feel comfortable, threat-free, and at peace with those around them to learn best. This is really a description of an emotionally stable, calm environment.
5. **Learning becomes more permanent when the learner is given the opportunity to apply what has been learned.**
 - * The time between initial learning and application should be very short.
 - * Since what is learned is based on what is done, hands-on experiences, simulations and OJT are valuable learning tools.
 6. **The presentation of learning experiences in a logical order makes learning an easier process.**
 - * The most common order of learning is from the simple to the complex- or from the basic to the specialized.
 - * Step by step or incremental learning is important.
 - * Mastery of step one must precede the study of step two. Step two should be mastered before step three is attempted, and so on.
 - * Elementary tasks should be mastered before complex tasks are attempted.
 7. **Early success in the learning process tends to improve the rate of learning.**
 - * "Success breeds success."
 - * Success must be spaced at calculated intervals to ensure continued learner interest and attention.
 - * Mastery of incremental steps and achievement of short-term goals are ways of achieving early success.
 8. **Learning retention is improved through use.**
 - * Learning retention can be improved through repetition.
 - * The learner must have the opportunity to demonstrate what has been learned.
 - * Practice must be correct practice and appropriate for the goal or objective. Skills practiced incorrectly will be learned incorrectly.
 9. **Learning is facilitated in an atmosphere where differences are permitted and encouraged.**
 - * "Different" is not the same as "deficient".
 - * Innovation, creativity, originality, the ability to do problem-solving could not exist without differences.
 - * The learner needs to know that it is acceptable to be different.
 - * Individualized instruction and self-pacing allows for differences.
 - * Individual differences should not be allowed to interfere with the learning of others.
 10. **Learning is facilitated where evaluation is seen as a helpful, cooperative process, and where self-evaluation is encouraged.**
 - * Evaluation should be seen as supportive of improvement, not punitive.
 - * Evaluations should be frequent and varied. They should come in many forms, not just as report cards and tests. Evaluations should include tests and report cards. Additional evaluation methods including written assessments, oral comments, informal observations, and examination of in-progress and completed projects should be used.
 - * Evaluation should present a clear assessment in order that appropriate remediation can be planned.

- * Evaluation should be a positive and cooperative effort between the learner, the teacher, and the peer group members.
- * Self-evaluation should be encouraged.

11. Learning is easier when each learner is made to feel his/her worth as an individual, when each is accepted and respected.

- * Each learner must be seen as a special human being.
- * Short-term goals give the opportunity for success both early and often in the learning process.
- * Short-term goals allow for incremental mastery learning.
- * Short-term goals allow for individual rates and styles of learning.
- * Short-term goals afford regular success opportunities which keep learner interest and attention directed toward long-term achievement.

12. Learning has a greater chance of becoming reality if a variety of sensory experiences are incorporated into teaching methods.

- * Since no two learners are alike, individual learning styles are going to be different. In order to accommodate these differences, a full range of sensory experiences are necessary for effective teaching.
- * All the senses (seeing, hearing, touching, smelling, and tasting) should be used in the learning process when possible. If more of the five senses are used simultaneously, the learning will be more permanent.
- * The five senses should be used simultaneously when possible. Learning can be enhanced by combining as few as two senses in the learning experiences.
- * Instruction through multi-media with frequent variation is helpful.
- * The more active and involved the learner is in the learning process, the more he/she senses things, the better the learning retention.

LEARNERS' ABILITY TO RETAIN INFORMATION

10 % of what is READ

20 % of what is HEARD

30 % of what is SEEN

50 % of what is SEEN & HEARD

70 % of what is SAID VERBALLY (by the student)

90 % of what is DONE AS AN ACTIVITY

13. Learning is most effective when it is expected that learning will take place.

- * Mastery and excellence seldom occur unless they are expected.
- * Learning must be expected and excellence demanded. What a teacher expects and asks for is most often what results. Expectations can be non-written and non-verbal, therefore, care must be taken not to set the wrong expectations.
- * When learners know that excellence and mastery are expected, that implies that they are capable of such mastery. This enhances the self-worth and contributes to effective learning.

14. Learning consists of changes in cognitive, psychomotor, and affective behaviors in an individual.

- * Learning in each of the domains (cognitive, psychomotor, and affective) occurs from the simple to the complex.
- * Cognitive behaviors have to do with cognition, which is the mental process or faculty by which knowledge is acquired. It is something that comes to be known, as through perception, reasoning, or intuition. Cognitive learning and teaching activities build thinking or reasoning skills.

- * Psychomotor behaviors have to do with muscular activity associated with mental processes. Psychomotor learning and teaching activities build hand and motor skills.
- * Affective behaviors have to do with emotions or feelings rather than thought. Affective learning and teaching activities focus on attitudes and feelings.

The only justification for instruction is for learning to take place. For effective learning to take place, the teacher must guide and facilitate the learning process. If changes in behavior are to take place, the teacher must understand what the student needs to learn and how the student learns.

VoCATS Briefing

What is VoCATS?



VoCATS, the N.C. Instructional Management System used primarily in Career and Technical Education (CTE), helps improve student learning by providing teachers with the materials they need to plan and carry out instruction.

VoCATS provides schools with a computerized instructional management system that can be used for the following:

- Planning instruction
- Assessing students before, during, and after instruction
- Tracking student progress
- Evaluating student mastery of competencies
- Documenting student achievement
- Providing accountability data

What does VoCATS include?

A complete VoCATS curriculum package includes:

- A blueprint, developed by teachers and validated by Business and Industry, which specifies course units, competencies, and objectives, and provides an indication of the relative importance of each
- Curriculum support materials aligned to the blueprint, such as an outline, resources, lesson plans, instructional activities, and other information useful in teaching the course
- A bank of assessment items, also aligned to the blueprint, that allows teachers to easily generate preassessments, interim assessments, and postassessments for use in the classroom
- A secured accountability assessment bank, aligned to the blueprint, from which statewide multiple-choice postassessments used to produce accountability data are generated annually

Current status



The current status of the VoCATS effort is as follows:

- More than 300 business representatives, 150 local administrators, and thousands of CTE teachers have been involved in developing curriculum materials.
- All LEAs are using VoCATS-designated software components and 95 percent of all high schools and many elementary and middle schools have computer hardware to run this software.

Approximately 90% of CTE teachers have participated in VoCATS staff development.

(Continued on next page)

VoCATS Briefing (*continued*)

Components provided by SDPI

Components provided by the State CTE staff include the following:

- 128 course blueprints validated by business/industry
- 119 classroom assessment banks distributed
- 98 curriculum support documents developed or adopted for use in North Carolina
- Statewide postassessments for 109 courses

Strengths of the instructional management system



VoCATS ensures that all teachers have access to the same curriculum resources. No matter where in the state they come from, teachers can utilize course blueprints and other materials. Most of these materials are available for download free or can be purchased in hard copy at a reasonable cost. Many are distributed at no charge to people who attend scheduled NCDPI staff development activities.

VoCATS strengthens the link between the classroom and the business community. It helps teachers individualize instruction and closely monitor the progress of each student. VoCATS makes it easy to pinpoint students' areas of weakness and provide necessary remedial assistance. At program completion, it provides students with a detailed record of their mastery of course content.

Accountability

Carl D. Perkins Vocational and Technical Education Act of 1998 (known as Perkins III) links federal funding in Career and Technical education to student performance. As one of the measures, local school systems must report the percentage of students who attain a standard proficiency level on statewide postassessments. School systems must demonstrate continuous progress toward a five-year goal. Data are disaggregated to analyze student performance by course, by school, by LEA, and by targeted groups such as students with disabilities.

Strengths of accountability system



Statewide postassessments are one component of VoCATS. Establishing clear connections between instruction and accountability strengthens the system. Teachers know from the course blueprint what should be taught in their classes and even the approximate amount of time that should be used to cover each topic. They know at the beginning of the course what students will be evaluated on and even the exact number of questions that will be asked on each objective. They can use the classroom assessment banks to test students throughout the course, monitor student progress, and determine which students need remedial activities. The statewide postassessments should reinforce what teachers already know about their students' mastery of the course content.

Recognition

The VoCATS process has received recognition from the following:

- The U. S. Department of Education has recognized VoCATS as a national CTE instructional model.
 - The Rand Corporation has cited VoCATS as an exemplary statewide system to assess student learning in CTE courses and programs.
-

Instructional Management

Many factors make up a good instructional management plan. Perhaps the most important of these is a teacher who has a sound instructional strategy, who plans consistently, and who cares for students. The concept of planning cannot be stressed enough. It is generally the teacher who has not planned that finds things going wrong and loses credibility with colleagues and students. The following is an overview of the strategic elements, which are important to a productive learning environment.

Scope and Sequence

For the teacher to have control of the learning environment, he/she must have a clear idea of what is to be covered. This information is provided by the VoCATS Instructional Management System. The following are some sources that a teacher should use when planning and implementing a trade and industrial education program.

- North Carolina Career and Technical Education Standard Course of Study Guide
- VoCATS Blueprints, Content Outlines, and Test Itembanks
- Textbook(s)
- Course Curriculum Guide(s)
- National Industry Standards
- Advisory Group Recommendations

Curriculum Materials

For information on T&I course blueprints, content outlines, test itembanks, textbooks, and curriculum guides contact; Trade and Industrial Education, Department of Public Instruction, 6360 Mail Service Center, Raleigh, NC 27699-6360, Administrative Support (919) 807-3889.

