



Live Interactive Virtual Explorations

Science Explorers Passport Program



Astronomy



Biology



Earth Science



Oceanography

HPWREN LIVE

Live Interactive Virtual Explorations

HPWREN LIVE is a pilot project within the National Science Foundation's High Performance Wireless Research and Education Network that focuses on bringing Live Interactive Virtual Explorations to students of all ages.

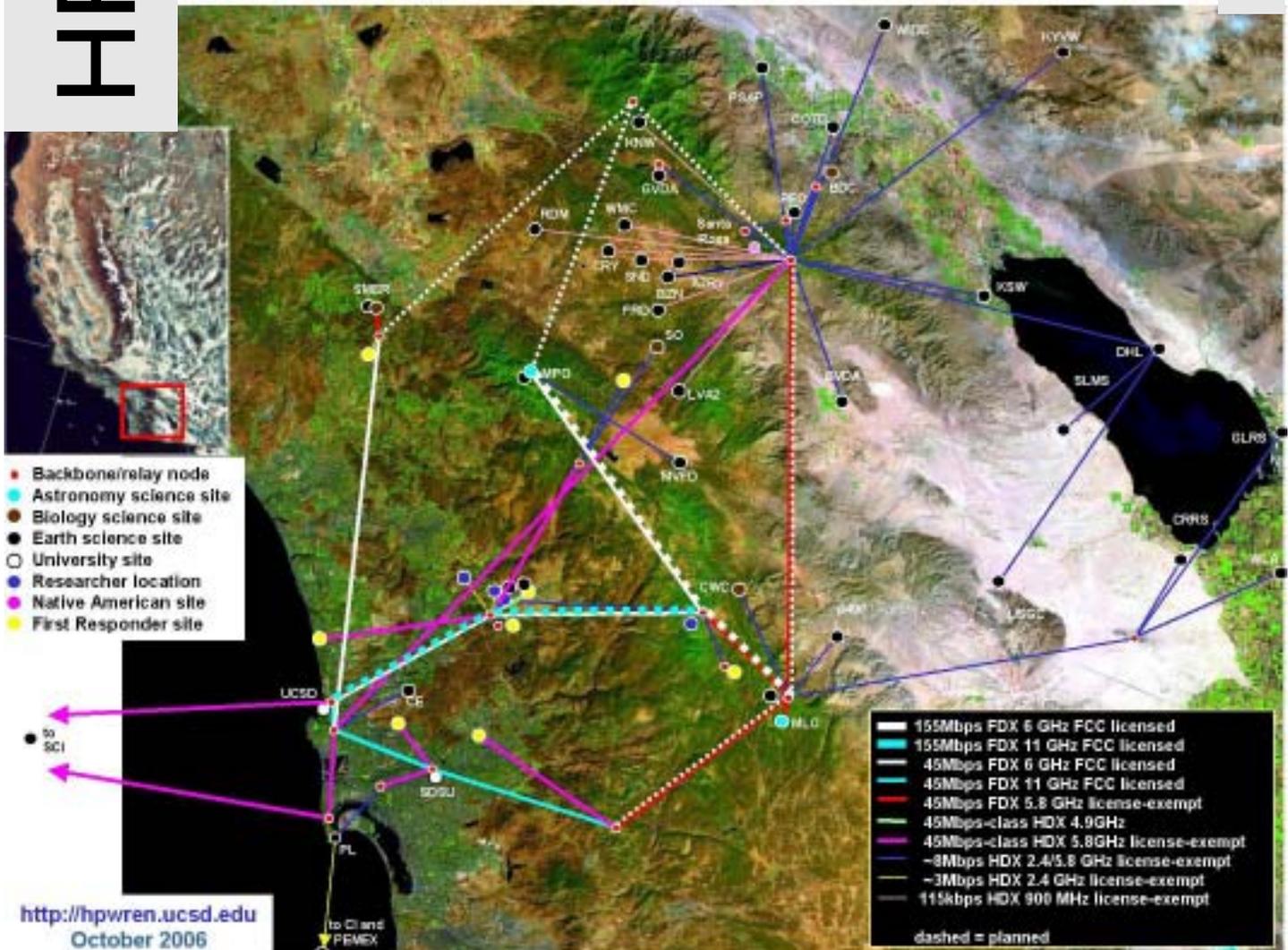
The primary objectives of HPWREN LIVE are twofold:

- 1) exploration and understanding of hard-to-reach science sites and
- 2) preparation for students going on fieldtrips to such sites.

HPWREN LIVE events require a classroom or conference room with the following:

- 1) Internet connection,
- 2) computer,
- 3) microphone,
- 4) web camera, and
- 5) speakers.

