

Academic Excellence



Through



Career and

Technical Education

**A Resource Kit
Incorporating
the
CTE Curriculum
Matrix**

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Chapter I Overview

A Changing World

Education, employment, and economic development in the United States are at a crossroads. They have all arrived at this critical juncture at the same time because of the interrelationship among them. The United States is transitioning from an industrial-based economy with strong remnants of an agrarian economy to an information, knowledge-based economy. This transition has led to the interconnection of education, employment, and economic development issues.

In studying these issues, the International Center for Leadership in Education has found that the skills, knowledge, and attitudes that students and workers require for the job market are relatively easy to identify. A rich body of research guides this effort.

The increasingly sophisticated workplace requires three sets of skills of most workers:

- Strong academics, especially in English language arts, math, and science, as well as computer skills
- Career specific skills for a chosen career cluster
- Virtues such as honesty, responsibility, and integrity.

Creating a CTE Curriculum Matrix

In the past two decades, business has been the prime mover behind school reform. The push began when business underwent fundamental structural change in the 1970s and 1980s. As a result, there was a change in the type of skills needed in the workplace and an increase in the level of competency needed in basic academic skills.

The education community heard the cry for higher standards and incorporated those higher standards into the current education paradigm. For example, to respond to the desire of employers to have workers with better reading skills, schools added more literature to the curriculum. What educators did not understand was that the work world demanded skills for reading a different type of material.

Now education faces an interesting quandary. Business pushed for higher standards and accountability as reflected in state tests. Schools

have to ensure that their students pass those tests. Some of the students who would typically enroll in CTE programs are the students who need more time and extra help to meet the academic standards. Many of these students have been prevented from participating in CTE so they could spend more time in academic courses, learning the traditional academic content and skills by traditional methods.

Career and technical education can enhance academics while directly promoting application-based learning

The time has come for a mid-course correction. In education's quest to raise standards, we may have actually lowered them in terms of the academic skills and knowledge needed for the 21st century workplace.

To make that mid-course correction, the International Center for Leadership in Education began conducting research and compiling data. We found that two data sets were needed:

1. what is on the state tests that students must take in terms of the state academic standards in English, math, and science
2. how those standards relate to the skills and knowledge that students will use in adult life.

The skills students need for success in life were determined through the International Center's Curriculum Survey of Essential Skills.

The International Center brought this information together in a Curriculum Matrix specific to a state. The Curriculum Matrix helps educators to focus on instruction on the content knowledge/skills that are most likely to be tested and the knowledge/skills that students need for success in their post-school activities.

This kit takes the Curriculum Matrix on step further. The CTE Curriculum Matrix crosswalks the state standards and essential skills to CTE programs to determine where they relate to each other. Now it is possible for CTE teachers to incorporate the tested and essential academic skills in their programs.

The Curriculum Matrix is included in *Aligning Standards, Tests and Essential Skills to Improve Instruction*, published by the International Center.

The development of the academic skills students need for the workplace and for state tests needs to be a shared responsibility of academic teachers and career and technical education teachers. Furthermore, students are more likely to master the most essential academic skills when they are taught and reinforced in a variety of settings.

What's in a Name?

The trend in contemporary K-12 vocational education is away from the use of the word “vocational” to label these programs. Many states have followed the lead of the national vocational education organizations and adopted the term “career and technical education”. Others use variations, such as career and technology education and professional-technical education. The changing terminology reflect a changing economy, in which technical careers have become the mainstay.

When the term “career education” first became popular in the 1970s, it was distinguished from vocational education by its emphasis on general employability and adaptability skills applicable to all occupations while vocational education was primarily concerned with occupational skill training for specific occupations. That basic definition of career education remains appropriate today.

Career Clusters

Some of the staff development materials in this kit are keyed to the 16 career clusters identified by The U.S. Department of Education Office of Vocational and Adult Education. These broad career areas reflect a new direction for education. The careers in each cluster range from entry level through professional/technical management in a broad industry field. Career clusters provide a way for schools to organize students and course offerings so students can learn about the whole cluster of occupations in a career field. Clusters are an excellent way to assist students in identifying their interests and goals for the future.

The 16 career clusters are:

- Agriculture and Natural Resources
- Architecture and Construction
- Arts, Audiovisual Technology and Communications
- Business and Administration
- Education and Training
- Finance
- Government and Public Administration
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology
- Law and Public Safety
- Manufacturing
- Retail/Wholesale Sales and Services
- Scientific Research/Engineering
- Transportation, Distribution and Logistics

Preparation of students in the career clusters must include:

1. academic skills
2. cluster-specific standards
3. broad transferable skills.

