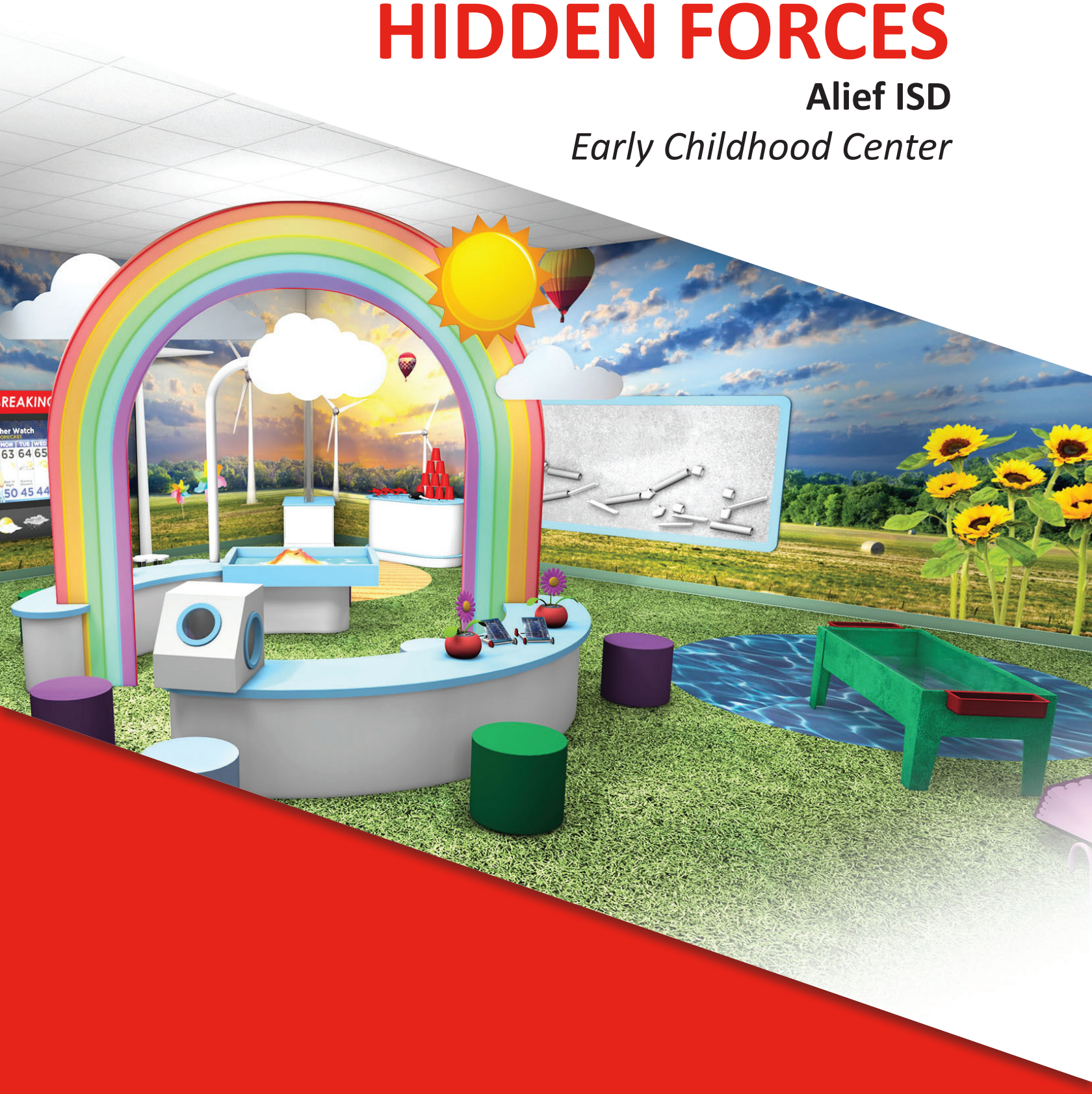
HIDDEN FORCES

Alief ISD

Early Childhood Center



EXPLORATION™ zones

by Exhibit Concepts, Inc.

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EXPERIENTIAL EDUCATION CLASSROOMS

Welcome to your new classroom! You may be experiencing many emotions—excitement, uncertainty, even apprehension. This is completely expected. Experiential learning may be new to you as a concept or theory, but rest assured, many of the principles that bind experiential learning have likely been applied by you for years. Experiential learning embodies the active participation, social engagement, and meaningful connections that we know are the pillars of play-based learning. Play is how young children learn!

This guide is intended to support you as you transition to a new classroom environment. You will find helpful background information on the theory, activity ideas organized by skill domains, experiential learning resources, and tools to assist you in reflective teaching practices. Most importantly, have fun with your students in this new learning environment. The classroom space really is a second teacher and the possibilities are endless!

What is Experiential Education?

Experiential education is a theory that acknowledges humans as active participants in the learning process. In the classroom, students are at the center of the learning process, actively engaging and participating in decision-making. Students' interests and needs drive topics of study with small group and individual projects evolving from their curiosities and real-life events. Experiential learning environments, like museums and zoos, naturally provide opportunities for inquiry-based learning that inspire curiosity and passion. These same features and opportunities are available in experiential learning classrooms.

How does experiential education impact your role as a teacher?

Teachers learn about students by actively listening and observing. You listen to conversations, observe students' choices, and communicate with families. Through this listening and observing, you can make assumptions about what students know and provide new materials, activities, and experiences that help expand upon this knowledge. By asking open-ended questions and encouraging students to make observations, students begin to build a schema that continues to grow.

How does experiential education impact the students' role?

Students are at the center of the learning process. Students' interests and needs drive topics of conversation and participation in activities. Students in experiential learning classrooms make choices and decisions throughout the day. They choose whether they play alone or in a group, they choose activity options that sound most appealing, and they choose to engage with interesting materials and equipment.

How Do I Use an Experiential Education Classroom?

A new classroom can be overwhelming, not only for you, but for your students too. Being prepared can help manage those overwhelming feelings and set you up for success in your new environment. Before introducing the classrooms to your students, take a gallery walk in each classroom, taking in the sights and sounds without interruptions. As you are noticing and observing features in the classroom, think about big ideas or themes that might naturally stem from these features. You can list activities or play-based items that might align with these ideas; several activity ideas and accompanying items are provided in the educator guide to help you get started. Introduce the classrooms to the students by taking a community gallery walk. Ask students to describe what they notice, how they feel, and what they would like to know more about.

What Will I Find in Each Experiential Education Classroom?

Each experiential education classroom includes similar best practices and strategies for working with young children, not only in the design but in the supportive activities. The unique themes and content can lead to new ideas and projects stemming from students' interests and questions. Each classroom includes:

- **A General Supply Kit:** A collection of materials that can be used in open-ended ways
- **Magnetic Boards:** Engagement tools for group learning or individual interactions
- **A Classroom Library:** Developmentally appropriate Spanish and English, non-fiction and fiction books, that support the theme
- **Sensory Exploration:** A station or area that encourages inquiry-based investigations
- **An Educator Guide:** A facilitation tool that includes supportive activities and ideas for assessment

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ACTIVITIES



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HIDDEN FORCES

Human Chain of Electricity

HF.01

I.B.3 Child sustains attention to personally chosen or routine (teacher-direct) tasks until completed.
VI.A.4 Child observes, investigates, describes, and discusses sources of energy including light, heat, and electricity.

Human bodies conduct electricity! As a group and individually, students explore the notion of circuits, conductors, and insulators by experimenting with energy sticks. Students make observations while conducting electricity with a group (closed loop) and individually with their body. Students also find other objects around the classroom that conduct energy.

