



Vocational Technical Education Framework



Business & Consumer Services Occupational Cluster

Fashion Technology (VFASH)

CIP Code 500407

June 2014

Massachusetts Department of Elementary and Secondary Education

Office for Career/Vocational Technical Education

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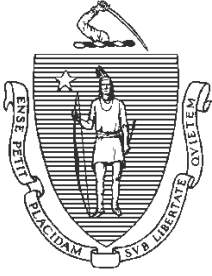
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Commissioner's Letter



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Mitchell D. Chester, Ed.D.
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July 2014

Dear Colleagues,

I am pleased to present to you the *Massachusetts Vocational Technical Education Frameworks*, adopted by the Department of Elementary and Secondary Education in June 2014. These frameworks, one for each of the 44 vocational technical programs, include standards in multiple strands representing all aspects of the industries that students in the vocational technical education program are preparing to enter.

The frameworks also include a crosswalk between the technical standards and relevant standards in Massachusetts Curriculum Frameworks to support effective integration of academic and technical content.

The comments and suggestions received during revision of the 2007 *Massachusetts Vocational Technical Education Frameworks* have strengthened these frameworks. We will continue to work with schools and districts to implement the 2014 *Massachusetts Vocational Technical Education Frameworks* over the next several years, and we encourage your comments.

I want to thank everyone who worked with us to create challenging learning standards for Massachusetts students. I am proud of the work that has been accomplished.

Sincerely,

Mitchell D. Chester, Ed.D.
Commissioner of Elementary and Secondary Education

Introduction

Overview & Organization and Key Changes

Overview

The Massachusetts Department of Elementary and Secondary Education understands the necessity of maintaining current Vocational Technical Education Frameworks which ensure career/vocational technical education students across the Commonwealth are taught the most rigorous standards aligned to the needs of business and industry.

With the advent of the Massachusetts Teaching & Learning System the Office for Career/Vocational Technical Education (CVTE) recognized the significance of including career/vocational technical education in the system and developed a comprehensive plan for including vocational technical education. The plan was designed in a Two Phase Process. Phase One included the revision of strands two, three, and six, of all of the Vocational Technical Education Frameworks. Phase Two consisted of three major components (projects) all equally crucial;

1. The revision of Strands One, Four, and Five to complete the revision of all six strands of the Vocational Technical Education Frameworks;
2. Statewide Professional Development on all revised strands, with training on strands two, three, and six delivered fall 2013, and training on strands one, four, and five delivered spring 2014;
3. The creation and development of additional Model Curriculum Unit (MCU) Teams.

The Office for Career/Vocational Technical Education Framework Team, with support from consultants, began Phase One in the 2012-2013 school year, to revise three of the six strands contained in all of the Vocational Technical Education (VTE) Frameworks. The state was organized into “Collaborative Partnerships” comprised of teams of project administrators, highly qualified subject matter educators, and business and industry partners, whose task was to revise Strand Two – Technical, Strand Three – Embedded Academics, and Strand Six – Technology Literacy. Each team met with a vocational advisory committee which included business and industry representatives and postsecondary education professionals, whose mission was to review and revise the team’s draft document during the revisionary process. Once strand two was revised, academic teachers (typically one English Language Arts teacher, one Mathematics teacher, and one Science teacher) worked with the technical subject matter teachers to develop a crosswalk between academic curricula standards and the technical standards, and provided examples of embedded academic content.

The Office for Career/Vocational Technical Education solicited statewide input from technical and academic teachers and administrators at the annual Massachusetts Association of Vocational Administrators (MAVA)/Massachusetts Vocational Association (MVA) - Connecting for Success Conference. Each framework team met with their content colleagues and reviewed the draft revisions and obtained

valuable feedback. Additionally, all drafts were reviewed and revised by the Massachusetts Vocational Technical Teacher Testing Program, to ensure appropriate measurable language.

Project consultants designed a new template to ensure all framework teams entered new standards and additional resources in a consistent manner. The framework teams created an “Appendix” listing potential industry recognized credentials attainable by secondary students; lists of professional, student, and relevant government organizations; and useful resources and websites. ** It is important to note that although most Framework Teams provided information for the “Appendix”, not all teams did. Therefore, sub-headings within the “Appendix” without information have been deleted. Disclaimer: Reference in the Appendices Section to any specific commercial products, processes, or services, or the use of any trade, firm or corporation name is for the information and convenience of the public, and does not constitute endorsement or recommendation by the Massachusetts Department of Elementary and Secondary Education.*

The Office for Career/Vocational Technical Education facilitated a comprehensive vetting process throughout the Commonwealth. During the fall of 2012 districts throughout Massachusetts solicited feedback from each Vocational Program’s Advisory Committee members at the Fall Board meetings. Additionally, the Office for Career/Vocational Technical Education met with various licensing boards at the Massachusetts Division of Professional Licensure and provided the applicable draft framework to each board for review. All framework drafts were posted on the CVTE website for public comment. Comments and suggested revisions received were shared with each framework team for response and edits, as appropriate.

The Phase I Process was completed on an accelerated timetable and resulted in all Vocational Technical Education Frameworks; Strand Two and Strand Six, revised with current, rigorous, relevant standards. Strand Three has been redesigned into a crosswalk which directly correlates academic and technical standards. An appendix of useful material for technical teachers recommended by their peers was added to each framework.

Phase II of the Framework Revision Process consisted of three major projects;

1. The Strands One, Four & Five Project, to complete the revision of all six strands of the Vocational Technical Education Frameworks;
2. Statewide Professional Development on all revised strands, with training on strands two, three, and six delivered fall 2013, and training on strands one, four, and five delivered spring 2014;
3. The creation and development of additional Model Curriculum Unit (MCU) Teams.

The Strands One, Four, & Five Project began in the fall of 2013 with the formation of a leadership team and three work groups. Co-Managers led the leadership team comprised of three Strand Coordinators who facilitated work teams and reviewed, researched, and revised these common strands. All skills specific to the vocational technical program have been included into Strand Two Technical.

The Strand One Team revised the safety knowledge and skills that all students need to acquire. The team included relevant issues (i.e., bullying, climate), laws, regulations, guidelines and policies pertaining to safety.

The Strand Four Team revised the Employability Knowledge and Skills that all students need to acquire. Teams considered current research on career readiness, including the work of the College Career Readiness Task Force convened by the Department, changes in workplace, technological changes that impact how people perform their work (i.e., communications methods), and included standards that emphasize the need for lifelong learning and adaptability given the multiple career changes over and an individual's working life. The team recommended this strand be renamed to: Career Readiness.

The Strand Five Team revised the Management & Entrepreneurship Knowledge and Skills that all students need to acquire. All business owners and employees must possess management and financial skills to be productive members of society. Skills included financial knowledge and basic business management skills.

All Strand One, Four and Five Project Teams worked collaboratively with staff from the Department of Elementary and Secondary Education and the Advisors of the Massachusetts Career and Technical Student Organizations to crosswalk standards to national Career & Technical Student Organizations Curricula, as applicable.

The Office for Career/Vocational Technical Education contracted the MAVA Consultant Team to work closely with the office to complete all of the work accomplished during Phase II of the Project.

A remarkable amount of work was accomplished through the efforts of hundreds of professionals who collaborated and diligently supported this work. The Office for Career/Vocational Technical Education is grateful for all the support received from the field, particularly all of the teachers (technical and academic), administrators, advisory committee members, business and industry representatives, the Division of Professional Licensure - boards, the Massachusetts Association of Vocational Administrators, the MAVA Consultants, and the Massachusetts Vocational Association, whose contributions were tremendous.

Special thanks to all staff in the Office for Career/Vocational Technical Education and the CVTE Framework Revision Team who provided guidance and numerous contributions during Phase One of the project.

Organization and Key Changes

This section contains the following:

- Highlights of Changes to the Vocational Technical Education Frameworks; which includes a summary of changes made to each strand.
- Organization of the Frameworks – Strand Two illustrates structure of topic headings, standards and objectives, and performance examples.

Highlights of Changes to the Vocational Technical Education Frameworks:

Strand One:

Safety and Health Knowledge and Skills have been revised to contain the safety standards that are common to all programs. The Strand One Team worked collaboratively with staff from the Department of Elementary and Secondary Education and the Advisors of the Career and Technical Student Organizations (CTSO) to crosswalk standards to national CTSO Curricula, as applicable.

- No objectives were deleted, only modified.
- Language and wording was clarified.
- Additions included a focus on maintaining a safe school and workplace in terms of creating a positive climate/environment.
- Student safety credential program has been revised.
- Safety attire has been revised.
- Emergency equipment and fire safety has been revised.
- Many new Performance Examples have been included.
- Within each strand, standards and objectives were grouped under Topic Headings, which are displayed in bold. Each standard is followed by a performance example. See the section below titled: "Organization of the Frameworks – Strand Two". All strands were organized in that manner, with the exception of the former Strand Three.

Strand Two:

The Technical Standards Knowledge and Skills have been revised to reflect business and industry changes since the adoption of the 2007 Vocational Technical Education Frameworks (VTEF). There are additional changes to Strand Two below:

- The Technical Knowledge and Skills (Strand Two) section contains standards specific to the particular vocational program; suffix "a" (as common to all programs) and suffix "c" (as common within a cluster) have been removed.
- Each VTEF Strand Two begins with safety and health knowledge and skills specific to the particular vocational program.
- Within each strand, standards and objectives were grouped under Topic Headings, which are displayed in bold. Each standard is followed by a performance example. See the section below

titled: “Organization of the Frameworks – Strand Two”. All strands were organized in that manner, with the exception of the former Strand Three.

- Strand Two of the Frameworks for Animal Science, Environmental Science and Technology, and Horticulture, begin with core standards required for all participants in the programs, followed by a series of standards organized in concentrations. See the section below titled: “Organization of the Frameworks – Strand Two” for more information.
- An update to some of the vocational programs framework is the addition of advanced or supplemental standards which are noted in Strand Two by an asterisk (*). *These standards are not required, but are provided as suggestions that districts may choose to use to increase the depth of a particular topic, or add additional topics, particularly for advanced students or for those seniors who do not participate in cooperative education.* See the section below titled: “Organization of the Frameworks – Strand Two” for more information.

