

Facilitation Guide: Laser Couture

Challenge

Students will engage in a design process to create a functional and visually striking element of a costume. This challenge aims to develop students' skills in using digital tools, exploring new techniques, and considering the impact of technology on traditional costuming practices.

Rationale

Learning how to combine traditional costuming design with digital tools and Glowforge is an essential skill for students. It encourages creativity, experimentation with materials, and allows for a more thoughtful and explorative approach to design. Additionally, using digital tools along with Glowforge helps students to discover new ways to work with materials and consider the impact of technology on traditional design practices.

By integrating traditional costuming design with digital tools and Glowforge, students can develop their design skills, foster creativity, and enhance critical thinking. This unique learning opportunity provides a deeper understanding of the design process. It inspires students to try new techniques while creating visually stunning, functional costumes that embody their creativity and unique perspective.

Standards

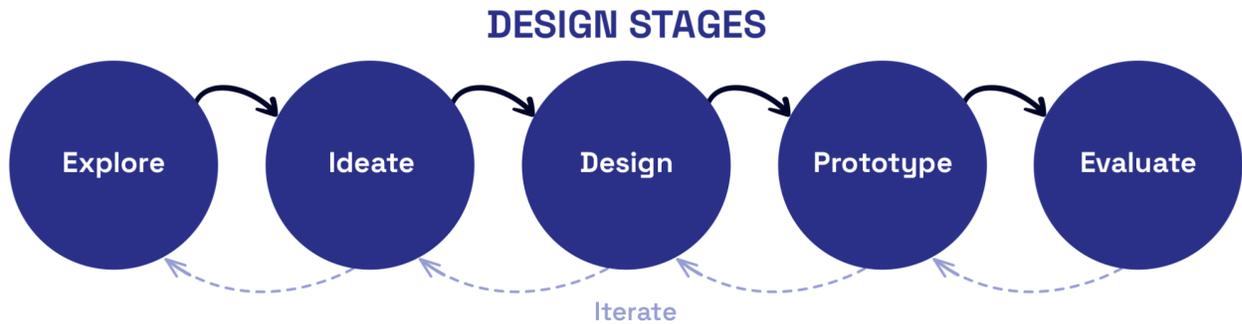
Common Career Technical Core Standards

- AR-PRF 7: Describe how technology and technical support enhance performing arts productions.
- AR- PRT 2: Demonstrate the production of various print, multimedia or digital media products.

ISTE Standards for Students

- Innovative Designer 1.4c: Students develop, test and refine prototypes as part of a cyclical design process.
- Innovative Designer 1.4d: Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

Facilitation Steps



Explore

In this stage, students focus on researching and investigating costume design and techniques. To ensure that students have the knowledge and skills they need to complete this stage, use the following steps.

1. Provide students with resources and a brief introduction to costume design.
 - Encourage students to engage with articles, websites, and videos to learn more about the future of costume design.
 - Ask students to consider current trends in costume design and how digital tools can be used to enhance these trends?
2. Encourage students to think about a recent production. [This article](#) has some great recent movies with standout costuming. Ask students to:
 - Consider how they might recreate an element of the design to understand the design process.
 - Think about how advancements in digital tools and technology impacted the field of costume design.
 - Imagine how traditional and nontraditional materials might be used to create a similar effect.
3. Encourage students to look to the past when designing for the future. They should consider different cultures, time periods, and techniques before they begin.
 - Ask students to think about how they might incorporate cultural or historical elements into their designs to enhance the production.
 - These two interviews with current costume designers could be helpful. [The Future of Costume Design](#) and [The Costumes of 'Black Panther'](#) discuss the incorporation of the past and cultural influence on their designs.

At the end of this stage, students will have a better understanding of how well designed costume elements can enhance the character and production.

Before moving on, students should identify specific areas or opportunities where they can combine their knowledge of costume design with digital design software and Glowforge. Once

they are finished, students will continue to the Ideate stage, where they will brainstorm what costume elements they can innovate with Glowforge.

Ideate

In this stage, students will take what they learned in the Explore stage and brainstorm and experiment with different ideas for their costume element design. This stage allows students to explore as many ideas as possible without judgment. Remind students to incorporate the use of digital tools with traditional costuming techniques to create unique and innovative designs. To ensure that students have the knowledge and skills they need to complete this stage, use the following steps.

