MO LEAP Block - Science with ELA Integration

Oil Spills — Grade 3

Purpose

Missouri Learning Engagement and Preparation (MO LEAP) Blocks are designed to support rich, grade-and content-appropriate instruction and measurement of learning. MO LEAP Blocks encourage a focus on providing meaningful and tailored feedback that promotes student reflection and growth. With formative assessments, the purpose is to provide feedback to encourage student growth in their understanding and provide opportunities for teachers to reflect on their instruction. In the words of Page Keeley, "The key is not to correct students and move on, but to use their ideas to design learning experiences that promote deep and lasting understanding."

Missouri Learning Standards

This MO LEAP task was designed to evaluate the following Missouri Learning Standards for Science:

- ❑ 3.PS2.B.1: Plan and conduct investigations to determine the cause and effect relationship of electric or magnetic interactions between two objects not in contact with one another.
- ❑ 3.ETS1.A.1: Define a simp… …ign… problem re… …a nee… that include… ma…

After development, this MO LEAP task was found to additionally evaluate the following Missouri Learning Standards for English Language Arts:

- ❑ 3.R.1.A.b: Develop and demonstrate reading skills in response to text by drawing conclusions and support with textual evidence.
- ❑ 3.R.3.A.b: Apply research process to create an individual question about a topic.
- ❑ 3.R.3.C.a: Read, infer, and draw conclusions to describe relationships among events, ideas, concepts, and cause and effect in texts.
- ❑ 3.R.3.C.c: Read, infer, and draw conclusions to use information gained from illustrations and … demonstrate understanding of the …xt.
- ❑ 3.R.3.A.e: Read, infer and draw conclusions to describe the relationship between events, ideas, concepts, or steps.
- ❑ …W.2.A: Write opinion texts.

Each MO LEAP Block was built around Missouri Learning Standards and promotes integration across content areas, when appropriate.

Documents

This task includes:

1. Integration of English Language Arts conten… standards.
2. A student version of the performanc…
3. A summary of the task's strengths and opportunities for improvement.
4. An annotated copy of the performance task fo… elements
5. A scoring rubric for teachers that includes sample student responses.

MO LEAP Blocks consist of multiple documents for teachers to effectively implement instruction. The number and type of resources will vary among content areas.

How does this task support all students?

✓ …task supports diverse learners is several ways. …k revolves around a meaningful …henon-ba…ed problem that has global relevance …ear to students—oil spills that negatively …imals and ecosystems in the ocean. The …blem can engage a wide range of …gage meaningful sense-making … problem that can be approached from …ctives with no clear single solution. …y, Q3 and Q4 allow students to bring their own …table as a meaningful part of the task, …portin…dent agency and identity as scientists. The …k itself inclu…es clear supports through visual text boxes and scaffolding to help ensure that students are clear about expectations for performances.

MO LEAP Blocks were developed to support all learners. Multiple opportunities for engagement can be found throughout the blocks, while also allowing for students to reflect on the content and their own learning.

How could this task be used?

For traditional classroom settings, this task could be used as an embedded performance assessment following a unit about magnets, provided that there are other opportunities for students to address other aspects of the DCI and related SEPs and CCCs. It provides important opportunities to continue learning and developing the targeted dimensions, as well as providing an opportunity to monitor student learning of previously learned ideas. Notably, this task can likely serve as a meaningful transfer task to determine whether students can use their understanding of magnets in a context that is quite different than many instructional sequences focused on magnets.

This performance assessment could also be used in a distance learning (both virtual and …gged).

For distanced virtual learning, teachers can share the experience with stude… …le Meets, etc. To allow for students to share their thoughts with …roup, Go… utilized. For completing the task itself, students could complet…

For distanced unplugged learning, students could be give… read or an audio file could be sent home via compact… to the teacher upon completion.

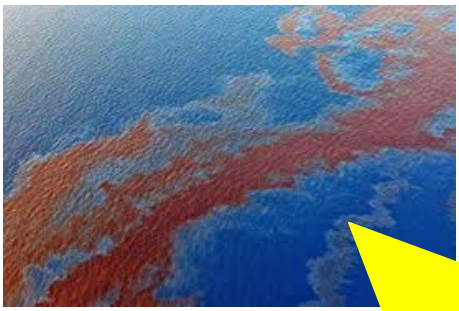
To see how other aspects of this performance as… environments, please reference the Migration Maps.

As educators are moving into various methods of instruction (distance, blended, and on-site), MO LEAP Blocks provide strategies for implementation in those different learning environments.

MO Learning Engagement And Preparation (LEAP) Science Block

Oil Spills - Student — Grade 3

Huge ships, called tankers, carry oil across the ocean. Sometimes the oil in the tankers spills into the ocean. Oil spills can spread out and harm plants and animals nearby. In this task, you are a scientist who is trying to find a way to collect the oil so you can remove it from the ocean.



Oil spill in ocean

Next, yo… …it. He is testing the…

He follows th…

2. Pu…
3. Puts bla…
4. Places…
5. Oh… …ther to the side of the tub.

Dr. Warner puts the black powder in a tub with water and oil (left). Then he holds a magnet outside the tub to pull the oil and powder toward it (right).

This example uses multiple modalities (text, video, and images) where students can be supported in their understanding as well as be introduced to experiments. This allows opportunities for students whose reading and writing abilities are still emerging to better understand and engage with the task. Opportunities for differentiation, such as this, were key considerations in the development of MO LEAP Blocks.