Strand Three:

Since the purpose of Strand Three was to correlate academic content that was *embedded* in the knowledge and skills necessary to perform certain technical skills, it was logical to highlight those connections through a crosswalk between the academic curriculum standards and the technical standards (Strand Two). The crosswalk directly correlates the English Language Arts (2011) and Mathematics (2011) Frameworks, incorporating the Common Core Standards and the Science and Technology/Engineering Frameworks. The crosswalk can be found in the appendix of each vocational framework. The crosswalk also includes performance examples which illustrate integrated academic and technical content.

- Embedded Academics has been replaced with a crosswalk between the academic curriculum standards and the technical knowledge and skills standards. The crosswalk is located in the Appendices.

Strand Four:

Employability (and Career Readiness) Knowledge and Skills focused on providing students with general knowledge and skills to be college and career ready. The Strand Four Team worked collaboratively with staff from the Department of Elementary and Secondary Education and the Advisors of the Career and Technical Student Organizations to crosswalk standards to national CTSO Curricula, as applicable.

- Language and wording were clarified.
- Additions included a focus on providing students with skills for employability/career readiness.
- Modifications included Career Exploration & Navigation, Communication in the Workplace, and Work Ethic & Professionalism.
- New Performance Examples have been included.
- Within each strand, standards and objectives were grouped under Topic Headings, which are displayed in bold. Each standard is followed by a performance example. See the section below titled: “Organization of the Frameworks – Strand Two”. All strands were organized in that manner, with the exception of the former Strand Three.

Strand Five:

Strand Five contains Management and Entrepreneurship Knowledge and Skills that are general for all students. The Strand Five Team worked collaboratively with staff from the Department of Elementary and Secondary Education and the Advisors of the Massachusetts Career and Technical Student Organizations to crosswalk standards to national Career & Technical Student Organizations Curricula, as applicable.

- Language and wording were clarified and organized into a logical format.
- The Strand Five Team felt that the 2007 curriculum remained valid.
- Additions included a focus on providing students with skills for management and entrepreneurship applicable to all vocational programs.
- Modifications included Starting and Managing a Business, Marketing, and Financial Concepts & Applications in Business, and Legal/Ethical/Social Responsibilities.
- New Performance Examples have been included.
- Within each strand, standards and objectives were grouped under Topic Headings, which are displayed in bold. Each standard is followed by a performance example. See the section below titled: "Organization of the Frameworks – Strand Two". All strands were organized in that manner, with the exception of the former Strand Three.

Strand Six

Strand Six Technology Literacy Knowledge and Skills has been replaced with the 2008 Massachusetts Technology Literacy Standards and Expectations Framework.

Appendix¹

Each framework contains an “Appendix” section which includes an Embedded Academic Crosswalk, Industry Recognized Credentials, Statewide Articulation Agreements, Professional, Governmental, and Student Organizations, Resources, and relevant websites.

The Appendix² contains:

- Embedded Academic crosswalks for English Language Arts, Mathematics, and Science & Technology/Engineering.
- Statewide Articulations: Current statewide Articulation Agreements and/or Apprenticeship Programs available to the specific vocational program are listed on this page. The development of new statewide articulations continues, and therefore these pages will be revised as new agreements are finalized.
- Industry-Recognized Credentials: Technical Teacher Teams generated lists of credentials for the vocational programs. Program Advisory Committees throughout the state reviewed and provided recommendations through the validation process. *The credential list has been provided as a resource only and districts are not obligated to provide all of the specified credentials for students.*
- Other: These pages provide lists of reference materials, government agencies, professional and student organizations, and useful websites created by each framework team. These are intended as helpful resources for technical teachers, identified by peers. These are not recommended or required by the Department of Elementary & Secondary Education.

¹ *Note: Although most Framework Teams provided information for the “Appendix”, not all teams did. Therefore, sub-headings within the “Appendix” without information have been deleted.*

Disclaimer: Reference in the Appendices Section to any specific commercial products, processes, or services, or the use of any trade, firm or corporation name is for the information and convenience of the public, and does not constitute endorsement or recommendation by the Massachusetts Department of Elementary and Secondary Education.

Organization of the Frameworks – Strand Two

The Vocational Technical Education Frameworks contain knowledge and skills covering all aspects of industry, reflected in six strands: Safety and Health, Technical, Embedded Academics, Employability, Management and Entrepreneurship, and Technological.

Within each strand, standards and objectives were grouped under topic headings, which are displayed in bold. Each standard is followed by a performance example. In the excerpt below, 2.A is the topic; 2.A.01 is the first standard and 2.A.01.01 and 2.A.01.02 are the objectives under that standard.

2.A Automotive Technology Specific Safety Practices

- 2.A.01 Identify and describe safety procedures when dealing with different types of automotive lifts according to current industry standards.
- 2.A.01.01 Demonstrate procedures for safe lift operations.
 - 2.A.01.02 Demonstrate safe use, placement and storage of floor jacks and jack stands.

2.A.01 Performance Example:

- Student will set up lift using manufacturer’s suggested lift points.

- 2.A.02 Demonstrate and describe safety procedures when dealing with high pressure systems including necessary ventilation according to current industry standards.
- 2.A.02.01 Describe and demonstrate the importance of safety procedures to be used when servicing high pressurized systems (fuel systems, brakes, air conditioning, suspension, hydraulic systems, etc.).
 - 2.A.02.02 Describe and demonstrate safe use of oxygen/acetylene torches and electric welding equipment.
 - 2.A.02.03 Demonstrate ventilation procedures to be followed when working in the lab/shop area.

2.A.02 Performance Example:

- Student will relieve fuel system pressure to perform necessary repairs.

- 2.A.03 Identify and describe safety procedures when dealing with electrical circuits according to current industry standards.
- 2.A.03.01 Describe safety procedures to be followed when servicing supplemental restraint systems.
 - 2.A.03.02 Demonstrate safety awareness of high voltage circuits of electric or hybrid electric vehicles and related safety precautions.

2.A.03 Performance Example:

- Safely disable Supplemental Restraint System (SRS) air bag for repair using manufacturer’s recommendations.

There are additional changes to some of the Frameworks Strand Two (Technical Knowledge and Skills). Specifically, Strand Two of the Frameworks for Animal Science, Environmental Science and Technology and Horticulture begin with core standards required for all participants in the programs, followed by a series of standards organized in concentrations. For example, Strand Two of the Horticulture Framework begins with the core standards required of all Horticulture students

(Topics 2.A through 2.I). These standards are followed by the three concentrations: Arboriculture (Topics 2.J through 2.L), Greenhouse Management and Floriculture (Topics 2.J. through 2.L) and Landscape and Turf Management (Topics 2.M through 2.Q).

Advanced / Supplemental Standards (Not Required)

Another variation that is new to the revised Strand Two Frameworks is the addition of advanced or supplemental standards which are noted with the use of an asterisk (*). *These standards are not required, but are provided as suggestions that districts may choose to use to increase the depth of a particular topic, or add additional topics, particularly for advanced students or for those seniors who do not participate in cooperative education.*

The following is an example from Automotive Technology, where entire topics were added:

Advanced Automotive Technology Technical Knowledge and Skills

Note: The following competencies are optional, supplementary competencies suitable for advanced students. These are not required.

2.CC Demonstrate appropriate engine repair techniques.

2.CC.01 Perform appropriate cylinder Head Repair.

2.CC.01.01* Diagnose, remove and replace cylinder head(s).

2.CC.01.02* Clean and visually inspect a cylinder head for cracks; check gasket surface areas for warpage and surface finish; check passage condition; determine necessary action.

The following is an example from the Strand Two Radio and Television Broadcasting Framework that shows the addition of an advanced objective, 2.B.04.08*:

2.B.04 Explain concepts fundamental to shooting in cinema and video.

- 2.B.04.01 Compare and contrast a single-camera and a multiple-camera production.
- 2.B.04.02 Explain the importance of shooting for the edit (i.e., match on action, sequencing, coverage).
- 2.B.04.03 Explain the importance of continuity.
- 2.B.04.04 Explain the 180° Rule line, and its application in various cinema scenarios.
- 2.B.04.05 Identify and establish a specific point-of-view when shooting from a script.
- 2.B.04.06 Analyze the methods in which specific shots can evoke emotion from an audience.
- 2.B.04.07 Define drop frame and non-drop frame code shooting and explain how to account for both when preparing for an edit.
- 2.B.04.08* Describe various cinematographic methods necessary when shooting scenes that incorporate post-production visual effect

2.B.04 Performance Examples:

- Students will list similarities and differences of single-camera and multiple-camera shoots.
- Students will describe multiple shooting considerations that are useful in streamlining the editing process.

Business & Consumer Services Occupational Cluster

Fashion Technology Framework (VFASH)

Strand 1: Safety and Health Knowledge and Skills

1.A Fundamentals of Health and Safety

- 1.A.01 Describe and apply health and safety regulations.
- 1.A.01.01 Identify, describe and apply health and safety regulations that apply to specific tasks and jobs. Students must complete a safety credential program, e.g., Occupational Safety and Health Administration 10, CareerSafe and ServSafe.
 - 1.A.01.02 Identify, describe and apply Environmental Protection Agency (EPA) and other environmental protection regulations that apply to specific tasks and jobs in the specific occupational area.
 - 1.A.01.03 Identify, describe and apply Right-To-Know (Hazard Communication Policy) and other communicative regulations that apply to specific tasks and jobs in the specific occupational area.
 - 1.A.01.04 Explain procedures for documenting and reporting hazards to appropriate authorities.
 - 1.A.01.05 Identify and describe potential consequences for non-compliance with appropriate health and safety regulations.
 - 1.A.01.06 Identify and list contact information for appropriate health and safety agencies and resources.

1. A.01 Performance Examples:

- List and define OSHA Health and Safety Regulations, EPA and other environmental protection regulations to occupational area.
- List and define Right-to-Know regulations and reporting of hazards and contact information for appropriate health and safety agencies.
- List the laws and rules of regulatory agencies governing sanitation and safety.
- Utilize OSHA as well as health and safety websites for purposes of research.

- 1.A.02 Demonstrate appropriate health and safety practices based on the specific occupational area.
- 1.A.02.01 Identify, describe and demonstrate the effective use of Safety Data Sheets (SDS).
 - 1.A.02.02 Read and interpret chemical, product and equipment labels to determine appropriate health and safety considerations.
 - 1.A.02.03 Identify, describe and demonstrate personal, shop and job site safety practices and procedures.
 - 1.A.02.04 Demonstrate safe dress and use of relevant safety gear, personal protective equipment (PPE) and ergonomics, e.g., wrist rests, adjustable workspaces, equipment, gloves, proper footwear, earplugs, eye protection and breathing apparatus.
 - 1.A.02.05 Demonstrate appropriate safe body mechanics, including appropriate lifting techniques and ergonomics.