All of these aspects of the curriculum should be organized in a continuum. As students grow and develop through this continuum, they will prepare themselves for broader and higher-level opportunities.

This kit is intended to help CTE teachers identify essential academic skills to include in their curricula to increase the rigor for all students and provide strategies for teaching students how to use the knowledge in workplace applications. The International Center believes that for CTE programs to flourish, they need to do the following:

- design programs based on data by incorporating into the curriculum (1) the academic skills that are state-tested, and (2) broad-based skills needed for future employment.
- focus on teaching the processes of application of knowledge for job clusters
- use research on learning and successful programs, such as the motivation of relevancy, the benefits of applied settings, and the appeal to students' interests/aptitudes.

This kit contains:

- a narrative that describes the challenges to career and technical education, standards and assessments, how data can help improve programs, and ways to make programs both rigorous and relevant
- the CTE Curriculum Matrix
- Gold Seal Lessons to assist teachers in incorporating academics in their programs
- professional development activities using the Matrix and the Rigor/Relevance Framework
- the national rankings of the essential skills
- videotaped presentations for awareness and staff development.

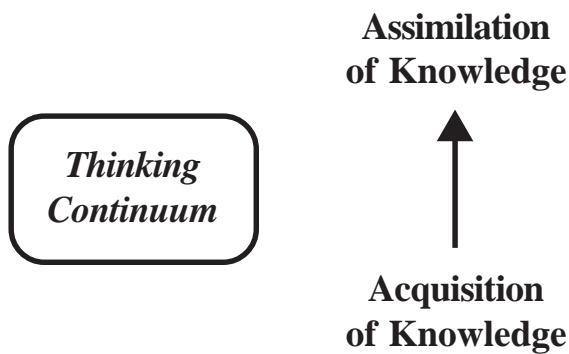
Purpose of this Kit

There are no magic formulas for student success. Too many dynamics are involved. Some paths to success are identifiable, however. This kit will help CTE teachers identify the essential versus nice-to-know versus not necessary academic skills. Using the CTE Curriculum Matrix, teachers can teach and reinforce the essential English language arts, math, and science skills in their curriculum as they prepare students for the workplace and to pass state tests.

The Rigor/Relevance Framework is a powerful tool for making changes in curriculum and assessment which support higher standards and improved learning for students. In the face of growing international competition and expanding information and technology, producing a well educated work force must become a goal of schools.

**Rigor/Relevance
Framework**

The Rigor/Relevance Framework is a tool developed by staff of the International Center to examine curriculum, instruction, and assessment. The Framework is based on two dimensions of higher standards and student achievement. First there is a continuum of knowledge that describes the increasingly complex ways in which we think. The knowledge continuum is based on Bloom's Taxonomy.



The low end of this continuum is simply acquiring knowledge and being able to recall or locate that knowledge in a simple manner (acquisition level). Just as a computer completes a word search in a word processing program, a competent person at this level can scan through thousands of bits of information in the brain to locate that desired knowledge.

The high end of the continuum labels more complex ways in which individuals use knowledge. At this level, knowledge is fully integrated into one's mind, and individuals can do much more than locate knowledge. They can take several pieces of knowledge and combine them in both logical and creative ways. Assimilation of knowledge is a good way to describe this high level of the thinking continuum. Assimilation is often referred to as higher-order thinking skills: at the assimilation level, the student can solve multistep complex problems and create unique work and effective solutions.