LIVE is a pilot project for the HPWREN team and we are currently experimenting with a vast array of technology and set-ups. If you have lessons learned that you would like to share, we'd love to hear from you!



Grab Your Science Explorer Passport...

...and get ready for your HPWREN LIVE adventure!

Within this binder you will find materials for teachers and parents as well as students.

The activities have either been downloaded from copyright-free education websites or created by HPWREN staff and collaborators.

These materials are not to be reproduced for commercial use (e.g., don't sell them!), but please make as many copies as you need for your children - whether you be a teacher, a parent, or both.

This particular binder is aimed at children enrolled in Pre-K through Grade 2.

Teacher/Parent Guideline pages are designed with a gray bar at the top.

Check out <http://hpwren.ucsd.edu/LIVE/> for supplemental materials.

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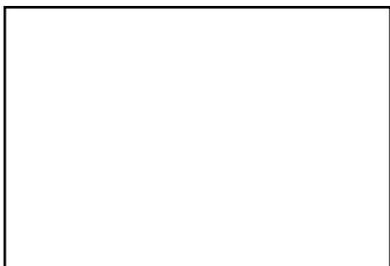
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Parent/Teacher Guidelines
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HPWREN LIVE Science Explorer Passport



My Exploration Place: _____

My Exploration Date: _____

My Exploration Highlight: _____



My Exploration Place: _____

My Exploration Date: _____

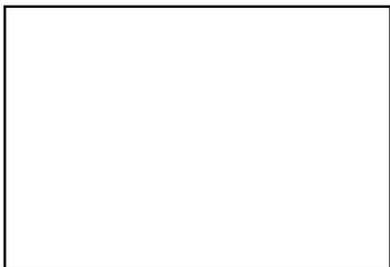
My Exploration Highlight: _____



My Exploration Place: _____

My Exploration Date: _____

My Exploration Highlight: _____



My Exploration Place: _____

My Exploration Date: _____

My Exploration Highlight: _____

Name: _____

Parent/Teacher Guidelines

HPWREN LIVE

HPWREN-LIVE Science Explorer Passport

The Science Explorer Passport allows students to document and then review HPWREN LIVE activities. Here are some suggestions for helping your students complete their passports:

1. Fill in the Exploration Place, Exploration Date, and Highlight - helping the child think about what they most enjoyed from the activity as the highlight. Maybe it was looking through the telescopes at the observatory or perhaps it was completing the activity that went along with the LIVE event.
2. The student can either draw their own picture of the Exploration Place or they can print out, cut, and paste a photograph from the HPWREN website. Printer-ready photographs sized for the passports are available at <http://hpwren.ucsd.edu/LIVE/>.

Assist your students in finding the photographs on the HPWREN LIVE website, printing them, cutting them, and pasting them onto their passports as they relive their “travels” along their journey of HPWREN science sites.

3. We suggest that the children keep their HPWREN LIVE Science Explorer Passport in a folder especially designated for these activities. The HPWREN LIVE website (<http://hpwren.ucsd.edu/LIVE/> website has photographs that you can print, cut out, and paste onto their folders.

As a side note, if you have photographs of your students that you would like to share with the HPWREN LIVE staff, please feel free to submit those to us! We love seeing students enjoying HPWREN LIVE experiences!

NOTES:

HPWREN LIVE Science Explorer Passport



My Exploration Place: Santa Margarita Eco Rese

My Exploration Date: April 29, 2007

My Exploration Highlight: looking at the
water sensor in the river



My Exploration Place: California Wolf Center

My Exploration Date: June 15, 2007

My Exploration Highlight: watching the
wolves play with each other



My Exploration Place: Palomar Observatory

My Exploration Date: August 20, 2007

My Exploration Highlight: seeing the stars
through the big telescope



My Exploration Place: Cabrillo Tidepools

My Exploration Date: December 22, 2007

My Exploration Highlight: watching the ROV
in the pools of water

Name: Sally Mae Student

Parent/Teacher Guidelines

HPWREN-LIVE Astronomy

The HPWREN LIVE Science Explorer Program for the Early Childhood age group is divided into four areas of study: Astronomy, Biology, Earth Science, and Oceanography. For each area of study, we include a suggested schedule of activities, however, your suggestions for improvement are always welcome.

6:00pm:

Welcome and formal introductions include opening the program with a subject and age-appropriate song such as Twinkle Twinkle Little Star as well as the reading of a simple picture book such as Goodnight Moon. A coloring/craft activity takes place for the children ("Science Explorer: Astronaut Puppet") while the adults listen to an explanation of the LIVE activity that will take place between the classroom and the Palomar Observatory.

