

VOCATIONAL/TECHNOLOGICAL EDUCATION CURRICULUM MODEL

prepared by
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OVERVIEW

Substantial changes are taking place in the world's economy, and in the nature of occupations. The economic vitality of Arizona is directly linked to the ability of its workforce. Technological and economic changes are happening at a dramatic rate, and vocational/technological education must adapt to these changes. Through extensive involvement of Arizona business and industry, a new model for vocational/technological education has been developed and a variety of pilot programs have been conducted to evaluate various components of the new model.

The purpose of this presentation is to provide an update on the evolution of the new model, and to identify some of the continuing efforts to implement these new programs.

ASSUMPTIONS

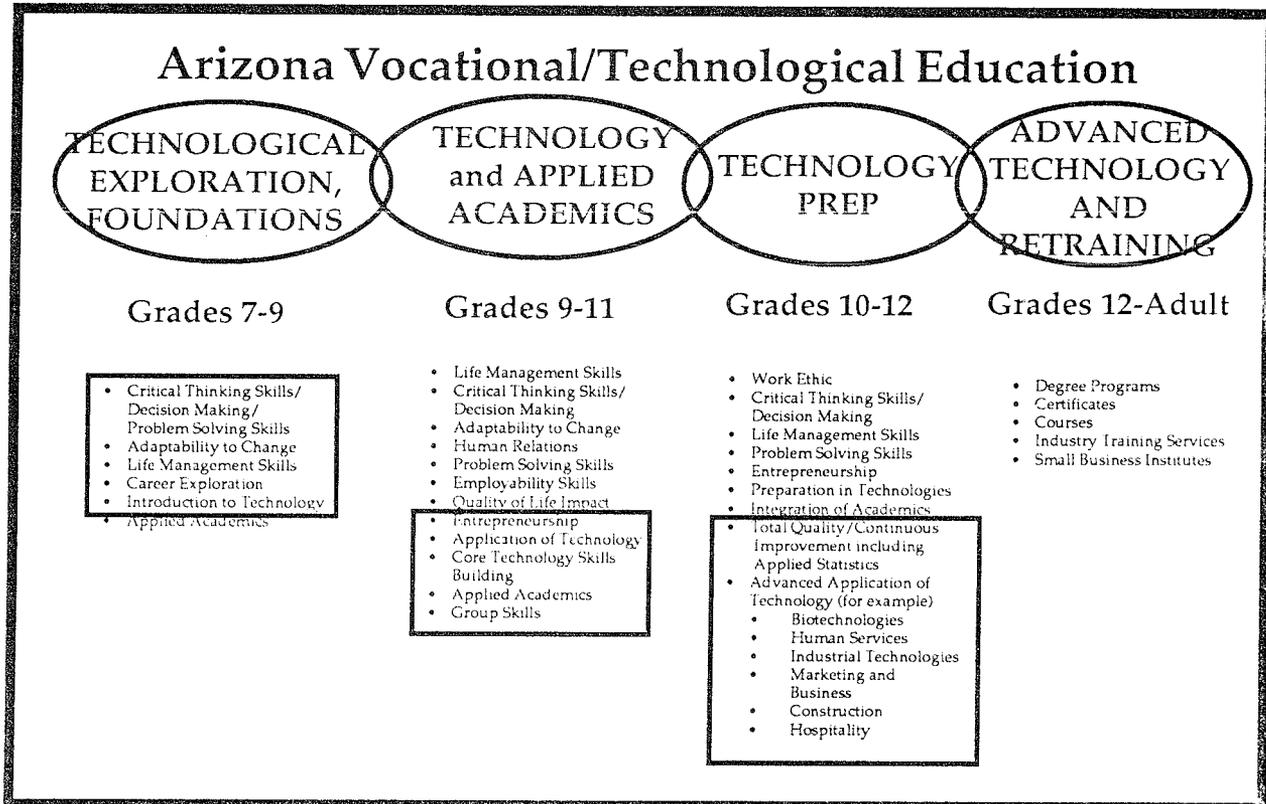
The Vocational/Technological Education Model was designed to respond to significant changes in the economy, in technology, and in the characteristics of the population we serve. Although there are many factors that must be considered, the following are major issues:

- Arizona must position itself to compete in a much more competitive world economy.
- Economic and technological changes will continue to occur at a rapid rate. This will change the skills needed by workers entering an occupation, and require significant retraining for those already employed.
- Because of changing technology, workers will need to have a stronger foundation in academic skills (math, communications and science) to allow them to adapt to the changes in occupations.
- Too many students either do not complete high school, or graduate from a "general" program that does not prepare them for employment or for an advanced educational program.

THE CURRICULUM MODEL

Arizona developed the Vocational/Technological Education Model to respond to the conditions described above. This model was based on much research on national trends, and with extensive input from Arizona business and industry representatives.

