**Idea Sparks**

**Discussion Prompts**

- Discuss the ethics behind Dr. Frankenstein using body parts to create a new life.
- Discuss the ethics of modern medical advancements (cloning of animals, stem cell research and therapies, transplants, etc.).
- In Mary Shelley’s novel, is Dr. Frankenstein responsible for the murders committed by his monster?
- What ethical questions arise when interpreting the ending of The Dark Descent of Elizabeth Frankenstein?
- What would have happened if Victor had created a companion for his creature? Should he have done so?

**Frankenstein’s Frankenstein**

People often call Victor Frankenstein’s monster “Frankenstein,” although Victor would probably have been horrified to have the creature take his name. Research interesting or odd items or discoveries that are named after a scientist. How might the scientists feel about having their creations named after them?

**Alchemy and the Scientific Method**

Victor Frankenstein was originally interested in alchemists. Part scientists, part magicians, alchemists were interested in purifying materials into their perfect forms. They sought to turn lead to gold and to create elixirs of immortality. Research alchemy. Explore how this study would have influenced Victor’s obsession with reanimation. Use the scientific method to prove or disprove a theory of alchemy.

**Sparking Life in Marginalized Characters**

In The Dark Decent of Elizabeth Frankenstein, we get a new perspective of the Frankenstein story through Elizabeth’s point-of-view. In fact, Kiersten White dedicated her novel to “everyone made to feel like a side character in their own story.” White’s retelling reveals the internal and external pressures exerted on Elizabeth because she was a young, single woman who had been orphaned as a child. What aspects and details of Elizabeth’s story are different in White’s version? What new perspectives might we gain from telling the story from Henry or Justine’s point-of-view? Write a scene from another marginalized character’s perspective. Explore other stories, and retell them from the perspective of a secondary character.
Mini Lessons
1. Stop That Body Snatcher!

Standards

<table>
<thead>
<tr>
<th>SS.H.4.9-12</th>
<th>Analyze how people and institutions have reacted to environmental, scientific, and technological challenges.</th>
</tr>
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<tbody>
<tr>
<td>Science &amp; Engineering Practices Developing and Using Models 9-12</td>
<td>Develop a complex model that allows for manipulation and testing of a proposed process or system.</td>
</tr>
<tr>
<td>SL.9-12.1</td>
<td>Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on grade 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.</td>
</tr>
</tbody>
</table>

Materials

- Access to the internet
- String, cardboard, craft sticks, pipe cleaners, paper towel tubes, straws, rubber bands, wire, mesh, and/or other miscellaneous items
- Masking tape
- Engineering Design Cycle graphic

![Engineering Design Cycle Graphic](image)
Procedure
Frankenstein was written when medicine was in its infancy. Thieves (called resurrectionists) would steal bodies to meet the demand of researchers and medical students for dissection and anatomy lessons. To combat this, devices were designed and sold to those who could afford it to deter and retaliate against would-be body snatchers.

1. Discuss the fact that stealing bodies and body parts from the grave was a huge problem when Mary Shelley wrote Frankenstein. Brainstorm and research reasons why this was the case. Relate your findings to Frankenstein.

2. Students should research how people handled the burial of the deceased in the early 1800s. They should focus on how people constructed devices to combat grave robbers.

3. Discuss the students' findings. Discuss why the demand for such devices no longer exists.

4. Divide the class into groups. Using the materials listed, students should design a coffin and their own unique device prototype to deter or retaliate against resurrectionists. They should utilize the Engineering Design Cycle to plan, test, and improve their prototypes.

5. Students should share and demonstrate their devices with the class.

2. Stuck in Ice

Standards

<table>
<thead>
<tr>
<th>HS-EST1-2</th>
<th>Design a solution to a complex real-world problem by breaking down into smaller, more manageable problems that can be solved through engineering.</th>
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<tr>
<td>SL.9-12.1</td>
<td>Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on grade 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.</td>
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<tr>
<td>WHST.9-12.7</td>
<td>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.</td>
</tr>
</tbody>
</table>
Materials

- Access to the internet
- Various building materials for first design: thin cardboard (such as a tissue box), pipe cleaners, straws, aluminum foil
- Various building materials for second design: craft sticks, balsa wood, thick cardboard, plastic (such as detergent or milk containers)
- Duct tape
- Scissors
- Small weighted objects (erasers, small rocks, etc.)
- Container of water (one per group)
- Access to a freezer
- Engineering Design Cycle graphic

Procedure

At the beginning of Mary Shelley's Frankenstein, Victor Frankenstein was picked up by a ship in the Arctic Ocean. The ship had been stranded by an enormous ice jam. Its crew had to navigate ice sheets and icebergs throughout the Arctic journey. But how do ships become icebound? How does ice form so quickly and thickly to engulf an entire ship?

1. Discuss sea ice, particularly in the Arctic. Task students with researching how sea ice forms and how ships become stuck in ice sheets. Questions to consider include:

   a) What happens on a molecular level to water when it freezes?
   b) Does the salinity in ocean water affect the way ocean water freezes?
c) How can ice form quickly enough for a ship to become icebound?

d) What happens to a ship that is stuck in an ice sheet?

2. Discuss the students’ findings.

3. Focus on ships becoming stuck in ice and what happens to them as a result. Ask students how a ship could survive being stuck in ice.

