



Project Essential Questions

- What common objects are attracted to magnets?
- What are characteristics of objects that are attracted to magnets?
- How does the viscosity of the slime change based on the amount of iron oxide in the mixture?

PROJECT DESCRIPTION

In this project, students will work in small groups to create magnetic slime. Each group will have different amount of iron filings in their mixture. Students will use magnets to explore the pull of the magnetic field on the magnetic slime based on the amount of iron filings in it. Students will use the visual arts to create this pliable sculpture made of magnetic slime!

LEARNING TARGETS

“I Can...”

- Explain the correlation between the amount of iron oxide and the magnetic pull of the magnet on the slime
- Compare and contrast the viscosity of the slime (through writing) depending on the amount of iron oxide in each mixture

Project
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Units provide differentiated ideas and activities aligned to a sampling of standards.

The units do not necessarily imply mastery of standards, but are intended to inspire and equip educators.

Produced through the U.S. Department of Education: Arts in Education—Model Development and Dissemination Grants Program
Cherokee County (GA) School District and ArtsNow, Inc.

DURATION: 2-3 days

Project Description	Learning Targets
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ESSENTIAL QUESTIONS

<ul style="list-style-type: none"> ● What common objects are attracted to magnets? ● What are characteristics of objects that are attracted to magnets? ● How does the viscosity of the slime change based on the amount of iron oxide in the mixture?

STANDARDS

Curriculum Standards	Arts Standards
<p>S3P2 Students will investigate magnets and how they affect other magnets and common objects. a. Investigate to find common objects that are attracted to magnets.</p> <p>ELA.W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p>	<p>MA:Cr2.1.3 Form, share, and test ideas, plans and models to prepare for media arts productions.</p>

KEY VOCABULARY

Content Vocabulary
<ul style="list-style-type: none"> ● Magnet ● Characteristics ● Iron ● Horseshoe magnet ● Magnetism ● Attract ● Strength ● Viscosity ● Compare & contrast
Art Vocabulary
<ul style="list-style-type: none"> ● Media: the tools and materials an artist uses ● Collaboration: two or more people working together in a joint intellectual effort ● Dialogue: a conversation between two or more persons ● Diction: using a “crisp and clear” actor voice that can be understood by everyone watching and listening

TECHNOLOGY INTEGRATION

- Make a “How To” video of the magnetic slime process. The video will demonstrate the correlation between the amounts the iron oxide and the magnetic field of the slime.

ASSESSMENTS

Formative	Summative
<ul style="list-style-type: none"> • Teacher observation with anecdotal notes regarding student participation and exploration during the slime experiment. 	<ul style="list-style-type: none"> • Students’ video demonstrating the correlation between the amounts the iron oxide and the magnetic field of the slime. • Students’ compare and contrast writing piece, discussing both the magnetic field as well as the viscosity of the slime.

MATERIALS

Class sets of horseshoe magnets, class set of neodymium magnets, bags of iron filings, liquid starch, liquid white glue, paint stir sticks, smocks, 4 bowls per small group

Activating Strategy (5-10 min)

- Monster Magnet Video on YouTube: <https://www.youtube.com/watch?v=MfNt44pFo9o>
- Discuss that we will be making our own magnetic slime.

Main Activity**Part 1**

- Teacher will list steps to create magnetic slime. Each group will make four different strengths of slime.
- Teacher will explain the purpose of creating four strengths of slime.

Part 2

- Pour ¼ cup of liquid starch into each of your four bowls.
- Add 1 tablespoon of iron powder to one bowl, two to the next, three to the next, and four to the last. Stir each until well mixed. (Each bowl should be labeled so students know how much iron filings they contain.)
- Add ¼ cup of white liquid glue to each bowl and mix.
- Take the slime out of each bowl and mix (separately) with your hands until it’s well mixed.
- Pat the slime dry with a paper towel to get rid of any excess liquid. The finished slime won’t make your hands black, but the extra liquid will.