1. Encourage students to generate as many ideas as possible.
 - Ask students to sketch out their ideas or create a list of features they would like to include in their design.
 - Consider using brainstorming techniques such as mind mapping or word association to help students come up with new ideas.
2. Ask students to choose their top three designs and sketch them out in more detail.
 - Encourage students to consider how they can incorporate digital tools and technologies into their designs to enhance the functionality or aesthetics of the costume element.
3. Inspire students to experiment and modify traditional costuming techniques. Ask students to:
 - Think about traditional costuming techniques that they are familiar with and how they might modify or adapt them to create a unique design element.
 - Experiment with different materials, textures, and finishes to create a unique and visually striking design that incorporates both traditional and digital techniques.
 - Encourage them to consider materials like [EVA foam or acrylic](#) as they are not traditionally used in costuming.
 - Students may also consider non traditional techniques like [engraving or burning designs](#) into fabrics they already have to customize their design.

Before moving on, students should have a good understanding of the materials and techniques that they will use to create their costume element design. Once they are finished, students will continue to the Design stage, where they will choose one or two ideas that they will develop further.

Design

In this stage, students will develop their ideas from the Ideate stage to draft a detailed plan for their costume element design. Students should focus on one or two ideas to better understand their needs and final design before printing. Encourage students to consider functionality, aesthetics, and safety. To ensure that students have the knowledge and skills they need to complete this stage, use the following steps.

1. Inspire students to experiment with combining traditional costuming techniques with Glowforge. Ask students to:

- Consider how they could use Glowforge to create intricate patterns or designs on fabric that would be difficult or impossible to create by hand.
 - Consider various materials they could use with Glowforge to create interesting textures or surface treatments for their costume element.
 - Explore how they can use Glowforge to create custom embellishments or accessories that would complement their costume element's design.
2. Introduce, review, or model available design software options, including [the Glowforge App](#).
 - Assist students as they create sketches or digital mockups of their designs.
 - Remind students that Glowforge can engrave from JPG or PNG image files and cut or engrave from SVG and PDF files. This means students can create something in popular software that they already use, convert it to one of the supported files, and print it.
 - Review page 28 in the [Glowforge Educator Guide](#) for more software tools and information.

At the end of this stage, students will have a clear understanding of the design elements and principles that they have incorporated into their costume element design. They should be able to explain how these elements work together to create a functional and visually striking costume element.

Before moving on, students should have a detailed plan for how they will bring their costume element design to life, including a list of materials, tools, and techniques that they will use to create their prototype. Once they are finished, students will continue to the Prototype stage, where they will select and test one of their fully developed design plans.

Prototype

In this stage, students will use their design plan to create a physical print. Students will select one of their fully developed design plans, print necessary elements on Glowforge, and test their techniques. To ensure that students have the knowledge and skills they need to complete this stage, use the following steps.

1. Model how to use your Glowforge in a safe and efficient manner.
 - Review the [Glowforge safety guidelines](#).
 - Use this [video](#) to show students a demonstration of how to use Glowforge.
 - Remind students of any applicable classroom or school policies.
2. Help students save time and materials while working on the functionality of their costume element.
 - Ask students to determine how long their design will take to print. Help them to learn more about [optimizing prints](#) to save time and materials.
 - Encourage students to [scale down their design](#) while they work out any functionality options. Once they have a working prototype they can print it at full scale.

3. Give students the time and resources needed to produce their costume element on Glowforge and test the creation of their print.
 - Provide students with access to Glowforge using a classroom print schedule to ensure that all students are able to produce the elements they need efficiently.
 - Remind students that Glowforge also works great with materials you may already have, such as cardboard or cardstock, that may be collected and used later or maybe even rescued from the recycle bin.

At the end of this stage, students will have a finished prototype of their costume element.

Before moving on, students should review their finished prototype to ensure it aligns with their vision and is both functional and visually striking. Students may need to test multiple times or return to earlier stages of the design process before moving on. Once they are finished, students will continue to the Evaluate stage, where they will receive feedback on their finished costume element.

Evaluate

In this stage, students will evaluate their costume element design and receive feedback from others. Feedback can be provided in pairs, small groups, or as a whole class. Encourage students to reflect on their process and consider the alignment of their finished element with their original intent. To ensure that students have the knowledge and skills they need to complete this stage, use the following steps.

1. Provide students with question prompts that invite them to compare their original design ideas with the final product. These might include:
 - How does your finalized costume element compare with the goals and objectives of your initial design?
 - How did using digital tools enhance your final print?
 - How can you further improve and refine your design?
2. Encourage students to share and discuss their ideas to generate feedback and suggestions from their peers to refine and enhance their print.
 - Students can use the question prompts from the Evaluate stage to guide their discussions.
 - Use a peer feedback model, such as a gallery walk, affinity mapping, or a concentric circle discussion, to support students as they work in pairs, small groups, or as a whole class.
3. Provide students with question prompts to help them reflect on the feedback that they received. These might include:
 - How can you further improve and refine your design?
 - If making additional changes to your costume element, which of the design process stages will you return to?
4. If applicable, provide students with time to complete a learning reflection, self-assessment, and/or peer critique.
 - Use the provided Assessment Suggestions for more ideas.

