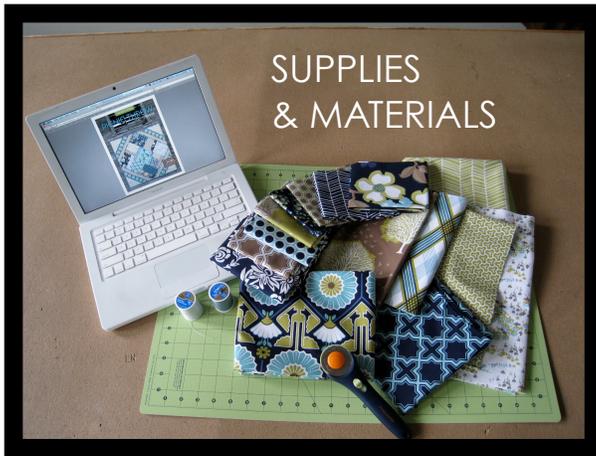


Clothing and TEXTILES

UTAH STATE UNIVERSITY COOPERATIVE EXTENSION PROGRAMMING

Clothing & Textiles Project: A Quilt

Documenting the Integration of Science, Technology, Engineering & Math (STEM) and Language Arts



Clothing and textiles-related projects assigned to secondary students reinforce science, technology, engineering, and math (STEM) standards required for high school graduation. To illustrate this point, the following tutorial will outline STEM and language arts standards utilized during the production of a quilt, which can serve as a skills assessment for secondary clothing and textiles-related courses. The standards that are included in this outline are found in the recently adopted Common Core Standards (2010) that strive to define college and career readiness expectations for high school students. The quilt pattern used for this project can be found on fabric designer Joel Dewberry's website: <http://www.joeldewberry.com>. Fabrics used for this project were designed by Joel Dewberry.



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Supplies Needed for Quilt Project:

- Fabric (listed on Joel Dewberry Pattern Instructions)
- Batting
- Coordinating Thread
- Scissors
- Straight Pins
- Chalk Pencil or Fabric Marker
- Rotary Cutter
- Cutting Mat
- Ruler/Measuring tape

Project Steps Connected to FCS Standards & STEM and Literacy Standards:

STEP 1: Select appropriate fabric for selected pattern. Consider the fiber characteristics of fabric and the end use of the completed project before choosing fabric.



Family and Consumer Sciences National Standards (2008-2018):

- 16.2: Evaluate fiber and textile products and materials.
- 16.3: Demonstrate fashion, apparel, and textile design skills.
 - 16.3.2: Apply basic and complex color schemes and color theory to develop and enhance visual effects.
 - 16.3.3: Utilize the elements and principles of design in designing, constructing, and/or altering textile, apparel, and fashion products.

Academic Proficiencies:

Language Arts:

- Demonstrates competence in using various information sources, including knowledge-based and technical texts to perform specific tasks (LA 2)

Science:

- Applies and uses laboratory techniques safely (SC 041)
- Applies and uses maps, charts, tables, and graphs to complete tasks (SC 042)

Technology & Engineering:

Creativity & Innovation (NETS, 2007)

- Apply existing knowledge to generate new ideas, products or processes.
- Create original works as a means of personal or group expression.

Critical Thinking, Problem Solving, and Decision Making

- Use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
- Identify and define authentic problems and significant questions for investigation
- Plan and manage activities to develop a solution or complete a project



STEP 2: Measuring and cutting out fabric for quilt pieces. To complete this step, students will address the following FCS, STEM, and Language Arts standards:



• Example: fabric H : 7.5" x 14.5", fabric I: 4.5" x 5.5", fabric J: 4.5" x 9.5". Fabric H, I, and J must accurately add up to the dimensions of fabric C (11.5" x 12.5") in order to be even. The pieced square consisting on H,I, and J must be cut a half inch larger in order to accommodate for 1/4" seam allowances (7.5" + 4.5"=12", C=11.5").

