General Format:

This formative assessment exemplar contains the following components:

1. Teacher Facing Information: This provides teachers with the full cluster as well as additional information including the question types, alignment to three dimensions, and answer key. Additionally, an example of a proficient student answer and a proficiency scale for all three dimensions are included to support the evaluation of the last item of the assessment. [pages 2-8]
2. Students Facing Assessment: This is what the student may see. It is in a form that can be printed or uploaded to a learning platform. [pages 9-14]
3. Student optional home data collection extension. [page 15]

Accommodation Considerations:

Teachers should consider possible common ways to provide accommodations for students with disabilities, English language learners, students with diverse needs or students from different cultural backgrounds. For example, these accommodations may include: Providing academic language supports, presenting sentence stems, or reading aloud to students. All students should be allowed access to a dictionary.

References:

Moulding, B., Huff, K., & Van der Veen, W. (2021). *Engaging Students in Science Investigation Using GRC*. Ogden, UT: ELM Tree Publishing.

Utah State Board of Education: Science
https://www.schools.utah.gov/curr/science?mid=1128&tid=1
Science Core Guide: Grade K
https://docs.google.com/document/d/18Ruc2OHV8KgpVXh68OFleNW0t12TvKYSTEXabzYW6E0/edit
Formative Assessment Exemplar K.2.4
https://docs.google.com/document/d/1uCk21ZADjjilS-PyBgIX9N6Pq5WQNU0AtFA4apambMY/edit

Teacher Facing Information

Standard: K.2.4

Design and communicate a solution to address the <u>effects</u> that living things (plants and animals, including humans) experience while trying to survive in their surroundings. *Define the problem by asking questions and gathering information, convey designs through sketches, drawings, or physical models, and compare designs. Emphasize students working from a plant, animal, or human perspective.* Examples could include a plant growing to get more sunlight, a beaver building a dam, or humans caring for the Earth by reusing and recycling natural resources. (ESS3.C, ETS1.A, ETS1.B, ETS1.C)

(Each standard is a student performance expectation that includes all three dimensions of science.)

This is an engineering standard.

Assessment Format: Printed

Phenomenon

Every time a child goes for a walk in his neighborhood, he sees a lawn sign that says "slow the flow." He asks one of his parents what that means, and the parent says it means to save water by using less water every day. The child realizes he needs to know more about **his own** water usage (when, where, how he uses water) to be able to save water. https://slowtheflow.org/	**Proficient Student Explanation** Students define the problem as the need to save water. They first must learn more about their own water usage. They will then design and evaluate possible solutions of ways they can save water.

Cluster Task Statement
Use the information below to design and communicate how the child might solve the problem.

Supporting Information
Utah is in a drought. A drought means there isn't enough water.

Cluster Questions

Gather:

Cluster Question # 1

Question Type: Multi Select

Addresses:

x_____ DCI - (ESS3.C) Living things depend on their environment to survive and can change it.

x_____ SEP - Asking Questions

x_____ CCC - Cause and Effect

Answer:

Question 1

What questions would be helpful to ask to find out about using water? Check two things that would be helpful to know.

1	2	3	4
What are ways I use water at home?	How does water get to my house?	How many rivers and lakes are near me?	How often do I use water?
☐	☐	☐	☐

Gather:

Cluster Question # 2

Question Type: Multiple Choice

Addresses:

x_____ DCI - (ESS3.C) Living things depend on their environment to survive and can change it.

x_____ SEP - Define the problem

x_____ CCC - Cause and Effect

Answer:

This table also helps students to discriminate between numbers.

Question 2

Use the information below to determine how the child's family is using water.

Table 1: Child's family water usage (4 people)

Water Use Task	Times Used In One Day	Gallons used per time	Gallons used per day
Flush toilet	12	6	72
Run faucet for 1 minute (waiting for water to get hot or cold)	5	4	20
Fill a bathtub (about 5 inches of water)	1	40	40
Shower (5 minutes)	8 (One time recorded for every 5 minutes)	35	280
Wash 1 load of laundry	1	45	45
Run dishwasher	1	15	15

Water Use Task	Times Used in One Day	Gallons used per time	Gallons used per day
Wash a load of dishes by hand (in a basin or plugged sink without water running)	0	4	0
Brush teeth with water running	4	8	32
Brush teeth with water off	4	1	4
Wash hands	16	1	16
Drink water (It is recommended each person drinks eight 8-ounce glasses of water a day, which equals half a gallon.)	8	0.25	2
TOTAL			532

(Table adapted from 4-H Water Conservation with the Water Lion)

Circle the two tasks which use the most water.