At the end of this stage, students will be able to reflect on the strengths and areas of improvement for their finished costume element. Students should determine whether revisions are needed and return to the appropriate stage in the design process to adjust their design. Consider assessing student work using one of the Assessment Suggestions or extending the challenge using provided Extension Activities.

Supplemental Supports

- For newer Glowforge users, demonstrate how to use Glowforge and its design features, including the design software, engraving capabilities, and cutting functionality. Check out the [Glowforge Educator Guide](#) for more ideas.
- The [Glowforge Community](#) is an excellent resource for inspiration, troubleshooting, and additional tips and tricks. Members are responsive and freely share techniques, settings for various materials for custom looks, and more.
- [This article from NY Embroidery Studio](#) discusses laser cutting techniques that aid designers with abstract, exaggerated concepts for runway shows such as haute couture or intricate costumes for film production.
- Laura Berens Baker's [Laser Cutting for Fashion and Textiles](#) is a good resource for inspirational projects. The book explores how to engineer designs and harness laser technology to upcycle fabrics, replicating traditional finishes as well as developing new ones.

Assessment Suggestions

Overall Learning Reflection

Learning reflections allow students to reflect on their learning experiences, identify key concepts, and explain how they have grown throughout the costume element design process. Ask students to write or record a video about what they learned throughout the challenge and how their learning will impact future costume designs, including their experience combining traditional costuming techniques with new technologies. Students can incorporate feedback elements from the Evaluate stage to describe their strengths and areas for improvement.

Self-Assessment

Self-assessments allow students to reflect on their learning through portfolios, presentations, or learning journals that involve evaluating their own progress and identifying areas for improvement. Consider providing specific criteria prior to beginning the challenge that students can use to assess their progress over the course of the challenge. The criteria may include elements related to:

- Form and function: Did my design meet the intended functional requirements, and is it easy to use and wear?

- Aesthetics: Did my design enhance the production and the character? Was it able to help tell the story or convey a deeper meaning?
- Use of Technology: Did the use of Glowforge help create unique designs that would be difficult to achieve with traditional costuming methods?
- Use of the design process: How well did I develop, test, and refine prototypes as part of a cyclical design process? What am I most proud of, and where could I improve?

Educator or Peer Assessment

Educator or peer assessments allow educators or students to review the quality and effectiveness of the finished costume element. The assessment can be based on specific criteria, such as visual design or messaging, innovation, and creativity, or use a more open approach, like a gallery walk or artist showcase. Explore suggestions for criteria below:

- Design: Is the costume element visually striking and unique, and does it fit within the overall aesthetic of the production or theme?
- Technical skill: Does the student demonstrate a strong technical skill set in the execution of their design, including the use of traditional costuming techniques and digital tools?
- Attention to detail: Has the student paid close attention to the details of their design, including the fit, finish, and overall quality of the final print?
- Innovation: Has the student demonstrated a high degree of creativity and innovation in the design of their costume element, using both traditional and digital tools to create something truly unique and original?

Extension Activities

Design Challenges often inspire students to think about what's next. For some, this could mean wanting to connect with people within the costuming or production industry or applying their skills in new ways. Here are a few ideas of how you can be a catalyst.

- Explore the intersection of sustainability and costume design. Have students research and experiment with using materials they already have or creating designs that can be easily repurposed or repaired.
- Research and explore the history of costume design and how it has evolved over time with the introduction of new technologies. Have students create a presentation or exhibit showcasing different eras of costume design and their impact on theater, film, and fashion.
- Explore the role of costume design in other industries, such as theme parks, advertising, or live events. Students can gain insight into the versatility of costume design and explore potential career paths outside of theater and film. Connect students to local industries or community theater productions, dance performances, or other artistic events to help design and create their costumes.

If your students enjoyed this challenge, they might also like [Reinventing the Ordinary: an Upcycling Challenge](#), a design challenge that encourages students to repurpose everyday objects into something new and useful.

Ready to take students to the next level? Try the Capstone Challenge [Celebrating Arts and Community](#), where students plan and promote a Community Art Celebration that includes an art installation to showcase student work and engage with the community.