Re-Inventing Fashion for the Future

Grade level: 9-12 (but can be easily adapted for younger students)

Summary of lesson: The *Re-Inventing Fashion for the Future* curriculum, centering on MIT's climate mission of decarbonizing energy and industry, teaches high school students about the fashion industry's significant contribution to global carbon emissions. Through the invention process, students create an eco-friendly textile using natural dyes and sew a garment that solves a problem for a potential client. In the final meeting, students develop a brand and logo for their clothing and devise a business plan that incorporates green transportation if their product is distributed at a larger scale.

Time/Duration: Four, 45-minutes classes at minimum (can easily extend to take longer)

Learning Principles:

- Understand the invention process and how it relates to identifying and solving problems in the fashion industry
- Learn about the fashion industry's impact on global carbon emissions and specifically how the use of sustainable materials, natural dyes, and green transportation could have a positive effect
- Gain knowledge and hands-on skills in materials science and chemistry, particularly with pH testing aptitude
- Learn how to hand sew
- Develop business skills by creating a mock business and distribution plan for the clothing that is created
- Acquire public presentation skills

Subject areas/Standards:

HS-ESS2-4, HS-ESS3-5, VA:Cr1.1llla, VA:Cr.1.2lla, VA:Cr.2.2la, VA:Pr4.1llla, SL.9-12.1, SL.9-12.4, SL9-12.5

Breakdown of lessons:

Class 1**:** Introduction to invention and intellectual property; participate in introductory invention activity; background info on fashion industry's impact on global carbon emissions and how the industry is becoming more green

Class 2: Learn about sustainable fabrics and upcycling; create your own textile using upcycled pieces of a white shirt and "dyeing" it using natural dyes from food or plants

Class 3: Invent a clothing item with a purpose and specific user in mind using sustainable fabrics and hand-made textiles; options to use fabric glue, hand sew or sewing machine

Class 4: Devise a logo/brand for the clothing item and a business plan for distribution at a larger scale that incorporates green transportation

Materials:

- Scissors
- Duct tape
- Newspaper
- Paper and pencils
- Strips of squares of white cotton fabric
- Recycled/old clothing
- Access to water
- Large bowls or bots
- Disposable latex-free gloves
- Fabric scissors
- Mason jars or cups for dyes
- A variety of dried herbs/flowers/fruits to create different colors (i.e., hibiscus, black tea, elderberries, coffee grinds, turmeric powder, indigo powder, blue spirulina powder)
- A variety of fresh fruits/plants such as spinach, leaves, blueberries, beets
- Hammers
- Gallon of white vinegar
- Plastic covering to protect tabletops and floors from dyes
- Tongs
- PH strips
- Baking soda
- Sewing kits with large eyed needles
- Fabric glue
- Sewing machine (optional)
- Craft materials such as googly eyes/large sequins (optional)
- Buttons/zippers/drawstrings (optional)
- Fabric markers (optional)
- Rubber bands (optional)
- Heat gun (optional)
- Fine mesh strainer (optional)
- Cyanotype paper (optional for extension activity)
- Trifold posterboards (optional)