Color the two tasks yellow which use the least water.

Reason:

Cluster Question # 3

Question Type: Multiple choice

Addresses:

x_____ DCI - (ESS3.C, ETS1.A)
Living things depend on their environment to survive and can change it. Define the problem.

x_____ SEP - Define the problem

x_____ CCC - Cause and effect

Answer:

Question 3
Which sentence best describes a way the child's family uses more water than they need to?

1	2	3
His family uses water in too many rooms in his house.	His family keeps the water running too long when using water.	His family drinks too much water.

Question 3
Which sentence best describes a way the child's family uses more water than they need to?

1	2	3
His family uses water in too many rooms in his house.	His family keeps the water running too long when using water. ✓	His family drinks too much water.

Communicate:

Cluster Question # 4

Question Type: Multi Select

Addresses:

x_____ DCI - (ESS3.C, ETS1.B)
Living things depend on their environment to survive and can change it. Developing possible solutions.

x_____ SEP - Design a solution

x_____ CCC - Cause and effect

Answer:

Question 4
What two solutions would best help the child's family save water?

1	2	3	4
Turn off water when brushing teeth. ✓	Drink less water.	Wash laundry more often.	Take shorter showers. ✓

I can save 7 gallons of water each time I brush my teeth and turn off the water.

I can save 35 gallons of water every 5 minutes my shower is shorter

Question 4
What two solutions would best help the child's family save water?

1	2	3	4
Turn off water when brushing teeth.	Drink less water.	Wash laundry more often.	Take shorter showers.

Look back at information from questions 1, 2, and 3 to help answer this question.

Explain why the two answers you picked are best.

Communicate:

Cluster Question # 5

Question Type: Multiple Choice

Addresses:

x____ DCI - (ESS3.C, ETS1.A, ETS1.C) Living things depend on their environment to survive and can change it. Defining the problem. Optimizing the solution.

x____ SEP - Design a solution

x____ CCC - Cause and effect

Answer:

Question 5
How will the child know if the solution he chose worked?

1	2	3
He keeps a log of where he uses water to remind his family to only use water in the bathroom.	He keeps a log of when his family uses water and finds they use water for less time each day.	He keeps a log of how long it takes for the washing machine to do a load of laundry.
☐	☑	☐

Question 5
How will the child know if the solution he chose worked?

1	2	3
He keeps a log of where he uses water to remind his family to only use water in the bathroom.	He keeps a log of when his family uses water and finds they use water for less time each day.	He keeps a log of how long it takes for the washing machine to do a load of laundry.
☐	☐	☐

Proficiency Scale

Proficient Student Explanation:

Students define the problem as the need to save water. They first must learn more about their own water usage. They will then design and evaluate possible solutions of ways they can save water.

Level 1 - Emerging	Level 2 - Partially Proficient	Level 3 - Proficient	Level 4 - Extending
SEP: Does not meet the minimum standard to receive a 2.	**SEP:** Describe a possible solution to a specific problem.	**SEP:** Define the problem. Generate and/or compare multiple solutions to a problem	**SEP:** Extends beyond proficient in any way.
CCC: Does not meet the minimum standard to receive a 2.	**CCC:** With support, identify observable patterns to describe the causes of events. With guidance, designs simple tests to gather evidence to support or	**CCC:** Identify observable patterns to describe the causes of events. Designs simple tests to gather evidence to support or refute ideas about causes.	**CCC:** Extends beyond proficient in any way.

	refute ideas about causes.		
DCI: Does not meet the minimum standard to receive a 2.	**DCI:** Plants and animals (including humans) depend on the land, water, and air to live and grow.	**DCI:** Plants and animals (including humans) depend on the land, water, and air to live and grow. They in turn can change their environment (e.g., the shape of land, the flow of water)	**DCI:** Extends beyond proficient in any way.

(Student Facing Format on following page)
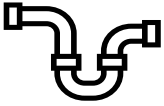
Name _____Date_____

Stimulus

Every time a child goes for a walk in his neighborhood, he sees a lawn sign that says "Slow the Flow." He asks one of his parents what that means, and the parent says it means to save water by using less water every day. The child realizes he needs to know more about **his own** water usage (when, where, and how he uses water) to be able to save water.

Your Task

Use the information below to design and communicate how the child might solve the problem (saving water).

Question 1
Question 1   What questions would be helpful to ask to find out about using water? Check two things that would be helpful to know.