Answer the following questions to decide how you might test Dr. Warner's experiment to make a decision whether or not his method could be used to clean oil spills in the ocean.

1. **Dr. Warner put a black powder on the oil during his experiment. What do you think would happen if he did this experiment without the powder? Explain why.**

Prediction:

Explanation:

This question provides students with a scaffold to begi… student attention on the relevant aspects of the experime… or CCC, it does provide important entry po… experiment.

EQUITY **SENSE-MAKING**

This question provides an opportunity to assess the know… …glish Language Arts, specifically 3.R.1.A.b and 3.W.2.A. By havi… …eir understanding of the science content and skills, it allows f… …o evaluat… …provide fe…back to students on their performance in ELA. Using the rubric provided to me…sure the ELA components, teachers can provide feedback to students as it relates to the expected outcomes for ELA without requiring that students complete an additional writing or additional content study. This will be important to help leverage time as we accelerate student learning after spring school closures.

INTEGRATION

Virtual option! Consider doing this digitally by asking …nts to … this qu… …n through a jamboard (anonymous) or padlet (tie responses to sp… …asks as scaffolding can be especially powerful as …teractive task comp… …dents find meaning and connection w… …and ca… …later in the task.

4. **Describe one way … …stion on a real oil s… …kets can be used to remove oil fr…**

Description:

Explanation:

This part of the prompt requires stude… …nse-make by 1) evaluating the experimental design as well as the two situations provided, and 2) think a… what is difference between a real oil spill and what we see in the lab (e.g., size of the spill). Successfully ans…ering this question would likely elicit student understanding of how magnets work (parts of 3.PS2.B identified above) to evaluate and modify the experimental design (3.ETS1.A.1). While the scoring rubric suggests that this requires students to use the Defining Problems SEP element "define a simple problem…", students are not defining a problem because they are not describing a situation people want to change or identifying criteria and constraints for solutions to that problem—instead, they are evaluating a design (the current experimental approach). This more closely connects to the 3-5 SEP Planning and Carrying Out Investigations element "evaluate appropriate methods and/or tools for collecting data."

SENSE-MAKING **SEPs** **DCIs** **CONNECTION TO ASSESSMENT PURPOSE**

This question provides an opportunity to assess the knowledge and skills of students in Science and English Language Arts, specifically 3.R.3.C.a and 3.R.3.A.e. Successful responses to this question require students to read, infer, and draw conclusions to describe relationships among events, ideas, concepts, and cause/effect in text, while also describing the relationships between the events, ideas, concepts, or steps.

INTEGRATION

Students are asked to demonstrate sense-making at various levels of understanding throughout the MO LEAP Blocks. This example highlights student explanations using evidence from multiple sources through writing.

MO LEAP Blocks include annotations highlighting features of high-quality science assessments and opportunities for ELA integration. In addition, they include adaptations for instruction through various learning environments.

Oil Spills - Teacher — Grade 3

Rubric for Question 4		
What we are measuring... **Science:** Student describes a change in the design of an investigation using reasoning about how changing the distance or property of a magnet affects the magnetic forces between objects. **ELA:** Student draws conclusions to describe relationships among and between events, ideas, or concepts.		
MLS	**Alignment to MLS**	**Alignment to Question/Criteria in Performance Assessment**
3.PS2.B.1: Plan and conduct investigations to determine the cause and effect relationship of electric or magnetic interactions between two objects not in contact with each other. **3.ETS1.A.1:** Define a simple de…n problem reflecting a need or w…at includes specified criteria for s…d constraints on materials, time, **3.R.3.C.a:** …d dra… conclusions among events, and effect in tex… …betw…	**SEP:** Define a simple problem that can be solved through the development of a new or improved object or tool. **CCC:** Cause and effect relationships …e routinely identified t… and used to explain ch… **DCI:** …	4. Describe one way his experiment will need to change to test his research question on a real oil spill. Then explain how that change will help him decide if magnets can be used to re…e oil from the ocean.

Description of student learning outcomes are centered around student performance at the "On Track" level. The focus on this one level of performance allows teachers to engage in conversations with students around productive feedback that encourages students to gain an understanding to further their learning. Again, the focus is not on correcting the student, but instead promoting deep and lasting understanding.

	Prog…essing	On Track	Excelling
Student Learning Outcomes	• *What opportunities for improvement and growth do students show?*	Identifies the criteria for success of the solution to the design problem and the constraints on materials, time, or cost and/or asks questions related to the analysis and comparison of sizes of magnetic forces, which depend on the properties of the objects and the distance between them, and, for forces between magnets, on their orientations relative to each other. Adequately describes cause/effect relationships and draws conclusion with adequate explanation.	• *In what ways does the students' response show extensive understanding and facility with the targeted response?*
	Sample Student responses coming soon!		
	Sample Teacher to Student feedback coming soon!		

MO Learning Engagement And Preparation (LEAP) Science Block

Oil Spills - Student — Grade 3

Student Reflection

Part A: Describe how you feel after completing this task. Are your feelings mostly positive or negative?

Part B: What were so
through this task?
problem/

Part C: What did yo **greates** **trengths? Biggest areas for improvement?**

Part D: How will you use what you have learned through this task in the future?

MO LEAP Blocks include opportunities for students' to reflect on their own learning at the completion of the task. This section allows for teachers to gain insight into the interests and identities of their students and further build relationships.