Part 3

- Students will use their magnets to explore the correlation between the amount of iron filings in the slime and the strength of the magnets pull.
- Students will use their hands to explore the viscosity of the slime depending on the amount of iron filings in each mixture.
- Students will write a preliminary compare and contrast based on their findings.

Classroom Tips:

- Teacher will pre-determine small groups that can work well together.
- Students will wear smocks to protect clothing.
- Teacher will set clear behavior expectations.

REFLECTION**Reflection Questions**

How did creating magnetic slime with different amounts of iron filings help me understand the correlation between the amount of iron filings in the slime and the strength of the magnets pull?

DIFFERENTIATION**Remedial/EL Students:**

- During the Reflection part of this project the following modifications could be made: place students in small groups, assist with Guided writing, provide sentence starters, provide graphic organizers, a word bank based on content vocabulary, a paragraph frame, or modify the length/writing assignment based on student needs.

Accelerated:

- These students could predict what effect different sizes of magnets would have on each oobleck sample. Students could also design a color coded ratings chart for the strength of the magnets based on ROYGBIV (red could be the strongest magnetic attraction and violet could be the least magnetic attraction).
- These students could also make a table projecting what would happen if more filings were added, or if the slime had less filings in it. Students could use a similar ratings chart as above for the amount of filings in the substance.

ADDITIONAL RESOURCES**Books**

- *Shivers in the Fridge* by Fran Manushkin (fiction)
- *Magnet Magic* by Phyllis Adams (fiction)
- *Marto's Magnets* by Wendy Pfeffer

Websites

- Monster Magnet Video on YouTube: <https://www.youtube.com/watch?v=MfNt44pFo9o>

APPENDIX (See Downloads)

- **Written Reflection Sheet for Magnetic Slime**
- **Rubric for Magnetic Slime**

CREDITS

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Magnetic Slime Rubric

Task	4	3	2	1
Writing Process	Student demonstrates a thorough understanding of how the different amounts of iron filings affected the strength and viscosity of the slime. Their analysis is written in complete sentences, using proper capitalization and punctuation. All science content vocabulary is spelled correctly.	Student most of the time demonstrates an understanding of how the different amounts of iron filings affected the strength and viscosity of the slime. Their analysis is mostly written in complete sentences, with proper capitalization and punctuation. Nearly all science content vocabulary is spelled correctly.	Student somewhat demonstrates an understanding of how the different amounts of iron filings affected the strength and viscosity of the slime. Their analysis is somewhat written in complete sentences, with proper capitalization and punctuation. Half of the science content vocabulary is spelled correctly.	Student rarely demonstrates an understanding of how the different amounts of iron filings affected the strength and viscosity of the slime. Their analysis is not written in complete sentences, and without proper capitalization or punctuation. Most of the science content vocabulary is spelled incorrectly.
Creation of magnetic slime	Students followed all the directions correctly. He/she used and created each mixture of slime correctly.	Student mostly followed the directions correctly. He/she used and created most of the mixtures of slime correctly.	Student somewhat followed the directions correctly. He/she used and created some of the mixtures of slime correctly.	Students rarely followed the directions correctly, most of the mixtures were mixed incorrectly.
Student collaboration	Student worked well with their partner throughout the entire project. Student gave positive feedback to peer. They shared materials appropriately.	Student worked well with their partner most of the time. Students gave positive feedback to their peer most of the time. They mostly shared their materials appropriately.	Student worked well with their partner some of the time. Student gave positive feedback to their peer some of the time. They somewhat shared their materials appropriately.	Student did not work well with their partner. Student did not give positive feedback to their peer. They did not share their materials appropriately.

Total Score: _____

Written Reflection- Magnetic Slime

1. We made magnetic slime with different amounts of iron filings. How did this help me understand the relationship between the amount of iron filings in the slime and the strength of the magnets' pull?

2. Why do you think the iron filings affected the viscosity of the slime?

Written Reflection- Magnetic Slime

1. We made magnetic slime with different amounts of iron filings. How did this help me understand the relationship between the amount of iron filings in the slime and the strength of the magnets' pull?

2. Why do you think the iron filings affected the viscosity of the slime?