- 1.A.02.06 Locate emergency equipment, first aid kit, SDS information directories and emergency action/response plan/escape routes in your lab, shop and classroom, including labels and signage that follow OSHA Hazard Communication Program (HAZCOM), eyewash stations, shower facilities, sinks, fire extinguishers, fire blankets, telephone, master power switches and emergency exits.
- 1.A.02.07 Demonstrate the safe use, storage, and maintenance of every piece of equipment in the lab, shop and classroom, e.g., the OSHA Lockout/Tagout Program (LOTO).
- 1.A.02.08 Describe safety practices and procedures to be followed when working with and around electricity, e.g., ground fault circuit interrupter (GFCI) and frayed wiring.
- 1.A.02.09 Handle, store, dispose of and recycle hazardous, flammable and combustible materials, according to EPA, OSHA and product specifications.
- 1.A.02.10 Demonstrate appropriate workspace cleaning, sanitation, disinfection and sterilization procedures required in specific occupational areas, e.g., Workplace Housekeeping OSHA Regulations.

1. A.02 Performance Examples:

- Identify, describe and demonstrate the use of SDS.
- List and demonstrate shop dress code, safety procedures and location of emergency equipment in labor classroom.
- Define and demonstrate safe storage and maintenance of equipment and proper disposal or recycling of hazardous, flammable and combustible materials.
- Identify, describe and demonstrate the Universal Precautions set of guidelines.

- 1.A.03 Demonstrate appropriate responses to situations that may threaten health and safety.
 - 1.A.03.01 Describe First Aid procedures for potential injuries and other health concerns in the specific occupational area.
 - 1.A.03.02 Describe the importance of emergency preparedness and an emergency action/response plan.
 - 1.A.03.03 Describe procedures used to handle emergency situations, defensive measures and accidents, including identification, reporting, response, evacuation plans and follow-up procedures.
 - 1.A.03.04 Identify, describe and demonstrate safety practices in specific occupational areas used to avoid accidents.
 - 1.A.03.05 Identify and describe fire protection, protection, precautions and response procedures.
 - 1.A.03.06 Discuss the role of the individual and the company/organization in ensuring workplace safety including transportation to and from school, school activities and the workplace.
 - 1.A.03.07 Discuss ways to identify, prevent and report school and workplace violence, discrimination, harassment and bullying.
 - 1.A.03.08 Demonstrate positive and appropriate behavior that contributes to a safe and healthy environment in school and the workplace.

1. A.03 Performance Example:

- Define first aid procedures and protocols used to handle emergency situations and practices used to avoid accidents.
- View safety videos and discuss the role of workplace safety.
- Attend or participate in a human rights alliance organization presentation.
- Observe and/or demonstrate the appropriate use of a fire extinguisher using the (PASS) technique: Pull, Aim, Squeeze, Sweep.
- Review and discuss specific policies, procedures and protocols regarding discrimination, harassment and bullying.
- Discuss and/or role-play proper and respectful behavior that contributes to a positive climate.
- Discuss and/or demonstrate behavior that contributes to a collaborative/teamwork environment.

Selected Websites

- Bullying Prevention and Intervention Resources : www.doe.mass.edu/bullying
- Centers for Disease Control and Prevention: www.cdc.gov
- Environmental Protection Agency : www.epa.gov
- “Lost Youth – Four Stories of Injured Young Workers”– WorkSafeBC:
<http://www2.worksafebc.com/Publications/Multimedia/Videos.asp?reportid=34291>
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- Protection of Student Rights: Massachusetts General Law:
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXII/Chapter76/Section5>
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- Readiness and Emergency Management for Schools: www.rems.ed.gov
- Safe and Healthy Learning Environments: www.doe.mass.edu/ssce/safety.html

Strand 2: Technical Knowledge and Skills

2.A Fashion Technology Safety and Health Knowledge and Skills

- 2.A.01 Identify safety concerns in business and industry.
 - 2.A.01.01 Describe categories of safety issues.
 - 2.A.01.02 Describe methods to promote safety and prevent accidents.

2.A.01 Performance Example:

- Students will successfully complete the OSHA 10-hour General Industry program.

- 2.A.02 Identify and practice safe procedures in the fashion workroom according to current industry and OSHA standards.
 - 2.A.02.01 Identify and follow safety rules.
 - 2.A.02.02 Demonstrate safe operation of industrial equipment.

2.A.02 Performance Examples:

- Students will prepare a PowerPoint presentation describing the safety rules for a fashion workroom including that of machine operation.
- Students will create a poster displaying classroom safety rules.

2.B Fashion Illustration

- 2.B.01 Demonstrate an understanding of shape and proportion in fashion illustration.
 - 2.B.01.01 Identify the basic shapes used in drawing.
 - 2.B.01.02 Demonstrate 8-head proportion.
 - 2.B.01.03 Sketch different types of fashion flats.
 - 2.B.01.04 Sketch front, back and side views.
 - 2.B.01.05 Sketch a figure to show movement.

2.B.01 Performance Example:

- Students will maintain a fashion illustration sketch book using mixed media.

- 2.B.02 Sketch garment details.
 - 2.B.02.01 Sketch a variety of garments including different details.
 - 2.B.02.02 Sketch a variety of accessories.

2.B.02 Performance Example:

- Students will sketch a variety of garment components (i.e. sleeve types, collars and necklines, etc.).

- 2.B.03 Use Computer Aided Design (CAD) technology in fashion illustration.
 - 2.B.03.01 Set up, edit, and save a document.
 - 2.B.03.02 Identify the basic tools used in drawing.
 - 2.B.03.03 List the basic keyboard shortcuts used in CAD.
 - 2.B.03.04 Demonstrate grouping, transforming, and aligning objects.
 - 2.B.03.05 Demonstrate use of layers in illustration.
 - 2.B.03.06 Using a croquis, create a variety of technical flats.
 - 2.B.03.07 Create a simple design using brushes, fills, and patterns.
 - 2.B.03.08 Create a textile pattern tile.

- 2.B.03 Performance Examples:
- Students will create a basic garment and then make several variations of that garment utilizing different trim details.
 - Students will produce an online portfolio of technical flats using Adobe Illustrator.
 - Students will create a textile design and have it printed on fabric.

2.B.04* Create a textile design for an intended purpose.

- 2.B.04* Advanced Performance Example:
- Using a light board, students will sketch a design and transfer onto fabric.

2.B.05* Using CAD software, design a variety of fashion accessories.

- 2.B.05* Advanced Performance Examples:
- Using Adobe Illustrator or a CAD program, students will design a handbag or shoes with hardware.
 - Using Adobe Illustrator or a CAD program, students will design a man's accessory such as a tie or messenger bag.

2.B.06* State examples of how photo editing software is used in the fashion industry.

- 2.B.06* Advanced Performance Example:
- Using Adobe Photoshop or similar software, students will scan a fabric or wallpaper print, resize and recolor swatch.

2.C Elements and Principles of Design

2.C.01 Identify and describe the elements of design.

2.C.01.01 Describe how the elements of design are used in fashion, textiles, and retailing.

- 2.C.01 Performance Examples:
- Students will create a color wheel using only the three primary colors.
 - Students will select one of the color schemes and create a collage.

2.C.02 Identify and apply the principles of design.

2.C.02.01 Describe how the principles of design are used in fashion, textiles, and retailing.

- 2.C.02 Performance Example:
- Using magazines, catalogs, or online sources, find an example of each principle of design used in textiles, apparel, or retail settings. Write a brief description of each design defining the principle and how it is used.

2.C.03* List the factors to consider when determining the best colors to complement a person's coloring.

- 2.C.03* Advanced Performance Example:
- Using fabric swatches and following a color analysis system, students will analyze a person's skin tone, hair color, and eye color and determine the colors that look best on the individual.

2.D Textiles

2.D.01 Classify natural and synthetic fibers.

2.D.01.01 Describe characteristics of commonly used natural and synthetic fibers.

- 2.D.01 Performance Example:
- Students will observe or perform basic fiber identification tests such as: shrinkage, colorfastness, simple burn, bleach, acetone dissolve, and abrasion.

- 2.D.02 Identify and describe types of fabric construction.
- 2.D.02.01 Identify simple weaves and knits.
 - 2.D.02.02 Describe the characteristics of knit, woven, and non-woven fabrics.
 - 2.D.02.03 Explain the importance of thread count.
 - 2.D.02.04 Identify common fabrics used for garments and household textiles.
 - 2.D.02.05 Identify additional textiles which have uses other than apparel or home goods.
 - 2.D.02.06 Identify different categories of fabric finishes.

2.D.02 Performance Examples:

- Students will create samples of the three basic weaves.
- Students will perform a thread count on a variety of types of fabrics and compare results.
- Students will create and maintain a fabric identification notebook with fabric swatches, and information on fiber content, construction type, care, uses, and price.
- Students will research one synthetic fiber and explain major improvements that the fiber has made to any industry, such as home decorating, medical, recreation, transportation, etc., and write a paper summarizing findings and also present most important facts to the class.
- Students will tie dye a garment of 100% cotton.

2.D.03 Describe legislation and the development of technology in the textile industry.

- 2.D.03.01 Identify the laws related to consumer textiles.
- 2.D.03.02 Identify the technological developments that have had an impact on the fabric industry.

2.D.03 Performance Examples:

- Students will research how Photoshop and similar software is used in the field of textile design.
- Students will visit a textile museum such as the American Textile History Museum in Massachusetts or the Slater Museum in Rhode Island.

2.D.04 Select appropriate care of fabrics based on fiber content.

- 2.D.04.01 Classify fabrics which are machine washable and those that always require dry cleaning.
- 2.D.04.02 Identify laundry products and describe their uses.
- 2.D.04.03 Describe stain removal processes for a variety of applications.

2.D.04 Performance Examples:

- Students will machine wash and machine dry multiple fabric samples with different fiber contents; note the differences in how the different fiber contents react to the machine washing and drying; take before and after benchmark measurements; calculate percentages of shrinkage/growth.
- Students will prepare a chart of stains and list best product/method for stain removal.
- Students will visit a dry cleaner.

