

INTEGRATING COMMON CORE IN CAREER AND TECHNICAL EDUCATION MINI-GRANT FRAMEWORK

Purpose:

- (1) To improve VALEES Career and Technical Education (CTE) students' English and mathematics achievement. (See attached CTE English and mathematics frameworks)
- (2) To promote collaboration among CTE educators, English and mathematics teachers, and business partners to connect pedagogy with workplace expectations.
- (3) To help students connect schoolwork with the world of work.

Eligible Applicants: VALEES member districts/cooperatives and CTE / Vocational Centers.

Expectations of Local Educational Agency

Implementation: Grant activities should incorporate the following components as applicable:

- (1) alignment of activities with Common Core Standards;
- (2) align with the CTE English and mathematics framework (see following pages);
- (2) collaborative instructional design among CTE teachers and academic teachers that integrate mathematics within their curriculum (example: CTE, mathematics, science, special education teachers);
- (3) pre- and post-assessment of CTE participating students if applicable;
- (4) professional development aligned with grant activities;
- (5) a final report filed with VALEES by May 2, 2017 (form provided). The final report must include documentation of expenditures, i.e., time sheets, copies of invoices or other documentation as applicable.

Projects could include activities such as, but not limited to:

- Implementation of KeyTrain in CTE in collaboration with academic teachers.
- Curriculum alignment between CTE program area(s) and mathematics curriculum.
- Developing integrated English or mathematics lesson plans for CTE and core classes.
- Professional development focusing on integrating mathematics or language arts in CTE and workplace or career preparation application of mathematics or language arts in academic courses.

Career and Technical Education Mathematics Framework

Purpose: To improve VALEES Career and Technical Education (CTE) students' mathematics achievement.

Identified Need: CTE teachers within VALEES and national reports have identified the need to improve the level of mathematics performance in the workplace, given the emergence of rapidly changing technology and increasing demands of a global economy on the workforce.

Math content should emerge from a work-place context and help students and teachers see real-world connections.

Framework: This initiative of integrating mathematics within CTE curricula is based upon the premise that for many students math content can effectively be addressed in a workplace context. Our goals are to:

- (1) promote collaborative work among CTE, mathematics, and others teachers to identify math concepts inherent in occupational curricula and design instructional activities which teach mathematics within an occupational context;
- (2) improve students' abilities to solve practical problems using mathematics in their CTE coursework;
- (3) enhance teacher and student understanding of the practical applications of mathematics in the workplace.

Professional development and external facilitation will support instructional design teams as they create math- enhanced lessons aligned with CTE curricula.

This framework is intended to align cross-curricular mathematics content and pedagogy. Primary goals of this effort include helping CTE teachers learn how to develop and teach math-enhanced lessons and mathematics educators to better understand how to incorporate real-world applications in lesson planning. This framework is based primarily upon the work of Stone, Daggett, Marzano and Conzemius (see bibliography).

Strategy: Processes central to the design of this initiative are:

- (1) collaborative design teams comprised of educators in the areas of CTE, mathematics, special population teachers, other teachers that incorporate mathematics within their curriculum, and administrative instructional leaders;
- (2) professional development focusing on curriculum mapping and developing instructional strategies based on theories of contextual learning;
- (3) evaluation of program effectiveness based upon measurement of student achievement using standardized tools such as KeyTrain, Work Keys, local assessments, and qualitative data gained from educators and students;
- (4) technology based resource sharing.

Assessment of student achievement and program evaluation will be conducted by each design team.

The implementation model will align professional development; cross-curricular instructional design that is mindful of state standards and Work Keys skill levels; classroom implementation with external facilitator support as appropriate; assessment of gain in student achievement; and, evaluation of program design.

Annotated Bibliography: Integrating Mathematics In CTE

Conzemius, Anne and O'Neill, Jan. *Building Shared Responsibility for Student Learning*, Association for Supervision and Curriculum Development, 2001.