Objectives

With the VoCATS blueprints in hand, the teacher must now translate competencies and objectives into the specifics that will be covered in the classroom on a daily basis. These specifications are the performance objectives for the course(s) being taught. Their function in the total educational plan is to direct the instructional and the learning effort toward a specific end. The content outlines developed for each course provide more specific information on what is to be covered in the classroom.

Lesson Plan

A lesson plan is a guide in the instructional process. The lesson plan specifies what is going to be covered and how it will be presented. Good lesson plans not only provide a guide to present and future actions, but they also provide a record of what has been done in the classroom. Based on this documentation modifications and improvements can be instituted.

Some commonly suggested reasons for lesson planning are:

- They help put objectives in perspective.
- They tend to lead to better methods of teaching.
- They cause reflective thinking about the subjective matter.
- They provide confidence to the inexperienced teacher.
- They help cut down on the unexpected in the classroom.
- They provide an incentive to the teacher to make adequate preparations.

- They help in allowing for individual student differences.
- They identify resources that must be available.
- They identify teacher skills that must be refreshed.

Results of a good lesson plan are:

- To ensure complete coverage of the subject and serve as a guide for the instructor.
- To aid in presenting the material in a proper sequence for effective learning.
- To ensure that proper consideration is given to each element of the lesson plan.
- To ensure that essential points are included.
- To provide a time control.
- To assist in the use of appropriate teaching aides.
- To provide an outline of the teaching methods and procedures to be used.
- To serve as a record in determining the progress of the educational program.
- To improve teacher confidence.
- To refresh the teacher's memory and guide classroom actions.
- To provide a strategy for multi-activity stations.

The lesson plan is not a crutch. It should be kept available at all times as a quick reference, but seldom held in the teacher's hand. It is read from only when the teacher is giving a quotation and details of a highly technical nature.

The lesson plan is not a substitute for thinking. It should be reviewed before each class to eliminate unnecessary "hang-ups", to keep the lesson on target, and to put materials at the teacher's immediate control.

The lesson plan must be revised on a regular basis. If a lesson plan is used from semester to semester or year to year, new information should be added, obsolete information should be eliminated and improved instructional aids should be included.

Suggested Lesson Plan Format

- Focus and Review
- Statement of Objectives
- Teacher Input
- Guided Practice
- Independent Practice
- Closure

This is an example of a six step lesson plan format in a reduced size.

ACTIVITY	DESCRIPTION OF ACTIVITIES & SETTING	MATERIALS, SUPPLIES, TOOLS	TIME REQUIRED
1. Focus & Review			
2. Statement of Objectives			
3. Teacher Input			
4. Guided Practice			
5. Independent Practice			
6. Closure			

The completed lesson plan is presented as a six step model. The **focus and review** step of the lesson plan assists with focusing the learner's attention, relating previous learning, diagnosing prerequisite skills, and giving reasons why the lesson is important. The second step, **statement of objectives**, lets students know exactly what is expected and alerts students to essential learning. These objectives are often written on the board or read to the students. The step of **teacher input** designates what the teacher does. It is the presentation of the learning activities that may take any one of many different forms, such as lecture, demonstration, role play, field trip, etc. Teacher input includes the checking of students for understanding and monitoring and adjusting student behavior. The fourth step, **guided practice**, includes close monitoring of all students' first attempts at new learning and prevents students from practicing errors. The step of **independent practice** is designed for students to practice new learning alone so that they may internalize new skills. It also provides a time for students to acquire speed and fluency with new skills and knowledge. The sixth and final step is **closure**. During this step the major concepts are summarized. The teacher should use this step to relate the taught lesson to other lessons and to highlight the applicability of the lesson.

Each step needs a **description of the activities and setting** that will be utilized to accomplish the step. The **materials, supplies, and tools** necessary for each step must be included. Finally, the **time required** for each step is identified. The designing of a lesson plan is vital for the success of the students and the teacher. If successfully carried out, the students should be able to meet the performance objective identified at the beginning of the lesson.

Practice Untried Elements

There is a maxim in teaching that says, "if anything is going to go wrong, it will" while you are presenting or demonstrating to students. As part of good teaching methods, the unknown and untried should be practiced before they are presented to a class. The teacher who is constantly fumbling, who seems not to have things under control, who seems lost, is a teacher who will have difficulty managing both students and the learning environment. Practice can minimize the embarrassing situations.

Evaluation

Evaluation will be covered in more detail in a later section. However, as part of this overview the multiple roles of evaluation will be pointed out.

- Student assessment - Perhaps the most common association made with evaluation is student evaluation. Essentially the function of such assessment is to determine the progress of a student's learning in comparison to some set of goals or standards. For such assessment to be effective, part of the learning process, achievement must be emphasized.
- Program evaluation - A second aspect of evaluation is that of determining the strengths and weaknesses of both the program and the instruction. An instructional program is not a static process, to be effective it must be dynamic. In order to be dynamic, it must have feedback. A well planned evaluation can and should provide insight into the state of the learner and the state of the program. When evaluation shows areas of weakness, it provides direction for improvement.

Organizing the Learning Environment

A vital and dynamic learning environment is critical to the growth of the learner. A good curriculum and well developed plans can only go so far. If the full potential of the learner is to be realized, the well planned curriculum must be combined with a learning environment that enables and encourages the learner to excel.

Some environmental factors that the teacher should consider are:

- Safety - Does the facility provide a safe learning and working environment? Does the facility provide an example of the proper facility layout? Students learn by example as well as by word. Are colors used in keeping with standard safety codes? Are guidelines and restrictions posted clearly? Is the facility free of clutter? Are tools and machines in proper working condition?
- Atmosphere - Does the facility provide a good feeling when you enter it? Does that facility cause a feeling of freshness and renewal? Is the facility clean and bright? The use of bulletin boards, pictures, and three-dimensional samples can serve as both instructional resources and intellectual stimuli. The frequent changing of displays and the rotation of samples can help to maintain a feeling of freshness. With a positive atmosphere, it is easier to maintain a facility and to achieve the desired learning goals.
- Flexibility - Does the facility allow for multiple activities? Can the facility be rearranged to meet the specific needs of a current activity? Realistically from both the points of safety and practicality, some things will need to be in fixed locations. However, there should be some flexible areas in the facility. If for no other reason, things should be rearranged occasionally to develop a feeling of freshness. More importantly, if the facility is to accommodate different activities and different learning styles, flexibility becomes essential.
- Control - Does the facility and the layout of equipment allow the teacher to manage the environment? If all the students are in rows of seats facing the teacher, control may be simple. When several different activities are occurring at the same time, control of the environment becomes far more difficult. Does the layout allow the teacher to monitor all work areas?
- Storage - Does the facility have adequate storage areas for materials and student work? Can access to these areas be controlled by the teacher? Is there a plan for accessing materials, tools and equipment by students? Is there a way of quickly accounting for facility resources? There are many strategies for accounting and distributing resources. The best of these places the least burden upon all involved, result in accurate accountability, and are integrated into the learning process.
- Resources - Does the facility have a variety of resources? Different learning styles require different learning methods. With different learning methods comes the need for a variety of instructional materials. In addition to having different materials, is there a system for student access to materials? Is there a system to account for the materials?

Perhaps the key concept to remember about the learning environment is that the teacher is a manager whose task it is to aid students acquire desired goals. To this end, the facility should be arranged and managed to make the jobs of both teacher and student as easy and productive as possible. In addition, it should be remembered that structure and organization will allow for flexibility while lack of structure and organization only lead to chaos.

Teacher Input

There are several methods of teacher input. The teacher needs to implement the method that is best suited for the students and the subject matter. Teacher input/instruction methods of lecture, discussion, and demonstration will be discussed.

Lecture

The lecture is regarded as the easiest to use of all classroom methods of instruction. It is also the most easily abused. The lecture may be considered an ineffective method of instruction because the teacher has no way of knowing how the presentation is being received by the students. It is best when used in combination with other methods. It is a valuable tool for teachers who recognize and appreciate its merits and limitations. The lecture should be supplemented with models, smart boards, illustrations, demonstrations, transparencies, and other instructional techniques and materials.

Lectures are most effective when they are used to introduce new topics, give directions to a demonstration, describe a personal experience, summarize other lessons and supplement other methods of instruction. It is recommended that the lecture not be used to describe manipulative processes, highly technical subject matter, and descriptions of complex objects. Characteristics of a good lecture are reflected by a good speaking voice, posture, and delivery. Utilization of media and other instructional aides such as writing technical and unfamiliar words on a smart board, using simple analogies and everyday comparisons, concise definitions and frequent repetition of difficult but important ideas are necessary to convey the message to the students. It is recommended that a lecture be used only when other methods of instruction have been approached and students can benefit from this instruction.

Discussion

The discussion method of instruction disseminates information or stimulates ideas through questions, comments and feedback from those involved in the discussion. The following are types of discussions and some guidelines for implementing the discussion.

1. Task-oriented small group - The purpose of this type of discussion is to help the members of the group focus on a specific goal or proposal.

Guidelines:

- Clearly define the task so all members of the group understand and agree.
- Sharply define roles and assignments of each member of the group.
- Provide the necessary resources or indicate where they may be obtained.
- Establish and adhere to a schedule.