2.D.05 Define sustainability in relation to the fashion industry.

- 2.D.05.01 List different ways that fabric manufacturing could be more environmentally friendly.
- 2.D.05.02 Identify various ways that consumers can contribute to sustainability.

2.D.05 Performance Examples:

- Complete a graphic organizer stating examples of environmentally friendly practices for fabric manufacturers.
- Recycle, redesign, and repurpose a pair of used blue jeans into a functional product.

2.E Apparel Design

2.E.01 Explain the reasons why people wear clothes.

2.E.01.01 Discuss how human needs, values, cultures, and personality affect what clothes people choose.

2.E.01 Performance Examples:

- Students will prepare a PowerPoint presentation in current media. listing examples of motives of dress
- Students will prepare a bulletin board displaying all the factors that influence clothing selection.

2.E.02 Research and report on fashion history.

2.E.02.01 Identify historical influences on current fashion design.

2.E.02.02 Explain factors that influence fashion.

2.E.02.03 Describe the fashion cycle and the fashion forecasting process.

2.E.02.04 Differentiate between haute couture, custom-made, knock-off, and ready-to-wear clothing.

2.E.02 Performance Examples:

- Students will create a series of sketches of current garment styles based on historical garments; identify the time period each sketch is based on.
- Students will find examples of historical influence on fashion in magazines, catalogs, or hard copies from the internet to create a mood board.

2.E.03 Identify garment styles and components.

2.E.03.01 Identify the styles within each garment category.

2.E.03.02 Identify various garment components.

2.E.03 Performance Examples:

- Students will write fashion copy: descriptive catalog copy, magazine article, script for an ad, or a press release for a new product.
- Students will sketch and label a variety of garment styles and components.
- Students will make a scrapbook of various garment styles and components.

2.E.04 Demonstrate flat pattern design.

2.E.04.01 Identify basic tools used in drafting.

2.E.04.02 Take necessary body measurements and perform calculations needed to create a sloper.

2.E.04.03 Draft a skirt or bodice pattern.

2.E.04.04 Label pattern with seam allowances, grain lines, and pattern symbols.

2.E.04.05 Test a flat pattern design using muslin.

2.E.04.06 Perform basic pattern alterations.

2.E.04 Performance Examples:

- Students will design a skirt, draft the pattern, test and alter the pattern, and construct a custom skirt.
- Students will use software, design a garment, input body measurements, and print a pattern.

2.E.05 Create a pattern using CAD software program.

2.E.05.01 Input body measurements into the program.

2.E.05.02 Design the garment pattern.

2.E.05.03 Print and test pattern.

2.E.05 Performance Examples:

- Students will use CAD software, design and print a custom jeans pattern; test pattern using muslin and construct jeans using fashion fabric.
- Students will create a unified line starting with a mood board depicting inspiration, flats drawn with CAD, a custom-fit pattern designed with CAD, and ending with constructed garments.

2.E.06 Demonstrate accurate draping techniques.

2.E.06.01 Locate placement for design lines and seams on mannequin.

2.E.06.02 Create a simple garment by draping.

2.E.06.03 Transfer draped garment onto pattern paper.

2.E.06 Performance Example:

- Students will practice draping several different bodice and skirt types; choose one of each, make a paper pattern, and construct a dress.

2.E.07* Using draping techniques, design a custom semi-formal dress.

2.E.07* Advanced Performance Example:

- Students assess personal body figure to determine the most flattering design, and select appropriate fabric to create a “little black dress.”

2.E.08* Design a garment for a client.

2.E.08* Advanced Performance Example:

- Students meet with a client, discuss garment needs, take body measurements, and design an appropriate outfit for the client.

2.E.09* Demonstrate wardrobe planning skills.

2.E.09* Advanced Performance Example:

- Students design a coordinating wardrobe using the basic garments based around a neutral color which can be reorganized into many different looks.

2.F Garment Construction

2.F.01 Identify equipment and tools.

2.F.01.01 Identify measuring, pinning, cutting, marking and pressing tools.

2.F.01.02 Select appropriate needle type and size for fabric.

2.F.01 Performance Examples:

- Using a graphic organizer, students will categorize the different types of equipment used in garment construction.
- Students will prepare a chart of needle sizes and types and match with suggested fabrics.

2.F.02 Take accurate body measurements.

2.F.02.01 Read a ruler to the 1/8”.

2.F.02.02 Locate appropriate placement for tape measure to take accurate body measurements.

2.F.02 Performance Example:

- Students will complete a personal body measurement chart, and then determine their figure type and pattern size.

- 2.F.03 Prepare for garment construction.
- 2.F.03.01 Analyze the pattern envelope to determine appropriate fabric type, pattern size, yardage requirements, and notions.
 - 2.F.03.02 Select and adjust pattern pieces.
 - 2.F.03.03 Calculate yardage needed for outfit and complete a production cost sheet.
 - 2.F.03.04 Preshrink fabric and straighten grain.

2.F.03 Performance Example:

- Students will select a commercial pattern, locate the notions, yardage requirements, and suggested fabrics, and then calculate yardage needed for their view and size. Students will then produce a shopping list for their construction project.

- 2.F.04 Demonstrate pattern layout, cutting and marking methods according to current industry standards.
- 2.F.04.01 Identify lengthwise and crosswise grain lines and true bias.
 - 2.F.04.02 Differentiate layouts for solid, napped, striped, plaid, directional print, and border print fabrics.
 - 2.F.04.03 Follow accurate cutting lines on a multi-sized pattern.
 - 2.F.04.04 Mark lines and symbols needed for construction using a variety of methods.

2.F.04 Performance Examples:

- Students will prepare a chart showing the different layouts for: solid, napped, striped, plaid, directional print, and border print fabrics.
- Students will use fabric and pattern manipulatives, and show layout based on grain line and fabric design.

- 2.F.05 Operate various machines used in garment construction according to current industry and OSHA standards.
- 2.F.05.01 Thread and operate a straight stitch machine.
 - 2.F.05.02 Operate overlock, buttonhole, blind stitch, cover stitch, zigzag and pearl edge machines.

2.F.05 Performance Example:

- Students will construct a blouse, overlocking the seams, and properly align buttons and buttonholes.

- 2.F.06 Demonstrate a variety of seams, and seam finishes.
- 2.F.06.01 Identify standard seam allowances for home and commercial sewing.
 - 2.F.06.02 Differentiate between standard, basting, and reinforcement machine stitching by stitch length.
 - 2.F.06.03 Demonstrate a variety of machine and hand stitching techniques.
 - 2.F.06.04 Demonstrate a variety of methods to reduce bulk in a seam allowance.
 - 2.F.06.05 Determine appropriate seam and seam finish for a particular fabric.

2.F.06 Performance Example:

- Students will produce a book of samples of garment construction techniques.

- 2.F.07 Summarize the importance of and demonstrate industry recommended pressing techniques.
- 2.F.07.01 Demonstrate the use of pressing tools and equipment.

2.F.07 Performance Example:
▪ Students will create a PowerPoint presentation of pressing tools, equipment and techniques.

- 2.F.08 Apply interfacing.
- 2.F.08.01 State the purpose of interfacing.
 - 2.F.08.02 Identify the two basic categories of interfacing.
 - 2.F.08.03 Trim and apply fusible interfacing.

2.F.08 Performance Example:
▪ Students will design a chart of different interfacings including fabrics types they are used for, application methods, and their uses.

- 2.F.09 Construct different types of garments for men and women, and accessories.
- 2.F.09.01 Construct a top, blouse, or shirt.
 - 2.F.09.02 Construct a skirt and pair of pants or shorts.
 - 2.F.09.03 Construct a dress.
 - 2.F.09.04 Make an item of loungewear.
 - 2.F.09.05 Stitch a garment of outerwear.
 - 2.F.09.06 Create an accessory item such as a purse, hat, tie or jewelry item.

2.F.09 Performance Example:
▪ Students will write a five paragraph essay describing the construction process and evaluating a garment they created.

- 2.F.10 Demonstrate a variety of garment details.
- 2.F.10.01 Insert a variety of closures.
 - 2.F.10.02 Reduce or add fullness with darts, tucks, pleats, and gathers.

2.F.10 Performance Example:
▪ Students will construct a purse, which includes adding fullness and applying a closure.

- 2.F.11 Check and adjust the fit of a garment.
- 2.F.11.01 Evaluate if the garment hangs properly.
 - 2.F.11.02 Analyze the fit at different body areas.
 - 2.F.11.03 Determine if enough ease has been allowed for movement.
 - 2.F.11.04 Alter garment width, length, or detail locations as necessary.

2.F.11 Performance Example:
▪ Students will critique the fit of a garment on a classmate/client and make recommendations for improvement.

- 2.F.12 Demonstrate how to mark, measure, and stitch a variety of hems with accuracy.
- 2.F.12.01 Demonstrate the industry method used to measure, trim, pin, and stitch a hem.
 - 2.F.12.02 Explain how to eliminate fullness in a hem.
 - 2.F.12.03 Apply a variety of hem finishing methods.

2.F.12 Performance Example:
▪ Students will create a sample book of hemming stitches and techniques, including both hand and machine methods.

- 2.F.13 Construct garments with a variety of fabrics.
- 2.F.13.01 Construct garments using solid, print, and one-way design woven fabrics.
 - 2.F.13.02 Construct a garment using plaid woven fabric.

- 2.F.13.03 Construct a garment using knit fabric.
- 2.F.13.04 Create a garment with a lining.

2.F.13 Performance Example:
▪ Students will construct a simple vest with a lining.

- 2.F.14 Perform simple alterations/repairs.
 - 2.F.14.01 Alter a ready-to-wear garment.
 - 2.F.14.02 Perform simple garment repairs.
 - 2.F.14.03 Create a new item by redesigning or recycling an existing garment.

2.F.14 Performance Example:
▪ Students will select a garment to remake; perform basic alterations to change the look and/or size of the garment.

- 2.F.15* Create a custom designed and draped semi-formal dress.

2.F.15* Advanced Performance Example:
▪ Students will construct a custom designed and draped “little black dress.”

- 2.F.16* Create a basic wardrobe building outfit.

2.F.16* Advanced Performance Example:
▪ Students construct an item with neutral fabric and a coordinating item from the wardrobe building lesson.