In this book Conzemius and O'Neill "blaze a path to educational responsibility – to *shared* responsibility for student learning." Shared responsibility occurs when the school staff understands what "success" means and when learning takes place as the result of common focus, collaboration, and reflection [assessment and ongoing evaluation].

Daggett, Willard R. *Achieving AYP Using State-specific Curriculum Data Matrix*, International Center for Leadership In Education, www.icle.net

User-friendly crosswalks of state standards to English, math, and science assessments; professional development activities and 150 Gold Seal Lessons linked to essential skills for grades K-12.

Daggett, Willard R. *Successful Schools: From Research To Action Plans*, International Center for Leadership In Education, June 2005. www.icle.net

A comprehensive analysis of effective schools research that identifies ten central findings that schools should use as a platform for success in reform initiatives: create a culture of high expectations for all students, use data in decision making, provide real-world applications, create a framework to organize curriculum, create multiple pathways for students to pursue excellence, set high expectations, sustained focused professional development, leverage parental involvement, establish a safe and orderly environment, and provide effective leadership.

Marzano, Robert J. *What Works In Schools: Translating Research Into Action*, Association for Supervision and Curriculum Development, 2003.

A synthesis of research underlying prevailing effective schools models including a statistical analysis of school, teacher, and student factors that can lead to high impact school improvement. Marzano ranks a guaranteed and viable curriculum and challenging learning goals as the top two high impact school level factors.

Stone, James R. III. *Building Academic Skills In Context: Testing the Value of Enhanced Math Learning In CTE*, National Research Center for Career and Technical Education and University of Minnesota, July 2006. (Report in entirety can be found at www.nccte.org/publications/shop/index.aspx)

An experimental study tested a model for enhancing mathematics instruction in five high school career and technical education (CTE) programs (agriculture, auto technology, business/marketing, health, and information technology). The model consisted of a pedagogy and intense teacher professional development. Volunteer CTE teachers were randomly assigned to an experimental (n = 57) or control (n = 74) group. The experimental teachers worked with math teachers in communities of practice to develop CTE instructional activities that integrated more mathematics into the occupational curriculum. After 1 year of the math-enhanced CTE lessons averaging 10% of class time, students in the experimental classrooms performed significantly better on 2 tests of math ability—the TerraNova and ACCUPLACER®—without any negative impact on measures of occupational/technical knowledge.

WorkKeys / KeyTrain. ACT. www.keytrain.com

The WorkKeys® Employment System is a comprehensive system for measuring, communicating and improving the common skills required for success in the workplace. It allows these skills to be quantitatively assessed in both individual persons and in actual jobs. Therefore Work Keys can allow you to correctly identify individuals who have the basic skills required to be successful in a given position or career. Key Train™ is a comprehensive, yet easy-to-use system for improving the basic skills measured by the Work Keys® Employment System.

VALEES Career and Technical Education English, Reading and Communications Framework

Purpose: To improve VALEES Career and Technical Education (CTE) students' communication skills.

Identified Need: CTE teachers within VALEES and national reports have identified the need to improve the level of reading and communications performance in the workplace, given the emergence of rapidly changing technology and increasing demands of a global economy on the workforce.

Communication content should emerge from a work-place context and help students and teachers see real-world connections.

Framework: This initiative of integrating reading and communications (verbal and non-verbal) within CTE curricula is based upon the premise that for many students communications can effectively be addressed in a workplace context. Our goals are to:

- (1) promote collaborative work among CTE, language arts, and other teachers to identify communications concepts inherent in occupational curricula and design instructional activities which teach communications within an occupational context;
- (2) improve students' abilities to communicate effectively in their CTE coursework;
- (3) enhance teacher and student understanding of the practical applications of reading and all forms of communication in the workplace.

Professional development should support instructional design that promotes reading across the curriculum lessons aligned with CTE curricula and state standards.