2. Didactic small group - This type of small group is used to inform, instruct, or clarify more abstract materials, to review for examinations, and to allow students to interact with questions and comment.

Guidelines:

- Teacher or student leader presents materials.
- Maintain the group size to no more than ten (10).

3. Tutorial small group - The emphasis in this group is more individual instruction, usually of a remedial nature, or the evaluation of an independent project of an advanced nature.

Guidelines:

- Remedial work should be of a type general enough to benefit all members of the group.
 - Emphasis should be on the teacher dealing with each member of the group.
 - No attempt is made for group dynamics and interaction.
 - A competent student assistant might be used in lieu of the teacher for remedial work.
4. Brainstorming small group - This type of group brings various class members together to discuss a topic freely and uninhibitedly. The topic is generally problem centered or solution centered.

Guidelines:

- The ideal number for brainstorming is about 12.
 - The topic should be relatively simple, familiar and easy to talk about.
 - Criticism is ruled out; judgments of ideas are made at a later time.
 - Quantity of participation is wanted.
 - Combination and improvement of ideas are sought.
 - One member should serve as a recorder and prepares a summary of the ideas.
5. Discussion small group - This is a free and uninhibited discussion by students on a topic which has come from previously structured material covered by the lesson.

Guidelines:

- The teacher acts primarily as an interested observer. He/she listens attentively, notices who participates and watches for student reaction.
- The students are responsible for coming to the discussion with sufficient background to participate effectively.
- The teacher's primary responsibility rests in evaluating the quantity and quality of each student's participation.

Demonstration

There is a definite place in Career and Technical education for the demonstration method of instruction. In a shop or a laboratory setting the teacher has an excellent opportunity to utilize the demonstration method. A demonstration should include an explanation of the steps, key points, and an integration of the safety factors. A well planned and well executed demonstration arouses and maintains student interest. As with the other type of instruction, the demonstration method should not be considered as a separate and distinct method of instruction, but rather a technique which can be used in combination with other methods. Using real tools, machines, and materials the teacher demonstrates what is to be learned by actually performing the skill or operation. Each step is explained to the students including the "why" for each step. It is extremely important that the demonstration be rehearsed in advance and limited to a group of a few individuals. It is

also advantageous to arrange students in such a manner that all can see the demonstration from the same position where they will normally be working. This is an excellent chance for the teacher to demonstrate acquired craftsmanship.

Four steps in demonstrating a skill:

1. The teacher explains and demonstrates the skill
2. The student (s) explain as the teacher demonstrates the skill
3. The student (s) demonstrate and explain the skill
4. The student practices the new skill. (Allow the students adequate time to develop their own abilities.)

Guided Practice/Independent Practice

Guiding student learning during the acquisition of new skills and knowledge requires approaches to the learning process that include teacher monitoring of student performance and student opportunities to gain speed and fluency with the new concepts. The core concept of T&I courses is that students learn by doing. Practicing reinforces the cognitive knowledge necessary to perform a craft skill. Essentially students are doing performance testing each day as the teacher analyzes their work and makes recommendations for improvement. When the student has mastered a set of skills, they can move on to more advanced techniques.

CTB Classroom Manager

CTB Classroom Manager is a software program made up of modules so that teachers can select the tools that best fit their particular teaching style. The following is a summary of the capabilities of CTB Classroom Manager:

- Creates tests - Quickly and easily generate professional classroom tests or performance tasks that target the curriculum and measure student achievement.
- Scores tests, reports results - As soon as the test is created, the Classroom Manager is ready to score it, either by hand or on the computer, and produce student and class reports for evaluating results.
- Tracks results - Test or performance assessment results are tracked in various ways for each outcome/task or by total test score.
- Links to grade book - Test or performance assessment results are sent automatically to an easy to use electronic grade book, which can produce a variety of reports including end of term report cards.

The Classroom Manager can run as a stand alone system on a single computer in a lab, classroom, and at home; or on a network that links computers located throughout the school building.

Teachers are allowed to put the CTB Classroom Manager software on their home computer if they are using it on their school computer. The teacher should make arrangements with the VoCATS coordinator for their school to install the software on their home computer.

Career and Technical Education Advisory Committees

Career and Technical Education advisory committees were established to ensure that Career and Technical educational programs were designed, developed, and implemented according to their appropriateness to business and industry in the community. Mandated through federal legislation (Vocational Amendments of 1976 and continued under the Carl Perkins Vocational Education Acts of 1984, 1990, and 1998) the local advisory committee should advise and assist the local education agency (LEA) on manpower needs, program content and evaluation, and in the development of short and long-range plans to be submitted to the State Board of Education. Three aspects of advisory committees will be presented:

- Types of advisory committees.
- Organization and appointment of advisory committees.
- Function and operation of an advisory committee.

Types of Advisory Committees

There are a number of different types of advisory committees and each serves a specific purpose within the organization for which it serves. Committees serve at all levels of planning. They include such organizations as the National Advisory Council and the Human Resource Investment Council for North Carolina. These committees advise leaders at the national and state levels regarding policy focus and the direction of Career and Technical Education. Although advisory committees of this type are often beyond the view of the front line educators, teachers should constantly be working toward goals and objectives established by these committees which reflect the interest of the leaders and decision-makers within the system.

Types of advisory committees relating to trade and industrial education are:

- Human Resource Investment Council for North Carolina - This committee provides input and technical assistance for the North Carolina Department of Public Instruction.
- Local Career and Technical Education Advisory Committee - Each LEA operating a Career and Technical program is required by federal legislation to maintain a Career - Technical Education Advisory Committee to advise administrators pertaining to the total Career and Technical education program of the school system.
- Craft or Trade Advisory Committee - This committee may operate as a sub-committee of the larger Local Career and Technical Education Advisory Committee. Craft or Trade Advisory committees are recommended even if the Trade and Industrial Education program is not involved in production work activities. A Program Advisory Committee is one that serves more than one trade area such as auto mechanics, machine shop, and welding.

Organization and Appointment

The organization of the advisory committee should be done after much thought and planning has gone into the process. A committee that is carefully and skillfully planned will be functional to the administrator and teacher and will complement the quality of training at every point where the committee makes contact with the instructional program. Some ways to organize a committee are suggested below.

Identification of committee members - There are many individuals in the community who are qualified and willing to serve on the advisory committee. Each of the potential members should be approached and advised as to the basic goals of the program. Many may be unaware that the instructional program exists. When the potential member has been minimally informed about what goes on in the instructional program, inquire as to their interest in serving on the committee. Also explain some of the responsibilities of such a position. At this point, do not ask the potential member to serve. Ask the person, "If you were asked to serve on our committee, would you serve?" If the response indicates little interest or concern and unwillingness to serve, offer thanks and remove the name from the list of potential committee members. Although the size of the active committee will range from four to seven members, the inactive membership may consist of as many as ten members. For this reason the initial list of prospective members may need to be as large as 20-25 or more to ensure an adequate selection of both active and inactive membership.

Selection of members - The selection of members is important. The objective of this step is to identify a number of local qualified citizens, individually inform them of the committee needs and identify or reject them as a potential candidate for the active or inactive committee. When the list of potential members has been assembled, a letter should be composed which requests the individual to serve on the committee. The letter should be brief but should include full details on committee responsibilities, committee operation, and rotation procedures. Such information assures that the committee is aware of its responsibilities. Often craft committee members are reluctant to leave their jobs and are exhausted after a busy day. This sometimes makes it difficult to get members to break their busy schedules and attend meetings. Certain strategies may be used to entice members to meetings. One approach is to make correspondence appear as official as possible to prevent members from seeing their duties as being superficial or trivial. They must know that a committee member serves an important role in the community, the school, and especially in the instructional program. One way to give letters an official appearance is to have the invitation sent by the superintendent's office. This establishes an official need for the committee's services in the community. The craft advisory committee is one of the most valuable devices an instructor can use to maintain an effective and up-to-date program. If used properly, it can provide the local support desired to acquire needed materials and to increase the placement potential of the instructional program. With a few creative ideas on the part of an assertive instructor, the advisory committee will provide the proper exposure to the community, establish an up-to-date program, and acquire appropriate feedback for program improvement.

Rotation of members - Members of the advisory committee should be rotated on a regular basis. Members may be exchanged between the active and inactive committee at regular intervals. This is to ensure variety in the kind of feedback provided to the instructional program, to guarantee infusion of new and fresh ideas, and to involve a greater portion of the occupational community. Members may be reluctant at first to offer valuable suggestions or to involve them in a useful, active manner. For this reason, each term of service should last approximately two years. Terms also should be staggered to ensure that experienced members are serving on the committee at all times. Experienced members can then assist the instructor in preparing or training new members in the kinds of activities established as beneficial to the program. Getting members acquainted with the program and development of the kinds of responsibilities they need to perform are important factors in the eventual success of the committee.

There are many reasons why rotation of committee membership is important to successful operation of the committee. Rotation of members prevents stagnancy of the committee by introducing new and fresh ideas from new members. It also provides a means of removing dysfunctional members by rotating them off the active committee. Members, both of the active and inactive committees, should be well informed of the procedure for rotation. Communication should be maintained with the inactive file to keep them informed of the current activities of the committee. Otherwise, those on the inactive file will lose interest in the program and may fail to respond when called on to do so.