- 2.F.17* Create a garment for a client.

2.F.17* Advanced Performance Example:
▪ Students meet with a client, discuss garment needs, take body measurements and the design and construct a garment to meet client’s wishes.

2.G Home Décor

- 2.G.01 Demonstrate use of fashion technology skills to create a variety of items for the home.
 - 2.G.01.01 Create a home decorating item.
 - 2.G.01.02 Take window measurements and construct a window treatment.
 - 2.G.01.03 Create a plan for a room makeover utilizing skills in CAD for the layout and demonstrating knowledge of design elements and principles.

2.G.01 Performance Examples:
▪ Students will produce any of the following home décor items; pillow, wall hanging, bulletin board.

- 2.G.02* Identify common quilt patterns.

2.G.02* Advanced Performance Example:
▪ Students identify common quilt block patterns and explain the significance of their names.

- 2.G.03* Select a pattern, coordinate fabrics, and calculate yardage needed to create a pieced quilt.

2.G.03* Advanced Performance Example:
▪ Students will choose a quilt block pattern and create a pieced quilt.

2.H Fashion Marketing

2.H.01 Define fashion marketing and describe how it works.

2.H.01.01 Describe the marketing mix.

2.H.01.02 Discuss consumer groups and demographics.

2.H.01 Performance Examples:

- Students will find examples of advertisements targeting different demographics.
- Students will design a product for a target customer.

2.H.02 Explain the economics of fashion.

2.H.02.01 Describe the marketing principle of supply and demand.

2.H.02.02 List the components of a business plan.

2.H.02 Performance Example:

- Students will develop a business plan for a product previously designed.

2.H.03 Explain key concepts in promoting an image.

2.H.03.01 Identify different types of advertising and techniques.

2.H.03.02 Identify key factors in store visuals.

2.H.03.03 Explain the concept of brand building.

2.H.03 Performance Examples:

- Students will visit a mall and describe various window displays.
- Students will design a window display or bulletin board.
- Students will develop a name and design a logo for your brand of your designed project.
- Students will create a business card.

2.H.04 List sales and profitability factors.

2.H.04.01 Calculate markup and markdown percents, and merchandise discounts.

2.H.04.02 Discuss store loss prevention techniques.

2.H.04 Performance Examples:

- Using a store receipt that the student supplies, students will calculate multiple merchandise discounts.
- Students will develop a PowerPoint presentation outlining their business plan; include store logo, layout, policies and procedures.

2.H.05 Describe laws, labor, and ethics related to the fashion industry.

2.H.05.01 Explain legislation that impacts the fashion industry.

2.H.05.02 List requirements or laws governing apparel labeling.

2.H.05.03 Identify fashion counterfeiting and piracy issues.

2.H.05 Performance Example:

- Students will create a label for a garment that they have constructed.
- Students will search the web for current examples for fashion counterfeiting or piracy.

- 2.H.06* Recognize the importance of promotion in fashion.
 - 2.H.06.01* Describe the use of special events in fashion promotion.
 - 2.H.06.02* Create a fashion promotion plan.

2.H.06* Advanced Performance Examples:

- Students make a list of the committees and responsibilities involved in the production of a small runway fashion show.
- Students make a list of the main types of fashion shows and explain the purposes of each.
- Students develop a fashion show theme and title for one season of the year; describe the merchandise categories that might be included and the target audience for the show; assemble the information into a report with illustrations and pictures and present to the class.

- 2.H.07* Explain the importance of visual merchandising.
 - 2.H.07.01* State the main purposes of visual merchandising.
 - 2.H.07.02* Describe the general areas of a store layout.
 - 2.H.07.03* Describe different display fixtures used for merchandise presentation.
 - 2.H.07.04* List the main components of all fashion displays.

2.H.07* Advanced Performance Example:

- Students visit their favorite store, analyze the window display and discuss why it is appealing.
- Students then identify how the merchandise is displayed and the types of fixtures that are used.

2.I Fashion Merchandising

- 2.I.01 Identify the components of Fashion Merchandising.
 - 2.I.01.01 Describe the basic functions of Fashion Merchandising: planning, buying and selling.

2.I.01 Performance Examples:

- Students will construct a flow chart poster depicting the 3 basic functions of fashion merchandising, including the definitions/importance of the functions, and present the poster to the class.
- Students will visit a regional apparel mart such as New England Apparel Club (NEAC) in Marlborough, MA.
- Students will create a spreadsheet showing the planning aspect of merchandising a product.
- Follow one company online. Investigate how it plans sales, chooses to source its product, and timeline for buying merchandise.

- 2.I.02 Explain the movement of fashion.
 - 2.I.02.01 Explain the difference between the trickle up and trickle down theories.
 - 2.I.02.02 State the stages of the fashion cycle.
 - 2.I.02.03 Recognize current fashion trends.

2.I.02 Performance Example:

- Students will interview someone from another generation and discuss what trends were popular when that person was a teenager/young adult.

- 2.I.03 Identify customer service skills important to retail.
 - 2.I.03.01 List several positive sales techniques.
 - 2.I.03.02 Describe how to handle customer complaints.

2.I.03 Performance Example:

- Students will role play various scenarios as both a customer service representative and a customer with a return and/or complaint.

2.I.04* Define forecasting and discuss the importance it plays in fashion merchandising.

2.I.04* Advanced Performance Example:

- Students watch the coverage of Fashion Week and prepare a report on trends and colors for the upcoming season.

2.I.05* Explain the business and economics of the fashion industry.

2.I.05.01* Identify categories of retail merchandise.

2.I.05.02* Identify the types of fashion retailers.

2.I.05.03* Identify major fashion centers, types of designers, and price market categories.

2.I.05.04* Explain how garment sizing affects pricing.

2.I.05.05* Describe the importance of the fashion industry to our economy.

2.I.05.06* Describe the importance of the fashion industry from a global perspective.

2.I.05* Advanced Performance Examples:

- Students will visit their local mall or research online, list the stores and categorize them by type of retail establishment.
- Students will choose one of the major fashion centers and list the fashion designers that work from that area.

2.J Fashion Technology Careers

2.J.01 Identify careers in the fashion industry.

2.J.01.01 Evaluate your personal interests and skills.

2.J.01.02 Identify the categories of careers in fashion technology.

2.J.01.03 Research a career in fashion including education, experience, traits and skills necessary.

2.J.01.04 Research a fashion designer and evaluate his/her skills and qualities that contributed to success.

2.J.01 Performance Examples:

- Students will create a portfolio containing examples of their fashion sketches, CAD designs, construction projects, writing skills, achievements and awards.
- Students will complete a self-analysis identifying strengths, weaknesses, and opportunities.
- Students will compose a personal resume outlining trade skills and experiences.
- Students will complete a job application related to the industry.
- Students will create a graphic organizer stating the jobs/careers in each category of fashion technology.
- Students will create a poster promoting a fashion program(s) for a college/university.
- Working as a group, students will create a PowerPoint presentation describing various careers in the fashion industry.
- Select a career in the fashion industry and identify the career path to obtain the position.
- Find a position online using job boards.
- Research a career in fashion and create a tri-fold brochure using publishing software stating job responsibilities, educational requirements, working conditions, and pay scale.
- Write a biography of a fashion designer of your choice and present to class.

2.J.02* Investigate a fashion related job or career to evaluate future employment.

2.J.02* Advanced Performance Examples:

- Students will create a list of questions to be used in a job interview or during a job shadowing experience.
- Students will job shadow a person in a fashion related job of interest.

Strand 3: Embedded Academics

Strand 3: Embedded Academics, a critical piece of a Vocational Technical Education Framework, are presented as Crosswalks between the Massachusetts Vocational Technical Education Frameworks and the Massachusetts Curriculum Frameworks. These Crosswalks are located in the Appendix of this Framework.

Academic Crosswalks

[Appendix A:](#) [English Language Arts](#)

[Appendix B:](#) [Mathematics](#)

[Appendix C:](#) [Science and Technology/Engineering](#)

Earth and Space Science

Life Science (Biology)

Physical Science (Chemistry and Physics)

Technology/Engineering

Strand 4: Employability and Career Readiness

4.A Career Exploration and Navigation

- 4.A.01 Develop a career plan and portfolio.
 - 4.A.01.01 Develop and revise career plan annually based on workplace awareness and skill attainment.
 - 4.A.01.02 Assess personal strengths and interest areas to determine potential careers, career pathways and career ladders.
 - 4.A.01.03 Examine potential career field(s)/discipline(s) and identify criteria to select, secure and keep employment in chosen field(s).
 - 4.A.01.04 Research and evaluate a variety of careers utilizing multiple sources of information and resources to determine potential career(s) and alternatives.
 - 4.A.01.05 Identify training and education requirements that lead to employment in chosen field(s) and demonstrate skills related to evaluating employment opportunities.
 - 4.A.01.06 Explore and evaluate postsecondary educational opportunities including degrees and certifications available, traditional and nontraditional postsecondary pathways, technical school and apprenticeships, cost of education, financing methods including scholarships and loans and the cost of loan repayment.
 - 4.A.01.07 Create a portfolio showcasing academic and career growth including a career plan, safety credential, resume and a competency profile demonstrating the acquisition of the knowledge and skills associated with at least two years of full-time study in the Chapter 74 program.

- 4.A.02 Demonstrate job search skills.
 - 4.A.02.01 Conduct a job search and complete written and electronic job applications, resumes, cover letters and related correspondence for a chosen career path.
 - 4.A.02.02 Explore and evaluate postsecondary job opportunities and career pathways specific to career technical areas.
 - 4.A.02.03 Identify role and use of social media and networking for staying current with career and employment trends as well as networking, job seeking and career development opportunities.
 - 4.A.02.04 Demonstrate ability to use social media and networking to develop useful occupational contacts, job seeking and career development opportunities.

- 4.A.03 Demonstrate all phases of the job interview process.
 - 4.A.03.01 Gather relevant information about potential employer(s) from multiple print and digital sources, assessing the credibility and accuracy of each source.
 - 4.A.03.02 Identify employment eligibility criteria, such as drug/alcohol free status, clean driving record, etc.

- 4.A.03.03 Practice effective interviewing skills: appearance, inquiry and dialogue with interviewer, positive attitude and evidence of work ethic and skills.
- 4.A.03.04 Explore and evaluate employment benefit packages including wages, vacation, health care, union dues, cafeteria plans, tuition reimbursement, retirement and 401K.