This framework is intended to align cross-curricular language arts content and pedagogy. Primary goals of this effort include helping CTE teachers learn how to develop and teach language arts-enhanced lessons and all educators to better understand how to incorporate real-world applications in lesson planning. This framework is based primarily upon the work of Stone, Daggett, Billmeyer, Tovani, Marzano and Conzemius (see bibliography).

Strategy: Processes central to the design of this initiative are:

- (1) collaborative design teams comprised of educators in the areas of CTE, language arts, special population teachers, other teachers that incorporate communication skills within their curriculum, and administrative instructional leaders;
- (2) professional development focusing on curriculum mapping and developing instructional strategies based on theories of contextual learning;
- (3) evaluation of program effectiveness based upon measurement of student achievement using standardized tools such as KeyTrain, Work Keys, local assessments, and qualitative data gained from educators and students;
- (4) technology based resource sharing.

Assessment of student achievement and program evaluation will be conducted.

The implementation model will align professional development; cross-curricular instructional design that is mindful of state standards and Work Keys skill levels; classroom implementation with external facilitator support as appropriate; assessment of gain in student achievement; and, evaluation of program design.

Bibliography Reading and Communications Framework

- Billmeyer, Rachael and Mary Lee Barton. *Teaching Reading in the Content Areas: If Not Me, Then Who?* 2nd Edition. Mid-continent Research for Education and Learning, Aurora, Colorado, 2002.
- Conzemius, Anne and O'Neill, Jan. *Building Shared Responsibility for Student Learning*, Association for Supervision and Curriculum Development, 2001.
In this book Conzemius and O'Neill "blaze a path to educational responsibility – to *shared* responsibility for student learning." Shared responsibility occurs when the school staff understands what "success" means and when learning takes place as the result of common focus, collaboration, and reflection [assessment and ongoing evaluation].
- Daggett, Willard R. *Achieving AYP Using State-specific Curriculum Data Matrix*, International Center for Leadership In Education, www.icle.net
User-friendly crosswalks of state standards to English, math, and science assessments; professional development activities and 150 Gold Seal Lessons linked to essential skills for grades K-12.
- Daggett, Willard R. *Successful Schools: From Research To Action Plans*, International Center for Leadership In Education, June 2005. www.icle.net
A comprehensive analysis of effective schools research that identifies ten central findings that schools should use as a platform for success in reform initiatives: create a culture of high expectations for all students, use data in decision making, provide real-world applications, create a framework to organize curriculum, create multiple pathways for students to pursue excellence, set high expectations, sustained focused professional development, leverage parental involvement, establish a safe and orderly environment, and provide effective leadership.
- Marzano, Robert J. *What Works In Schools: Translating Research Into Action*, Association for Supervision and Curriculum Development, 2003.
A synthesis of research underlying prevailing effective schools models including a statistical analysis of school, teacher, and student factors that can lead to high impact school improvement. Marzano ranks a guaranteed and viable curriculum and challenging learning goals as the top two high impact school level factors.
- Stone, James R. III. *Building Academic Skills In Context: Testing the Value of Enhanced Math Learning In CTE*, National Research Center for Career and Technical Education and University of Minnesota, July 2006. (Report in entirety can be found at www.nccte.org/publications/shop/index.aspx)
An experimental study tested a model for enhancing mathematics instruction in five high school career and technical education (CTE) programs (agriculture, auto technology, business/marketing, health, and information technology). The model consisted of a pedagogy and intense teacher professional development.
- Tovani, Cris. *Do I Really Have to Teach Reading? Content Comprehension, Grades 6-12*. Stenhouse Publishers, 2004.
- WorkKeys / KeyTrain. ACT. www.keytrain.com
The WorkKeys® Employment System is a comprehensive system for measuring, communicating and improving the common skills required for success in the workplace.