Operation of the Committee

The committee should meet formally no less than three times annually. Although this would not constitute the number of visits or contacts made with individual members, it is important that they meet as a body to conduct official business of the committee on a regular basis. Members should be encouraged to visit the program while it is in operation and communicate with the teachers and with students on an informal basis. Establishment of acquaintances at this level may improve interest and employment opportunities.

Committee meetings should follow a formal agenda which has been established well before the meeting. The teacher, with the assistance of the committee chairman, should determine what topics will be discussed and in what order they should be presented. As much as possible, the meeting should be preplanned, but always ensure that each member is provided an opportunity to contribute to the discussion and offer additional suggestions. Members may be better prepared to discuss business if they are informed of the topics before the meeting. When letters are sent to committee members concerning the next scheduled meeting, the topics for that meeting may be included. The committee meeting should be conducted according to a printed agenda. Each member's time is valuable; therefore, meetings should not be extended for longer periods of time than are necessary to conclude committee business. The committee chairman should direct and lead discussion with the teacher providing the necessary clarification of program objectives and activities. The program teacher should keep accurate minutes.. These may be organized and mailed to each member on a date following the meeting. Although mailing of the minutes is not absolutely essential, each committee member should be informed of the progress being made toward implementation of their recommendations. Failure to respond to committee recommendations may result in the disenchantment of members and make their efforts appear unimportant. A follow-up to the committee indicating the kinds of activities the program plans to initiate is encouraging in building committee strength. Also, it is important to show some immediate results. Results which surface after several months may fail to reinforce their confidence in committee activities.

The craft advisory committee is a valuable asset to any instructional program. Contact with members, both by the teacher and by students while working in the program, is important for complete success. However, keep in mind that the committee is only an advisory body providing suggestions and guidance to the program. Their role is not to control, to demand nor to insist on policy or activities to be conducted. Committees should be made aware of their roles and convinced that their input is valuable to program success. The actual program still remains the responsibility of the teacher and local school administrators.

***North Carolina General Assembly General Statutes govern advisory committees for production work activities in Career and Technical Education programs. The advisory committee law in its entirety is shown below.**

§ 115C-165. Advisory committee on production work activities.

The board of education of each local school administrative unit in which the proposed production work activities are to be undertaken shall appoint appropriate advisory committees of no less than three persons residing within that administrative unit for each program (or in the case of Trade and Industrial Education, for each specialty) for the purpose of reviewing and making recommendations on such production work activities. Respective advisory committee members shall be lay persons who are actively involved in the appropriate business or trade. No production work activity shall be undertaken without the involvement of the appropriate advisory committee. (1977, c. 490, s. 4; 1981, c. 423, s. 1; 1983, c. 750, s. 3.)

Evaluations

Public demands for more efficient expenditures of tax dollars raise several very important implications for education in general and Career and Technical education more specifically. Career and Technical educators have inherited the responsibility of ensuring that programs are administered in an efficient manner. Greater pressures imply that program objectives should be clearly defined, aligned to the needs of business and industry, and developed according to standards established for business and industrial employees. These qualities of Career and Technical education programs can be controlled and directed by effective evaluation. In this context; however, evaluation has a fairly diverse interpretation. Evaluation, for the purposes of this handbook, will be viewed from three perspectives: Program evaluation, teacher evaluation, and student evaluation.

Program evaluation includes both formal (accrediting agencies) and informal (in-house) assessments useful in providing information for program improvement and decision making/planning. Teacher evaluation will be reflected by self-assessment, peer assessment, administrator assessment, student assessment, and industry specific exams. These are useful in identifying weak areas in teacher performance and facilitating the establishment of both short and long range objectives for a planned self improvement profile. The final area of evaluation, and probably most important, is that of measuring students' progress and attainment of the stated objectives. It includes the three major domains of learning (knowledge, skills, and attitudes) and the techniques for measuring student performance within each of these areas. The actual success of any program relies heavily on the ability of the teacher to apply these assessment strategies. Success is affected by using various methods of assessment/evaluation to redirect the program as needed and to measure the performance level of students while applying the appropriate diagnosis to reach intended objectives.

Program Evaluation

There are various forms of program evaluations, each designed to serve a specific type of goal.

- **Program Accountability** - To build confidence in the public's concern that tax dollars are spent efficiently and appropriately.
- **Planning and Decision-making** - To gather information relative to school and community needs and services. It is appropriate that effective instructional programs exist and reflect the occupational needs of the community.
- **Program Improvement** - To assess the current status of the instructional programs and identify areas where improvements may be needed.

Evaluation provides a periodic review of program components for use by administrators and instructors in updating, changing and occasionally eliminating obsolete instructional content.

Formal evaluations provide particular influence on programs as schools undergo a self-study and an external review by a visiting team of experts in the field. The self-study provides for the school's comparison of its programs against a standard set of criteria. After a close review and update of identified deficiencies in the self-study, the external visiting team is asked to review the program with the same established criteria. This

provides an unbiased review of the program. Armed with the results from the self-study and the visiting team review, the school is equipped with the kinds of information it needs to facilitate effective program improvement.

There are several types of formal evaluation processes available for secondary school program evaluation and accreditation. Although often recommended at the state and regional levels, schools are not required to impose all these evaluations upon themselves. A list of the evaluation/accrediting agencies includes:

- Southern Association of Colleges and Schools (SACS)
- North Carolina Department of Public Instruction

SACS is entirely self-imposed by the local school agency. All schools in North Carolina are periodically evaluated by the State Department of Public Instruction.

One of the greatest pressures currently applied to Career and Technical education programs is that they are expected to be accountable for the training which occurs. One useful tool to help predict these needs is to maintain current and accurate feedback from businesses and industries which have already employed program graduates. Another is feedback from the graduates themselves. Information relative to the skill possessed by students as they enter the job market and what is expected by the employer has some important implications for priorities set in the actual training.

Two types of surveys or evaluations are useful in obtaining this information. A student follow-up survey can determine the student's perception of how appropriately training is geared to the actual job. An obvious conclusion here suggests that accurate data must be maintained on the student after graduation. A second survey would obtain information from the employer about the student. Both of these collection systems are a part of VEIS (Vocational Education Information Systems). If the student possesses all the skills needed, it would indicate that the program objectives are aligned appropriately with industry needs. The surveys may indicate needs for higher level skills, updating of training equipment, interview skills, etc. Basic to external evaluations is the receiving of feedback about the products (the students) that leave the educational institution and the determining of the kinds of data needed to improve programs so that students will be employable.

Teacher Evaluation

Evaluation of teacher performance assists the teacher in identifying strengths and deficiencies or areas where improvement may be made. Evaluation of the instructional program may be viewed from several different perspectives:

Instructor self-evaluation - Instructors generally have some idea of the kinds of improvement which should occur in the program. A personal rating; however, will clue the instructor to the kinds of priorities which should be set and will stimulate interests in areas of weakness. The mere fact that the instructor is willing to undergo a self-imposed evaluation suggests that program improvements are a high personal priority.

Student program evaluation - Students are usually quite honest in their perceptions of an instructional program. Unfortunately, students are not always convinced that what

they do is in their best interest and the evaluation may lose some of its true usefulness. This type of evaluation could indicate; however, that some clarification of instructional objectives is needed. A student evaluation could particularly point out areas of dissatisfaction, lack of motivating activities, and non-relevancy of instructional content. Student feedback should be obtained at regular intervals during the school year and often enough so that some immediate improvements may be applied.

Administrator evaluation - Administrators can become one of the best resources for evaluating the instructional program. This may be done in either a formal or informal manner, depending on the policies required by the local system. Suggestions or recommendations at this level should be recorded and immediate consideration given as to how the recommendations are to be accomplished. The advantage in this type of evaluation is that a free flow of communication can result in immediate feedback and often immediate results.

In putting effective teaching into practice, schools are required to do a great deal of self-study and self-assessment. To help in that process, total staff development is implemented with emphasis on such practices as the daily use of classroom logs, peer observations, video taping, and developing professional growth plans. The Teacher Performance Appraisal Instrument (TPAI) was designed to provide uniform criteria for teacher evaluation while improving teaching/learning effectiveness. The major functions that the Teacher Performance Appraisal Instrument evaluates are as follows.

1. Major Function: Management of Instructional Time

- 1.1 Teacher has materials, supplies, and equipment ready at the start of the lesson or instructional activity.
- 1.2 Teacher gets the class started quickly.
- 1.3 Teacher uses available time for learning and keeps students on task.

2. Major Function: Management of Student Behavior

- 2.1 Teacher has established a set of rules and procedures that govern the handling of routine administrative matters.
- 2.2 Teacher has established a set of rules and procedures that govern student verbal participation and talk during different types of activities—whole class instruction, small group instruction, etc.
- 2.3 Teacher has established a set of rules and procedures that govern student movement in the classroom during different types of instructional activities.
- 2.4 Teacher frequently monitors the behavior of all students during whole-class, small group, and seat work activities and during transitions between instructional activities.
- 2.5 Teacher stops inappropriate behavior promptly and consistently, yet maintains the dignity of the student.
- 2.6 Teacher analyzes the classroom environment and makes adjustment to support learning and enhance social relationships.

3. Major Function: Instructional Presentation

- 3.1 Teacher links instructional activities to prior learning.
- 3.2 Teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning activities that make these aspects of subject matter understandable and meaningful for students.
- 3.3 Teacher speaks fluently and precisely.
- 3.4 Teacher provides relevant examples and demonstrations to illustrate concepts and skills.

