Massachusetts Career Technical Education

Fashion Technology Framework

2014

This framework will be updated and included on the [Career-Connected Learning Hub.](http://www.macareerconnectedlearning.org) Visit the CCL Hub to register for an Employer or Educator Summit to provide feedback on the update , see the revision calendar, and access resources for this and other frameworks.

# [Strand 2: Technical Knowledge and Skills](#_bookmark0)

###### Fashion Technology Safety and Health Knowledge and Skills

* + 1. Identify safety concerns in business and industry.
       1. Describe categories of safety issues.
       2. Describe methods to promote safety and prevent accidents.
    2. Performance Example:
       - Students will successfully complete the OSHA 10-hour General Industry program.
    3. Identify and practice safe procedures in the fashion workroom according to current industry and OSHA standards.
       1. Identify and follow safety rules.
       2. 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.

###### Fashion Illustration

* + 1. Demonstrate an understanding of shape and proportion in fashion illustration.
       1. Identify the basic shapes used in drawing.
       2. Demonstrate 8-head proportion.
       3. Sketch different types of fashion flats.
       4. Sketch front, back and side views.
       5. Sketch a figure to show movement.
    2. Performance Example:
       - Students will maintain a fashion illustration sketch book using mixed media.
    3. Sketch garment details.
       1. Sketch a variety of garments including different details.
       2. 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.).
  + 1. Use Computer Aided Design (CAD) technology in fashion illustration.
       1. Set up, edit, and save a document.
       2. Identify the basic tools used in drawing.
       3. List the basic keyboard shortcuts used in CAD.
       4. Demonstrate grouping, transforming, and aligning objects.
       5. Demonstrate use of layers in illustration.
       6. Using a croquis, create a variety of technical flats.
       7. Create a simple design using brushes, fills, and patterns.
       8. 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.

###### Elements and Principles of Design

* + 1. Identify and describe the elements of design.
       1. Describe how the elements of design are used in fashion, textiles, and retailing.
    2. 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.
    3. Identify and apply the principles of design.
       1. 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.

###### Textiles

* + 1. Classify natural and synthetic fibers.
    2. Describe characteristics of commonly used natural and synthetic fibers.
    3. Performance Example:
       - Students will observe or perform basic fiber identification tests such as: shrinkage, colorfastness, simple burn, bleach, acetone dissolve, and abrasion.
    4. Identify and describe types of fabric construction.
       1. Identify simple weaves and knits.
       2. Describe the characteristics of knit, woven, and non-woven fabrics.
       3. Explain the importance of thread count.
       4. Identify common fabrics used for garments and household textiles.
       5. Identify additional textiles which have uses other than apparel or home goods.
       6. 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.
  + 1. Describe legislation and the development of technology in the textile industry.
       1. Identify the laws related to consumer textiles.
       2. 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.
  + 1. Select appropriate care of fabrics based on fiber content.
       1. Classify fabrics which are machine washable and those that always require dry cleaning.
       2. Identify laundry products and describe their uses.
       3. 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.
  + 1. Define sustainability in relation to the fashion industry.
       1. List different ways that fabric manufacturing could be more environmentally friendly.
       2. Identify various ways that consumers can contribute to sustainability.
  1. Apparel Design

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.
  + 1. Explain the reasons why people wear clothes.
       1. Discuss how human needs, values, cultures, and personality affect what clothes people choose.
    2. 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.
    3. Research and report on fashion history.
       1. Identify historical influences on current fashion design.
       2. Explain factors that influence fashion.
       3. Describe the fashion cycle and the fashion forecasting process.
       4. 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.
  + 1. Identify garment styles and components.
       1. Identify the styles within each garment category.
       2. 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.
  + 1. Demonstrate flat pattern design.
       1. Identify basic tools used in drafting.
       2. Take necessary body measurements and perform calculations needed to create a sloper.
       3. Draft a skirt or bodice pattern.
       4. Label pattern with seam allowances, grain lines, and pattern symbols.
       5. Test a flat pattern design using muslin.
       6. 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.
  + 1. Create a pattern using CAD software program.
       1. Input body measurements into the program.
       2. Design the garment pattern.
       3. 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.
  + 1. Demonstrate accurate draping techniques.
       1. Locate placement for design lines and seams on mannequin.
       2. Create a simple garment by draping.
       3. 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.