The curriculum model is based on four levels of instruction. Level I is designed to serve students in grades 7-8, Level II serves students in grades 9-10, Level III serves students in grades 11-12, and Level IV serves students in post-secondary roles.



CURRICULUM FRAMEWORK

Once the basic Model was developed, a steering committee was established to begin the process of designing an instructional framework. This committee was comprised of various staff members of the Arizona Department of Education, local vocational teachers and administrators, and business representatives. The role of this committee was to establish some basic direction for future curriculum development efforts.

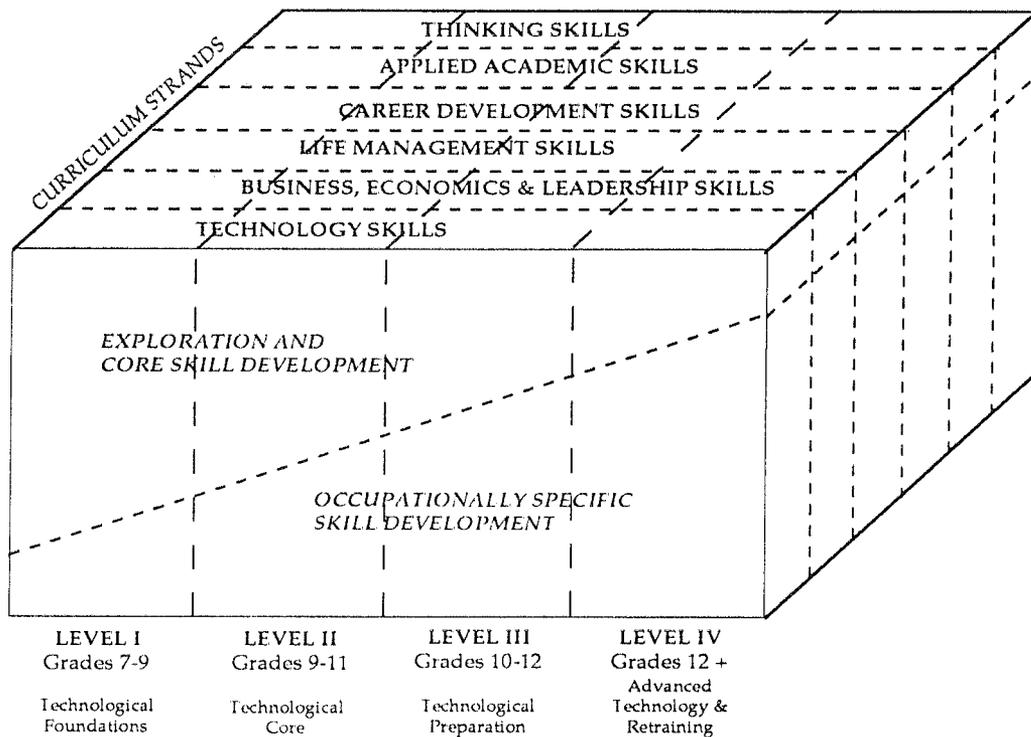
There are two distinct components of the curriculum framework that must be established. One component addresses the student outcomes that will occur as a result of implementation of the model. The second component will address the delivery system for implementation of the model, in other words, the courses and programs that will provide students with the opportunity to achieve the identified outcomes.

STUDENT OUTCOMES

In defining the basic student outcomes, the steering committee combined the existing concepts listed for each level of the model into six strands. These strands are:

- Thinking Skills
- Career Development Skills
- Applied Academic Skills
- Life Management Skills
- Business, Economic and Leadership Skills
- Technology Skills

These six strands are each incorporated as a component of each level of the model, as depicted in the illustration below.



As the illustration also indicates, the degree of occupational specialization increases at each level of the model. This progression allows students to build a foundation of core skills, and focus on more specific occupational areas as they progress through the model.

The steering committee also worked to develop a series of student outcomes for each of the four levels of the model, organized around the six strands previously identified. Those outcomes are listed on the following pages.

LEVEL I -- TECHNOLOGICAL EXPLORATION & FOUNDATIONS

THINKING SKILLS

- Describe the processes of decision making and problem solving
- Compare and contrast different decision making and problem solving skills
- Define and demonstrate how one acquires information
- Define a variety of creative thinking skills
- Describe the effects of change

CAREER DEVELOPMENT SKILLS

- Describe and demonstrate school and work ethics
- Identify and explore areas of career interest
- Experience meaningful and relevant activities related to areas of interest
- Explore occupational cluster choices

APPLIED ACADEMIC SKILLS

- Identify and demonstrate basic academic skills
- Describe the relationship between academic skills and occupational skills
- Identify careers which capitalize on specific academic strengths and interests