- 3.5 Teacher assigns tasks and asks appropriate levels of questions that students handle with a high rate of success.
- 3.6 Teacher conducts the lesson or instructional activity at a brisk pace, slowing presentations when necessary for student understanding but avoiding unnecessary slowdowns.
- 3.7 Teacher makes transitions between lessons and between instructional activities within lessons effectively and smoothly.
- 3.8 Teacher makes sure that assignment is clear.
- 3.9 The teacher creates instructional opportunities that are adapted to diverse learners.
- 3.10 The teacher uses instructional strategies that encourage the development of critical thinking, problem solving, and performance skills.
- 3.11 The teacher uses technology to support instruction.
- 3.12 The teacher encourages students to be engaged in and responsible for their own learning.

4. Major Function: Instructional Monitoring

- 4.1 Teacher maintains clear, firm, and reasonable work standards and due dates.
- 4.2 Teacher circulates to check all students' performance.
- 4.3 Teacher routinely uses oral, written, and other work products to evaluate the effects of instructional activities and to check student progress.
- 4.4 Teacher poses questions clearly and one at a time.
- 4.5 Teacher uses student responses to adjust teaching as necessary.

5. Major Function: Instructional Feedback

- 5.1 Teacher provides feedback on the correctness or incorrectness of in-class work to encourage student growth.
- 5.2 Teacher regularly provides prompt feedback on out-of-class work.
- 5.3 Teacher affirms a correct oral response appropriately and moves on.
- 5.4 Teacher provides sustaining feedback after an incorrect response by probing, repeating the question, giving a clue, or allowing more time.
- 5.5 The teacher uses knowledge of effective verbal and non-verbal communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

6. Major Function: Facilitating Instruction

- 6.1 Teacher has long- and short-term instructional plans that are compatible with school and district curricular goals, the school improvement plan, the NC Standard Course of Study, and the diverse needs of students and the community.
- 6.2 Teacher uses diagnostic information obtained from tests and other formal and informal assessment procedures to evaluate and ensure the continuous intellectual, social, and physical development of the learner.
- 6.3 Teacher maintains accurate records to document student performance.
- 6.4 Teacher understands how students learn and develop and plans appropriate instructional activities for diverse student needs and different levels of difficulty.
- 6.5 Teacher uses available human and material resources to support the instructional program.

7. Major Function: Communicating within the Educational Environment

- 7.1 Teacher treats all students in a fair and equitable manner.
- 7.2 Teacher participates in the development of a broad vision of the school.
- 7.3 Teacher fosters relationships with school colleagues, parents, and community agencies to support students' learning and wellbeing.

8. Major Function: Performing Non-Instructional Duties

- 8.1 Teacher carries out non-instructional duties as assigned and/or as need is perceived to ensure student safety outside the classroom.
- 8.2 Teacher adheres to established laws, policies, rules, and regulations.
- 8.3 Teacher follows a plan for professional development and actively seeks out opportunities to grow professionally.
- 8.4 Teacher is a reflective practitioner who continually evaluates the effects of his or her decisions and actions on students, parents, and other professionals in the learning community.

The teacher will be rated on each of the major functions based on the following rating scale:

Above Standard Performance within this function area is consistently high. Teaching practices are demonstrated at a high level. Teacher seeks to expand scope of competencies and undertakes additional, appropriate responsibilities.

At Standard Performance within this function area is consistently adequate or acceptable. Teaching practices fully meet all performance expectations at an acceptable level. Teacher maintains an adequate scope of competencies and performs additional responsibilities as assigned.

Below Standard Performance within this function area is sometimes inadequate or unacceptable and needs improvement. Teacher requires supervision and assistance to maintain an adequate scope of competencies and sometimes fails to perform additional responsibilities as assigned.

Unsatisfactory Performance within this function area is consistently inadequate or unacceptable and most practices require considerable improvement to meet minimum performance expectations. Teacher requires close and frequent supervision in the performance of all responsibilities.

Most teachers possess certain characteristics or techniques of teaching in which improvements can be made. Keeping an open mind to all suggestions, recommendations, and feedback from questionnaires, surveys, etc., can be helpful in designing a self-improvement profile. The end result must always be viewed objectively in that students are the beneficiaries of any and all program improvements. Any teacher who is receptive to constructive criticism and always willing to improve is likely to achieve much greater job satisfaction.

Additional data may be collected through the VoCATS system for assessment of program strengths and deficiencies.

Student Performance Evaluation

Effective evaluation at various levels helps to verify that established objectives have been obtained. The basic and most obvious application of evaluation; however, assesses student mastery of objectives. Recent trends have emphasized competency-based instruction which requires that students master a minimum number of competencies according to strictly stated criteria. Mastery of these competencies is measured through the use of criterion-referenced tests which measure the student's progress toward mastery of the stated performance objectives. Criterion-referenced evaluation of competency

mastery is usually done by several methods. The first measurement is usually done through a very objective "paper and pencil" test which suggests the mastery level of certain stated facts and other technical information. The "paper and pencil" test is used both alone and also in conjunction with a performance test, the second type of criterion-referenced tests. In a performance test a student is given one or more jobs or operations to perform which use as many skills as possible related to the assigned competency. Upon successful performance of the competency skills, a judgment is made (based on specific stated criteria) as to the level of mastery.

A criterion-referenced measure should indicate certain specific information about the student to the program monitor. It would not only determine if additional training is needed but it would also point out the exact training where deficiencies have occurred. The assessment component of the VoCATS instructional management system has been adopted by the North Carolina Department of Public Instruction to evaluate student performance.

Constructing Written Tests

When constructing written test items for a criterion-referenced test, the instructor has several options. The test builder can choose between multiple choice, open-ended, matching, short answer, essay, forced choice, fill-in-the-blank, true/false, and several other types of test questions. In developing any of these types of tests; however, several important points should be remembered. It should measure what students know about a particular subject by testing their ability to apply that knowledge. Simple recall of a few dated facts will not necessarily inform the teacher that the student can perform on the job. Written tests should use true-to-life job situations to determine the student's ability to solve problems.

The following, taken from Bloom's Taxonomy, represents six levels of learning within the cognitive (knowledge) domain which may serve as a basis for writing test items. They are knowledge, comprehension, application, analysis, synthesis, and evaluation. A description of each item should clarify the situation in which each of these learning types may be used.

Knowledge - involves the recall of specific information, methods, processes, and structures. The emphasis is on remembering definitions, recalling specific facts, recognizing, knowing processes, categories, criteria, methodology, principles, theories, trends, etc.

SAMPLE: The connecting nut on an acetylene regulator has:
A. An interference fit.
B. Left hand threads.
C. Right hand threads.
D. Removable threads.

Comprehension - represents the lowest level of understanding. A student's ability to comprehend may be tested by drawing conclusions, summarizing, generalizing, translating, and interpreting.

SAMPLE: Which is true?
The exhaust stroke follows the power stroke. As the piston approaches Bottom Dead Center (BDC) on the power stroke the exhaust valve:
A. Allows a fresh change of air-fuel mixture to enter.
B. Closes.
C. Opens.
D. Triggers a spark.

Application - involves using the abstract in concrete situations. Questions testing application abilities require students to apply general ideas, rules, methods, principles, or theories.

SAMPLE: Describe how to determine the differences in elevation between two points that are not visible from either single point.

Analysis - involves the breakdown of material into smaller parts which are more easily understood. Test questions measuring analysis abilities would test behaviors such as the ability to recognize an unstated assumption, to differentiate facts from hypothesis, to determine cause and effect relationships.

SAMPLE: "Furniture preferences of architectural designs vary throughout the country." The preceding statement would be a factor in:
A. Market differentiation.
B. Market segmentation.
C. Non-price competition.
D. Price competition.

Synthesis - is putting parts together to make a whole. Questions testing synthesis ability would require a student to apply two or more skills to formulate and produce a product or to accomplish a task.

SAMPLE: Design and build a functional refrigeration evaporator unit using five different sizes of pipe (three copper and two steel).

Evaluation - requires either quantitative or qualitative judgment on the part of the student based on some established criteria.

SAMPLE: Determine the surface texture and hardness of poured concrete for purposes of initiating the finishing phases.

Written test items may be classified as either subjective or objective measurements. The basic differences in the two are relative to the amount of arbitrary judgment required to evaluate student mastery. Objective measurement utilizes strict interpretation of the established criteria. The precise nature of the criteria would enable several evaluators to arrive at the same score or level of mastery. Items missed on an objective test would indicate areas where additional study is needed, items that are not clearly understood by students or portions of the curriculum which may be weak or misleading.

Several problems arise in the use of subjective evaluation. Subjective measurement provides vague feedback to the student as to what remains to be learned to achieve mastery. It fails to suggest instructional deficiencies for the purpose of improving or upgrading the program and very little data is passed on to post-graduate institutions and industry about the level of mastery obtained by the student. The major characteristic which makes subjective measurement unattractive is that students are rated and scored in an arbitrary manner.

Written Tests

Objective Type	Subjective Type
Multiple Choice	Essay
Matching	Short Answer
Forced Choice (True/False)	
Completion	

An objective test strives to be free from bias in any form. It works to a major advantage both to the student who is being fairly tested and to the teacher who is not required to make a different judgmental call for every question on a student's test paper. Within the group of objective test types multiple choice items are usually best and forced choice are generally the poorest.

