Early Learning Science

Mid-Valley
STEM-CTE HUB

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Early Learning Science

With the Early Learning Science Kit, students explore magnetism, motion, and buoyancy—as they complete hands-on experiments and engineering activities! Each station includes 8 cards that prompt students to perform simple experiments... and comes with all the hands-on materials needed to complete each one. Plus, each station features an engineering activity to extend the learning—and build critical-thinking and problem-solving skills! The set covers motion, magnets, and sink or float/buoyancy.

Grade Level

PreK - 1st

Group Size

2 - 4 students per group

Time Duration

15 - 30 minutes per activity

Content of Kits

Components

- 2 Lakeshore Magnet sets
- 2 Lakeshore Sink or Float sets
- 2 Lakeshore Motion sets

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Usage

Getting Started

1. **Inventory and Organize the Stations**
Confirm that both complete sets are present. Organize the materials into the three station categories: motion, magnets, and sink or float. Keep each station's activity cards, guide, stand, and manipulatives together.

2. **Review the Activity Cards**
Select activity cards that match students' ages, abilities, and available time. Preschool students may benefit from educator-led demonstrations, while kindergarten and first-grade students can complete selected activities with increasing independence.

3. **Introduce Science Routines**
Model how to make a prediction, test one idea at a time, observe carefully, and share what happened. Emphasize that unexpected results are an important part of scientific learning.

4. **Prepare the Learning Area**
Set up separate workspaces for each station. Use a tray or towel beneath water investigations, provide open floor or table space for motion activities, and keep magnetic materials away from electronic devices.

Storage

- **Keep Station Materials Together**
Return all materials, activity cards, guides, and wooden stands to their designated station containers. Avoid mixing pieces from the motion, magnet, and buoyancy stations.
- **Clean and Dry Before Packing**
Dry all materials used in water before returning them to the kit. Wipe other components with a soft cloth and check that no pieces are missing, bent, cracked, or damaged.

Troubleshooting

- **An Investigation Does Not Work as Expected**
Check the activity card and confirm that the materials are positioned correctly. Encourage students to change one part of the setup, test again, and compare the new result with the first attempt.
- **Students Need Additional Support**
Demonstrate the first step, use simple picture cues, and divide the activity into shorter tasks. Pair students strategically and assign roles such as material manager, tester, observer, or reporter.

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Activity Guide

Beginner

Push, Pull, and Move
Students investigate how pushes, pulls, ramps, and starting positions affect an object's motion. They make predictions, observe changes in speed or direction, and use their findings to complete a simple motion challenge.

Oregon Science Standards Alignment
- K.PS2.1, K.PS2.2, K.ETS1.1, K.ETS1.3

Procedure
1. Allow students to explore how the objects move when pushed or pulled.
2. Ask students to predict what will happen when they use a stronger or gentler push.
3. Test both pushes and compare how far or how quickly the object moves.
4. Change the direction of the push or adjust the available ramp or pathway.
5. Create a target line with masking tape.
6. Challenge students to make an object stop as close to the line as possible.
7. Ask students to draw or describe what helped the object reach the target.

Intermediate

Magnetic Maze Challenge
Students explore how magnets can push or pull objects without direct contact. They then apply their observations to guide a magnetic object through a simple pathway or maze.

Oregon Science Standards Alignment
- K.ETS1.1, K.ETS1.2, K.ETS1.3

Procedure
1. Have students test what happens when two magnets are placed near each other.
2. Ask students to observe when the magnets pull together and when they push apart.
3. Invite students to test selected classroom objects and sort them according to whether a magnet attracts them.
4. Draw a wide pathway or simple maze on paper.
5. Challenge students to move the object by controlling a magnet from beside or beneath the paper.
6. Ask students to complete the maze without touching the moving object directly.
7. Adjust the pathway or create a new maze based on the results.

Advanced

Sink, Float, and Build a Boat
Students predict and test whether objects sink or float. They use their observations to design or select a floating structure that can carry a small load.

Oregon Science Standards Alignment
- K.ETS1.1, K.ETS1.2, K.ETS1.3, 2.PS1.1, & 2.PS1.2

Procedure
1. Display several objects from the station. Ask students to predict whether each object will sink or float.
2. Test one object at a time and record the results.
3. Sort the objects into sink and float groups.
4. Compare observable features of the objects.
5. Introduce the challenge of creating or selecting a floating structure that can carry a small load.
6. Have students draw their idea.
7. Add one counter at a time and observe how much the structure can hold.
8. Invite students to adjust the design and test it again.

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Learning Extensions

STEAM Connections: Engineering - Math - Science

Learning Objectives:

- Make predictions and compare them with the results of hands-on investigations.
- Describe how pushes and pulls can change an object's motion.
- Observe that magnets can attract or repel and can affect some objects without touching them.
- Test and classify objects according to whether they sink, float, or respond to a magnet.
- Use drawings, words, gestures, or charts to communicate observations and conclusions.
- Apply early engineering practices to build, test, compare, and improve simple solutions.

Career Connections:

- **Scientist –** Asks questions, conducts investigations, and uses observations to learn how the world works.
- **Mechanical Engineer –** Designs and tests objects and machines that move or use forces.
- **Marine Engineer –** Designs boats and other structures that must float and move safely through water.
- **Materials Scientist –** Studies the properties of materials and determines how they can be used.
- **Product Designer –** Creates and tests useful objects that solve problems for people.
- **Robotics Engineer –** Uses motion, magnets, sensors, and programming to design robots.
- **Science Educator –** Helps learners explore scientific ideas through questions, demonstrations, and experiments.

Essential Employability Skills:

- Problem Solving
- Communication
- Critical Thinking
- Perseverance
- Observation and Attention to Detail

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Resources and Accessibility

Safety Guidelines

- **Supervise Materials and Water Investigations**

Provide active adult supervision during all activities. Keep small pieces away from students who may place objects in their mouths, clean spills promptly, and use only a shallow amount of water during sink-or-float investigations.

- **Use Magnets and Moving Objects Safely**

Keep magnets away from electronic devices, magnetic cards, and individuals with implanted medical devices. Remind students not to throw rolling objects, place magnets near their mouths, or aim moving materials toward other people.

Accessibility

- **Provide Multiple Ways to Participate**
- Offer roles such as predictor, material manager, tester, observer, sorter, and reporter. Students may communicate their thinking through speech, pointing, picture choices, drawings, gestures, or assistive technology.
- **Adapt the Learning Environment**

Use large visual directions, high-contrast sorting mats, stable trays, and easy-to-grasp materials when needed. Position stations at accessible heights and provide hand-over-hand assistance only with the student's permission. Reduce the number of materials presented at one time for students who benefit from a less visually or sensory-demanding workspace.

Library Catalog

Library Resources

Feedback

QR to feedback survey