###### Garment Construction

* + 1. Identify equipment and tools.
       1. Identify measuring, pinning, cutting, marking and pressing tools.
       2. Select appropriate needle type and size for fabric.
    2. 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.
    3. Take accurate body measurements.
       1. Read a ruler to the 1/8”.
       2. 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.
  + 1. Prepare for garment construction.
       1. Analyze the pattern envelope to determine appropriate fabric type, pattern size, yardage requirements, and notions.
       2. Select and adjust pattern pieces.
       3. Calculate yardage needed for outfit and complete a production cost sheet.
       4. 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.
  + 1. Demonstrate pattern layout, cutting and marking methods according to current industry standards.
       1. Identify lengthwise and crosswise grain lines and true bias.
       2. Differentiate layouts for solid, napped, striped, plaid, directional print, and border print fabrics.
       3. Follow accurate cutting lines on a multi-sized pattern.
       4. 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.
  + 1. Operate various machines used in garment construction according to current industry and OSHA standards.
       1. Thread and operate a straight stitch machine.
       2. 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.
  + 1. Demonstrate a variety of seams, and seam finishes.
       1. Identify standard seam allowances for home and commercial sewing.
       2. Differentiate between standard, basting, and reinforcement machine stitching by stitch length.
       3. Demonstrate a variety of machine and hand stitching techniques.
       4. Demonstrate a variety of methods to reduce bulk in a seam allowance.
       5. 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.
  + 1. Summarize the importance of and demonstrate industry recommended pressing techniques.
       1. 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.
  + 1. Apply interfacing.
       1. State the purpose of interfacing.
       2. Identify the two basic categories of interfacing.
       3. 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.
  + 1. Construct different types of garments for men and women, and accessories.
       1. Construct a top, blouse, or shirt.
       2. Construct a skirt and pair of pants or shorts.
       3. Construct a dress.
       4. Make an item of loungewear.
       5. Stitch a garment of outerwear.
       6. 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.
  + 1. Demonstrate a variety of garment details.
       1. Insert a variety of closures.
       2. 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.
  + 1. Check and adjust the fit of a garment.
       1. Evaluate if the garment hangs properly.
       2. Analyze the fit at different body areas.
       3. Determine if enough ease has been allowed for movement.
       4. 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.
  + 1. Demonstrate how to mark, measure, and stitch a variety of hems with accuracy.
       1. Demonstrate the industry method used to measure, trim, pin, and stitch a hem.
       2. Explain how to eliminate fullness in a hem.
       3. 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.
  + 1. Construct garments with a variety of fabrics.
       1. Construct garments using solid, print, and one-way design woven fabrics.
       2. Construct a garment using plaid woven fabric.
       3. Construct a garment using knit fabric.
       4. Create a garment with a lining.

2.F.13 Performance Example:

* Students will construct a simple vest with a lining.
  + 1. Perform simple alterations/repairs.
       1. Alter a ready-to-wear garment.
       2. Perform simple garment repairs.
       3. 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.

###### Home Décor

* + 1. Demonstrate use of fashion technology skills to create a variety of items for the home.
       1. Create a home decorating item.
       2. Take window measurements and construct a window treatment.
       3. Create a plan for a room makeover utilizing skills in CAD for the layout and demonstrating knowledge of design elements and principles.
    2. 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.

###### Fashion Marketing

* + 1. Define fashion marketing and describe how it works.
       1. Describe the marketing mix.
       2. Discuss consumer groups and demographics.
    2. Performance Examples:
       - Students will find examples of advertisements targeting different demographics.
       - Students will design a product for a target customer.
    3. Explain the economics of fashion.
       1. Describe the marketing principle of supply and demand.
       2. List the components of a business plan.