STRENGTHENING 21st-CENTURY EMPLOYABILITY SKILLS MINI-GRANT FRAMEWORK

Purpose: To strengthen employability skills of VALEES Career and Technical Education students. (See attached Strengthening Employability Skills framework.)

Eligible Applicants: VALEES member districts/cooperatives and CTE / Vocational Centers.

Expectations of Local Educational Agency

Implementation Grant activities should incorporate the following components as applicable:

- (1) identification of specific employability skills to be addressed and implementation strategies that may be applied across CTE program areas,
- (2) exploration of non-traditional approaches to improve employability skills,
- (3) professional development aligned with the action plan,
- (4) a final report filed with VALEES by May 2, 2017 (form provided). The final report must include documentation of expenditures, i.e., time sheets, copies of invoices or other documentation as applicable.

Projects could include activities such as, but not limited to:

- Implementation of KeyTrain and/or Career Cruising in CTE in collaboration with academic teachers.
- Developing instructional strategies to improve students' workplace skills.
- Developing career awareness curricula to enhance students' awareness of workplace expectations and career pathways.
- Integrating strengthening employability skills strategies across the curriculum.

Strengthening 21st-Century Employability Skills

Purpose: To strengthen employability skills of VALEES Career and Technical Education (CTE) students.

Identified Need: Employers and educators continue to identify a gap between desired employability skills and employee on-the-job performance. Employability skills include not only technical skills but also “soft skills” including positive attitudes and behaviors such as attendance, being on time for work, integrity, work ethics, responsibility, adaptability, working with others, creativity, and problem solving. (See bibliography)

Students need to develop behaviors, attitudes, and ways of thinking that meet 21st century workplace expectations.

Goals: Focusing attention on the continuing need for students to possess general, transferable employability skills, and for employers to recognize the changing nature of “generation next” employees will enhance students’ personal growth and employability. Goals of this initiative are to:

- (1) help CTE educators and students develop a better understanding of the critical “soft skills” required for success in the workplace;
- (2) assist CTE educators in developing strategies to incorporate employability skill training within CTE curricula;
- (3) develop a framework which engages business/industry representatives to inform students and educators about workplace expectations;
- (4) help employers better understand “generation next” characteristics;
- (5) expand staff knowledge and understanding of entrepreneurship and intrapreneurship.

CTE educators and business / industry leaders will benefit from a better understanding of employability skills training in relationship to “generation next” employees.

Strategy: Activities to support this initiative may include:

- (1) provide inservice opportunities for CTE committee members and school leaders to improve students’ employability skills;
- (2) develop strategies to inform employers about “generation next” characteristics and strategies to recognize these characteristics in the workplace;
- (3) develop a model strategy that engages business/industry representatives with students to share workplace expectations;
- (4) assist schools in exploring methods to help students become more self-managed and reflective about career choices, including examining “habits of mind” as an emerging definition of how intelligent people behave (Costa);
- (5) expand staff knowledge and understanding of entrepreneurship and intrapreneurship.

A combination of providing workshops, resource materials, and utilization of varied communication technologies may be used to support this effort. Components of KeyTrain and/or Career Cruising along with local data sources such as attendance, tardies, and related classroom measures may be used to measure gains for those districts that identify this area as a priority focus.

Annotated Bibliography Strengthening Employability Skills

Career Advice, Rotary Club of Port Louis in cooperation with Mauritius Employers Federation, 2002. www.rotaryportlouis.com/career.htm

This publication is designed to distribute career information in a concise structured manner and to serve as a model for schools, colleges, and universities.

Costa, Arthur and Kallick, Bena. *Discovering & Exploring Habits of Mind*, ASCD, 2000.

The authors identify sixteen habits of mind that are identified as universal characteristics of intelligent behavior. They are: (1) persisting, (2) managing impulsivity, (3) listening with understanding and empathy, (4) thinking flexibly, (5) thinking about thinking (metacognition), (6) striving for accuracy, (7) questioning and posing problems, (8) applying past knowledge to new situations, (9) thinking and communicating with clarity and precision, (10) gathering data through all senses, (11) creating, imagining, innovating, (12) responding with wonderment and awe, (13) taking responsible risks, (14) finding humor, (15) thinking interdependently, and (16) remaining open to continuous learning.