DOING THE ACTIVITY

1. Provide opportunities for students to explore the energy sticks with little direction. Encourage them to make observations and ask questions. After the students have time to explore, ask them to hold onto each end and describe what they notice (the energy stick lights up and emits sound. The students are conducting electricity by closing the circuit).
2. Have several members of the group hold hands in a circle. Have one student hold one electrode and the student next to them hold the other electrode. As long as everyone in the circle is holding hands, the energy stick will light up and emit sounds. If someone breaks the circle, the energy stick will no longer visualize a closed circuit.
3. Ask students to find other objects in the classroom that light up the energy stick (close a circuit), reminding them to explore with a partner to make a complete human connection.

TEACHING STRATEGY

Explore different conductors of electricity with a partner. Try water, a spoon, and even dirt!

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HIDDEN FORCES

Asking Questions Like a Scientist
HF.02

II.B.1 Child uses language for multiple purposes.
III.A.1 Child engages in story-related pre-reading and activities.
VI.A.1 Child observes, investigates, describes, and discusses properties and characteristics of common objects.

After a read aloud of *What is a Scientist?* by Barbara Lehn, students and educator review the purpose of questions (to find out information) and create a class list of common questions a scientist might ask like, "What do you see?" and "What happened?" Students participate in an educator-led ice balloon experiment, listening to modeled questions and asking additional questions throughout to find out information.

DOING THE ACTIVITY

1. Read *What is a Scientist?* by Barbara Lehn, reviewing aspects of a scientist (pausing on each page) as you read the story. After reading the story, return to the "types of questions" page. Review questions, writing a few question examples on a dry erase board or chart paper.
2. Tell students they will be making discoveries, just like a scientist, by investigating ice. Freeze several water balloons overnight. Peel off the balloons and allow students to examine the ice using the tools (toothpicks, salt, flashlights, and magnifying glasses). Ask students questions like, "What happens if you poke the ice with a toothpick?," "Pour salt on the ice?," "Shine a light on the ice?," and "What do you notice?"

TEACHING STRATEGIES

- Before participating in the ice investigation, ask students if they have any questions about ice. Write the questions on a dry erase board or chart paper, revisiting the questions after the investigation. Are students able to answer any of their own questions after investigating?
- Add food coloring or liquid watercolors to the water balloons to encourage additional ice observations.

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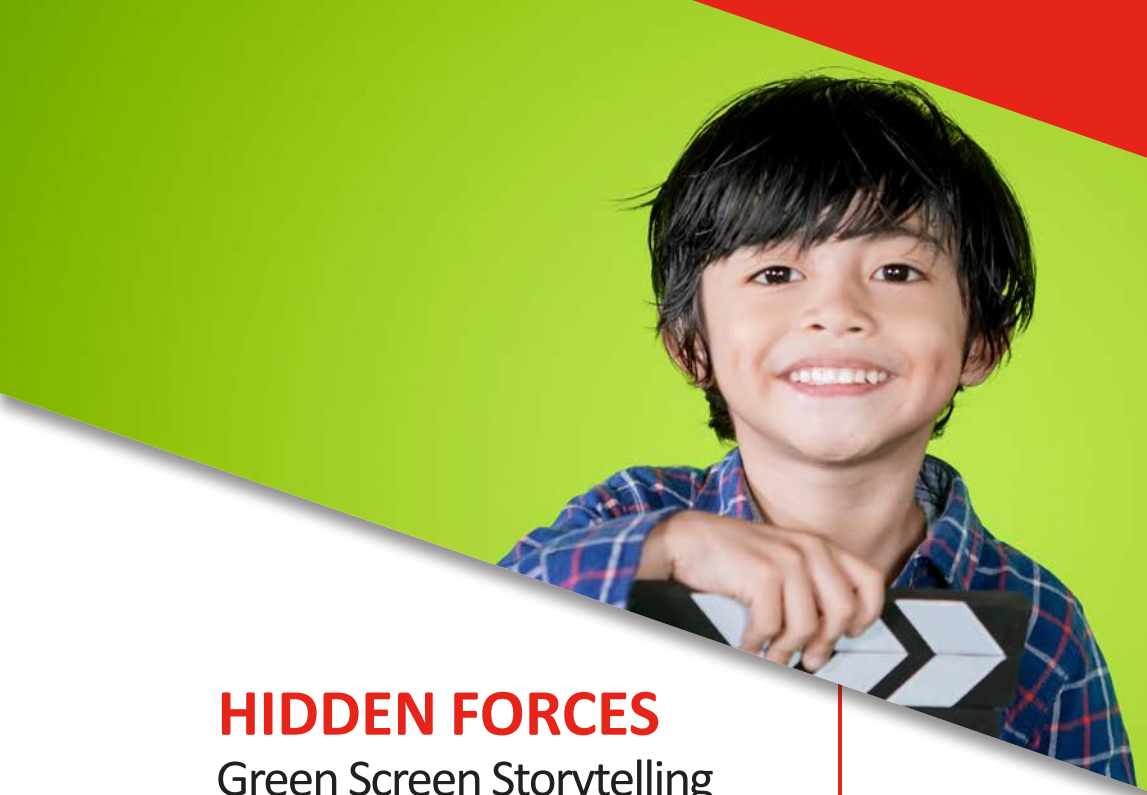






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HIDDEN FORCES

Green Screen Storytelling

HF.03

I.A.2 Child shows self-awareness of physical attributes, personal preferences, and own abilities.
I.C.4 Child increasingly interacts with peers during cooperative play scenarios that share a common plan and goal.
VIII.C.1 Child responds to different musical styles through movement and play.

Students practice speaking skills and assume new roles and personas by using virtual backdrops that provide new learning environments. Students can add materials from dramatic play such as umbrellas, hats, scarves, sunglasses, etc., to enhance their new personas. Application suggestions: Green Screen Live Video Record, WeVideo, and Do Ink.

DOING THE ACTIVITY

1. To use the green screen, download a green screen application on a device, such as Green Screen Live Video Record, WeVideo, or Do Ink. Practice using the application before introducing to the students.
2. Encourage students to tell stories about the weather, using the props. Students can start by telling stories about the current weather and as they become more comfortable, they can make weather predictions. Film the students telling stories and include students in the review, reflection, and editing process.

TEACHING STRATEGIES

- Be sure to practice using the application before introducing to the students. With a strong understanding of the technology, the focus can shift to inspiring creativity.
- Rotate props to encourage storytelling from a variety of topics. Use background photos that lend to storytelling like scenery and themed items.

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HIDDEN FORCES

Hidden Forces Word Bank: Making Words with Alphabet Beads

HF.04

III.C.1 Child recognizes and names at least 20 letters (upper- or lower-case letters).
IV.C.4 Child uses appropriate directionality when writing (e.g., top to bottom, left to right).
IX.B.2 Child shows increasing control of tasks that require eye-hand coordination.

Each themed classroom includes a word bank. A featured activity will be included with each themed word bank. **Making Words with Alphabet Beads:** Students reinforce letter recognition and recreate word wall words with large-scale alphabet beads. Students can have discussion about uppercase and lowercase letters as they review word bank words.

DOING THE ACTIVITY

Place the word bank words, alphabet beads, and threading material in the writing center and encourage students to recreate word bank words using the beads. Students can also create other words, string the letters in order from A-Z, and practice letter recognition. Have students match the beads along the alphabet arch.

TEACHING STRATEGIES

- Place the beads in alphabetical order to make finding the beads easier for students who need the support. As a challenge, place the beads in a container and ask students to search for specific letters.
- Include other types of threading material in the writing center like pipe cleaners, string, and yarn with varying widths.

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HIDDEN FORCES

Weather Stories

HF.05

III.D.2 Child uses information learned from books by describing, relating, categorizing, or comparing and contrasting.
VI.C.3 Child observes and describes what happens during changes in the earth and sky.

Students learn weather-related vocabulary as they listen to stories about weather and match elements from stories to the associated weather phenomena flashcards. Students continue to have discussions about the ways weather affects our lives.

