Lesson Plan

<table>
<tr><td>Title: Stone Pendant</td><td>Grade Level: 10-11</td></tr>
<tr><td colspan="2">The Big Idea (Overall Concept): Use metal jewelry techniques to construct a stone pendant</td></tr>
<tr><td colspan="2">Description of Lesson (Brief Summary): Students will learn and practice the techniques of soldering and bezel stone-setting. Using the elements and principles of art and design, they will sketch multiple designs and choose one to construct into a final piece. Attention to safety and asking questions for clarification will be emphasized. Students will engage in a full-class final critique to share their own inspirations, successes, and challenges, and to give constructive comments to their peers.</td></tr>
<tr><td colspan="2">Time: 8 x 60 min classes (1.5 weeks)</td></tr>
<tr><td>Enduring Understandings:
• Artists and designers balance experimentation and safety, freedom and responsibility while developing and creating artworks.
• People gain insights into meanings of artwork by engaging in the process of art criticism.
• Artists and designers develop excellence through practice and constructive critique, reflecting on, revising, and refining work over time.</td><td>21st Century Skills:
• Creativity
• Communication
• Analytical thinking

Studio Habits:
• Develop craft
• Observe
• Reflect</td></tr>
<tr><td>Essential Questions:
• How do artists grow and become accomplished in art forms?
• How does knowing and using visual art vocabularies help us understand and interpret works of art?
• Why is it important for safety and health to understand and follow correct procedures in handling materials, tools, and equipment?</td><td>Technical Skills:
• Sketching
• Soldering
• Bezel stone-setting
• Measuring and cutting bezel
• Attaching a bail</td></tr>
<tr><td colspan="2">National Core Art Standard’s: http://www.nationalartsstandards.org/
• VA:Cr2.1.IIa - Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
• VA:Cr2.2.Ia - Explain how traditional and non-traditional materials may impact human health and the environment and demonstrate safe handling of materials, tools, and equipment.
• VA:Re7.1.IIIa - Analyze how responses to art develop over time based on knowledge of and experience with art and life.
• VA:Re9.1.IIIa - Construct evaluations of a work of art or collection of works based on differing sets of criteria.</td></tr>
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Instruction – daily plan:
Day 1 - I will begin the day introducing the project goals and requirements. Students will design and construct a stone pendant using the techniques of soldering and stone-setting. They will use the elements and principles to creatively design an aesthetically interesting final work. Examples of quality pendants will be shown to give them visual inspiration. This will lead into a demonstration of techniques and safety. I will work through the entire process from start to finish. They will be encouraged to take notes and ask questions. First, I will show them the sketch of my design. Holding the stone, I will measure the bezel tightly around it and cut the bezel. The base of my pendant will already be cut out before the presentation, so we will be ready to move to the torch to learn soldering. Hair will be tied back and safety glasses will be worn. The first step is to solder the bezel together to itself. I will clamp it to the platform and use the torch to heat it up. When heated, I will turn the torch off, use a brush to apply the flux, and use tweezers to add the solder. With the solder in place, I will turn the torch back on and heat the bezel to melt the solder. I will use tweezers to put the bezel into a bowl of water to cool down. I will remove the bezel from the water and put my stone in to make sure the bezel is bent to the right shape. I will take the stone out, set the bezel on the pendant base in the ideal spot, and use the torch to heat it up. I will apply flux and solder around the inside of the bezel, and then heat it from the bottom until the solder is melted and both pieces are attached. The piece will be placed in the water to cool down. I will ask students to consider how they will attach their wire to their pendant. They can either drill holes in their pendant base or create a bail. I will show them the process of attaching a bail by cutting and bending a small piece of wire, placing it on the back of the base, heating it, adding flux and solder, and heating it again. When the bail is attached, I will put it in water to cool down and then put it in the pickle. I will tell the students to wait 10 minutes for their piece in the pickle, but for this demonstration I'll just have it in there for a few seconds. I will use tongs to get it out and take it to the sink to clean it with soap and water. I will let them know that this step in the process will be used for polishing or coloring their work using detailing techniques we've already learned. I will skip making those final touches for the sake of time. The demonstration continues into stone-setting techniques. Students will be shown the various tools we have available for smoothing a clean and secure edge around the stone. I will demonstrate how to use those tools and pass around the final product. I will ask if they have any questions or need clarification about any part of the demonstration. After the demo, I will lay out various cabochon stones and chains (metal, leather, silk) available for the students to choose from. They will have their choice of one stone and one chain. Most students will be satisfied with the available materials, but I'll let them know they're also welcome to bring in their own stones or chains from home. They will spend the remainder of the hour looking through binders of images showing final work and past student projects.

Day 2 - Students will spend the first 20 minutes of class silently working on sketches. They will consider their chosen stone and chain to reflect on the elements and principles of art and design. They will sketch three different design variations of a pendant, and next to each they will list its three most outstanding elements or principles. Students will choose their favorite design and begin sawing out its form. Some students may be ready to begin soldering on this day, and I will be available to assist them if they have questions. The majority of students will work for the hour on sawing out their pendant base.

Days 3 and 4 - Students will use class time to work on sawing and decorating their pendant base, measuring and cutting their bezel, and beginning the process of soldering. I will let students know that if their base has intricate details, they have the option to solder their piece together first and then continue cutting and detailing. This will help keep a steady rotation of students using the torches available. I will be available for any questions and will walk around the room working with students individually.

Day 5 - I will begin the day by reminding students we're at the halfway point for this project and they'll have the hour plus two more class sessions to finish. I predict that they will be at different stages of completion due to the difficult technical skills required. Some students may find that their solder didn't work well or their stone doesn't fit, so they will have the time and opportunity to practice trying again. If students finish early and want to make another pendant, they're welcome to bring in their own materials or purchase any additional materials from me.

Day 6 - Students will be in the final stages of their projects - sanding, polishing, adding patina, and stone-setting. I will be available for questions and will walk around the room working with students individually.

Day 7 - Final touches will be made to their work. They will attach the chain to their pendant and be done by the end of the hour. I will pass around plastic bags for them to write their name on and hold their pieces in.

Day 8 - We will have a full-class group critique. Students will bring their chairs to a circle and we will discuss each of their final pieces together. Every student will pass around their final piece (in its bag) and explain how they chose their design, what they like about it, or what challenges they had. Students will add constructive comments to respond to each others work. They will turn in their bags of final pieces to me at the end of the hour.

Resources: (Websites, Books, Music, etc…)

- Soldering instructions:
  - https://youtu.be/o-JcrbWCqYA
- Bezel setting instructions:
  - https://www.instructables.com/id/Bezel-Setting-Tutorial/
  - https://youtu.be/0qSPNjT5p6o

Materials Needed:

- Flat stones (cabochon)
- Chains (metal, leather, silk)
- Binders of final work and student projects
- Sketchbook, colored pencils, pen, pencil
- Bezel wire (copper, brass, silver)
- Silver solder - easy, medium, hard
- Sheet metal - 16-20 gauge thickness of copper, brass, and silver
- Saw and blades - size #0, #1, and #2
- Drills and drill bits
- Copper and brass wire
- Sand paper
- Polishing machine
- Roll printing machine
- Hammer, pliers, files
- Stamps
- Torch, setup, and safety protection
- Chemical patina
- Flux
- Citric acid (pickle)
- Fire extinguisher
- Sink, soap, sponge, paper towel

Evaluations:
Formative
• Sketchbook (day 1)
• Working with students individually (days 2-7)

Summative
• Final critique (day 8)