Employability Skills 2000+, The Conference Board of Canada, Ottawa, Canada, May 2000.

www.conferenceboard.ca/education (www.conferenceboard.ca/education/learning-tools/pdfs/esp2000.pdf)

A concise description of “critical skills needed in the workplace - whether you are self-employed or working for others.” An Employability Skills Toolkit for the Self-Managing Learner is available. Employability Skills 2000+ include communication, problem solving, positive attitudes and behaviors, adaptability, working with others, and science, technology and mathematics skills.

Illinois Career Development K-12 Competencies and Indicators,

2005 Skills Gap Report – A Survey of the American Manufacturing Workforce, National Association of Manufacturers, The Manufacturing Institute, 2005.

More than 80% of respondents to this survey indicate they are experiencing a shortage of qualified workers overall. In addition to shortages of various types of employees, manufacturers surveyed reported they are also dissatisfied with the skills of their current employees. Nearly half indicated their current employees have inadequate basic employability skills, such as attendance, timeliness and work ethic, while 46 percent reported inadequate problem-solving skills, and 36 % indicated insufficient reading, writing, and communication skills.

Learning for the 21st Century, Partnership for 21st Century Skills, 2002. www.21stcenturyskills.org

The Partnership for 21st Century is a unique organization of business and educators leaders who have come together to help schools bridge the gap to 21st century learning. “Today’s education system faces irrelevance unless we bridge the gap between how students live and how they learn.” The report examines core content requirements related to a 21st century context, learning tools, and learning skills.

What Are Employability Skills?, The Workplace, Alabama Cooperative Extension System: A Fact Sheet, September 15, 2000. www.aces.edu/crd/workforce/publications/employability-skills.PDF

DEVELOPING CAREER PATHWAYS INCLUDING PROGRAMS OF STUDY (POS) & CAREER AND COLLEGE READINESS MINI-GRANT FRAMEWORK

Purpose: To customize VALEES' regional Programs of Study to your high school's curriculum and develop strategies to utilize Programs of Study in students' career planning.

Eligible Applicants: VALEES member districts/cooperatives and CTE / Vocational Centers.

Expectations of Local Educational Agency:

Implementation Grant activities should incorporate the following components as applicable:

- (1) review the VALEES regional Programs of Study template and select at least one program area to develop a local POS that incorporates your school's curriculum, vocational or career center coursework, and links to post-secondary education such as apprenticeships, trade schools, or community college programs. Special emphasis will be given to the CTE areas of COMPUTER PROGRAMMING AND GAME DESIGN when considering grant awards. Other program areas are eligible as well.
- (2) develop a plan of action that will incorporate the identified POS in career planning for students in your school.
- (3) identify how Career Cruising and/or KeyTrain will be incorporated.
- (4) share your work with schools within the VALEES region.

Project should include activities such as, but not limited to:

- Identify specific CTE and core course offering at your high school and vocational / career center that align with career pathways in the chosen program area for which a Program of Study is developed.
- Develop a POS matrix using the regional model that a student may use to develop career awareness and for career planning.
- Collaborate with other high schools, vocational / career centers, and applicable post secondary organizations in the development of your POS.
- Publish your work regionally to assist other VALEES high schools and vocational / career centers in developing their own POS.
- Consider sharing your work at the Building Partnerships for America's Future or Connections Conference.

Developing Local Programs of Study

Purpose: To customize VALEES' regional Programs of Study to your high school's curriculum and develop strategies to utilize Programs of Study in students' career planning.

Identified Need: Providing strategic ways for students to explore career options and prepare for a dynamic work world through secondary and postsecondary educational programs has become increasingly important. Developing secondary through postsecondary articulated programs of study and career experiences is an important component of ensuring comprehensive career programs.