DOING THE ACTIVITY

Read *What Kind of Weather?* by Dona Rice, *Minino y la lluvia* by Meritxell Marti, and *Ready for Weather* by Sarah Jones. During a second reading of the stories, ask students to match weather phenomena flashcards to descriptions from the stories. Ask students to think about the symbol or image that describes a particular weather pattern.

TEACHING STRATEGY

Make a classroom chart (monthly calendar format) to keep track of the weather every day for a month. Compare the total number of sunny days to cloudy or rainy days.

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HIDDEN FORCES

Hidden Forces Alphabet: Alphabet Bingo

HF.06

I.B.3.a Child sustains attention to personally chosen or routine (teacher-directs) tasks until completed.
II.A.2 Child shows understanding by following three-step verbal directions.
III.C.1 Child recognizes and names at least 20 letters (upper- or lower-case letters).

Each themed classroom includes a magnetic alphabet. A featured activity will be included with each themed magnetic alphabet. **Alphabet Bingo:** Students reinforce alphabet recognition by participating in alphabet Bingo.

DOING THE ACTIVITY

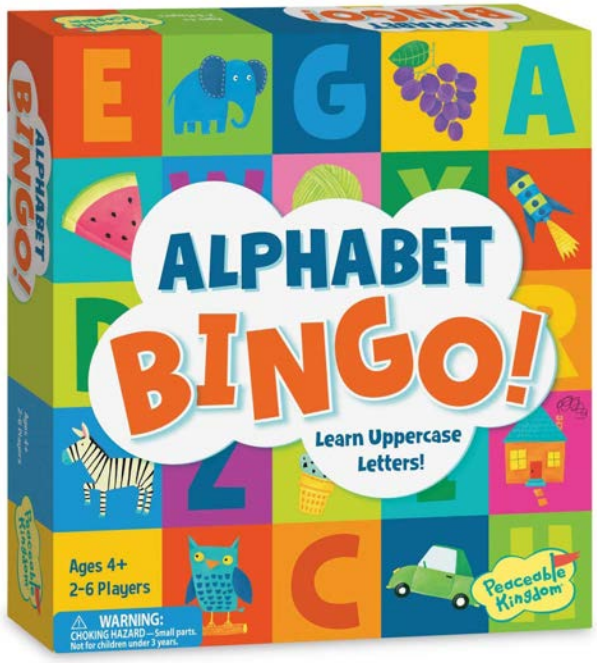
1. Align themed magnetic letters from A-Z on the magnetic board. Pass out the Bingo cards and chips. Explain that each box will be covered with a Bingo chip as a letter is called out. A box may be covered once and some boxes may be left over.
2. As you call out letters, be sure students are using the Bingo chips to cover a letter. Remind students that Bingo looks like a filled row. You can remove a themed letter from the magnetic board as it is called.

TEACHING STRATEGY

Incorporate Bingo variations as students master letter recognition. You can try letter-sound Bingo (call out a sound and encourage students to find the associated letter) and picture Bingo (hold up a picture and encourage students to find the beginning letter sound).

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HIDDEN FORCES

Weather Journals

HF.07

II.B.1 Child uses language for multiple purposes.
II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe, and make connections among objects, people, places, actions, and events.
IV.A.1 Child intentionally uses marks, letters, or symbols to record language and verbally shares meaning.

Young children organically make observations about the weather. Incorporating daily group observation and reflection about the weather encourages children to talk about their observations and build upon existing knowledge. Students can make personalized weather journals using simple classroom materials, recording daily observations through drawings or word bank words.

DOING THE ACTIVITY

1. Ask students to make weather journals. Staple writing paper and construction paper (cover and back page) together and encourage students to personalize the cover page.
2. Ask students what the word “observe” means. Define observe as looking carefully at something. Explain that students will observe the weather each day during morning meeting, using the magnets to make daily recordings. Students will use their weather journal to record their own observations each day in order to have group reflections.

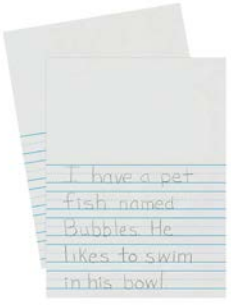
TEACHING STRATEGIES

- Determine a length of time for recording weather observations. After the period, ask students to reflect on their observations as a group, making comparisons between their observations.
- Ask students to participate in focused observations. For example, ask students to observe clouds each day, making comparisons between each daily observation.

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Monday	lunes
Tuesday	martes
Wednesday	miércoles
Thursday	jueves
Friday	viernes
Saturday	sábado
Sunday	domingo





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HIDDEN FORCES

Rock, Mineral, and Geode Sort

HF.08

V.D.3 Child recognizes and compares weights of objects.
V.E.1 Child sorts objects that are the same and different into groups and uses language to describe how the groups are similar and different.
VI.C.1 Child observes, investigates, describes, and discusses earth materials and their properties and uses.

The Earth is made up of many layers; the Earth's surface is covered by its thinnest layer, the crust. The crust, which is land, mostly consists of rocks and minerals. Students explore rocks, minerals, and geodes to make comparisons and sort by attributes such as size, appearance, and weight. Tools of exploration such as a mineral magnifier, a balance scale, and exploration trays will be provided.

DOING THE ACTIVITY

1. As a large group activity, lay out the rocks, minerals, and geodes on a rug or tabletop. Ask students to look closely at the specimen and think of words that could be used to describe them. Record their words on a dry erase board or chart paper. Choose one of the observations and ask students to place all of the specimen that fit the observation in a group. Repeat the process and review characteristics of specimen in each group.
2. As a small group activity, lay out the rocks, minerals, geodes, and tools of observation (balance and magnifying glasses) on a tabletop and encourage students to make observations. Ask students questions like, "Which specimen is the heaviest?," "Which specimen is the lightest?," and "What do you notice about the specimen as you look closely?" Help students use descriptive words as they answer questions, such as hard, soft, smooth, rough, heavy, and light. Students can use the spray bottles and activity trays to clean the specimen.

TEACHING STRATEGY

Make a rocks and minerals anchor chart. Start with rocks/minerals in the center and include words students use to describe rocks and minerals. Post the chart and continue to add words as they make new discoveries.

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HIDDEN FORCES

Shadow Shapes

HF.09

I.C.4 Child increasingly interacts with peers during cooperative play scenarios that share a common plan and goal.
V.D.1 Child recognizes and compares heights or lengths of people or objects.
VI.A.1 Child observes, investigates, describes, and discusses characteristics of common objects.

Shadows are shapes made by something coming between a light source and a surface. Students naturally explore shadows outside using the Sun as a light source (natural light). Inside, students use artificial light like flashlights and lamps as light sources to explore shadows. Students find objects around the classroom to cast shadows on white butcher paper, tracing the shadow shapes.

DOING THE ACTIVITY

1. Ask students what a shadow is (a dark shape that is made when something is blocking light). Ask students to think about where they have seen shadows before. Place a strip of painter's tape on the floor, close to a wall. Have two students, of differing heights, stand on the painter's tape as they face the wall. Ask students to predict who will have the taller shadow. Shine a flashlight on the two students while the remaining students make predictions.
2. Have students find other items around the classroom to make shadows. Encourage students to move the flashlight to make different shapes with the object.

TEACHING STRATEGIES

- Trace shadows onto butcher paper. Tape the butcher paper onto the wall. Ask one student to hold the flashlight, while another student holds an object between the flashlight and the butcher paper. A final student can trace the object that is held between the flashlight and the butcher paper.
- Observe shadows outside. Students can compare the shadows of different-sized objects (people, trees, buildings, light poles, etc.). Make these observations at different times of the day to have discussions about the position of the Sun.

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HIDDEN FORCES

What is Static Electricity?

HF.10

II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.A.1 Child observes, investigates, describes, and discusses properties and characteristics of common objects.

Students use balloons, wool fabric, and friction to create observable opposite charges. Once students make observations, they can test the charges against other materials like a table, another charged balloon, and metal, sharing their observations and discussing why some items repel one another and why some items attract one another.