Family and Consumer Sciences Standards (2008-2018):

- 16. 4: Demonstrate skills needed to produce, alter, or repair fashion, apparel, and textile products.
- 16.4.1: Demonstrate professional skills in using a variety of equipment, tools, and supplies for fashion, apparel, and textile construction, alteration, and repair.

Language Arts:

- Applies the reading process and strategies to directions or tasks that are relatively short with limited categories of information, directions, concepts, and vocabulary (LA 1)
- Demonstrates competence in using various information sources, including knowledge-based and technical texts to perform specific tasks (LA 2)

Mathematics:

- Adds, subtracts, divides, and multiplies whole numbers (MA 1)
- Adds subtracts, divides, multiplies, mixed numbers, fractions, and decimals (MA 2)
- Mentally adds, subtracts, divides, and multiplies whole numbers (MA 4)
- Understands and applies basic methods of measurement (MA 6)
- Calculates and evaluates precision measurements (MA 014)
- Measures distance using standard measurement tools (MA 181)



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STEP 3: Begin sewing the quilt pieces together to assemble the top of the quilt. To complete this step, students will address the following FCS, STEM, and Language Arts standards:

Family and Consumer Sciences Standards (2008-2018):

- 16. 4: Demonstrate skills needed to produce, alter, or repair fashion, apparel, and textile products.
- 16.4.1: Demonstrate professional skills in using a variety of equipment, tools, and supplies for fashion, apparel, and textile construction, alteration, and repair.

Language Arts:

- Applies the reading process and strategies to directions or tasks that are relatively short with limited categories of information, directions, concepts, and vocabulary (LA 1)
- Demonstrates competence in using various information sources, including knowledge-based and technical texts to perform specific tasks (LA 2)

Mathematics:

- Calculates and evaluates precision measurements (MA 014)
- Measures distance using standard measurement tools (MA 181)
- **Note:** Students will be required to adjust measurements for quilt pieces while constructing the quilt top. Even though the pieces are measured and cut accurately in the beginning, during the process of sewing geometric shapes together mental mathematical changes might need to be made.

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Technology Operations and Concepts

- Use technology systems
- Select and use applications effectively and productively
- Troubleshoot systems and applications



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CONSTRUCTION**

STEP 4: Layer the appropriate batting between the quilt back and pieced quilt top. Begin machine quilting the throw. To complete this step, students will address the following FCS, STEM, and Language Arts standards:

Family and Consumer Sciences Standards (2008-2018):

- 16.2: Evaluate fiber and textile products and materials (there are many choices available for batting that is located between the layers of the quilt. Students will need to differentiate between the wide variety of products based on fiber content and durability factors).
- 16. 4: Demonstrate skills needed to produce, alter, or repair fashion, apparel, and textile products.
 - 16.4.1: Demonstrate professional skills in using a variety of equipment, tools, and supplies for fashion, apparel, and textile construction, alteration, and repair.



Mathematics:

- Calculates and evaluates precision measurements (MA 014)
- Measures distance using standard measurement tools (MA 181)
- **Note:** Students will need to decide on the pattern that will be machine quilted on the surface of the finished product. Measuring the placement of seams or ties to connect the quilt layers is essential.

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STEP 4: Make and attach binding to the quilt. To complete this step, students will address the following FCS, STEM, and Language Arts standards:

Family and Consumer Sciences Standards (2008-2018):

- 16. 4: Demonstrate skills needed to produce, alter, or repair fashion, apparel, and textile products.
- 16.4.1: Demonstrate professional skills in using a variety of equipment, tools, and supplies for fashion, apparel, and textile construction, alteration, and repair.



Mathematics:

- Adds, subtracts, divides, and multiplies whole numbers (MA 1)
- Adds subtracts, divides, multiplies, mixed numbers, fractions, & decimals (MA 2)
- Mentally adds, subtracts, divides, and multiplies whole numbers (MA 4)
- Understands and applies basic methods of measurement (MA 6)
- Calculates and evaluates precision measurements (MA 014)
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