4. A Performance Examples:
- Conduct research to analyze and present on specific careers within a cluster.
 - Conduct web-based job search using sites such as Monster.com, CareerBuilder.com, Indeed.com, Snagajob.com, Simplyhired.com and others.
 - Create profile on social media/networking site such as LinkedIn and/or LinkedIn University for postsecondary research and employment opportunities.
 - Complete online job application.
 - Conduct and videotape practice interviews for instructor and student analysis.
 - Provide students with sample employment and benefit packages for evaluation.

4.B Communication in the Workplace

- 4.B.01 Demonstrate appropriate oral and written communication skills in the workplace.
 - 4.B.01.01 Communicate effectively using the language and vocabulary appropriate to a variety of audiences within the workplace including coworkers, supervisors and customers.
 - 4.B.01.02 Read technical and work-related documents and demonstrate understanding in oral discussion and written exercise.
 - 4.B.01.03 Demonstrate professional writing skills in work-related materials and communications (e.g., letters, memoranda, instructions and directions, reports, summaries, notes and/or outlines).
 - 4.B.01.04 Use a variety of writing/publishing/presentation applications to create and present information in the workplace.
 - 4.B.01.05 Identify, locate, evaluate and use print and electronic resources to resolve issues or problems in the workplace.
 - 4.B.01.06 Use a variety of financial and data analysis tools to analyze and interpret information in the workplace.
 - 4.B.01.07 Orally present technical and work-related information to a variety of audiences.
 - 4.B.01.08 Identify and demonstrate professional non-verbal communication.
- 4.B.02 Demonstrate active listening skills.
 - 4.B.02.01 Listen attentively and respectfully to others.
 - 4.B.02.02 Focus attentively, make eye contact or other affirming gestures, confirm understanding and follow directions.
 - 4.B.02.03 Show initiative in improving communication skills by asking follow-up questions of speaker in order to confirm understanding.

4. B Performance Examples:
- Read and analyze technical instructions to learn what makes them effective.
 - Read and analyze technical instructions to follow directions and/or solve a problem.
 - Examine a technical document and use it to write a set of instructions for another student to follow and evaluate.
 - Analyze websites for effective technical writing and design.
 - Create brochures and presentations using software and/or Web 2.0 tools to convey technical information.
 - Conduct research using the Internet, print documents, observations and interviews to create a technical guide.

4.C Work Ethic and Professionalism

- 4.C.01 Demonstrate attendance and punctuality.
- 4.C.01.01 Identify and practice professional time-management and attendance behaviors including punctuality, reliability, planning and flexibility.
- 4.C.02 Demonstrate proper workplace appearance.
- 4.C.02.01 Identify and practice professional appearance specific to the workplace.
- 4.C.02.02 Identify and practice personal hygiene appropriate for duties specific to the workplace.
- 4.C.02.03 Identify and wear required safety gear specific to the workplace.
- 4.C.03 Accepts direction and constructive criticism.
- 4.C.03.01 Demonstrate ability (both verbally and non-verbally) to accept direction and constructive criticism and to implement solutions to change behaviors.
- 4.C.03.02 Ask appropriate questions to clarify understanding of feedback.
- 4.C.03.03 Analyze own learning style and seek instructions in a preferred format that works best for their understanding (such as oral, written or visual instruction).
- 4.C.04 Demonstrate motivation and initiative.
- 4.C.04.01 Evaluate assigned tasks for time to completion and prioritization.
- 4.C.04.02 Demonstrate motivation through enthusiasm, engagement, accurate completion of tasks and activities.
- 4.C.04.03 Demonstrate initiative by requesting new assignments and challenges.
- 4.C.04.04 Explain proposed solutions to challenges observed in the workplace.
- 4.C.04.05 Demonstrate the ability to evaluate multiple solutions to problems and challenges using critical reasoning and workplace/industry knowledge and select the best solution to the problem.
- 4.C.04.06 Implement solution(s) to challenges and/or problem(s) observed in the workplace.
- 4.C.04.07 See projects through completion and check work for quality and accuracy.
- 4.C.05 Demonstrate awareness of workplace culture and policy.

- 4.C.05.01 Display ethical behavior in use of time, resources, computers and information.
- 4.C.05.02 Identify the mission of the organization and/or department.
- 4.C.05.03 Explain the benefits of a diverse workplace.
- 4.C.05.04 Demonstrate a respect for diversity and its benefit to the workplace.

- 4.C.06 Interact appropriately with coworkers.
 - 4.C.06.01 Work productively with individuals and in teams.
 - 4.C.06.02 Develop positive mentoring and collaborative relationships within work environment.
 - 4.C.06.03 Show respect and collegiality, both formally and informally.
 - 4.C.06.04 Explain and follow workplace policy on the use of cell phones and other forms of social media.
 - 4.C.06.05 Maintain focus on tasks and avoid negative topics or excessive personal conversations in the workplace.
 - 4.C.06.06 Negotiate solutions to interpersonal and workplace conflicts.

4. C Performance Examples:

- Complete a learning style analysis tool.
- Develop a rubric to assess work ethic and professionalism as detailed in the standards above.

Student Organizations

Business Professionals of America

www.bpa.org

Selected Websites

- 5 Ways to Ace a Job Interview: http://kidshealth.org/teen/school_jobs/jobs/tips_interview.html
- America's Career Resource Network: <http://acrn.ovae.org/teachers/careerexpclassrm.htm>
- Career Cruiser – Florida Department of Education: <http://www.fldoe.org/workforce/pdf/cruiser.pdf>
- Career Development Guide and Glossary: <http://www.doe.mass.edu/connect/cde.html>
- Career One Stop: <http://www.careeronestop.org/>
- Career Plan: <http://www.doe.mass.edu/cd/plan/intro.html>
- Career Plan Model: http://www.doe.mass.edu/ccr/epp/samples/cpmodel_11x17.pdf
- Checklist: <http://www.doe.mass.edu/cd/plan/checklist.pdf>
- Career Tech: http://www.okcareertech.org/cac/Pages/resources_products/ethics_web_sites.htm
- Ethics Resource Center: <http://www.ethics.org/>
- Interaction in the Workplace: <http://hrweb.berkeley.edu/guides/managing-hr/interaction/communication>

- Individual Learning Plans: How-to Guide: “Promoting Quality Individualized Learning Plans: A How to Guide on the High School Years” <http://www.ncwd-youth.info/ilp/how-to-guide>
- ILP Fact Sheet: <http://www.ncwd-youth.info/fact-sheet/individualized-learning-plan>
- ILP Policy Brief: <http://www.ncwd-youth.info/ilp/produce-college-and-career-ready-high-school-graduates>
- ILP Resources Home Page: <http://www.ncwd-youth.info/ilp>
- Interview Skills Lesson Plans:
<http://www.amphi.com/media/1220281/interview%20skills%20lesson%20plan.doc>
- Labor and Workforce Development: <http://www.mass.gov/lwd/employment-services/preparing-for-your-job-search/>
- Maine Community College System – Center for Career Development:
http://www.ccd.me.edu/careerprep/CareerPrepCurriculum_LP-6.pdf
- Massachusetts Work-Based Learning: <http://skillspages.com/masswbl>
- North Dakota Association of Agriculture Educators:
http://www.ndaae.org/attachments/File/Preparing_students_for_a_Job_Interview.pptx
- NY CTE Learning Standards—Career Development and Occupational Studies (CDOS) Resource Guide with Core Curriculum : <http://www.p12.nysed.gov/cte/cdlearn/cdosresourceguide.html>
- Occupational Outlook Handbook: <http://www.bls.gov/ooh/>
- Purdue OWL Job Search Resources (for writing resumes, applications, and letters):
<https://owl.english.purdue.edu/engagement/34/>
- Soft Skills to Pay the Bills — Mastering Soft Skills for Workplace Success:
<http://www.dol.gov/odep/topics/youth/softskills/>
- US Department of Labor: <http://www.dol.gov/dol/audience/aud-unemployed.htm>
- Workplace Communication:
<http://www.regionalskillstraining.com/sites/default/files/content/WC%20Book%201.pdf>
- Your Plan For the Future: <http://www.yourplanforthefuture.org>

Strand 5: Management and Entrepreneurship Knowledge and Skills

5.A Starting a Business

- 5.A.01 Demonstrate an understanding of the practices required to start a business.
 - 5.A.01.01 Define entrepreneurship and be able to recognize and describe the characteristics of an entrepreneur.
 - 5.A.01.02 Compare and contrast types of business ownership (i.e., sole proprietorships, franchises, partnerships, corporations).
 - 5.A.01.03 Identify and explain the purpose and contents of a business plan.
 - 5.A.01.04 Demonstrate an understanding of the principles and concepts of a business's supply chain (i.e., suppliers, producers and consumers).

5. A Performance Examples:

- Develop a presentation pertaining to an entrepreneur and their business.
- Communicate with a business owner and discuss the pros and cons of starting and owning a business. Summarize the main points of the discussion.
- Choose a product or service and describe the process leading to distribution.
- Write a business plan for a business in your community.

5.B Managing a Business

- 5.B.01 Demonstrate an understanding of managing a business.
 - 5.B.01.01 Formulate short- and long-term business goals.
 - 5.B.01.02 Demonstrate effective verbal, written and visual communication skills.
 - 5.B.01.03 Utilize a decision-making process to make effective business decisions.
 - 5.B.01.04 Identify a business's chain of command and define its organizational structure.
 - 5.B.01.05 Identify and apply effective customer service skills and practices.
 - 5.B.01.06 Identify, interpret and develop written operating procedures and policies.
 - 5.B.01.07 Track inventory, productivity and labor cost.
 - 5.B.01.08 Demonstrate business meeting skills.
 - 5.B.01.09 Identify professional organizations and explore their benefits.

5. B Performance Examples:

- Working as a team, role-play situations that an entrepreneur might face in dealing with customers or employees.
- Contact a relevant professional organization and request information about its benefits, membership requirements and costs.
- Plan and conduct a business meeting.
- Identify companies that are known for customer service and list the practices that help differentiate themselves from all others in their industry.

5.C Marketing a Business

- 5.C.01 Demonstrate an understanding of marketing and promoting a business.
 - 5.C.01.01 Explain the role of business in the economy.
 - 5.C.01.02 Describe the relationship between business and community.
 - 5.C.01.03 Describe methods of market research and identifying target markets.