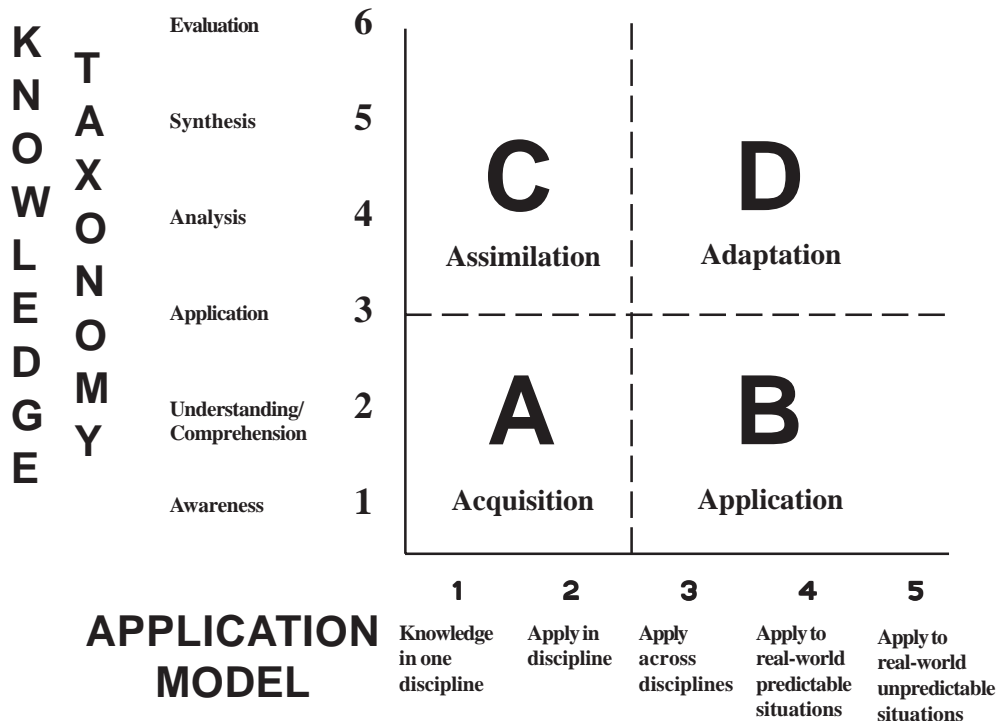
The second continuum is one of action. While the thinking continuum can be very passive, the action continuum describes putting knowledge to use. At the low end (acquisition level) we have knowledge acquired for its own sake. At the high end is action—the use of that knowledge to solve complex problems, particularly from the real world, and to create projects, designs, and other works.

A more extensive discussion of the Rigor/Relevance Framework can be found in *Planning Rigorous and Relevant Instruction: A Resource Kit*, which includes activities for understanding how to use the Framework in planning instruction and assessment.



The thinking continuum can be expressed through a six-point knowledge taxonomy, known as Bloom's Taxonomy. The five-point Application Model describes the levels of the action continuum. Combined, they become the Rigor/Relevance Framework, shown on the following page.

Rigor/Relevance Framework



Four Quadrants

The Rigor/Relevance Framework has four quadrants. Quadrant A represents simple recall and basic understanding of knowledge for its own sake. Quadrant C represents more complex thinking but still knowledge for its own sake. Examples of quadrant A are knowing that the world is round and that Shakespeare wrote *Hamlet*. Quadrant C embraces higher levels of knowledge, such as knowing how the U.S. political system works and analyzing the benefits and challenges of the cultural diversity of this nation versus other nations. The second type of knowledge/skills also comprises two quadrants. Quadrants B and D represent action or high degrees of application. Quadrant B would include knowing how to use math skills to make purchases and count change.

The ability to access information in wide-area network systems and to gather knowledge from a variety of sources to solve a complex problem in the workplace are types of quadrant D knowledge.

Here is an example involving technical reading and writing.

- Quadrant A: Recall definitions of various technical terms.
- Quadrant B: Follow written directions to install new software on a computer.
- Quadrant C: Compare and contrast several technical documents to evaluate purpose, audience, and clarity.
- Quadrant D: Write procedures for installing and troubleshooting new software.

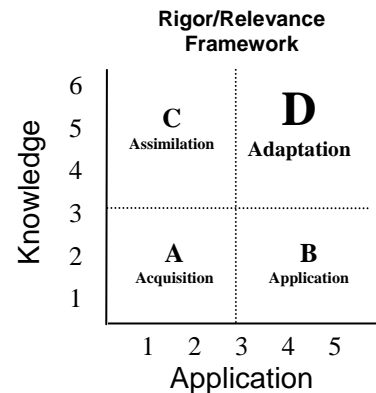
Each of these four quadrants can also be labeled with a term that characterizes the learning or student performance.

- Quadrant A** **Acquisition:** Students gather and store bits of knowledge and information. Students are primarily expected to remember or understand this acquired knowledge.
- Quadrant B** **Application:** Students use acquired knowledge to solve problems, design solutions, and complete work. The highest level of application is to apply appropriate knowledge to new and unpredictable situations.
- Quadrant C** **Assimilation:** Students extend and refine their acquired knowledge to be able to use that knowledge automatically and routinely to analyze and solve problems and create unique solutions.
- Quadrant D** **Adaptation:** Students have the competence to think in complex ways and also apply knowledge and skills they have acquired. Even when confronted with perplexing unknowns, students are able to use extensive knowledge and skills to create solutions and take action that further develops their skills and knowledge.