DOING THE ACTIVITY

1. Give each student in the group a balloon and ask them what they know about balloons and what they can do with their balloon (squishy, bouncy, toss balloon in the air, catch balloon, etc.). Rub a balloon on your head and ask students what they notice (hair is sticking up). Ask students why your hair might be sticking up (the balloon). Encourage students to test the balloon on their own hair and make observations.
2. Test other objects around the classroom, making predictions before each test. For example, rub the balloon on your head, hold up several pieces of tissue paper, and ask students what they think will happen if the balloon is near the tissue. Test the predictions, continuing the pattern with other items from the classroom.
3. Compare to the ways magnetic poles interact with each other using magnets. Have students test the magnets' ability to attract (or repel) to similar objects as the balloon and make comparisons.

TEACHING STRATEGIES

- Be sure to reinforce consistent vocabulary throughout this activity. Words like attract, stick together, repel, and move away help ensure understanding.
- Move other objects with static electricity like bubbles, soda cans, and foil.

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HIDDEN FORCES

Plasma Globe

HF.11

II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.A.1 Child observes, investigates, describes, and discusses properties and characteristics of common objects.

A plasma tube, lamp, or globe is a clear glass container filled with a mixture of gases with an electrode in the center. Young children can organically learn about electricity as they touch different materials, and their body, to the globe and make observations. Children can talk about the materials that pull electrical current and the materials that stop (insulate) electrons.

DOING THE ACTIVITY

1. Introduce students to the plasma globe by offering opportunity for supervised free exploration. Model appropriate interactions (touch the tube with your hand, touch the tube with another object) and encourage students to do the same, verbalizing observations. Ask students what they notice.
2. As a small group, experiment with focused objects such as a light bulb, metal Slinky, plastic Slinky, wooden block, and fabric scarf. Ask students what they notice as each object interacts with the plasma globe. Continue encouraging students to test interactions with other objects, introducing the terms insulator and conductor if you feel it is appropriate for your group of students.

TEACHING STRATEGY

Ask students to bring in items from home and items found in nature to see if they pull electrical currents or stop electrons.

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HIDDEN FORCES

Wind Tunnel Exploration

HF.12

II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.A.2 Child observes, investigates, describes, and discusses position and motion of objects.

Wind tubes are an engaging way for students to experiment with and learn about the movement of air as force. Children explore relationships with natural wind currents using various materials within the tunnel, making observations about speed and direction. Children experiment with foam, scarves, paper airplanes, tissue paper, and any other classroom materials.

DOING THE ACTIVITY

1. Ask students to wave their hands in front of their face and describe what they feel (wind, air). Explain that wind is a force and ask students where they see/feel wind. Provide opportunities for students to explore the wind tunnel freely by adjusting the speed and direction of the airflow, and observe drag and force using various materials within the tunnels.
2. Make observations and talk about the ways objects behave in the wind tunnel. Discuss the variables in objects, including weight, shape, and surface area. These observations and discussion help students reflect, redesign, and test again.

TEACHING STRATEGIES

- Help students design, build, and test specific objects that spin, fly, or float in unusual ways, including paper airplanes and parachutes.
- Bring in a tabletop fan and make comparisons between the amount of force produced by the fan and wind tunnel. Test items using both sources of wind.
- Measure wind speed outside and in the classroom using a class-made wind gauge.

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HIDDEN FORCES

Gravity Magnetic Wall

HF.13

I.C.4 Child increasingly interacts with peers during cooperative play scenarios that share a common plan and goals.
II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.A.2 Child observes, investigates, describes and discusses position and motion of objects.

The properties of gravity are reinforced as students explore magnetic PVC, ramps, rings, balls, and other manipulatives. The adaptable pieces encourage inquiry-based learning and systems thinking with many opportunities for open-ended investigations.

DOING THE ACTIVITY

1. Encourage students to experiment with the ramps, rings, balls, and cars. Ask students what they notice as they experiment. Draw attention to the angle of the ramp and properties of the items that roll. Ask students the following guided questions: "How does the material affect the speed?," "How does the weight of the object affect the speed?," "How does changing the ramp angle affect the speed?"
2. Provide items that will not roll down a ramp or chute, such as a square block, paper, and paper clip. Ask students to experiment and make comparisons to the other items.

TEACHING STRATEGY

Explore gravity in other ways in the classroom using simple materials. Tie several paper clips to a string, then tie each piece of string onto a pencil or stick. Lift the pencil up so the paperclips hang from the string. Ask students to move the stick around and describe what they notice (the paperclips always point to the ground). Gravity pulls objects toward the Earth. Students can explore with magnets to see how other forces (magnetism) can overcome gravity.

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HIDDEN FORCES

Solar Power Exploration

HF.14

II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.A.4 Child observes, investigates, describes, and discusses sources of energy including light, heat, and energy.

The Sun is our nearest star and is very powerful! Students learn that the Sun provides us with heat, light, and energy by investigating the effects on the Sun's ultraviolet rays. Using sun print paper, solar powered gadgets, and other hands-on investigations, students begin to make conclusions about the power and importance of the Sun.

DOING THE ACTIVITY

Ask students why the Sun is important (gives us heat, light, and energy). Tell students they will explore the Sun (power) by participating in activities.

Activity 1: The Sun gives us energy. Students can see the transfer of energy by exploring solar activated items. Have students place the lantern and flowers in the Sun. Ask students to describe what happens. Have students place the lantern and flowers in a dark space. Ask students to describe what happens. Explain that the Sun is providing energy to these items (in the Sun), which helps them move.

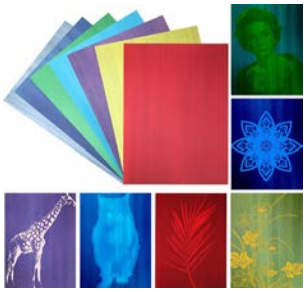
Activity 2: The Sun gives us energy. Students see the transfer of energy by observing the interaction between the Sun and different colors. Take the bottles and balloons outside. Place a white balloon over both an opaque bottle and translucent bottle. Watch as the Sun inflates the balloon on the opaque bottle. Have students touch the opaque and translucent bottles, noticing the temperature difference. Explain that the opaque (black) bottle absorbs more energy from the Sun.

Activity 3: The Sun gives us light. Students see the effects of UV light on solar paper. Take students outside and distribute the solar paper. Ask students to place their paper in a sunny spot and choose an object to place on the paper. Leave the paper in the Sun for at least an hour (no longer than 2 hours). Take the object off the paper and discuss observations. Explain that the Sun's powerful UV rays interact with chemicals in the paper.

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HIDDEN FORCES

Sink or Float

HF.15

II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.A.1 Child observes, investigates, describes, and discusses properties and characteristics of common objects.

Children discover buoyancy and density by making predictions about objects' ability to float and testing predictions in the Water Exploration sensory area. Students can continue testing items from around the classroom in educator-led or student-led ways.

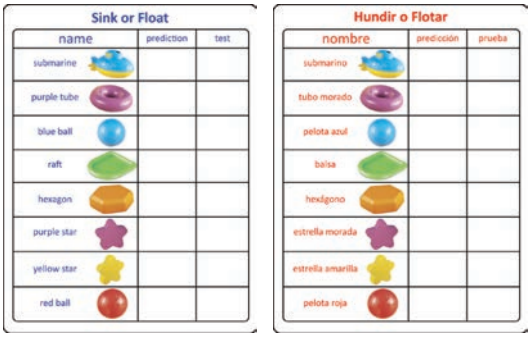
DOING THE ACTIVITY

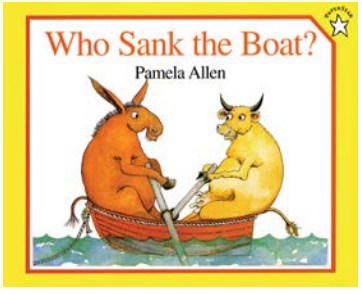
1. Fill the Water Exploration Sink with water. Ask students to make predictions about each object, with questions like, "Will this object sink or float?" and "Why do you think it will sink or float?" Indicate students' predictions on the sink/float prediction chart.
2. Ask students to test each item's ability to float, filling out the test column on the sink/float prediction chart. Facilitate a buoyancy discussion, relating to other things that sink/float (coins, themselves, boats, etc.).