4. Divide class into groups. Task students with using the first materials listed to build a ship that will survive unharmed when it becomes stuck in ice. They will build a ship that can float, and it will be frozen in water to be tested. (The first materials are purposely chosen so that the design will fail. Do not let the students know.)

5. Following the Engineering Design Cycle, students should build their first ship. It should be weighted so that it sits partially under water. Test the designs by placing the ships in a container of water and freezing it overnight.

6. Next class, remove container from the freezer, and check how well each one survived the freezing process.

7. Have students utilize the Engineering Design Cycle to redesign their ships using the first list of materials in addition to new materials from the second list. Repeat the freezing process.

8. Compare the results. Discuss the different materials and why they may have held up better to freezing. Discuss other materials or designs that may hold up better. Discuss how engineers consider materials and how water freezes when designing ships.

9. For further investigation into this content, students can research Ernest Shackleton and his ship the Endurance. This is an example of what Robert Walton and his crew would have experienced during their months stranded in ice.

https://mashable.com/2015/10/10/the-endurance/#8PJJENhertiqf
3. Frankenstein’s Notes

Standards

<table>
<thead>
<tr>
<th>SS.IS.6.9-12</th>
<th>Construct and evaluate explanations and arguments using multiple sources and relevant, verified information.</th>
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<tbody>
<tr>
<td>SS.IS.7.9-12</td>
<td>Articulate explanations and arguments to a targeted audience in diverse settings.</td>
</tr>
<tr>
<td>WHST.9-12.1</td>
<td>Write arguments focused on discipline-specific content.</td>
</tr>
<tr>
<td>SL.9-12.4</td>
<td>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.</td>
</tr>
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Materials

- *The Dark Descent of Elizabeth Frankenstein* by Kiersten White
- Access to the internet
- Paper/pencils

Procedure

Victor Frankenstein’s journals and lab notes play a large role in Kiersten White’s The Dark Descent of Elizabeth Frankenstein. When Elizabeth finds Victor’s lab and notes, she takes it on herself to burn all evidence of his despicable and grotesque experiments. This ensured that no one would be able to recreate his experiment. Later, the author reveals that Mary has Victor’s journals. Elizabeth wants her to burn them, but she refuses. At the end of the novel, the reader could speculate that Mary and Adam used Victor’s journal to resurrect Elizabeth.

The journals offer an opportunity to discuss the following ethical questions:

- What is Elizabeth’s role and ethical responsibility in Victor’s crimes throughout their lives?
- What if Elizabeth hadn’t burned Victor’s notes? What if someone else found them and tried to recreate the process?
- What if authorities found the notes immediately and stopped Victor before anyone else died?
Is Elizabeth brought back with the help of Victor's journals? If so, how might she react to her resurrection process and her ill-gotten body parts?

Should Victor's journals be destroyed, or are there some aspects of his research that could benefit humanity?

1. Discuss formal debates. Outline for the class the procedure for debates.
   - Research (time decided by teacher)
   - Argue affirmative three minutes
   - Argue negative three minutes
   - Prepare rebuttal two minutes
   - Negative rebuttal two minutes
   - Affirmative rebuttal two minutes
   - If you favor a different debate style, feel free to use that.

2. Divide the class in half. Assign each half either the affirmative or the negative in the argument that Elizabeth and Mary should have burned Victor's journals. Each side should brainstorm the effects of their stance. They should also research historical examples of medical research and experiments both with positive and negative consequences as evidence to back up their argument (Nazi medical experiments, Henrietta Lacks, Tuskegee study, and Willowbrook State School, are a few examples).

3. After time for research has expired, proceed with the debate.

4. Have each student write a summary of the process and decide a winner in the debate, citing evidence from the debate for their decision.
4. Medicine: From Frankenstein to Today

Standards

<table>
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<tr>
<th>SS.H.2.9-12</th>
<th>Analyze change and continuity within and across historical eras.</th>
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<td>SS.H.4.9-12</td>
<td>Analyze how people and institutions have reacted to environmental, scientific, and technological challenges.</td>
</tr>
<tr>
<td>WHST.9-12.2</td>
<td>Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</td>
</tr>
<tr>
<td>WHST.9-12.7</td>
<td>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.</td>
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Materials

- Access to the internet

Procedure

Victor Frankenstein looked to the natural philosophers of the past for guidance in his inquiry and experimentation. Today, these are equivalent to scientists studying chemistry, physics, and anatomy. Medicine was in its infancy at the time. Much has transpired in our understanding of the human body and the technologies used in the medical field. How did we go from bloodletting, trepanation (boring holes in the skull), and mercury therapy to vaccines, transplants, and antibiotics?

1. Discuss some of the science involved in Victor's experiments. Ask students for some examples of how science, particularly medicine, has changed since Frankenstein was written.

2. Brainstorm some medical areas (i.e. general surgery, anesthesiology, transplants, neurology, orthopedics, cardiovascular, pulmonary, etc.)

3. In pairs, task students to research the history of one area of medical interest,
focusing particularly on the time period between the late 1700s to now. They should find major developments and document the dates they occurred, other historically significant events that occurred simultaneously (i.e. a war), and what impact the events had on medicine. They should have a minimum of 10 events.

4. Students should then create a timeline, either written or using technology, illustrating the events.

5. Students will then present their timelines, explaining the developments, the dates they were discovered, and how they impacted medicine.