Multiple Choice Items - will have as the stem (stimulus) a statement or question which can be completed or answered by a short answer or response. It is best to have only one correct answer from a maximum of four possible choices. The goal of the test question is to determine whether the student knows the material being tested. If it is necessary to have more than one correct answer, state this in the directions. Also, be very careful to have only one correct answer if the directions so indicate. Several advantages and disadvantages of multiple choice items are:

Advantages	Disadvantages
Easy to score	Difficult to construct meaningful questions
May be constructed to measure specifically one of the learning levels within the cognitive domain	Difficult to select a variety of responses without being repetitive
May be constructed to determine application of knowledge rather than simple recall of facts	

Forced Choice (True/False) Items—are not a good choice for criterion-referenced testing. Even a person who knows absolutely nothing about the subject at hand could conceivably guess the answer correctly.

Advantages	Disadvantages
Easy to construct	Easy to guess answers
Easy to score	Difficult to establish according to learning level
	Not adaptable to as wide a range of application type of questions

Matching Items—are similar to multiple choice tests in that concepts are centered around terminology, definitions, and related matters. A matching test will list a term in one column and its definition in the opposite column. In lieu of a definition, the opposing column may contain a key phrase or related bit of knowledge which matches the term better than the other bits of knowledge in the column.

Advantages	Disadvantages
Usually an interesting test	When varying from terminology/definitions, it is often easy to get subjective with answer interpretation
Easy to construct	
Easy to score	
Low guessing factor	

Completion Items—are used to measure exact, factual recall. It will provide a statement, often directly from a textbook, which has missing words or phrases. The student must supply the missing words or phrases to complete the statement.

Advantages	Disadvantages
Easy to construct	Must be very precise
Low guessing factor	Difficult to measure applications
Incentive to develop study habits	Answers may be subject to interpretation

Subjective Tests - These generally come in two basic forms: Short answer and long answer (essay). There are times when either test can be used, but in a Career and Technical education setting, successful use of the subjective test is difficult. The very nature of a subjective test means that it is the test scorer's opinion that matters. A personal judgment must be made with each answer to determine correctness. As may be determined by previous discussion, the use of subjective evaluation is not recommended for any Career and Technical education course and if used should be applied only under highly controlled conditions.

The following is a condensed checklist that may be useful in designing valid subjective tests.

- List the major objectives to be appraised.
- Identify sub-objectives or evaluation indicators.
- Analyze and define each objective in terms of expected student outcomes.
- Construct one or more test items for each objective or sub-objective.
- Assemble the items for the test. (Construct alternative tests if needed.)
- Write clear and concise directions for each type of question.
- Review and study every aspect of the assembled test.
- Construct a test key where applicable.
- Establish a validity procedure. (Validity can be established by field testing.)
- Make any necessary revisions or corrections.
- Continued revision of the test may be necessary to ascertain thorough measurement of mastery toward the objectives.

Constructing Performance Tests

Written test items are generally easy for both the teacher and the student to understand. Both parties expect the test item to assess the student's ability to recall information. If used properly, a written test can also assess the student's ability to apply facts in solving problems. A written test; however, cannot measure the level of skill mastery needed in the actual performance of a task. This must be done with a performance evaluation. Like written tests, evaluations should be monitored according to specific criteria. Arbitrary judgment about performance should be eliminated.

Basically, a performance test can be aimed at rating two different abilities. The first is the "process" a student follows in performing a task. In this case, the teacher may or may not be interested in the final product. The process evaluation would determine if the student followed the appropriate procedure, if safety factors were followed, and if the processes were completed in the correct order.

The second ability performance tests should measure is the quality of the final product. The teacher may prefer not to observe the "product" as it is being produced. The product evaluation should determine if the product functions, if it is neat, if its overall appearance is good, and if it is the correct product. One of the chief advantages of the product evaluation is that it leaves the teacher more time for process evaluation.

Three types of instruments are provided here which describe how performance test instruments may be applied.

Checklists are used to encourage the student to exhibit high quality skills development and to involve the student in the rating process. It is difficult to expect students to know if the work completed conforms to industry standards without feedback from the instructor. However, making the standards or criteria available can be of great value. Note that the checklist is not used for giving a grade. Its real value is to offer communication between the learner and the instructor. The exercise should be repeated several times or as often as necessary to achieve mastery. The student performs the self-evaluation using available standards or criteria. Using the same standards or criteria the instructor should make an evaluation and difference in the ratings should be discussed.

Example: CHECKLIST FOR SOFT SOLDERING COPPER TUBING

- OBJECTIVE:** To swage, clean, flux, and soft solder copper tubing using 50-50 and 95-5 solders.
- DIRECTIONS:** Place an (X) in the column that best describes the quality of your work. The teacher will do the same.

	Student Check				Instructor Check		
	Poor	Average	Excellent		Poor	Average	Excellent
Handled torch in safe manner							
Cleaned torch correctly							
Soldered with correct heat							
Used correct solder							
Swaged fitting conforms to specifications							
Quality of soldered connection							
Orderliness of work area							

Score Cards are particularly useful in evaluating products and processes. To construct score cards, study the learning topic and list those areas that are essential for objective achievement. Standards and minimum levels of mastery should be established and made available to students. The scores listed below may be used to determine mastery of subject matter and the actual scores earned.

Example: SCORE CARD FOR SOFT SOLDERING COPPER TUBING

OBJECTIVE: To swage, clean, flux, and soft solder copper tubing using 50-50 and 95-5 solders.

DIRECTIONS: Score yourself from one to the highest possible score. The instructor will do the same. The minimum score for each criterion must be achieved for successful mastery of the objective.

CRITERIA	STD. SCORE	MIN. SCORE	MY SCORE	INSTR'S SCORE
Able to handle soldering	10	8		
Able to clean soldering torch correctly	10	8		
Able to light soldering torch correctly	10	8		
Know the types of solders and mixtures	10	10		
Swaged fitting conforms to standards	10	8		
Soldering connection is proper	10	8		
Soldering connection is leak proof	10	10		
Work area is clean and tools are returned to proper place	10	10		
TOTAL SCORES	80	68		

Rating Scales consist of descriptors indicating performance at various levels. Care must be taken in writing the descriptors to ensure a clear continuum. If written clearly enough, they will indicate specific deficiencies in the achievement of complete mastery. These scores may also be used for grading.

Example: RATING SCALE (RUBRIC) FOR SOFT SOLDERING COPPER TUBING

OBJECTIVE: To swage, clean, flux, and soft solder copper tubing using 50-50 and 95-5 solders.

DIRECTIONS: Place the rating you select in the column under "my score".. If the rating falls between **1 and 2, it will be evaluated as poor; 3 and 4 will be average;** and **5 will be excellent.** Use a number for the rating.

RATING SCALE FOR SOFT SOLDERING COPPER TUBING

1 - 2	3 - 4	5	MY SCORE	TEACHER SCORE
Soldering torch is not clean	Torch is clean but not serviceable	Torch is clean and ready for next job		
Unable to light torch	Torch is lit but flame is improper	Torch flame is adjusted correctly		
Swaged fitting is improperly fitted	Swaged fitting looks good but does not meet standards	Swaged fitting tight and meets standards		
Soldering connection is dirty	Connection is improperly cleaned	Connection is bright and shiny		
Connection leaks	Connection will probably leak in future	Well soldered connection		
Work area messy	Partially cleaned up	Well organized clean area		

Assessing Student Attitudes

Perhaps as important as skills and knowledge acquired by students are the attitudes that they develop toward work. Attitudes have been described as how one acts, feels or thinks and ultimately reflects one's disposition and opinion. It is important that the Career and Technical education teacher develop positive impressions about the way a student feels, acts, and thinks when developing occupational skills. In an effort to develop the kinds of attitudes expected by industry and necessary for total development of the student, it is important that attitudes toward work be positive and self-fulfilling.

There are a number of qualities the teacher may use to measure student attitudes. Among these are student initiative, work quality, ability to work with others, and the ability to cope with daily problems as they are encountered.

Just as knowledge is evaluated through written tests and skills are measured through performance tests, attitudes should also be evaluated. To avoid evaluation which is too subjective, it is more useful to evaluate attitudes through a set of criteria which carries a significant amount of weight in computing student grades. A skillfully developed rating scale might generate additional ideas as to how attitudes should be evaluated. The following sample attitude rating form suggests certain weights for the criteria measured and should leave flexibility for the teacher to generate a personal and unique grading system. The qualities listed in the left-hand column are weighted across the chart from left to right. A total of the student's averaged performance will result in a rating. This rating can be used to prescribe corrective attitudinal measures.

ATTITUDE RATING FORM

Qualities	1	2	3	4	5
Initiative: Use of time	Wasted time	Needed constant supervision	Worked with some supervision	Worked with little supervision	Industrious
Quality of Work	Incorrect	Poor quality	Adequate quality	Excellent quality	Highest quality
Takes and follows directions	Listens poorly and executes poorly	Occasionally attentive with many errors	Generally attentive with some errors	Always attentive with no errors	Excellent attention and perfect execution
Works with others	"Loner"	Occasionally works well	Generally works well	Most always works well	Always works well

SkillsUSA

An Introduction to SkillsUSA

SkillsUSA is the Career and Technical Student Organization (CTSO) for Trade and Industrial Education students. North Carolina SkillsUSA is sponsored by the North Carolina Department of Public Instruction as a service to secondary and post-secondary students enrolled in North Carolina's trade and industrial education courses. The content and teaching techniques of the national SkillsUSA program have been adopted by the North Carolina Department of Public Instruction as an integral part of the curriculum offered in each of the Trade and Industrial Education courses throughout North Carolina.

