Frankenstein200 Online Game Experience

Audience: Ages 10 to 14
Subjects: Physical sciences; life sciences; engineering and technology; science and society; art, music, and literature
Time required: 100 minutes (10 minutes per episode)

Description

In the Frankenstein200 game, learners will be hired as science assistants by a company called L.I.F.E, The Frankenstein Laboratory for Innovation and Fantastic Exploration (L.I.F.E.). Founded and led by a distant descendant of Victor Frankenstein, Dr. Tori Frankenstein, L.I.F.E. is at the forefront of research on genetics and artificial intelligence (AI). Learners will be asked to help Dr. Frankenstein's two aids, Mya and Xavier solve science problems related to some mysterious incidents in the laboratory.

The game encompasses ten unique episodes paired with relevant science issues. Each episode presents a science related ethical dilemma that students have to solve in order progress in the game.

The Frankenstein200 game can be played on any internet-connected device (e.g., smartphone, tablet, computer).

Learning objectives

The primary objective of this activity is to encourage creativity and reflection about responsible innovation. In addition, learners will explore the following concepts:
- The social and ethical consequences of scientific and technological exploration.
- How Mary Shelley's Frankenstein inspired scientists doing experiments.
- How technological advancements can help us better understand the world around us.
- How researchers can create modified and entirely new organisms.
- What DNA is and why it is important.
- How chatbots and artificial intelligence work and what attributes they have.

Description of the Frankenstein200 game episodes

The game has the following storyline:

Frankenstein200 game episode	Description
Episode 1	Players meet Mya, who welcomes them to L.I.F.E. and shares her current research on DNA testing. She confides that she had her own DNA checked.

	But what she finds is strange and disturbing; she hurriedly signs off, clearly shaken by whatever she discovered.
Episode 2	Players help the other researcher, Xavier, with his project on AI and chatbots. Xavier believes bots can take over lots of everyday tasks—soon they will be building things for us, driving our cars, and cooking our dinners.
Episode 3	Mya tells students about chimeras—organisms that have DNA from more than one source—and wonders if she might be one too. She's not sure what to do next. Mya decides to run a more detailed DNA analysis, but she's scared what she might find.
Episode 4	Xavier finally gets the chatbot working. He shows off some fun interactions with her, and then tells players he has hooked her up to the website so they can interact with her too.
Episode 5	Mya has the results of her extended DNA tests, and they show that her genome is riddled with strange entries that are not human. She breaks down, fearing that she doesn't know anything about herself anymore.
Episode 6	The AI chatbot begins to behave weirdly, and Xavier is convinced that he's responsible. Mya shares the DNA test results with him. Mya and Xavier enlist students' help in searching for clues that might unravel the mystery, and they ask players to not tell Tori that they are helping them.
Episode 7	The AI chatbot has died and Xavier is heartbroken. He blames himself, and asks Mya to help discover why; she thinks it's because the little life form was the only one of its kind and it needed more of its own kind in order to thrive and grow.
Episode 8	Mya and Xavier discover that, before the chatbot died, she left them a clue. With students' help, they discover the key to unlocking the mystery of Mya's strange DNA—proof that the person responsible was Tori. Mya wants to confront their boss, but Xavier insists that they shouldn't.
Episode 9	Xavier apologizes to Mya, and together they confront Tori, demanding she fully reveal what is going on. Tori reveals the truth—Mya, herself, is an experiment. When Mya's mother was pregnant, Tori gave her with a virus that altered Mya's DNA

	to combine with non-human additions. Tori lays out her grand plan: to eradicate all disease and illness through DNA manipulation. Mya is furious; she accuses Tori of being a mad scientist, just like her infamous ancestor.
Episode 10	Mya reaches out to players for help. She doesn't know what she should do—if she lets Tori continue experimenting on her, she could learn more about what she really is, but she doesn't trust Tori. If she runs away, she'll be leaving everything behind for an uncertain future, and Tori might try to pursue and recapture her. Students have the opportunity to choose how the game ends.

Procedure

After registering the game, players will have the opportunity to interact with Dr. Tori Frankenstein's two lab aides, Mya and Xavier, and help them solve a wide range of problems and puzzles. Players can earn various achievements and awards when they complete challenges.

In case educators want to combine the game experience with hands-on activities, we recommend the following activities and schedule for a week long project (45 minutes each day):

Days	Hands-on activities	Frankenstein200 game activities
Day 1	Scribbler activity	Registration, completing episodes 1-2
Day 2	Automata activity	Completing episodes 3-4
Day 3	Frankentoy activity (or Monster Mask)	Completing episodes 5-6
Day 4	Dough Creature activity	Completing episodes 7-8
Day 5	Spark of Life (or Batter Stack)	Completing episodes 9-10

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

- **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
- **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8

Next Generation Science Standards

This activity is aligned with the following disciplinary core ideas'
- Life science (LS)
- Physical science (PS)
- Engineering, technology, and the application of science (ETS)
- Appendix J—Science, technology, society, and the environment
- Science and engineering practices

Audience: Ages 4 and up
Subjects: Physical sciences; life sciences; engineering and technology; science and society; art, music, and literature
Time required: 20 minutes (15 minutes for activity and 5 minutes for discussion)

Description

In this activity, learners make an automaton, a moving mechanical device that imitates the movement of a human, animal, or other living thing. The activity is designed to prompt conversation and reflection about responsible innovation.