LIFE MANAGEMENT SKILLS

- Identify characteristics of effective interpersonal relationships
- Identify wellness, health and safety concepts
- Identify personal, economic and environmental resources
- Define self-concept and identify self-esteem issues
- Identify and explore group processes
- Perform effectively as an individual and member of a team

BUSINESS, ECONOMIC AND LEADERSHIP SKILLS

- Describe basic economic concepts and systems
- Describe the characteristics of a successful business
- Describe the value of work to the individual, community and nation
- Identify qualities and types of leaders
- Define and describe cultural diversity
- Explain the value of continually improving the work process

TECHNOLOGY SKILLS

- Describe and demonstrate basic technological principles and processes
- Demonstrate basic computer skills

LEVEL II -- TECHNOLOGY & APPLIED ACADEMICS

THINKING SKILLS

- Analyze simple problems; present and test possible solutions
- Select several decision making models to utilize in a problem solving situation
- Utilize information acquired from several sources
- Apply creative thinking skills to realistic situations and problems
- Identify methods for implementing change

CAREER DEVELOPMENT SKILLS

- Demonstrate appropriate school and work ethics
- Evaluate potential career interests or choices
- Develop core occupational skills required for identified areas of interest

APPLIED ACADEMIC SKILLS

- Reinforce academic skills through application in vocational and technological settings
- Develop academic, technological and personal strengths in relationship to a selected occupational cluster

LIFE MANAGEMENT SKILLS

- Apply strategies for developing positive social, family and work relationships
- Establish life-long wellness, health and safety practices
- Apply coping strategies to real life situations
- Demonstrate techniques for managing personal, economic and environmental resources
- Demonstrate effective group process techniques

BUSINESS, ECONOMIC AND LEADERSHIP SKILLS

- Describe the differences among economic systems and their relationship to the worker and consumer
- Describe the process of creating a new business
- Demonstrate team participation and leadership skills
- Identify the impact of cultural diversity in business
- Apply continuous improvement processes to work

TECHNOLOGY SKILLS

- Demonstrate technology skills specific to a cluster of related occupations
- Describe the positive and negative impact of technology

LEVEL III -- TECHNOLOGY PREPARATION

THINKING SKILLS

- Analyze complex problems; develop, present and defend solutions
- Utilize several problem solving models to solve a complex problem
- Apply information from one context to a second unrelated context
- Develop a plan for implementation of ideas
- Demonstrate creative ideas for a specific situation or problem

CAREER DEVELOPMENT SKILLS

- Demonstrate ability to make decisions that contribute to a productive work ethic
- Write a career plan and revise as needed
- Identify required training to achieve career choice
- Demonstrate job acquisition skills
- Demonstrate specific occupational skills needed for employment

APPLIED ACADEMIC SKILLS

- Apply integrated academic and vocational/technological skills in real and simulated situations
- Demonstrate related academic and vocational/technological skills for a selected occupation

LIFE MANAGEMENT SKILLS

- Develop strategies for balancing work, family and social relationships
- Relate wellness, health and safety concepts to life situations
- Formulate and evaluate a personal resource management plan
- Analyze personal strengths and weaknesses in relation to life and work goals
- Apply group process techniques to a specific occupational setting

BUSINESS, ECONOMIC AND LEADERSHIP SKILLS

- Describe the role of global competition and its effects on the individual and the workplace
- Apply economic concepts to a selected business
- Develop a plan for starting a new small business
- Accept leadership responsibilities
- Interact and effectively communicate with members of diverse cultures
- Describe the value of productively managing human resources, methods, machines, materials and the environment

TECHNOLOGY SKILLS

- Demonstrate technological skills for a specific occupation
- Apply statistical process controls to a specific occupation

LEVEL IV -- ADVANCED TECHNOLOGY & RETRAINING

THINKING SKILLS

- Analyze several complex problems simultaneously; present, test and defend solutions
- Utilize several problem solving models to solve several complex problems simultaneously
- Apply information from several contexts to multiple contexts
- Monitor and/or assess effectiveness of an implementation plan
- Monitor and evaluate the effects of change
- Apply creative processes in real life situations

CAREER DEVELOPMENT SKILLS

- Compare quality-of-life goals and career options
- Increase skills to become a more marketable commodity in the global economy
- Use job acquisition skills to obtain employment in the workforce

APPLIED ACADEMIC SKILLS

- Complete related academic courses which enhance current and future occupational choices
- Evaluate career plans on a continuing basis to determine appropriate educational strategies

LIFE MANAGEMENT SKILLS

- Establish and maintain positive social, family and work relationships
- Apply wellness, health and safety concepts
- Adapt to changing life situations
- Continually evaluate the management of personal resources and revise the management plan
- Redefine personal and work related goals
- Effectively participate as an individual and as a team member

