nickelodeon SLIME IN SPACE: A VIRTUAL FIELD TRIP

Teacher's Guide
Grades 3–5

Science Teaching Guide

Introduction:

This virtual field trip is hosted by Nick Uhas and Rihana Mungin, a mechanical engineer research assistant who is currently studying slime.

In the video, the virtual field trip follows Nickelodeon's signature green slime as it travels to the International Space Station via a rocket launch. From there, astronauts Luca, Christina, and Drew, who are stationed at the International Space Station, conduct several demonstrations to see how slime behaves in orbit. Students will hypothesize what they think will happen to slime when it's in an off-earth, microgravity environment and follow along with the astronauts as they demonstrate how slime reacts differently or similarly to other matter, like water or coffee.

Discussion questions before watching the video:

Before watching the Slime in Space: A Virtual Field Trip, discuss the questions below.

1. Describe Nickelodeon Slime: What is slime? What is its texture? How does it behave when it's dropped? What does it do when you touch it?
2. Describe water: What is its texture? How does it behave when it's poured? What does it do when you touch it?
3. Do you think slime is a solid or a liquid?
4. How do you think slime will react in space? Will it float? Spill all over?
5. Will slime react differently or be similar to water in a microgravity environment, like space?

Watch the video: https://nickcommunity.com/sis

Science Standards Connected to the Virtual Field Trip:

Next Generation Science Standards Disciplinary Core Ideas

5-PS1-2, 5-PS1-3, 5-PS1-4 Matter and Its Interactions

5-PS2-1, 3-PS2-1, 3-PS2-2 Motion and Stability: Forces and Interactions

4-PS4-1, 4-PS4-2 Waves and Their Applications in Technologies for Information Transfer

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After the Video
Discussion Questions

Key vocabulary to know:

Microgravity: very weak gravity as in an orbiting spacecraft.

Slime: a mixture of ingredients that come together to create a polymer substance.

Newtonian fluid: a fluid that follows Newton's law of viscosity. The viscosity doesn't change if you apply a force.

Gravity: a natural phenomenon by which all things with mass or energy are brought toward one another.

Force: strength or energy as an attribute of physical action or movement.

Viscous: the state of being sticky, gluey and syrupy due to internal friction.

Hydrophobic: tending to repel or fail to mix with water.

1. **How high above Earth is the International Space Station?**
   The International Space Station flies above Earth at more than 250 miles! (2:22)

2. **Why can't you pour things in space?**
   In space, everything is weightless, so it doesn't pour, it bunches up into balls. (3:05)

3. **What is the educational purpose of taking slime into space?**
   It gave lots of data which can lead to the development of life support technologies. (3:40)

4. **What is the technical definition of slime?**
   A mixture of ingredients that come together to create a polymer substance. (4:47)

5. **Is slime a liquid or a solid?**
   It has properties of both. (4:58)

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After the Video
Discussion Questions

6. **Which room in the International Space Station are the astronauts conducting their experiments?**
   The galley, where they eat. (6:13)

7. **What does slime look like when it's squeezed in space?**
   A ball or a balloon, it's a perfect sphere and it's shiny. (6:23)