Learning objectives

The primary objective of this activity is to encourage creativity and reflection about responsible innovation. In addition, learners will explore the following concepts:
- How to be more creative by inventing new things.
- The social and ethical consequences of scientific and technological exploration.
- How robots work and what attributes they have.

Procedure

By using simple components, such as a plastic container, a piece of straw, skewers and foam circles, learners build their own machine and animate it with handlers.

When they're done with the activity, facilitators ask the following questions:
- Is it alive?
- How can you tell the difference between a machine and a living creature?

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

- **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
- **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8
- **Grade 11-12**: CCSS.ELA-LITERACY.RST.11-12.1, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.8

Next Generation Science Standards

This activity is aligned with the following disciplinary core ideas'
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- Physical science (PS)
- Engineering, technology, and the application of science (ETS)
- Appendix J—Science, technology, society, and the environment
- Science and engineering practices

[Battery Stack](#)

Audience: Ages 7 and up
Subjects: Physical sciences; life sciences; engineering and technology; electricity and magnetism; health and medicine; science and society; art, music, and literature
Time required: 25 minutes (15 minutes for activity and 10 minutes for discussion)

Description

In this activity, learners make a voltaic pile, the first kind of battery. The activity is designed to prompt conversation and reflection about responsible innovation.

Learning objectives

The primary objective of this activity is to encourage exploration and reflection about responsible innovation. In addition, learners will investigate the following concepts:
- How to be more creative by inventing new things.
- The social and ethical consequences of scientific and technological exploration.
- How Mary Shelley's Frankenstein inspired scientists studying electricity.

Procedure

By using zinc and copper washers, vinegar and a rod, learners build a voltaic pile. Then, they attach a buzzer or LED to the pile and use a meter so they can observe how much electricity their pile generates. They are also encouraged to add more zinc and copper washers to their pile and see what happens to the buzzer or LED.

When they are done with the activity, facilitators will engage in a discussion with them about the inventor, Allesandro Volta as well as Frankenstein and electricity. Learners will be asked to reflect on the following questions:
- Why do you think Volta may have wanted to investigate electricity?
- How do you think Shelley may have felt about the electrical experiments going on during her lifetime? How would you have felt about them?
- Are inventors responsible for the ways people use their inventions? Is an invention itself good or bad, or does it depend how people use it?

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

-   **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
-   **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8
-   **Grade 11-12**: CCSS.ELA-LITERACY.RST.11-12.1, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.8

Next Generation Science Standards

This activity is aligned with the following disciplinary core ideas:
-   Life science (LS)
-   Physical science (PS)
-   Engineering, technology, and the application of science (ETS)
-   Appendix J—Science, technology, society, and the environment
-   Science and engineering practices

[Dough Creature](#)

Audience: Ages 7 and up
Subjects: Physical sciences; life sciences; engineering and technology; electricity and magnetism; health and medicine; science and society; art, music and literature
Time required: 20 minutes (15 minutes for activity and 5 minutes for discussion)

Description

In this activity, learners make a creature out of conductive dough and use it to create an electrical circuit. The activity is designed to prompt conversation and reflection about responsible innovation.

Learning objectives

The primary objective of this activity is to encourage creativity and reflection about responsible innovation. In addition, learners will explore the following concepts:
-   How to be more creative by inventing new things.
-   The social and ethical consequences of scientific and technological exploration.
-   How medical technologies can take advantage of the fact that the human body can complete an electrical circuit.
-   How technological advancements can help us better understand the world around us.

Procedure

By forming conductive and insulating playdough balls, learners create simple circuits. Then, they put a wire from a battery pack into each ball and attach LED bulbs to the dough. Learners are encouraged to experiment with different solutions, such as creating their dough creatures and attaching multiple bulbs, a buzzer, or a motor.

When they are done with the activity, learners will be asked to reflect on the following questions:
- What kind of creature do you want to make?
- What is your creature like? Is it kind, silly, or naughty?
- Does it get along with others?
- What does your creature do? Where does it live? Who takes care of it?

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

- **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
- **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8
- **Grade 11-12**: CCSS.ELA-LITERACY.RST.11-12.1, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.8

Next Generation Science Standards

This activity is aligned with the following disciplinary core ideas:
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- Physical science (PS)
- Engineering, technology, and the application of science (ETS)
- Appendix J—Science, technology, society, and the environment
- Science and engineering practices

Frankentoy

Audience: Ages 7 and up
Subjects: Life science; science and technology; science and society; art, music and literature
Time required: 15 minutes (5 minutes for activity, 10 minutes for discussion)

Description

In this activity, learners make a "creature" by mixing and matching different parts of toys. The activity is designed to prompt conversation and reflection about responsible innovation.