Effective Programs of Study are customized to local curricula and are an integral part of developing each student's career awareness and plan of study.

Programs of Study can help students expand career awareness and the knowledge and skills necessary to pursue a specific career pathway. Involving teachers, administrators, and external partners in developing POS will foster support for implementation at your school.

Goals:

- (1) increase staff, student, and parental awareness of Illinois' Programs of Study;
- (2) articulate secondary curricula with post-secondary education or training focusing on identified career pathways related to the chosen Program of Study;
- (3) develop an implementation strategy to expand students' career planning to include Programs of Study and development of Individual Career Plans (ICP).

The Career Clusters framework (see Illinois Career Cluster Model, 2009) "organizes educational preparation and occupational choices into a unified concept" that:

- is for all students,
- creates educational plans of study students can follow from secondary to postsecondary experiences to the workplace,
- promotes smooth transitions throughout students' educational experiences
- empowers students to make informed educational choices, and
- helps students develop individual plans of study,

Strategy:

- (1) review Illinois' Career Cluster Model;
- (2) align local curricula and post-secondary continuing education opportunities as they relate to career pathways;
- (3) collaborate with applicable CTE staff and external partners including career and vocational centers and business partners; and
- (4) develop strategies to incorporate Programs of Study in students' secondary school and post-secondary planning, including utilization of Career Cruising, KeyTrain, and the development of individual Plans of Study.

Products should include at least one Program of Study developed for your secondary school and a proposed action plan to incorporate POS in students' career planning.

Annotated Bibliography Programs of Study

American Diploma Project. www.achieve.org/ADPNetwork

This ISBE adopted initiative describes itself as, "Governors, state superintendents of education, business executives and college leaders are working to bring value to the high school diploma by raising the rigor of high school standards, assessments and curriculum and aligning expectations with the demands of postsecondary education and careers."

Careerclusters.org. <http://careerclusters.org/>

Official web site for the States Career Cluster Initiative. An excellent resource for the development of Plans of Study and knowledge and skills charts for career clusters.

Illinois Programs of Study Guide, 2009. Illinois State Board of Education and Illinois Community College Board. Published by the Office of Community College Research and Leadership (OCCRL). <http://occril.illinois.edu/taxonomy/term/1>

A comprehensive .guide providing background information "useful to understanding Illinois' framework for implementation and evaluation of Programs of Study." Excellent references.

Illinois Programs of Study Model, 2009. Illinois State Board of Education and Illinois Community College Board. Published by the Office of Community College Research and Leadership (OCCRL). <http://occril.illinois.edu/taxonomy/term/1>

This booklet provides information on the implementation of career clusters in Illinois. It is an excellent introduction to the Illinois Career Cluster framework and is a useful implementation resource.

Partnership for 21st Century Skills. www.21stcenturyskills.org/index.php

There is a profound gap between the knowledge and skills most students learn in school and the knowledge and skills they need in typical 21st century communities and workplaces. □□To successfully face rigorous higher education coursework, career challenges and a globally competitive workforce, U.S. schools must align classroom environments with real world environments by infusing 21st century skills. □This skills set includes:

- Information and communication skills (information and media literacy skills; communication skills)
- Thinking and problem-solving (critical thinking and systems thinking; problem identification, formulation and solution; creativity and intellectual curiosity)
- Interpersonal and self-direction skills (interpersonal and collaborative skills; self-direction; accountability and adaptability; social responsibility)
- Global awareness
- Financial, economic and business literacy, and developing entrepreneurial skills to enhance workplace productivity and career options
- Civic literacy

VALEES Programs of Study, 2009. www.valees.org

Draft matrix of Programs of Study in each of the VALEES program areas. Priority areas for fully developed POS including postsecondary components are Fire Science, Auto Technology and Health Occupations.