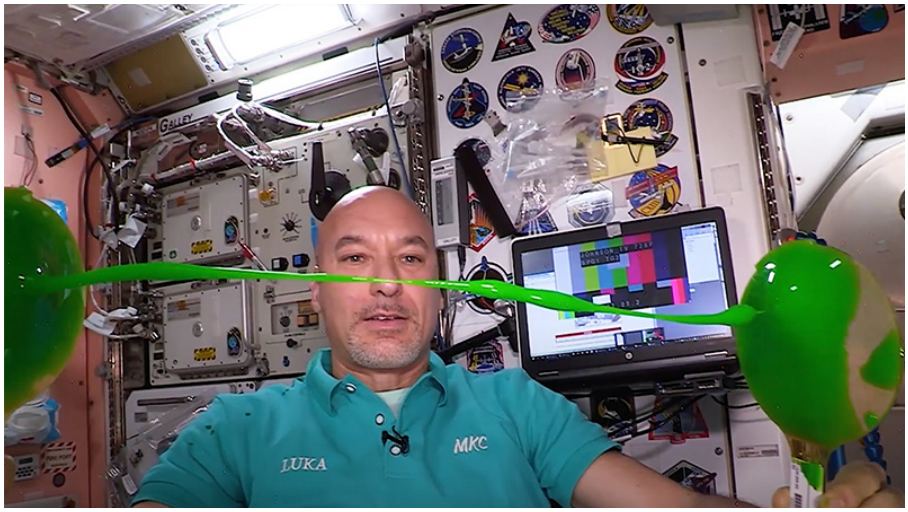
8. **How does the ball of slime differ from the ball of water in space?**
   The water ball has a lot more wobble to it and waves through it and it moves a lot more. (7:00)

9. **What was different about the paddles the astronauts used in space?**
   They were coated in a waterproof coating. (8:25)

10. **When the astronauts pull the paddles apart, how does it differ when they pull slow vs fast?**
    When they pull slowly, the bridge between the two is small. When they pull quicker, the bridge is really long. (10:20)

11. **How does slime travel when squirted out on Earth vs out in space?**
    On Earth, the slime travels in an arc before falling faster and making a mess. In space, the slime travels in a straight line and eventually hits the wall. (11:48)

12. **What was Christina's favorite part of the day's experiments?**
    Not being able to predict what was going to happen. (14:45)



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Fill-in-the-blank Story Sheets

Slime in Space #1

Fill in the blanks below choosing a word for each part of the speech outlined. All the answers will come from watching Nickelodeon Slime in Space: A Virtual Field Trip!

The team at _____ (noun) thought it would be awesome to send their famous _____ (noun) into space, and the astronauts agreed. Slime was sent up to the _____ (noun), which is orbiting above the Earth at _____ (number) miles, using a _____ (noun) because it's the only way to get it there. The astronauts wanted to see how slime would be different in _____ (noun) than when it's on Earth. Slime, which is both a _____ (noun) and a solid, is _____ (adjective) meaning it's sticky due to internal friction. The astronauts used _____ (plural noun) which were covered in a _____ (adjective) material, to see what happened when _____ (noun) was squished together and pulled apart. The astronauts learned a lot and said they loved that they _____ (contraction) know what was going to _____ (verb).

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Fill-in-the-blank Answers

Slime in Space #1

Fill in the blanks below choosing a word for each part of the speech outlined. All the answers will come from watching Nickelodeon Slime in Space: A Virtual Field Trip!

The team at Nickelodeon (noun) thought it would be awesome to send their famous slime (noun) into space, and the astronauts agreed. Slime was sent up to the International Space Station (noun), which is orbiting above the Earth at 250 (number) miles, using a rocket (noun) because it's the only way to get it there. The astronauts wanted to see how slime would be different in microgravity (noun) than when it's on Earth. Slime, which is both a liquid (noun) and a solid, is viscous (adjective) meaning it's sticky due to internal friction. The astronauts used paddles (plural noun) which were covered in a hydrophobic (adjective) material, to see what happened when slime (noun) was squished together and pulled apart. The astronauts learned a lot and said they loved that they didn't (contraction) know what was going to happen (verb).

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Slime in Space #2

Fill in the blanks below choosing a word for each part of the speech outlined. Be as fun and silly as you want!

Slime is great to play with because it feels gooey and _____ (adjective).

Nickelodeon thought it would be a good idea to send slime to space, and so that's what they did. When the _____ (noun) slime arrived in space, the astronauts were _____ (adjective) and _____ (adjective) to be able to play with slime in microgravity. I had no idea slime would _____ (verb) when it was _____ (verb), but it was _____ (adjective) to watch. As the astronauts on the space station continued to play with the slime, they realized it was _____ (adjective) and was going to _____ (adjective). For me, the best part of the video was when _____ (noun) got _____ (verb) and then I _____ (verb). Watching the astronauts have so much fun with the slime was great! I had no idea that space meant being able to _____ (verb) with slime.