TEACHING STRATEGY

Read books about buoyancy, such as *Who Sank the Boat?* by Pamela Allen, *Things That Float and Things That Don't* by David Adler, and *Flota o se hunde?* by Amy Hansen. Buoyancy is a difficult concept for young children to grasp and books help children build vocabulary and make the concept relatable.

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HIDDEN FORCES

Tornado in a Bottle

HF.16

II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.C.3 Child observes and describes what happens during changes in the earth and sky.

A tornado is a column of air that extends from a thunderstorm to the ground. The windstorm often collects dust and debris as it travels across land. Students can create a water vortex using simple materials in the classroom to observe how motion creates a pathway for air. New vocabulary terms include funnel clouds, warm air, cool air, thunderstorm, and vortex.

DOING THE ACTIVITY

1. Read several books about tornados, waterspouts, and hurricanes from the classroom library, discussing elements of each weather phenomenon (where they form, how they form, and how students can stay safe during each weather phenomenon).
2. Make an observable tornado (vortex) in the classroom. Fill one bottle two thirds full of water and attach the tube connector. Attach the second bottle to the other end of the tube connector. Be sure the tube connector is securely attached. Quickly turn the bottle over, so the bottle with water is on top, and set it vertically on a flat surface. Start moving the tubes in a circle and ask students to make observations (a vortex forms and water spirals into the lower bottle.

TEACHING STRATEGY

Try different variations of the activity. Add oil to the water (oil will rise to the surface of the water since it is less dense) and ask students to make observations. Add several small objects to the bottle and ask students to make observations as you (they) swirl the bottle.

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HIDDEN FORCES

A Rainbow of My Own

HF.17

II.D.3 Child consistently understands (receptive) and uses (expressive) new vocabulary acquired through books, conversations, and play.
VI.A.4 Child observes, investigates, describes, and discusses sources of energy including light, heat, and electricity.

Prisms are a fun way to observe and hypothesize about light! After students listen to the story *A Rainbow of My Own* by Don Freeman, they participate in discussions about the relationship between prisms, rainbows, and light, and discover how different items look when observed through a prism.

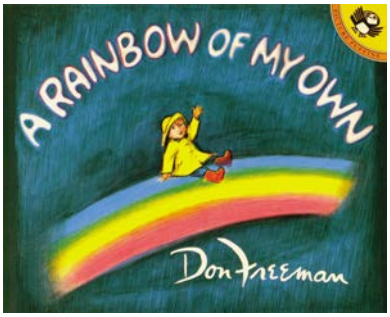
DOING THE ACTIVITY

1. Read the story *A Rainbow of My Own* by Don Freeman. After reading the story, begin a conversation about the science of rainbows by asking the following questions: "What causes rainbows?" and "Where do they go?" Students are not expected to know the answers to these questions but asking critical thinking questions helps them think about possibilities.
2. Allow students to experiment with the prisms and flashlights. Can they create a rainbow? What do they notice about the rainbow they created? Encourage students to place a white piece of paper on the table and use a flashlight to display a rainbow on the paper. They can trace the rainbow with crayons or colored pencils as a friend holds the flashlight.

TEACHING STRATEGIES

- Hang prisms around your classroom, close to a window. Students can go on a rainbow hunt as the prisms bend the sunlight.
- Create prism patterns with patterned colored paper. Draw a pattern on colored paper. Place a prism on the paper and explore how the prism interrupts the pattern.

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HIDDEN FORCES

Weathering and Erosion

HF.18

II.D.1 Child understands (receptive) and uses (expressive) a wide variety of words to label, describe and make connections among objects, people, places, actions, and events.
VI.C.1 Child observes, investigates, describes, and discusses earth materials, and their properties and uses.
VII.C.1 Child identifies and creates common geographic features.

When weathering breaks down the Earth's surface, it forms small pieces of dirt, sand, and rock. This material is moved through erosion and ends up somewhere else. Students see the effects of erosion by making landmasses out of sand and stone and changing the shape and location with moving water.

DOING THE ACTIVITY

1. Ask students the following questions: "Where might you see moving water?," (oceans and rivers) "Where might you see the wind move things?," (the wind moves leaves, trees, and other objects outside) and "How does wind/water change the land around us?" (wind can blow dirt, water can carry dirt as it moves) Tell students that wind/water changing the land is called erosion and erosion happens over long periods of time.
2. Pour sand into the container and ask students to build a structure(s). Ask students to brainstorm how they can move the sand using only water. Have students use the measuring cups/turkey basters to pour water over the sand and observe how the sand moves. Have students build another structure, this time using rocks to protect the structure. Did they notice anything different as they tried to move the sand? How did the rocks impact sand movement?

TEACHING STRATEGIES

- Have students try moving the sand with wind, using a tabletop fan. Do they notice similar observations as the sand moves with wind?
- Provide students with as many images as possible to visualize erosion. Look for landforms close to your region to build context.

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HIDDEN FORCES

Storm Safety

HF.19

I.B.2.b Child uses verbal and nonverbal communication to communicate basic emotions and feelings.
VI.C.3 Child observes and describes what happens during changes in the earth and sky.

Thunderstorms and other severe weather can be scary. It's important that young children feel safe, while also learning the safety procedures that are in place for the school community. Educators can lead discussions about the features of weather and document school/classroom safety features in place during severe weather.

DOING THE ACTIVITY

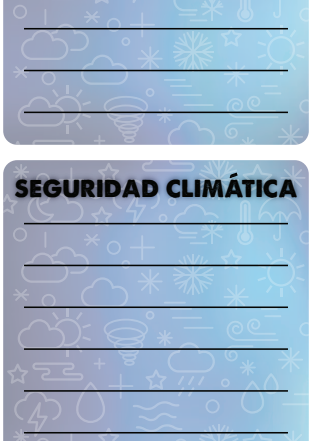
1. Severe weather is a part of our reality. Students see and hear media images of homes lost due to tornados, floods, or other severe weather while some students have been directly affected. It's important that preschool educators acknowledge the uncertainty but reiterate that safety procedures help keep us safe. Review the types of severe weather that students have seen or heard about.
2. Using the weather safety charts, create a collaborative storm safety process for the classroom. Help students determine several simple steps that can help keep them safe in the classroom during severe weather, such as "Stay away from windows" and "Cover your head under a table." Keep the steps simple so they are memorable and easy to follow. Include a brief discussion that includes answering "why" each safety step is important.

TEACHING STRATEGY

Provide opportunities for young children to express weather interests or concerns in their questions, play, or art. Be prepared with fact-based answers.

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HIDDEN FORCES

Weather Station Dramatic Play

HF.20

I.C.4 Child increasingly interacts with peers during cooperative play scenarios that share a common plan and goal.
VI.C.3 Child observes and describes what happens during changes in the earth and sky.
VIII.C.1 Child creates or recreates stories, moods, or experiences through dramatic representations.

A meteorologist is a type of scientist who studies the Earth's weather. They help us prepare for each day's temperature and let us know to expect rain, snow, or Sun. Students can assume the role of meteorologist by exploring relevant items such as thermometers, weather forecast charts, microphones, headphones, and weather-appropriate clothing and accessories.

DOING THE ACTIVITY

Encourage students to tell stories about the weather, using the props. Students can start by telling stories about the current weather and as they become more comfortable, they can make weather predictions. Hang a map of the United States behind the students and explain that they can describe the weather in each area. This activity can be planned in correlation with HF.03.