ETHNIC DINING

Gold Seal Lesson



Career Cluster - Hospitality and Tourism

Curriculum Area

**FAMILY AND CONSUMER SCIENCE
TRADE & INDUSTRIAL/CULINARY ARTS**

Grades 9 – 12

Instructional Focus

Writing: Students write for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.
Speaking: Students speak for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.
Listening: Students listen for a variety of purposes appropriate to the grade level.
Technology: Students word-process their findings and conclusions.

Performance Task

This task exposes students to other cultures by examining foods typical of that culture. Students will identify and profile three ethnic dining establishments in a magazine article. Write-up will include descriptions of each ethnic dining category and identification of the differences in diets and dining habits among cultures.

Students must:

- Identify ethnic dining categories for analysis
- Profile ethnic dining habits within each category
- Identify three ethnic restaurants in the area (or use the Internet to identify ethnic restaurants in a large city)
- Compile collected information in an article written for an appropriate magazine
- Word-process all findings

Lastly, students will make an oral presentation that includes the name of each of the three dining establishments, translation of name (if applicable), location, days/hours of operation, price range of menu items, décor, and brief description of any ethnic entertainment or any other unusual characteristics.

Scoring Guide

4 Points

The student selected and described three diverse ethnic restaurants in an informative and creative way. Written work had no errors in spelling, grammar, mechanics, or sentence structure. Student utilized research time well. Oral presentation was understandable and complete; speaking was audible and clear.

3 Points

The student selected and described three ethnic restaurants in an informative and creative way. Written work contained minor errors in spelling, grammar and mechanics. The student utilized research time well to satisfactorily. Oral presentation was mostly understandable, generally clear and audible. Information was complete.

2 Points

The student selected and described three restaurants in a reasonably informative way. Written work contains major sentence structure, spelling, grammar and mechanics problems. Student utilized research time satisfactorily. Oral presentation was confusing; speaker was unclear and unprepared, and some required information was missing.

1 Point

The student selected and described fewer than three restaurants. Assignment is incomplete or missing content findings. Written work needs serious revision and editing due to sentence structure, spelling, grammar, and mechanics problems found throughout the written work. Student did not utilize research time well. Oral presentation was difficult to hear, and required information was not conveyed.

Essential Skills

- Apply in writing the rules and conventions of grammar, usage, punctuation, paragraphing and spelling. (e1)
- Present information in well-organized fashion that will be clear to the target audience. (e11)
- Exhibit good data management skills by collecting, organizing data. (s19)

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**Using the
CTE Curriculum
Matrix**

Purpose



This activity gives CTE teachers practice using the CTE Curriculum Matrix. By analyzing the CTE Curriculum Matrix, teachers will understand its organization, categories, and priority ratings. Once they are familiar with the Matrix, CTE teachers will see its value for identifying academic essential skills that can easily be integrated into Career and Technical Education curriculum.

Preparation

- Make copies of relevant pages from your CTE Curriculum Matrix (found in Chapter V)
- Make copies of the **CTE Curriculum Matrix Discussion Questions** worksheet

Procedure

Time
1 hour

1. Review the origin and meaning of the information displayed on the CTE Curriculum Matrix.
2. Group teachers by CTE area.
3. Have teachers work in pairs or small groups to analyze the information on the CTE Curriculum Matrix to identify skills that can be integrated into their CTE curriculum. Have them respond to each of the questions on the handout:
 - Which topics/performance indicators are most valued by the community?
 - Which topics/performance indicators are emphasized on state assessments?
 - Which topics/performance indicators/essential skills can easily be taught in the CTE course?
 - How could you use this information?
4. Lead a full-group discussion on what was learned and what needs to be modified in CTE instruction to help students master those academic standards with high priority ratings based on the CTE Curriculum Matrix information.

CTE Curriculum Matrix Discussion Questions

**Which topics/performance indicators
are most valued by the community?**

**Which topics/performance indicators
are emphasized on state assessments?**

**Which topics/performance indicators/
essential skills can easily be taught in the
CTE course?**

How could you use this information?