- 5.C.01.04 Describe and apply the concepts of a marketing mix (the 4Ps of marketing: product, price, place and promotion).
- 5.C.01.05 Compare and contrast the promotional tools and techniques used to sell products, services, images and ideas.
- 5.C.01.06 Describe the impact of supply and demand on a product or business.
- 5.C.01.07 Identify direct and indirect competition on a business.
- 5.C.01.08 Identify and use sales techniques to meet client needs and wants.
- 5.C.01.09 Discuss strategies to acquire and retain a customer base.

5. C Performance Examples:
- Research reliable sources to identify marketing and industry data related to a business.
 - Conduct market research by developing a survey and presenting the results.
 - Create a promotional campaign using a variety of media.
 - Write a marketing plan for a product.

5.D Financial Concepts and Applications in Business

- 5.D.01 Demonstrate an understanding of financial concepts and applications.
 - 5.D.01.01 Identify essential financial reports and understand their purpose (i.e., budget, balance sheet and income statement).
 - 5.D.01.02 Describe payroll practices (i.e., deductions – federal, FICA and state taxes and insurances).
 - 5.D.01.03 Identify the importance of maintaining accurate records.
 - 5.D.01.04 Apply practices related to pricing, purchasing and billing.
 - 5.D.01.05 Maintain and reconcile a checking account.
 - 5.D.01.06 Identify the options for funding a business.

5. D Performance Examples:
- Given an employee time card and rate of pay, calculate gross pay, taxes, deductions and net pay.
 - Develop a budget for a simulated business or project.
 - Analyze and discuss financial documents from a company.
 - Research various methods of funding a business.

5.E Legal/Ethical/Social Responsibilities

- 5.E.01 Demonstrate an understanding of legal, ethical and social responsibility for businesses.
 - 5.E.01.01 Identify state and federal laws and regulations related to managing a business.
 - 5.E.01.02 Describe and identify ethical business practices.
 - 5.E.01.03 Demonstrate an understanding of business contracts.
 - 5.E.01.04 Explain the role of diversity in the workplace.
 - 5.E.01.05 Explain the role of labor organizations.
 - 5.E.01.06 Identify practices that support clean energy technologies and encourage environmental sustainability.
 - 5.E.01.07 Demonstrate an understanding of how technology advancements impact business practices.

- 5.E Performance Example:
- Read and interpret a contract.
 - Complete an application for a license, permit or certificate.
 - Research federal, state and local regulations and laws required for a business.
 - Participate in and summarize a discussion with a member of a labor or civil rights organization.

Selected Websites

- CVTE Strand 1, 4, and 5 Resources: <https://sites.google.com/a/mccanntech.org/cvte-strands-1-4-and-5-resources/>
- Entrepreneur: <http://www.entrepreneur.com>
- Inc. Magazine: <http://www.inc.com/>
- Junior Achievement “Be Entrepreneurial Program”: <https://www.juniorachievement.org/web/ja-usa/home>
- Kahn Academy Interviews with Entrepreneurs: <https://www.khanacademy.org/economics-finance-domain/entrepreneurship2/interviews-entrepreneurs>
- Kauffman Founders School: <http://www.entrepreneurship.org/en/founders-school.aspx>
- National Federation of Independent Business: www.nfib.com
- National Foundation for Teaching Entrepreneurship (NFTE): www.nfte.com
- SBA Loans: <http://www.sba.gov>
- SkillsUSA Professional Development Program Competency List: <http://www.skillsusa.org/downloads/PDF/lessons/professional/PDPPreview.pdf>
- Small Business Administration: www.sba.gov

Glossary

Term	Definition
Balance sheet	A statement of the assets, liabilities and capital of a business at a particular point in time.
Budget	An estimate of income and expenditure for a set period of time.
Business Ownership	Types of business ownership refer to the legal structure of an organization. Legal structures include: Sole Proprietorship, Partnerships, Corporations and Limited Liability Companies.
Business Plan	A written document that describes in detail your business goals and how you are going to achieve them from a marketing, operational and financial point of view.

Term

Chain of Command and Organizational Structure

**Definition**

Refers to the management structure of an organization. It identifies lines of authority, lines of communication, and reporting relationships. Organizational structure determines how the roles, power and responsibilities are assigned and coordinated and how information flows between the different levels of management. (A visual representation of this structure is called an org chart).

FICA

Federal Insurance Contributions Act requires taxes deducted from pay for supporting Social Security.

Income Statement

A financial statement providing operating results for a specific time period showing a business's revenues, expenses and profit or loss.

Market Research

- Primary: Surveys, Focus Groups, Observation
- Secondary: Websites, Internet

Marketing Mix

A set of controlled variables that formulate the strategic position of a product or service in the marketplace. These variables are known as the 4 P's of marketing and include product, place, price and promotion.

Methods to Track Inventory, Productivity and Labor Cost

Refers to the processes a business uses to account for: 1) the inflows and outflows of inventory and materials related to inventory; 2) the efficiency of operations and 3) the cost of labor including salary and benefits.

Promotional Tools and Techniques

The six elements of a promotional mix are: advertising, visual merchandising, public relations, publicity, personal selling and sales promotion.

Supply Chain

The supply chain, or channel of distribution, describes how the product is handled and/or distributed from suppliers with materials, to the manufacturer, wholesaler or retailer and finally to the consumer.

Target Market

Those who are most likely to buy your product or service.

Strand 6: Technology Literacy Knowledge and Skills

6.A Technology Literacy Knowledge and Skills (Grades 9 through 12)

- 6.A.01 Demonstrate proficiency in the use of computers and applications, as well as an understanding of the concepts underlying hardware, software, and connectivity.
 - 6.A.01.01 Use online help and other support to learn about features of hardware and software, as well as to assess and resolve problems.
 - 6.A.01.02 Install and uninstall software; compress and expand files (if the district allows it).
 - 6.A.01.03 Explain effective backup and recovery strategies.
 - 6.A.01.04 Apply advanced formatting and page layout features when appropriate (e.g., columns, templates, and styles) to improve the appearance of documents and materials.
 - 6.A.01.05 Use editing features appropriately (e.g., track changes, insert comments).
 - 6.A.01.06 Identify the use of word processing and desktop publishing skills in various careers.
 - 6.A.01.07 Identify the use of database skills in various careers.
 - 6.A.01.08 Define and use functions of a spreadsheet application (e.g., sort, filter, find).
 - 6.A.01.09 Explain how various formatting options are used to convey information in charts or graphs.
 - 6.A.01.10 Identify the use of spreadsheet skills in various careers.
 - 6.A.01.11 Use search engines and online directories.
 - 6.A.01.12 Explain the differences among various search engines and how they rank results.
 - 6.A.01.13 Explain and demonstrate effective search strategies for locating and retrieving electronic information (e.g., using syntax and Boolean logic operators).
 - 6.A.01.14 Describe good practices for password protection and authentication.
- 6.A.02 Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.
 - 6.A.02.01 Demonstrate compliance with the school's Acceptable Use Policy.
 - 6.A.02.02 Explain issues related to the responsible use of technology (e.g., privacy, security).
 - 6.A.02.03 Explain laws restricting the use of copyrighted materials.
 - 6.A.02.04 Identify examples of plagiarism, and discuss the possible consequences of plagiarizing the work of others.
- 6.A.03 Design and implement a personal learning plan that includes the use of technology to support lifelong learning goals.
 - 6.A.03.01 Evaluate the authenticity, accuracy, appropriateness, and bias of electronic resources, including Web sites.
 - 6.A.03.02 Analyze the values and points of view that are presented in media messages.
 - 6.A.03.03 Describe devices, applications, and operating system features that offer accessibility for people with disabilities.

- 6.A.03.04 Evaluate school and work environments in terms of ergonomic practices.
- 6.A.03.05 Describe and use safe and appropriate practices when participating in online communities (e.g., discussion groups, blogs, social networking sites).
- 6.A.03.06 Explain and use practices to protect one's personal safety online (e.g., not sharing personal information with strangers, being alert for online predators, reporting suspicious activities).
- 6.A.03.07 Explain ways individuals can protect their technology systems and information from unethical users.
- 6.A.04 Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.
 - 6.A.04.01 Devise and demonstrate strategies for efficiently collecting and organizing information from electronic sources.
 - 6.A.04.02 Compare, evaluate, and select appropriate electronic resources to locate specific information.
 - 6.A.04.03 Select the most appropriate search engines and directories for specific research tasks.
 - 6.A.04.04 Use a variety of media to present information for specific purposes (e.g., reports, research papers, presentations, newsletters, Web sites, podcasts, blogs), citing sources.
 - 6.A.04.05 Demonstrate how the use of various techniques and effects (e.g., editing, music, color, rhetorical devices) can be used to convey meaning in media.
 - 6.A.04.06 Use online communication tools to collaborate with peers, community members, and field experts as appropriate (e.g., bulletin boards, discussion forums, listservs, Web conferencing).
 - 6.A.04.07 Plan and implement a collaborative project with students in other classrooms and schools using telecommunications tools (e.g., e-mail, discussion forums, groupware, interactive Web sites, video conferencing).

Appendices

The framework teams created an “Appendix” listing potential industry recognized credentials attainable by secondary students; lists of professional, student, and relevant government organizations; and useful resources and websites. **** It is important to note that although most Framework Teams provided information for the “Appendix”, not all teams did. Therefore, sub-headings within the “Appendix” without information have been deleted.***

Disclaimer: Reference in the Appendices Section to any specific commercial products, processes, or services, or the use of any trade, firm or corporation name is for the information and convenience of the public, and does not constitute endorsement or recommendation by the Massachusetts Department of Elementary and Secondary Education.