TEACHING STRATEGY

Encourage students to make pretend play scene materials. For example, ball up pieces of white paper to make a snowstorm, or use cotton balls to have a snowball fight. Students can cut out "raindrops" from blue construction paper and toss them in the air to create rain.

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HIDDEN FORCES

Pinwheels

HF.21

III.A.1 Child engages in story-related pre-reading activities.
VI.C.3 Child observes and describes what happens during changes in the earth and sky.
IX.B.1 Child shows control of tasks that require small-muscle strength and control.

After exploring informational books about wind such as *I Face the Wind* by Vicki Cobb, and *The Wind Blew* by Pat Hutchins, students begin to understand that wind is movement of air (and caused by uneven heating of the Earth). Students experiment with wind by creating pinwheels and paper airplanes.

DOING THE ACTIVITY

1. Read *I Face the Wind* by Vicki Cobb and *The Wind Blew* by Pat Hutchins. After reading the books, facilitate a discussion about wind. Ask students the following questions: "Where have you seen wind?" and "What do you notice about wind?"
2. Make pinwheels with the students. Students can first decorate both sides of the paper template using crayons or colored pencils. Educator can cut out the template and punch holes in all four wings of the pinwheel, as well as the center of the pinwheel. Educator can insert the end closest to the flexible part of the straw into the center of the pinwheel. Lastly, educator can insert each of the four holes on the wings onto the straw, adhering with tape. Using the handheld fan, students can make predictions about the pinwheel's movement in correlation to the fan's wind speed.

TEACHING STRATEGY

Make paper airplanes and compare the affects wind has on each. Does wind affect paper airplanes and pinwheels in the same way?

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HIDDEN FORCES

Falling Rain Dance

HF.22

VII.A.3 Child connects their life to events, time, and routines.
VIII.B.1 Child participates in classroom music activities including playing musical instruments and moving to rhythms.
IX.A.1 Child demonstrates coordination and balance in isolation.

On a rainy day, students can use their senses to describe what they notice about the rain (the rain is falling fast/slow, it feels cold, smells like dirt, etc.). Students move like raindrops using their body and use instruments to recreate the sounds of rain.

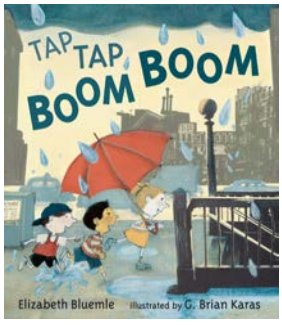
DOING THE ACTIVITY

1. On a rainy day, ask students to notice the rain and the wind. Ask students the following questions: "How does the rain look as it falls?," "How does the rain feel?," and "What makes the leaves move on the trees?" Talk about the rainy-day experience and ask students to move like raindrops. Can they drip slowly? Can they drip fast? Can they move like a leaf blowing in the wind?
2. Ask several students to play instruments while other students move, encouraging them to change the tempo often, fast to slow and back again. Give several more students scarves and ask them to move the scarves with the music. Switch up roles to give each student an opportunity to play an instrument, move with the music, and move scarves with the music.

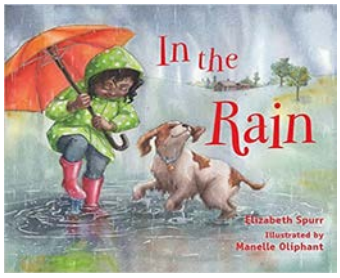
TEACHING STRATEGY

Read books about rain sounds like *Tap Tap Boom Boom* by Elizabeth Bluemle and *Rain Feet* by Angela Johnson. You can have discussions about the cultural significance of rain dances (some cultures dance for rain during periods of drought) and the celebrations when it rains (some cultures celebrate rain as rain makes it possible for plants and crops to grow).

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HIDDEN FORCES

Earthquake Proof Structures

HF.23

VI.A.1 Child observes, investigates, describes, and discusses properties and characteristics of common objects.
IX.B.1 Child shows control of tasks that require small-muscle strength and control.

After reading *Jump into Science: Earthquakes* by Ellen Prager, students consider the design challenges engineers face when designing, inventing, and building. Earthquakes can cause walls to crack, foundations to move, and even whole buildings to crumble! Students apply new information from the story to creating earthquake-proof structures using dowels and clay. Students test their structure during an "earthquake," redesign, and try again.

DOING THE ACTIVITY

1. Read or picture walk (depending on student's interest level) *Jump into Science: Earthquakes* by Ellen Prager, discussing cause and effect of earthquakes throughout. After the story, review features of strong structures from the story. Model building a strong structure using the wooden dowels and clay. Encourage students to build an individual or small group structure using the wooden dowels and clay.
2. Place the large marbles into the container. After students have designed their individual or group structure, ask them to test the durability of their structure in the marble container. Ask students to place the structure on top of the marbles and shake the container. What do students notice about their structure as they shake the container? Ask students to redesign and retest their structure, taking into account new findings.

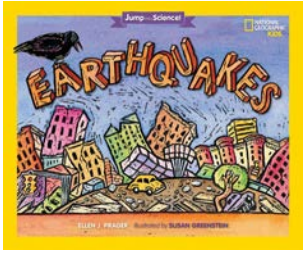
TEACHING STRATEGY

Try the activity again using other types of building materials like Legos, blocks, and toothpicks. Ask students what they notice about the different building materials as they test durability.

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HIDDEN FORCES

Play-Based Exploration with an AR Sandbox

HF.24

VII.C.1 Child identifies and creates common geographic features.
IX.B.1. Child shows control of tasks that require small-muscle strength and control.
X.A.2. Child uses and names a variety of digital tools that support and enhance learning.

An augmented reality (AR) sandbox is a 3D, interactive educational tool to help understand mapping, topography, natural hazards, and more. A mounted computer projector and motion- sensing device detects the distance to the kinetic sand and a visualization is cast to the sand from a projector. Students can freely interact with the sand and make observations while the educator guides conversation around water, weather, landforms, and maps.

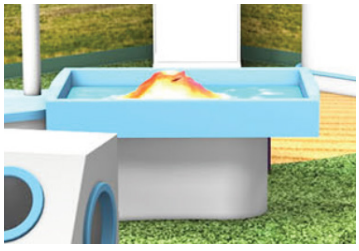
DOING THE ACTIVITY

1. Demonstrate how the AR sandbox visualization works. Cover the projector lens so students can see that the sand is one color. Unblock the project lens to show students how the colors and contour lines return to the sand surface.
2. Show students the topographic map and landform examples. Ask students what they notice about the maps and landforms (height, colors, etc.). Provide opportunities for students to explore the AR sandbox freely. Ask students what they notice about the sandbox and the visualizations. Ask students the following questions: “How do the colors and lines change as you build features in the sand?” and “What do you think the lines tell us?”

TEACHING STRATEGY

- Determine a set of rules before acclimating students to the AR sandbox. Simple rules like, “Sand stays in the box.” and “Wash your hands before and after using the AR sandbox.” keeps the students safe and minimizes issues with the AR sandbox.
- Compare the sandbox visualization to the real topographic maps. Ask students to build landforms in the sandbox which closely resemble the maps.

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HIDDEN FORCES

Application Explorations

HF.25

I.B.1.b Child takes care of and manages classroom materials.
X.A.1 Child opens and navigates through digital learning applications and programs.

With the support of adults, young children can use technology applications actively to improve language skills and prepare for school readiness. Two applications to explore in **Hidden Forces** include: Weather by Tinybop and Sid's Science Fair/PBS KIDS.

DOING THE ACTIVITY

Introduce the applications Weather by Tinybop and Sid's Science Fair/PBS KIDS, modeling the appropriate use. Provide time for students to explore the applications, asking probing questions to help students think critically about the content they are interacting with. Starter questions like, "What do you think if ..." and "Can you compare this with ..." provide students with opportunities to dig deeper.