2.H.02 Performance Example:

* Students will develop a business plan for a product previously designed.
  + 1. Explain key concepts in promoting an image.
       1. Identify different types of advertising and techniques.
       2. Identify key factors in store visuals.
       3. 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.
  + 1. List sales and profitability factors.
       1. Calculate markup and markdown percents, and merchandise discounts.
       2. 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.
  + 1. Describe laws, labor, and ethics related to the fashion industry.
       1. Explain legislation that impacts the fashion industry.
       2. List requirements or laws governing apparel labeling.
       3. 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.

###### Fashion Merchandising

* + 1. Identify the components of Fashion Merchandising.
       1. Describe the basic functions of Fashion Merchandising: planning, buying and selling.
    2. 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 it product, and timeline for buying merchandise.
    3. Explain the movement of fashion.
       1. Explain the difference between the trickle up and trickle down theories.
       2. State the stages of the fashion cycle.
       3. 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.
  + 1. Identify customer service skills important to retail.
       1. List several positive sales techniques.
       2. 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.

* + - 1. \* Identify major fashion centers, types of designers, and price market categories.
      2. \* Explain how garment sizing affects pricing.
      3. \* 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.

###### Fashion Technology Careers

* + 1. Identify careers in the fashion industry.
       1. Evaluate your personal interests and skills.
       2. Identify the categories of careers in fashion technology.
       3. Research a career in fashion including education, experience, traits and skills necessary.
       4. Research a fashion designer and evaluate his/her skills and qualities that contributed to success.
    2. 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 a 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.

# [Embedded Academic Crosswalks](#_bookmark0)

### [Embedded English Language Arts and Literacy](#_bookmark0)

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| CTE  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:  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:   * 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:  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.  Performance Example:  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 *topics*, *texts*, *and issues*, 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.  Performance Example:  Students will give multiple presentations throughout the year in a variety of settings based on projects in the field. |

### [Embedded Mathematics](#_bookmark0)

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| CTE  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.  Performance Example:   * 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.  Performance Example:  Students will use symmetry and proportion to identify and describe the principles of design. |
| 2.E.04  2.E.06  2.E.07  2.E.08 | 1. MD.4 2. MD.1   4.G.3   1. NS.1   7.G.1  RP.1 | 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.  Performance Example:  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. |
| 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 | 3.MD.4  4.MD.1  4.NF.3C  4.NF.3D  4.NF.4C  6.NS.1  7.G.4   1. 7.RP.1 | 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.  Performance Example:   * 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. |
| 2.G.01  2.G.03 | 3.MD.4  4.MD.1  4.NF.3C  4.NF.3D  6.NS.1 | 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.  Performance Example:  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:  Students use will use proportional relationships to calculate markup and markdown percent and merchandise discounts. |

### [Embedded Science and Technology/Engineering](#_bookmark0)

#### [Physical Science (Chemistry)](#_bookmark0)

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| CTE  Learning Standard Number | Subject Area, Topic Heading and  Learning Standard Number | Text of Chemistry Learning Standard |
| 2.D.01 | Properties of Matter | * 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:  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:  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)](#_bookmark0)

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| --- | --- | --- |
| CTE  Learning Standard Number | Subject Area, Topic Heading and  Learning Standard Number | Text of Physics Learning Standard |
| 2.E 01 | Heat and Heat Transfer | * 1. Explain how heat energy is transferred by convection, conduction, and radiation.   2. Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.   Performance Example:  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](#_bookmark0)

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| --- | --- | --- |
| CTE  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:  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. 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.   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.   3. Produce and analyze multi-view drawings (orthographic projections) and pictorial drawings (isometric, oblique, perspective), using various techniques.   4. Interpret and apply scale and proportion to orthographic projections and pictorial drawings (e.g., ¼" = 1'0", 1 cm = 1 m).   5. Interpret plans, diagrams, and working drawings in the   construction of prototypes or models.  Performance Example:  Students will use computer aided design (CAD) to create fashion illustrations, textile designs and patterns for garment making. |

[Industry Recognized Credentials](#_bookmark0) (Licenses and Certifications/Specialty Programs)

Occupational Safety and Health Administration (OSHA) - Ten-Hour General Industry Certification [OSHA General Industry Training Guidelines](http://www.osha.gov/dte/outreach/generalindustry/index.html)

##### 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