BUSINESS, ECONOMIC AND LEADERSHIP SKILLS

- Describe the effects of changing economic and political conditions on the quality of life
- Develop plans for expanding an existing business
- Accept leadership roles in school, business and the community
- Expand and cultivate relationships to improve human relations and increase domestic and international business opportunities
- Apply continuous improvement to solving problems and making decisions

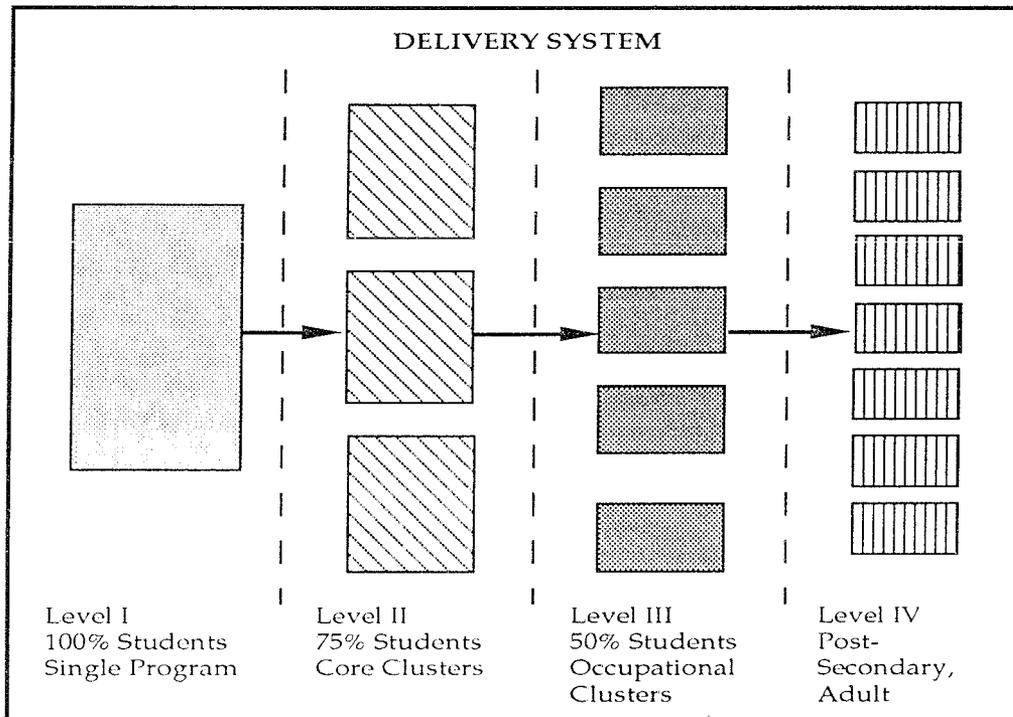
TECHNOLOGY SKILLS

- Demonstrate skill with new and emerging technologies
- Adapt to changes in technology
- Develop new applications for technology

DELIVERY SYSTEM

The second component of the total curriculum framework is the delivery system. A delivery system is a series of courses, programs and/or experiences that provides students the opportunity to learn and demonstrate achievement of the desired outcomes.

Although significant additional research and development is necessary to design the appropriate delivery system for the Model, the following characteristics have been identified.



- Level I -- will consist of a specific course/program offered at the 7th-8th grade level, with the goal of serving 100% of the students in those grades.
- Level II -- will consist of several cluster courses or programs that provide students with core skills for a group of related occupations. It is envisioned that at least 75% of all students in grades 9-10 will participate in these courses/programs.
- Level III -- will consist of courses or programs that serve a specific occupational area or a smaller cluster of occupations than Level II. It is projected that at least 50% of students in grades 11-12 will participate in these types of programs.
- Level IV -- will consist of various post-secondary programs, including articulated "tech-prep" or "2+2" programs. Level IV will also include adult and retraining programs, such as Industry Training Services.

A critical component of the design of the delivery system is that students be provided the opportunity to participate in a coherent program of instruction. Through a significant effort for career development (or career guidance), students must be able to select the experiences that will enable them to obtain the appropriate skills for employment, or for entry into an advanced educational program.

FUTURE PLANS

The Program Improvement Unit intends to conduct a significant research and development activity during 1990-91. The purposes of this activity will include the following:

- Updating research on occupational demand in Arizona
- Revalidation of occupational program competency lists for occupations with the highest demand
- Development of a coherent scope and sequence for the Model, reflecting course and program sequences for specific occupational areas
- Development of course of study and curriculum guide for Level I of the Model

Throughout this process, the Steering Committee, business and industry, and local vocational teachers and administrators will be actively involved. The development of the Model is a fundamental component in the restructuring of Vocational/Technological Education in Arizona.