TEACHING STRATEGY

Technology and media can support early learning and relationship building if used intentionally. Educators learn about the challenges and opportunities with integration of technology to best support their students. Ask yourself the following questions:

- Is the media age appropriate, individually appropriate, and culturally and linguistically appropriate?
- Is the media active, hands-on, and empowering?
- Is assistive technology available to children with special needs?

IN THIS KIT



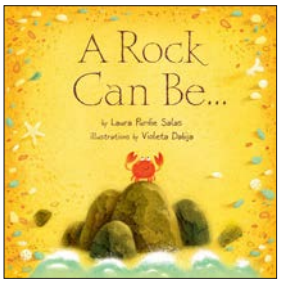
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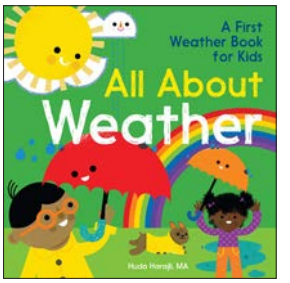


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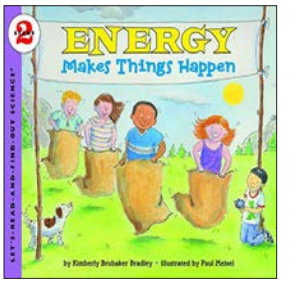
A Rock Can Be...



All About Weather



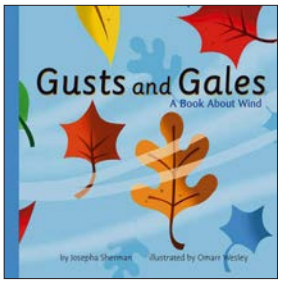
Empujar y Jalar



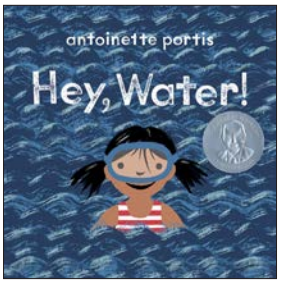
Energy Makes Things Happen



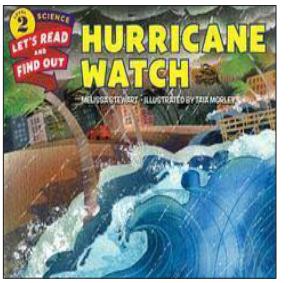
Física Cuántica



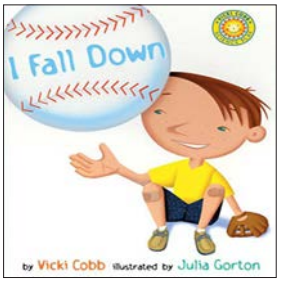
Gusts and Gales: A Book About Wind



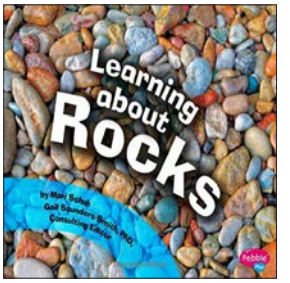
Hey, Water!



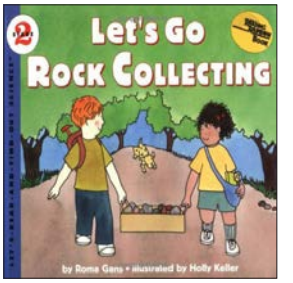
Hurricane Watch



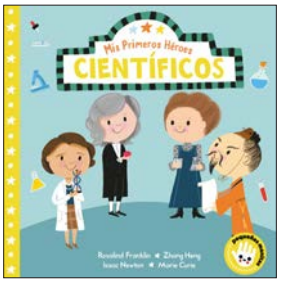
I Fall Down



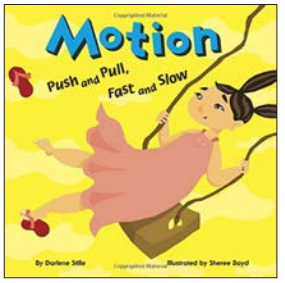
Learning About Rocks



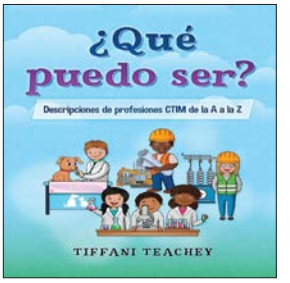
Let's Go Rock Collecting



Mis Primeros Heroes: Científicos



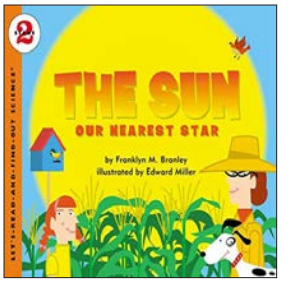
Motion: Push and Pull, Fast and Slow



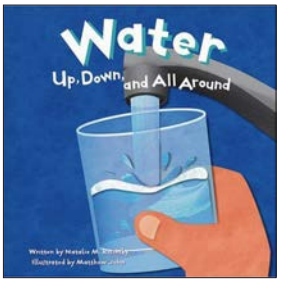
Qué Puedo Ser?



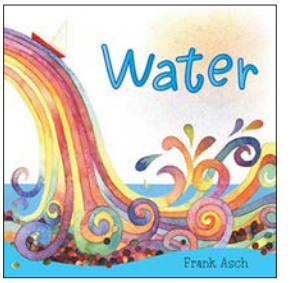
Sólido o Líquido?



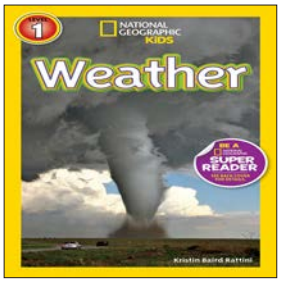
The Sun: Our Nearest star



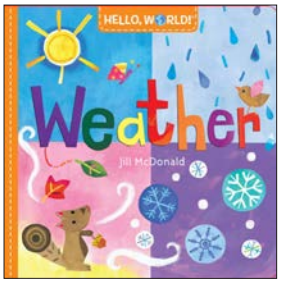
Water: Up, Down, and All Around



Water



Weather

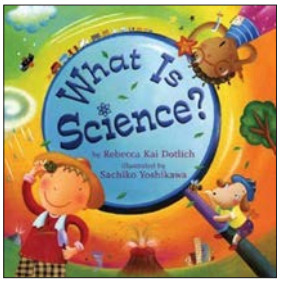


Weather

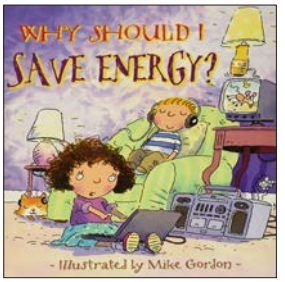
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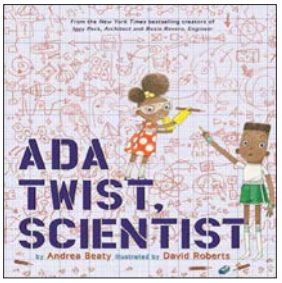


What is Science?



Why Should I Save Energy?