Embedded Academic Crosswalks

Embedded English Language Arts and Literacy

CVTE Learning Standard Number	Strand Coding Designation Grades ELAs Learning Standard Number	Text of English Language Arts Learning Standard
2A-2J	L6 Grades 9-10 and Grades 11-12	Acquire and use accurately general academic and domain-specific words or phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
2A, 2B, 2C, 2D, 2E	RST4 Grades 9-10 and Grades 11-12	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
Performance Example: <ul style="list-style-type: none"> Students will produce writing throughout the year using specific wording and jargon particular to the field and tasks in this area. 		
2D, 2J	WHST1 Grades 9-10 and Grades 11-12	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2C, 2D, 2F, 2H, 2I, 2J	WHST2 Grades 9-10 and Grades 11-12	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
2F, 2G	WHST3 Grades 9-10 and Grades 11-12	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
2A, 2C, 2F, 2H, 2I, 2J	WHST4 Grades 9-10 and Grades 11-12	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
2A, 2C, 2F, 2H, 2I, 2J	WHST5 Grades 9-10 and Grades 11-12	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
2A, 2B, 2E, 2F, 2I	WHST6 Grades 9-10 and Grades 11-12	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
2A-2J	WHST10 Grades 9-10 and Grades 11-12	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
Performance Example: <ul style="list-style-type: none"> Students will write multiple essays and complete multiple projects that will require them to analyze different elements of the field in relation to their hands-on work in the shop area. These students will engage in a writing process that will be specific to audience and purpose. 		
2B, 2C, 2D, 2E, 2H, 2J	RST2 Grades 9-10 and Grades 11-12	Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and defined by specific details; provide an objective summary of the text.
Performance Example: <ul style="list-style-type: none"> Students will routinely read informational texts which they will examine, evaluate, and summarize. 		
2C, 2D, 2E, 2H, 2I, 2J	WHST7 Grades 9-10 and Grades 11-12	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the

		subject under investigation.
2C, 2D, 2E, 2H, 2I, 2J	WHST8 Grades 9-10 and Grades 11-12	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
<p>Performance Example:</p> <ul style="list-style-type: none"> Students will gather relevant information pertaining to specified areas within the field in multiple research projects to strengthen their understanding of the fashion design field. 		
2A, 2D, 2E, 2H, 2I, 2J	SL1 Grades 9-10 and Grades 11-12	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>topics, texts, and issues</i> , building on others' ideas and expressing their own clearly and persuasively.
2A, 2D, 2E, 2F 2I	SL4 Grades 9-10 and Grades 11-12	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
2A, 2D, 2F, 2I	SL5 Grades 9-10 and Grades 11-12	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
2A, 2D, 2E, 2F. 2I	SL6 Grades 9-10 and Grades 11-12	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
<p>Performance Example:</p> <ul style="list-style-type: none"> Students will give multiple presentations throughout the year in a variety of settings based on projects in the field. 		

Embedded Mathematics

CVTE Learning Standard Number	Math Content Conceptual Category and Domain Code Learning Standard Number	Text of Mathematics Learning Standard
2.B.01 2.B.02	1.G.1 1.G.2 7.RP.1	Distinguish between defining attributes versus non-defining attributes; build and draw shapes that possess defining attributes. Compose two-dimensional shapes or three-dimensional shapes to create a composite shape and compose new shapes from the composite shape. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.
<p>Performance Example:</p> <ul style="list-style-type: none"> Students will demonstrate an understanding of shape and proportion in fashion illustration by identifying basic shapes used in drawing and sketching different types of fashion flats in front, back and side views and with the construction details. 		
2.C.02	4.G.3 7.RP.1	Recognize a line of symmetry for a two dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.

<p>Performance Example:</p> <ul style="list-style-type: none"> Students will use symmetry and proportion to identify and describe the principles of design. 		
<p>2.E.04 2.E.06 2.E.07 2.E.08</p>	<p>3.MD.4 4.MD.1 4.G.3 6.NS.1 7.G.1 7.RP.1</p>	<p>Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Know relative sizes of measurement units within one system of units. Recognize a line of symmetry for a two dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions. Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.</p>
<p>Performance Example:</p> <ul style="list-style-type: none"> Students will use symmetry, proportions, measurement and operations with fractions and mixed numbers while creating a flat pattern design by drafting a simple pattern as well as using draping techniques. 		
<p>2.F.02 2.F.03 2.F.06 2.F.09 2.F.10 2.F.11 2.F.12 2.F.14 2.F.15 2.F.17</p>	<p>3.MD.4 4.MD.1 4.NF.3C 4.NF.3D 4.NF.4C 6.NS.1 7.G.4 7.RP.1</p>	<p>Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Know relative sizes of measurement units within one system of units. Add and subtract mixed numbers with like denominators. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators. Solve word problems involving multiplication of a fraction by a whole number. Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions. Know the formulas for the area and circumference of a circle and solve problems. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.</p>
<p>Performance Example:</p> <ul style="list-style-type: none"> Students will use symmetry, proportions, measurement and operations with fractions and mixed numbers while preparing a garment for construction, constructing different types of garments for men and women, reducing or adding fullness, performing alterations when necessary and also demonstrating how to mark, measure and stitch a variety of hems. 		
<p>2.G.01 2.G.03</p>	<p>3.MD.4 4.MD.1 4.NF.3C 4.NF.3D 6.NS.1</p>	<p>Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Know relative sizes of measurement units within one system of units. Add and subtract mixed numbers with like denominators. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators. Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions.</p>
<p>Performance Example:</p> <ul style="list-style-type: none"> Students will use measurement, convert units, and solve real problems involving all operations with fractions and mixed numbers while using fashion technology skills to create a variety of items for the home. 		

2.H.04	7.RP.3	Use proportional relationships to solve multi-step ratio and percent problems.
Performance Example: <ul style="list-style-type: none"> Students will use proportional relationships to calculate markup and markdown percent and merchandise discounts. 		

Embedded Science and Technology/Engineering

Physical Science (Chemistry)

CVTE Learning Standard Number	Subject Area, Topic Heading and Learning Standard Number	Text of Chemistry Learning Standard
2.D.01	Properties of Matter	1.1 Identify and explain physical properties (e.g., density, melting point, boiling point, conductivity, malleability) and chemical properties (e.g., the ability to form new substances). Distinguish between chemical and physical changes.
Performance Example: <ul style="list-style-type: none"> Students will identify physical changes while performing basic fiber identification tests such as: shrinkage, colorfastness, simple burn, bleach, acetone dissolve and abrasion. 		
2.D.04	Solutions, Rates of Reaction, and Equilibrium	7.1 Describe the process by which solutes dissolve in solvents. 7.3 Identify and explain the factors that affect the rate of dissolving (e.g., temperature, concentration, surface area, pressure, mixing).
Performance Example: <ul style="list-style-type: none"> Students will discuss solutes dissolving when machine washing multiple fabrics during a shrinkage test and designing a chart of stains and stain removal products and methods. 		

Physical Science (Physics)

CVTE Learning Standard Number	Subject Area, Topic Heading and Learning Standard Number	Text of Physics Learning Standard
2.E 01	Heat and Heat Transfer	3.1 Explain how heat energy is transferred by convection, conduction, and radiation. 3.2 Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.
Performance Example: <ul style="list-style-type: none"> Students will discuss the importance of clothing as protection from environmental elements and the ability of various types of fabric to insulate while identifying reasons people wear clothes. 		

Technology/Engineering

CVTE Learning Standard Number	Subject Area, Topic Heading and Learning Standard Number	Text of Technology/Engineering Learning Standard
2.A.02 2F.01	Manufacturing Technologies	7.2 Identify the criteria necessary to select safe tools and procedures for a manufacturing process (e.g. properties of materials, required tolerances, and end-uses).
Performance Example: <ul style="list-style-type: none"> Students will identify the correct tool for the job and demonstrate the safe use of industrial machinery while constructing clothing, accessories and home goods. 		
2.B.03 2.E.05 2.G.01	Engineering Design	1.1 Identify and explain the steps of the engineering design process: identify the problem, research the problem, develop possible solutions, select the best possible solution(s), construct prototypes and/or models, test and evaluate, communicate the solutions, and redesign. 1.2 Understand that the engineering design process is used in the solution of problems and the advancement of society. Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified. 1.3 Produce and analyze multi-view drawings (orthographic projections) and pictorial drawings (isometric, oblique, perspective), using various techniques. 1.4 Interpret and apply scale and proportion to orthographic projections and pictorial drawings (e.g., ¼" = 1'0", 1 cm = 1 m). 1.5 Interpret plans, diagrams, and working drawings in the construction of prototypes or models.
Performance Example: <ul style="list-style-type: none"> Students will use computer aided design (CAD) to create fashion illustrations, textile designs and patterns for garment making. 		

DESE Statewide Articulation Agreements

No Statewide Articulation Agreements at this time.

Industry Recognized Credentials (Licenses and Certifications/Specialty Programs)

Occupational Safety and Health Administration (OSHA) - Ten-Hour General Industry Certification [OSHA General Industry Training Guidelines](#)

Fashion, Textiles, and Apparel Competency Assessment and Certification

http://www.aafcs.org/CredentialingCenter/fashion_textiles_apparel.asp

National Retail Federation (NRF) – National Customer Service Certification

Other

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My Pattern Designer. My Pattern Designer, LLC, 2006. DVD.

The Power of Color. Learning Zone Xpress, 2000. DVD.

Trade Journals

Sew News

Teen Vogue

Threads

Vogue

Vogue Patterns

W

Women's Wear Daily

Related National, Regional, and State Professional Organizations

SkillsUSA

Massachusetts Vocational Association (MVA)

Massachusetts Association of Vocational Administrators (MAVA)

Retailers Association of Massachusetts

American Association of Family and Consumer Sciences

The American Sewing Guild (ASG)

Home Sewing Association

The Council of Fashion Designers of America: CFDA

The Council of International Fashion Designers (CIFD)

Fashion Group International (FGI)

Fashion Group Intl Boston

American Apparel and Footwear Association (AAFA)

Fashion Jewelry and Accessories Trade Association (FJATA)

Fashion Design and Merchandising Professional Organizations

Color Marketing Group

International Textile and Apparel Association

American Association of Textile Chemists and Colorists (AATCC)

American Society for Testing and Materials (ASTM)

American Fibers Manufacturers Association (AFMA)

National Textile Association

The Costume Society of America (CSA)

The International Costumers Guild

The Under Fashion Club

National Retail Federation

Retail Advertising & Marketing Association International

The Ad Club

International Interior Design Association - New England

American Society of Interior Designers

Student Organizations

Skills USA www.maskillsusa.org

Distributive Education Clubs of America (DECA)

Business Professionals of American (BPA)

Selected Websites

www.fashion.net
www.style.com
www.video.style.com
www.fashioncenter.com
www.fashion.about.com
www.infomat.com
www.fashion-incubator.com
www.Snapfashun.com
www.Trendstop.com
www.Wgsn.com
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