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Slime in Space
Word Search

Find and circle each of the words from the list below. Words can appear forwards or backwards, vertically, horizontally, or diagonally in the grid.

Word List:

ASTRONAUT
FORCE
GRAVITY
HYDROPHOBIC
LIQUID
MATTER
NEWTONIAN
NICKELODEON
SLIME
SOLID
SPACE
VISCOUS

Y	Q	T	P	D	N	U	M	M	Z	N	D	C	N	M
M	V	I	S	C	O	U	S	A	I	G	B	A	A	V
T	M	O	B	J	Z	D	M	C	T	Z	A	R	I	D
G	U	E	C	A	P	S	K	V	G	T	Z	L	N	I
D	A	A	Y	Z	K	E	V	T	X	U	E	J	O	L
J	W	T	N	H	L	J	S	W	X	W	Q	R	T	O
C	C	I	B	O	H	P	O	R	D	Y	H	Y	W	S
K	W	E	D	C	R	Z	T	T	U	E	T	T	E	B
K	M	E	L	B	K	T	S	S	E	I	C	X	N	Z
W	O	A	I	O	S	U	S	H	V	S	D	R	I	N
N	T	Z	Q	B	O	Y	O	A	L	G	J	T	O	U
S	S	T	U	W	M	V	R	I	L	E	T	J	R	F
U	D	A	I	U	S	G	M	Z	W	J	W	F	M	U
Y	F	A	D	S	T	E	C	O	Y	V	A	U	L	X
B	X	T	I	A	S	N	Y	T	Z	H	V	O	H	R

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Word Search Answers

Word List:

ASTRONAUT
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Y	Q	T	P	D	N	U	M	M	Z	N	D	C	N	M
M	V	I	S	C	O	U	S	A	I	G	B	A	A	V
T	M	O	B	J	Z	D	M	C	T	Z	A	R	I	D
G	U	E	C	A	P	S	K	V	G	T	Z	L	N	I
D	A	A	Y	Z	K	E	V	T	X	U	E	J	O	L
J	W	T	N	H	L	J	S	W	X	W	Q	R	T	O
C	C	I	B	O	H	P	O	R	D	Y	H	Y	W	S
K	W	E	D	C	R	Z	T	T	U	E	T	T	E	B
K	M	E	L	B	K	T	S	S	E	I	C	X	N	Z
W	O	A	I	O	S	U	S	H	V	S	D	R	I	N
N	T	Z	Q	B	O	Y	O	A	L	G	J	T	O	U
S	S	T	U	W	M	V	R	I	L	E	T	J	R	F
U	D	A	I	U	S	G	M	Z	W	J	W	F	M	U
Y	F	A	D	S	T	E	C	O	Y	V	A	U	L	X
B	X	T	I	A	S	N	Y	T	Z	H	V	O	H	R

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How to Play:

Print this card prior to watching the Nickelodeon Slime in Space: A Virtual Field Trip. As you're watching, color in the squares as you see each of the items.

B	I	N	G	O
ALLY BROOKE	WATER IN SPACE	TOOTH FLOSS CUTTING THROUGH SLIME	A BALLOON POPPING	VISCOSITY
THE WORD 'WOBBLES'	A SWIRL OF SLIME IN SPACE	MICROGRAVITY	SLIME IN SOMEONE'S HAIR	A SLIME SANDWICH
"250 MILES"	HYDROPHOBIC	FREE SPACE	DRINKS WATER IN SPACE	MISSING BULLS-EYE
PING PONG PADDLES	NEWTONIAN FORCE	BELLA TWINS	SLIME BETWEEN TWO FINGERS	A ROCKET LIFTING OFF
SLIME ON GOGGLES	"MY FAVORITE PART ABOUT TODAY"	ASTRONAUT WITH SLIME ON FACE	FORCE	HIGH FIVE

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