Integrating SkillsUSA into Classroom Instruction

Career and Technical Education courses are designed to prepare students for the "real world" since that is where they will spend the largest portion of their lives. Since work consists of more than punching a time clock and showing up regularly, other aspects of students' careers should be considered. To attain success students must develop skills in leadership, determination, pride, dignity, and many other qualities which are difficult to teach.

This is where SkillsUSA comes in. When SkillsUSA is put to work in the classroom or laboratory, students are given a tremendous advantage. SkillsUSA builds and reinforces self-confidence, positive attitudes toward work, and communication skills. SkillsUSA helps students believe in themselves and in their abilities.

SkillsUSA is one of the best teaching tools available to the teacher. It opens doors to exciting opportunities for the teacher, students, the school, and the community. There are a number of valuable documents available from the State and National SkillsUSA offices which will assist the teacher in acquainting groups with the purpose and function of the organization.

Included among these publications are:

- The Teachers Tool Kit
- The Meeting Kit
- The SkillsUSA Leadership Handbook
- Total Quality Management

These publications are available from SkillsUSA, Inc., P. O. Box 3000, Leesburg, VA 22075. North Carolina also has several publications including:

- Parliamentary Procedure Guide
- Professional Development Plan
- Newsletters

Information and assistance in the following areas can be obtained from the North Carolina Department of Public Instruction, Trade and Industrial Education, 6360 Mail Service Center, Raleigh, NC 27699-6360

- North Carolina SkillsUSA Advisor's Handbook
- Organizing a SkillsUSA chapter
- Electing officers
- Planning a calendar of events

- Getting students active locally and beyond
- Participating in competitive events (contests)
- Rewarding members and community sponsors

Membership in SkillsUSA

The SkillsUSA Leadership Handbook and The North Carolina SkillsUSA Advisor's Handbook provide general information on membership classifications and services. All state and national dues are submitted directly to the national SkillsUSA office. Each SkillsUSA member will receive a membership card and issues of the "*SkillsUSA Tabloid*" from the national organization. Professional members will receive twelve issues of Professional News. Each member will receive from North Carolina SkillsUSA a membership card and issues of the *SkillsUSA News and Views*. Membership provides the opportunity for students to hold a local, state, or national office and they are eligible to compete and participate in local, regional, state, national, and international competitive events. Successful competition at a lower level permits both teachers and students to participate in state and national leadership workshops and conference.

SkillsUSA History

In the 1930's, a national organization called the Future Craftsmen of America grew out of the recognition of the needs of students training for industrial occupations. This organization failed in its second year of operation, but individual states kept the idea alive with organizations of their own.

The Vocational Clubs of America (VICA) was organized in 1965 as a non-profit educational association for trade, industrial, technical, and health occupations students with the assistance of the National Association of State Supervisors of Trade and Industrial Education. Sponsoring its founding were the American Vocational Association, the US Office of Education, the AFL-CIO, and the United State Chamber of Commerce. Twenty-six state trade and industrial club associations with a total of 30,000 members joined the national VICA organization during the first year. In 1980, VICA chartered 49 states with over 290,000 members involved in learning about the dignity of work, high standards in trade ethics, patriotism, democracy and much more. In 1999 VICA's name was changed to SkillsUSA-VICA. The current name of **SkillsUSA** has been in place since September 1, 2004.

Competitive Events

Local (January)

Any SkillsUSA member is entitled to take part in local competition. Students should not be selected by the local advisor or teacher. Competition should be held in order to give every member an equal opportunity to represent the local chapter on the regional level. Consult the *SkillsUSA Championships, Technical Standards Revised* for contest guidelines.

Regional Skills and Leadership Conference

(Late February - early March)

Each region will conduct their own skills and leadership conference under the direction of their respective Trade and Industrial Education Leadership Councils and the state office. Each winner will advance to state competition. (The number of contestants is

determined by guidelines developed annually and published by the NC SkillsUSA Office)

State Skills and Leadership Conference

(March-April)

The state office manages the state level competition according to the rules of the *SkillsUSA Championships, Technical Standards Revised* and any amendments set by the state executive council. First place winners advance to national competition. This offers students an opportunity to demonstrate acquired classroom skills. At both the regional and state conferences, delegates select officers for the upcoming year as well as conducting the business of the organization.

National Conference and competition

(June)

The National SkillsUSA Olympics are held annually during the National SkillsUSA Leadership Conference. First place state level winners are eligible to compete in nationally sponsored contests. National winners and their schools are awarded first, second, and third place medallions. Be sure to read the *SkillsUSA Championships, Technical Standards Revised Guidebook* for detailed information about specific contests. All national level contests are established by a SkillsUSA Championship Technical Committee. Members of each of these committees are labor and management representatives from business and industry. Contestants are evaluated on skill performance by technical experts from industry.

International Competition

(Scheduled biennially during the summer)

Contestants are selected from national winners to participate in the International Skill Olympics. Many countries are involved in the competition in a variety of skilled trade areas. Members selected to compete internationally have the opportunity to test their knowledge and skills against young people from other countries. By participating, the United States and SkillsUSA will strengthen vocational, industrial and technical programs; bring recognition to skilled young people; and promote peace among nations.

SkillsUSA Information Online

www.SkillsUSAnc.org

www.SkillsUSA.org

All information will be posted online.

Special Populations Services

Description

The primary function of special populations coordination is to ensure that members of special populations receive adequate services and job skill training.

Special services are coordinated for special populations to ensure their access to recruitment, enrollment and placement activities. These supplementary services are essential to the successful participation of some disabled and disadvantaged students in Career and Technical Education courses. Students with the greatest needs have top priority for services. Coordination with other service providers reduces the number of direct service contacts and the duplication of efforts. Being non-instructional personnel, Special Populations Coordinators have the major responsibilities for ensuring such coordination.

Coordination services begin with the identification of each member of special populations enrolled in the local education agency's Career and Technical Education program. This approach allows the local education agency to meet the broad assurances of the law.

One such assurance, helping a student to enter a Career and Technical Education program, enhances their chances of selecting an appropriate career pathway. Preparatory services are provided in the middle school or prior to a student's enrollment in a Career and Technical Education course at high school. These services include, recruitment of potential Career and Technical Education students, career guidance, vocational assessment, and monitoring.

After participation in the outreach and recruitment activities, each student's special needs are identified and coordinated to ensure success in completing their chosen course of study. Following the assessment process and career guidance, appropriate plans are developed.

The quality of a local Career and Technical Education program is dependent upon its ability to meet the statewide core indicators of performance and/or local modifications.

Major Functions

The major functions of the position include the following:

1. Outreach and Recruitment
2. Assessment Prescription
3. Coordination with other Service Providers
4. Monitoring Access, Progress, and Success
5. Annual Accountability /Planning

Examples of appropriate activities for each of the major functions include the following.

Outreach and Recruitment

- Promote recruitment, enrollment, and placement activities for special populations students.

- Provide information about Career and Technical Education opportunities to special populations students and their parents.
- Coordinate/development a career development plan for identified special populations students enrolled in Career and Technical Education courses.

Assessment and Prescription

- Identify members of special populations enrolled in Career and Technical Education courses.
- Assess the special needs of special populations students enrolled in Career and Technical Education courses.
- Development and implementation the Special Populations Component to the Career Development Plan (Career Development Plan-Plus).
- Participate in the Individualized Education Team for the development and implementation of the Career and Technical Education and transition components of the Individual Education Program (IEP).
- Coordination of special services for special populations students.
- Maintain a Career and Technical Education resource laboratory for members of special populations and Career and Technical Education teachers.
- Assist with transitional services for special populations students.
- Provide guidance and career development activities for special populations students.

Coordination with other Service Providers

- Collaborate with Career and Technical Education teachers and other relevant service
- Providers in providing services to special populations students.
- Coordinate with the provisions of the Workforce Investment Act (WIA), special education, vocational rehabilitation, community agencies, businesses/industry and significant others to provide appropriate supplementary services to members of special populations.
- Coordination of services with JTPA, Special Education,
- Facilitate in-service training for individuals working with members of special populations to improve their abilities and techniques in meeting the special needs of these students.
- Monitor the Career and Technical Education component of the IEP and Career Development Plan-Plus to ensure that appropriate supplementary services are provided and performance indicators are met.
- Coordinate work experiences and field trips for special populations students.

Monitoring Access, Progress, and Success

- Maintain records documenting access to, progress through, and successful completion of Career and Technical Education courses for special populations students.
- Analyze Vocational Education Information System (VEIS) data to determine maintenance and improvement of access, progress and success of members of special populations in Career and Technical Education courses.
- Document the attainment of performance indicators for members of special populations.

Annual Accountability/Planning

- Identify programs that need improvement to assist special populations students in meeting the performance indicators.
- Describe strategies to improve supplementary services for members of special populations in meeting the performance indicators
- Evaluate incentives and adjustments to determine if adequate services are being provided to members of special populations in meeting the performance indicators.
- Maintain relevant record keeping and inventory systems related to job responsibilities.
- Coordinate with appropriate administrative personnel and service providers to develop a plan of work based on the evaluation and needs assessment results to ensure that members of special populations are receiving adequate supplementary services and career planning.