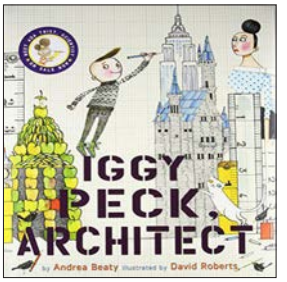
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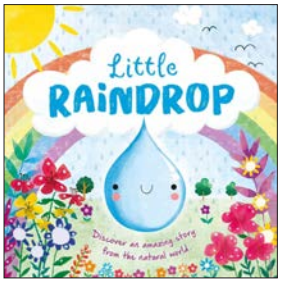
Ada Twist, Scientist



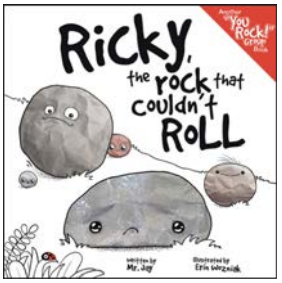
Elephant Wind



Iggy Peck, Architect



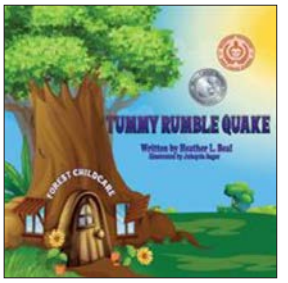
The Little Raindrop



Ricky, the Rock That Couldn't Roll



Rosie Revere, Engineer



Tummy, Rumble, Quake

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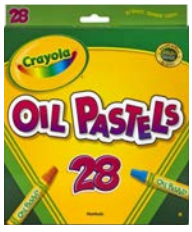












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ASSESSMENT TOOLS



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HIDDEN FORCES

Activity Rubric Scale

Student:_____ Class:_____

Date:_____

Activity or Skill:_____

_____

4 **Achieved-** The student frequently demonstrates the ability to apply the knowledge or perform the skill accurately in several environments without support.

3 **Progressing-** The student demonstrates understanding or use of the knowledge or skill in one or more environments with some support.

2 **Emerging-** The student is beginning to show understanding or use of the knowledge or skill in one environment with extensive support. The student is unable to demonstrate the skill without assistance.

1 **Introduced-** The student has been exposed to the knowledge or skill as part of the educational curriculum but demonstrates no measurable understanding of the knowledge or skill at this time.

Notes:_____

_____

_____

_____

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HIDDEN FORCES

Anecdotal Note Observation Form

Student:_____ Date:_____ Time:_____

Objective for this observation:

List of others in the context:

Context:

Notes:

Preliminary thoughts regarding observation:

Educator's Signature:_____

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HIDDEN FORCES

General Observations

DATE	TIME	SKILL	OBSERVATIONS

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HIDDEN FORCES

Picture Portfolio

Student:_____

Date:_____

Learning Center:_____

(Include photo or sample of student's work)

Notes:_____

_____

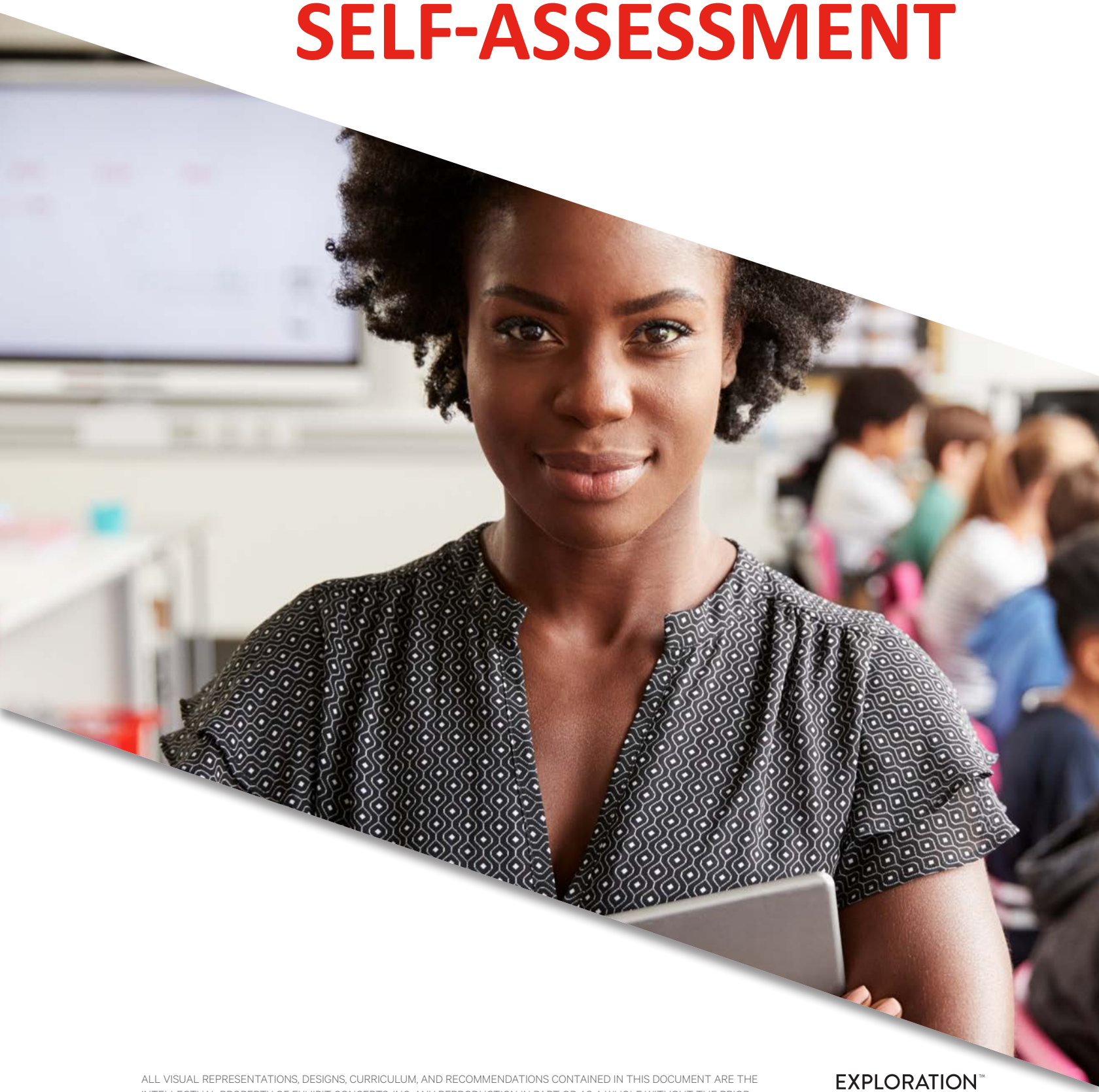
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TEACHER SELF-ASSESSMENT



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HIDDEN FORCES

Self-Assessment of Benchmarks of Experiential Education Implementation

Name:_____ School:_____ Date:_____

WHEN I PLAN...	LACKING	EMERGING	PRACTICING
I plan activities and experiences that follow the interests of my students.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I consider multiple learning modalities.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I consider new and novel items to engage students.	☐☐☐☐	☐☐☐☐	☐☐☐☐
WHEN I TEACH...	**LACKING**	**EMERGING**	**PRACTICING**
I give students choices.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I ask open-ended questions that help students think creatively and critically.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I observe my students.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I identify and respond to the existing knowledge and skills each student brings to an activity or experience.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I help students make connections between existing and new knowledge.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I use developmentally appropriate concepts and vocabulary to introduce new content.	☐☐☐☐	☐☐☐☐	☐☐☐☐
I individually reflect on how to continuously improve my instruction.	☐☐☐☐	☐☐☐☐	☐☐☐☐
IN MY CLASSROOM...	**LACKING**	**EMERGING**	**PRACTICING**
My students are active in the learning process by:			
• choosing items to engage with and participating in activities that interest them.	☐☐☐☐	☐☐☐☐	☐☐☐☐
• working through problems and activities in real-life situations.	☐☐☐☐	☐☐☐☐	☐☐☐☐
• collaborating with peers, as developmentally appropriate.	☐☐☐☐	☐☐☐☐	☐☐☐☐
• initiating their own investigations.	☐☐☐☐	☐☐☐☐	☐☐☐☐
• asking questions.	☐☐☐☐	☐☐☐☐	☐☐☐☐
• making observations.	☐☐☐☐	☐☐☐☐	☐☐☐☐
My students recognize and use developmentally appropriate vocabulary and concepts.	☐☐☐☐	☐☐☐☐	☐☐☐☐
My students are intrinsically motivated.	☐☐☐☐	☐☐☐☐	☐☐☐☐

My definition of experiential education is:

I'd like to know more about the following in regard to experiential education:

My strengths:

Areas I'd like to improve upon:

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