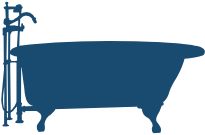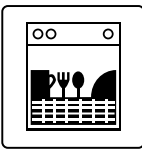| 1	2	3	4
What are ways I use water at home?	How does water get to my house?	How many rivers and lakes are near me?	How often do I use water?
☐	☐	☐	☐

Name _____Date_____

Table 1: Child's family water usage (4 people)

Water Use Task	Times Used In One Day	Gallons used per time	Gallons used per day
Flush toilet	12	6	72
Run faucet for 1 minute (waiting for water to get hot or cold)	5	4	20
Fill a bathtub (about 5 inches of water)	1	40	40
Shower (5 minutes)	8 (One time recorded for every 5 minutes)	35	280
Wash 1 load of laundry	1	45	45
Run dishwasher	1	15	15

Name _____Date_____

Water Use Task	Times Used In One Day	Gallons used per time	Gallons used per day
Wash a load of dishes by hand (in a basin or plugged sink without water running)	0	4	0
Brush teeth with water running	4	8	32
Brush teeth with water off	4	1	4
Wash hands	16	1	16
Drink water (It is recommended each person drinks eight 8-ounce glasses of water a day, which equals half a gallon.)	8	0.25	2
TOTAL			532

(Table adapted from 4-H Water Conservation with the Water Lion)

Circle the two tasks which use the most water.

Color the two tasks yellow which use the least water.

Name _____Date_____

Question 3
Which sentence best describes a way the child's family uses more water than they need to?
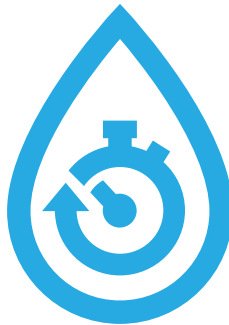
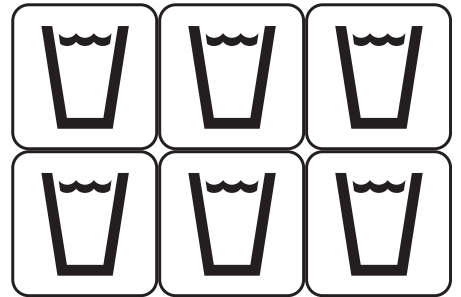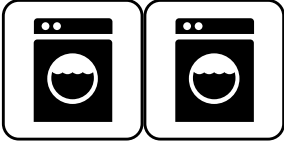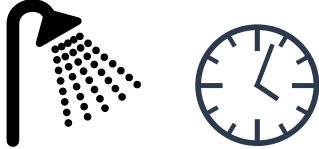| 1	2	3
His family uses water in too many rooms in his house.	His family keeps the water running too long when using water.	His family drinks too much water.

Name _____Date_____

Question 4
What two solutions would best help the child's family save water?

1	2	3	4
Turn off water when brushing teeth.	Drink less water.	Wash laundry more often.	Take shorter showers.
☐	☐	☐	☐

Look back at information from questions 1, 2, and 3 to help answer this question.

Explain why the two answers you picked are best.

Name _____Date_____

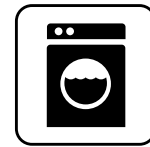| Question 5		
How will the child know if the solution he chose worked?		
1	2	3
He keeps a log of where he uses water to remind his family to only use water in the bathroom.	He keeps a log of when his family uses water and finds they use water for less time each day.	He keeps a log of how long it takes for the washing machine to do a load of laundry.

Name _____Date_____

My family's daily water usage tally

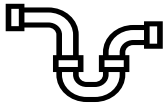| Water Use Task	Times Used In One Day	Gallons used per time	Gallons used per day
Flush toilet		6	
Run faucet for 1 minute (waiting for water to get hot or cold)		4	
Fill a bathtub (about 5 inches of water)		40	
Shower (5 minutes)	(One time recorded for every 5 minutes)	35	
Run dishwasher		15	
Wash a load of dishes by hand (in a basin or plugged sink without water running)		4	
Wash a load of dishes by hand (with water running)		30	
Wash 1 large load of clothing		45	
Wash 1 small load of clothing		30	
Brush teeth with water running		2	
Brush teeth with water off		1	
Wash hands		1	
Drink water (It is recommended each person drinks eight 8-ounce glasses of water a day, which equals half a gallon.)		0.25	
TOTAL			

Name _____Date_____

Name _____Date_____

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https://freesvg.org/10-hotel-icon-room-has-dishwasher
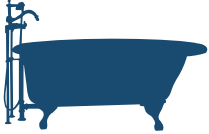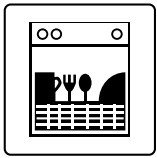

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https://openclipart.org/detail/232373/toothbrush

Name _____Date_____

Name _____Date_____