Major Service Area Outcomes

As a result of special services and activities, members of special populations should improve in the areas of access to, progress through, and success in comprehensive Career and Technical Education. Comprehensive Career and Technical Education is comprised of preparatory programs and services, instructional programs and services, and transition services.

Preparatory Programs And Services

Preparatory programs and services are provided in the middle school or prior to a student's enrollment in a Career and Technical Education course at the secondary level. These services include, but are not limited to, outreach and recruitment of potential Career and Technical Education students; career guidance; assessment of special needs; and other appropriate services, programs or activities. Following the assessment process and guidance, appropriate plans are developed.

Instructional Programs And Services

Instructional programs and services should ensure that members of special populations have equal access to the full range of Career and Technical Education courses, make progress in basic and vocational skills through the use of supplementary services, and progress through their educational programs. Supplementary services must be documented on the Individual Education Program for students enrolled in special education or on the Career Development Plan-Plus for special populations students not enrolled in special education.

Transition Services

Transition services are provided for students enrolled in special education who are 16 years old or older to assist them in the transition from secondary to postsecondary education or employment.

Transition Services: The term "transition services" means a coordinated set of activities for a child with a disability that –

- (A) is designed to be within a results-oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child's movement from school to post-school activities, including post-secondary

- education, Career and Technical education, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation;
- (B) is based on the individual child's needs, taking into account the child's strengths, preferences, and interests; and
- (C) includes instruction, related services, community experiences, the development of employment and other post-school adult living objectives, and when appropriate, acquisition of daily living skills and functional vocational evaluation.

Who are Members of Special Populations?

Members of special populations are:

1. Individuals with disabilities;
 2. Individuals from economically disadvantaged families, including foster children;
 3. Individuals preparing for nontraditional training and employment;
 4. Single parents, including single pregnant women;
 5. Displaced homemakers; and
 6. Individuals with other barriers to educational achievement, including individuals with limited English proficiency.
1. **Children with Disabilities.** The term "children with disabilities" includes, without limitation, all children who, because of permanent or temporary mental, physical or emotional disabilities, need special education, are unable to have all their educational needs met in a regular class without special education and related services, or are unable to be adequately educated in the public schools.

Autism. Autism is a developmental disorder, which involves several areas of development: reciprocal social interaction skills, communication skills, and the presence of restricted and/or repetitive behavior, interests and activities.

Behaviorally-Emotionally Disabled. Behaviorally-emotionally disabled students are students who, after receiving specially designed educational support services and intervention strategies in the regular educational setting, still exhibit patterns of situational inappropriate interpersonal or intrapersonal behavior. The inappropriate behaviors must be long-standing patterns of behavior which occur regularly and often enough as to interfere consistently with the student's own learning process.

Deaf-Blind. Deaf-blind students have concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational problems that they cannot be accommodated in special education programs solely for deaf or blind children.

Hearing Impaired. Hearing impaired children are those with hearing losses which are disabling educationally and developmentally and who, with or without amplification, may require various instructional modifications and related services in order to make full use of their learning opportunities. Hearing impaired is a generic term, which includes deafness and all hearing losses ranging from mild to profound.

Mentally Disabled. Mentally disabled refers to those individuals with significantly sub-average general cognitive functioning and a reduced rate of learning. This condition exists concurrently with deficits in adaptive behavior, is manifested during the developmental period, and adversely affects the student's educational performance.

Multi-handicapped. Multi-handicapped students have a pervasive primary disability that is cognitive and/or behavioral in combination with one or more other disabilities, the combination of which causes such development and educational problems that the children cannot be accommodated in special programs that primarily serve one area of disability.

Orthopedically Impaired. An orthopedically impaired child possesses a severe orthopedic impairment, which adversely affects their educational performance. The term includes impairments caused by congenital abnormalities and impairments from other causes. Preschool children who are orthopedically impaired have an orthopedic impairment, which adversely affects physical and motor development and which interferes with the acquisition of skills. The term includes impairments caused by congenital abnormalities and impairments from other cause.

Other Health Impaired. Other health impaired students have chronic or acute health problems, which causes limited strength, vitality or alertness, including a heightened alertness to environmental stimuli, to such an extent that special educational services are necessary.

Pregnant Students. Pregnant students with special educational needs are those who, because of their pregnancy, require special education and/or related services other than that which can be provided through regular education services.

Developmentally Delayed. Children identified in this area are those ages three through seven whose development and/or behavior is so significantly delayed or atypical that special education and related services are required.

Specific Learning Disabilities. Specific learning disabilities is an inclusive term used to denote various processing disorders presumed to be intrinsic to an individual. For the purpose of special educational services students classified as learning disabled are those who, after receiving instructional intervention in the regular education setting, have substantial discrepancy between ability and achievement. The disability is manifested by substantial difficulties in the acquisition and use of skills in listening comprehension, oral expression, written expression, basic reading, reading comprehension, mathematics calculation, and mathematics reasoning.

Speech - Language Impaired. A pupil who has a speech-language impairment has a disorder in articulation, language, voice, and/or fluency. A speech-language impairment may range in severity from mild to severe. It may be developmental or acquired, and pupils may demonstrate one or any

combination of the four parameters listed above. A speech-language impairment may result in a primary disability or it may be secondary to other disabilities.

Traumatic Brain Injury. Traumatic brain injury is an acquired open or closed head injury caused by an external physical force that impairs a student’s cognitive, communicative, perceptual, behavioral, social-emotional, and/or physical abilities to the extent that the student requires special education. Congenital, degenerative, or brain injuries induced by birth trauma are not included in this definition.

Visually Impaired.

- Functionally blind children have so little remaining vision that
- They must use Braille as their reading medium.
- Partially sighted children have a loss of vision, but are able to use regular or large type as their reading medium. These will generally be children who have a visual acuity between 20/70 and 20/200 in the better eye after correction.
- Children who are legally blind have a visual acuity of 20/200 or less in the better eye after correction or a peripheral field so contracted that the widest diameter extends an arc no greater than 20 degrees.

2. **Individuals from economically disadvantaged families**—individuals who are economically disadvantaged or from an economically disadvantaged family and qualify for any of the following:
 - Aid to Families with Dependent Children,
 - Food Stamps, Free or reduced-price meals; and/or
 - Determined to be low-income according to the latest available data from the Department of Commerce or the Department of Health and Human Services Poverty Guidelines.
 - Is a foster child
3. **Individuals preparing for nontraditional training and employment**—individuals who are enrolled in Career and Technical Education courses which are linked to nontraditional/underrepresented occupations.
4. **Single parents, including single pregnant women**—unmarried single individuals with children and those expecting a child.
5. **Displaced homemakers**—individual experiencing a change in lifestyle due to unpredictable circumstances.
6. **Individuals with other barriers to educational achievement, including individuals with limited English proficiency**
 - A. **Academically Disadvantaged**—individuals who score below Level III on a standardized achievement test; or, below the 25th percentile on an aptitude test; or, has secondary school grades below 2.0 on a 4.0 scale (on which the grade “A” equals 4.0); or below 2.5 (on which the grade “A” is weighted); or, fails to attain minimum academic competencies.

- B. **Potential Dropouts**—individuals who may reasonably be expected to leave school for any reason before graduating or completing a program of study and without transferring to another school. Students in this category usually exhibit one or more of the following characteristics:
- Consistent low achievement,
 - High rate of absenteeism,
 - No motivation,
 - Constant discipline problems, or,
 - Delinquent behavior in school and in the community.
- C. **Individuals with limited English proficiency**— individuals who have difficulty understanding the English language and/or English is not the common language of communication in their home environment.

7. **Disabilities Covered under Section 504**

Section 504 regulation defines an “individual with handicaps” as any person who:

- Has a physical or mental impairment, which substantially limits one or more major life activities.
- Has a record of such an impairment, or
- Is regarded as having such an impairment.

The regulation further defines a physical or mental impairment as:

- Any physiological disorder or condition, cosmetic disfigurement, or anatomical loss affecting one or more of the following body systems:
 - neurological; musculoskeletal; special sense organs; respiratory, including speech organs; cardiovascular; reproductive; digestive, genitourinary; hemic and lymphatic; akin; and endocrine; or,
 - Any mental or psychological disorder, such as, mental retardation, organic brain syndrome, emotional or mental illness, and specific learning disabilities.

The key factor in determining whether a person is considered an “individual with handicaps” covered by Section 504 is whether the physical or mental impairment results in a substantial limitation of one or more major life activities. Further, with regard to a student, that impairment must affect learning in order for Section 504 to apply. Major life activities, as defined in the regulation, include functions such as caring for one’s self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning and working.

"Disabled" under Section 504 of the Rehabilitation Act of 1973 means that an individual has a physical or mental impairment. The impairments include any physiological disorder or condition, cosmetic disfigurement, or anatomical loss affecting one or more of the following body systems: neurological; musculoskeletal; special sense organs; respiratory, including speech organs; cardiovascular; reproductive, digestive, genitourinary; hemic and lymphatic; skin; and endocrine; or any mental or psychological disorder, such as mental retardation, organic brain syndrome, emotional or mental illness, and specific learning disabilities.

Local school administrative units shall make provisions to provide a wide range of support services as needed by members of special populations who are enrolled in a Career and Technical Education program.

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