Learning objectives

The primary objective of this activity is to encourage creativity and reflection about responsible innovation. In addition, learners will explore the following concepts:
- How to be more creative by inventing new things.
- The social and ethical consequences of scientific and technological exploration.
- How researchers can create modified and entirely new organisms.

Procedure

By mixing and matching parts of plush animals and dolls, learners create their own creatures. Then, they are asked to act out a story of their creation and take photos of it.

When they are done with the activity, learners will be asked to reflect on the following questions:
- What kind of creature is it? Is it a pet or a wild animal?
- What does your creature say and do?
- Where does it live?
- Can it make friends with another creature?

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

- **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
- **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8
- **Grade 11-12**: CCSS.ELA-LITERACY.RST.11-12.1, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.8

Next Generation Science Standards

This activity is aligned with the following disciplinary core ideas'
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- Physical science (PS)
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Monster Mask

Audience: Ages 4 and up
Subjects: Physical sciences; life sciences; engineering and technology; technology; electricity and magnetism; science and society; art, music and literature
Time required: 20 minutes (15 minutes for activity; 5 minutes for discussion)

Description

In this activity, learners make a mask with a special feature: an LED bulb that lights up. The activity is designed to prompt conversation and reflection about responsible innovation.

Learning objectives

The primary objective of this activity is to encourage creativity and reflection about responsible innovation. In addition, learners will explore the following concepts:
- How to be more creative by inventing new things.
- The social and ethical consequences of scientific and technological exploration.
- How technologies can be used to modify living organisms.

Procedure

Learners create their paper mask by drawing its shape on a sheet of paper. Then, they cut it out and attach LED bulbs to the mask.

During this activity, learners will be asked to reflect on the following questions:
- What can you add to give the mask character?
- How will we know whether your mask is friendly or scary?
- Did you design your mask to give it a certain personality or character?
- What makes a face seem funny, scary, or just plain weird?

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

- **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
- **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8
- **Grade 11-12**: CCSS.ELA-LITERACY.RST.11-12.1, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.8

Next Generation Science Standards

This activity is aligned with the following disciplinary core ideas'
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- Physical science (PS)
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- Science and engineering practices

[Scribbler](#)

Audience: Ages 4 and up
Subjects: Life sciences; physical sciences; science and technology; electricity and magnetism; science and society; art, music and literature
Time requirement: 20 minutes (15 minutes for activity; 5 minutes for discussion)

Description

In this activity, learners make a toy bot that is capable of scribbling on a sheet of paper. The activity is designed to prompt conversation and reflection about responsible innovation,

Learning objectives

The primary objective of this activity is to encourage creativity and reflection about responsible innovation. In addition, learners will explore the following concepts:
- How to be more creative by inventing new things.
- The social and ethical consequences of scientific and technological exploration.
- How robots and artificial intelligence work.

Procedure

Learners will create scribble bots by using simple materials, such as pool noodles, markers and rubber bands. They will animate their scribblers with an electric toothbrush so it can move and drawn on a sheet of paper.

When they're done with the activity, facilitators will ask the following questions:
- How can you give your creature its own personality and abilities?
- Is your creature alive, or does it just seem to be? Are its scribbles art?
- If so, who is the artist—you or the scribbler?

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

- **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
- **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8
- **Grade 11-12**: CCSS.ELA-LITERACY.RST.11-12.1, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.8

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Spark of Life

Audience: Ages 4 and up
Subjects: Life sciences; physical sciences; science and technology; electricity and magnetism; health and medicine; science and society; art, music and literature
Time requirement: 20 minutes (5 minutes for activity; 15 minutes for discussion)

Description

In this activity, learners will create a battery from two kinds of metal and their own body. This activity is designed to prompt conversation and reflection about responsible innovation.

Learning objectives

The primary objective of this activity is to encourage exploration and reflection about responsible innovation. In addition, learners will investigate the following concepts:
- How to be more creative by inventing new things.
- The social and ethical consequences of scientific and technological exploration.
- How medical technologies can take advantage of the fact that the human body can complete an electrical circuit.

Procedure

Learners will create an electric circuit by placing their hands on a steel and copper sheet, and using their own body. They can measure how much electricity they produce by a meter.

When learners are done with the activity, facilitators start a conversation about how medical technologies, like a TENS unit, use electricity to help people, and how electricity and magnetism inspired Mary Shelley to write *Frankenstein*. Then, they ask the following questions:
- Would you try a TENS unit to help heal an injury? Would you be nervous or excited to see if it worked?
- How do you think Shelley may have felt about the electrical experiments going on during her lifetime? How would you have felt about them?
- Would you get a chip in your brain to help you move a paralyzed arm? Would you get a brain chip to become better at sports?

Common Core Standards

This activity is aligned with the following Science and Technical Subjects:

- **Grade 6-8**: CCSS.ELA-LITERACY.RST.6-8.1, CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.6-8.8
- **Grade 9-10**: CCSS.ELA-LITERACY.RST.9-10.1, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.9-10.8
- **Grade 11-12**: CCSS.ELA-LITERACY.RST.11-12.1, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.8

Next Generation Science Standards

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