6:15pm:

Scott Kardel begins our exploration of the Palomar Observatory - explaining what an astronomer does and the use of telescopes at the observatory. A peek at the night sky through one of the Palomar telescopes will conclude the "tour". Slides of presentation to accompany LIVE activity are found at <http://www.astro.caltech.edu/palomar/temp/palapolomartalk.ppt>.

6:30pm:

Scott will conduct a brief Question and Answer session. Here are a few suggested questions to start the Q&As:

1. What exactly is a star?
2. How far away are stars from us?
3. How many planets are there?
4. Which planet is closest to Earth?

(as time permits for these questions - just to get the ball rolling until people feel comfortable asking their own questions)

6:45pm

More Q&A if people are still interested or move on to 7:00pm section

7:00pm

Distribute evaluation sheets for adults and the "Science Explorer: Star Show" sheets for the children - help the kids write their names on the "certificates".

7:15pm

Ask the children if they would like to see the stars outside before heading home for bed. Take them all outside and give them turns on the telescopes so that they can see the night sky up close.

7:15pm-7:30pm

Goodbyes

HPWREN LIVE Science Explorer Astronaut Puppet

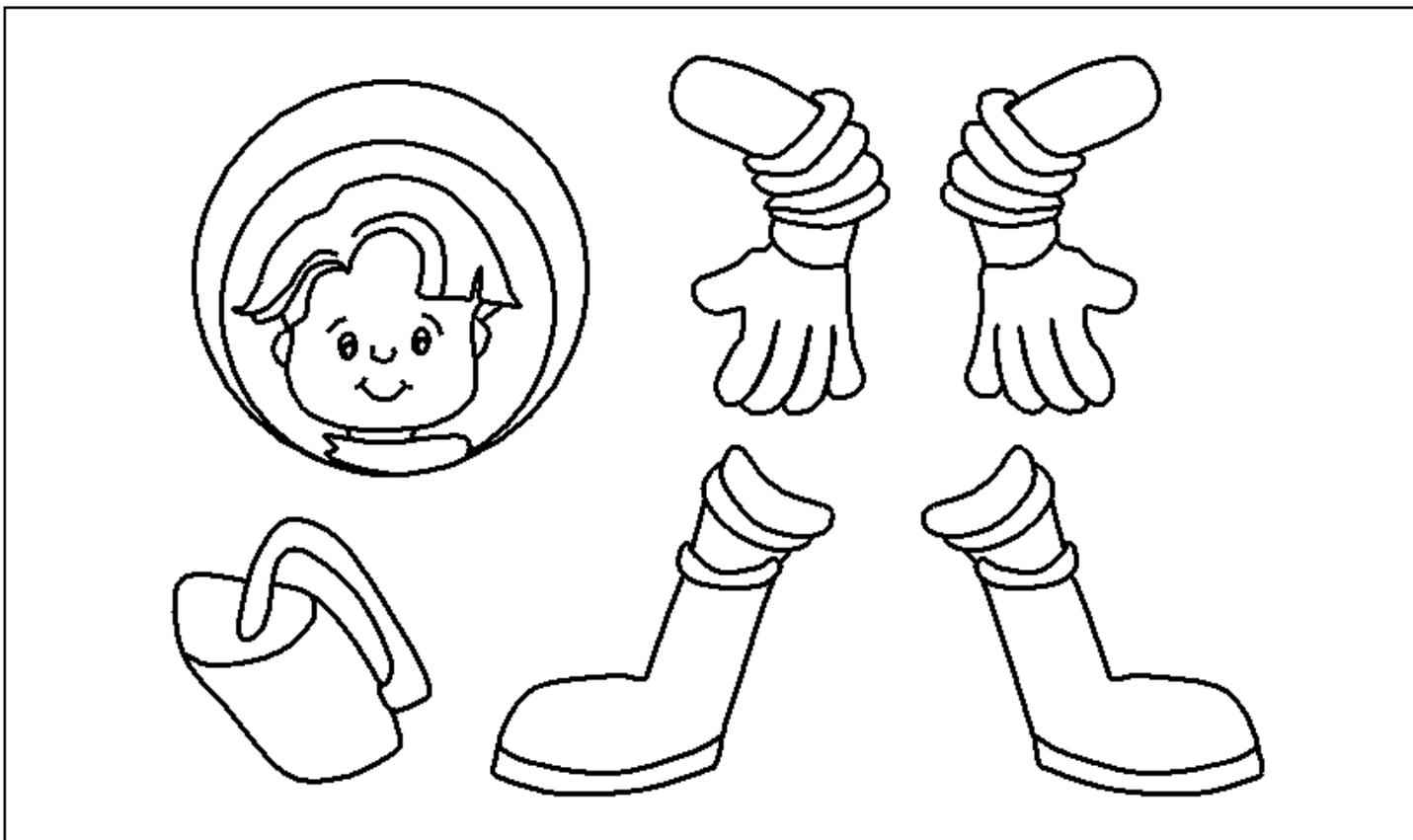


Items Needed:

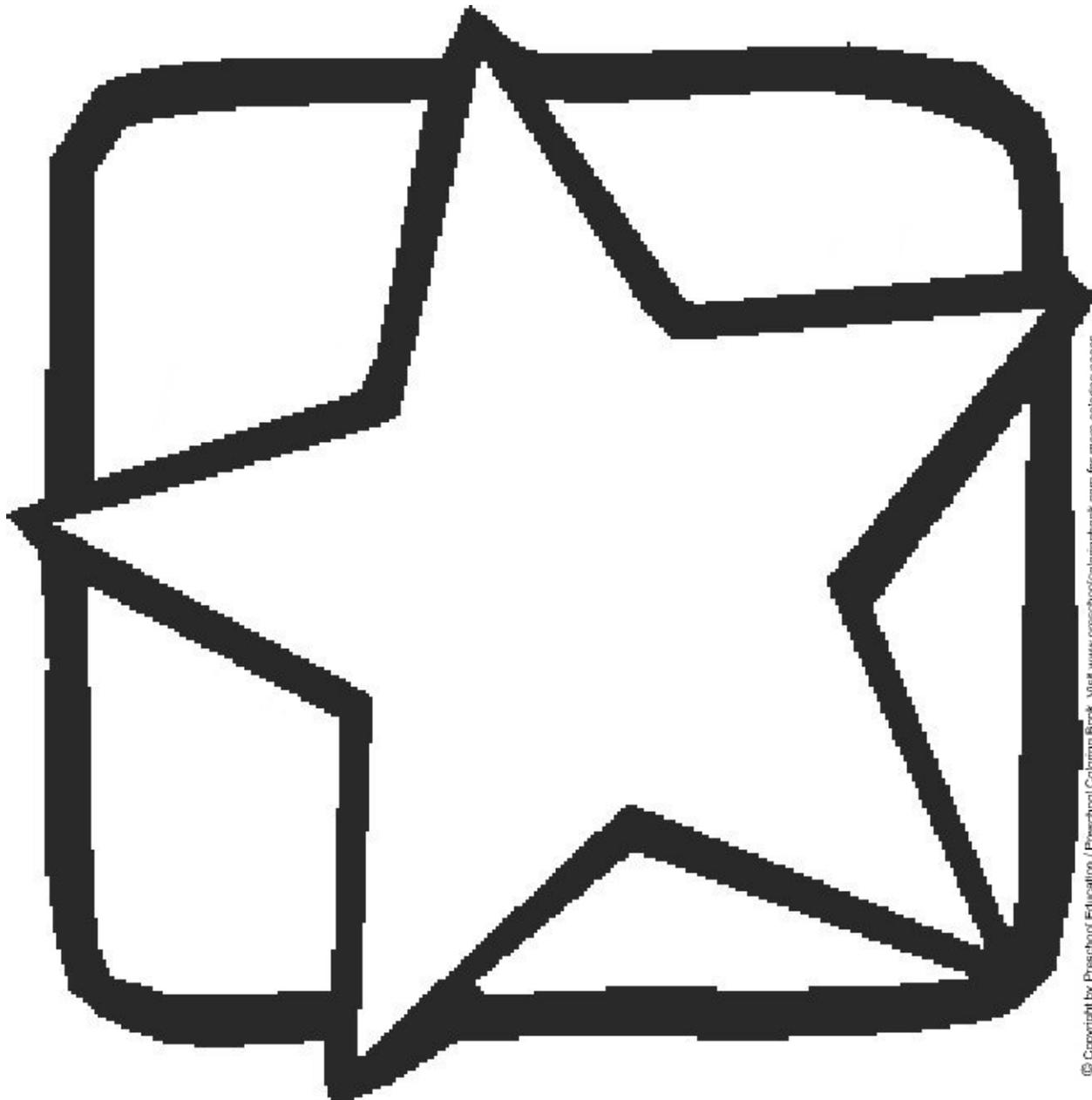
toilet paper roll
aluminum foil
crayons
scissors
tape or gluestick

Instructions:

1. Cover toilet paper roll with aluminum foil.
2. Color the astronaut head, arms, legs, and satchel.
3. Cut out the colored pieces and then tape or glue them onto the toilet paper roll covered in aluminum foil.



HPWREN LIVE Science Explorer Star Show

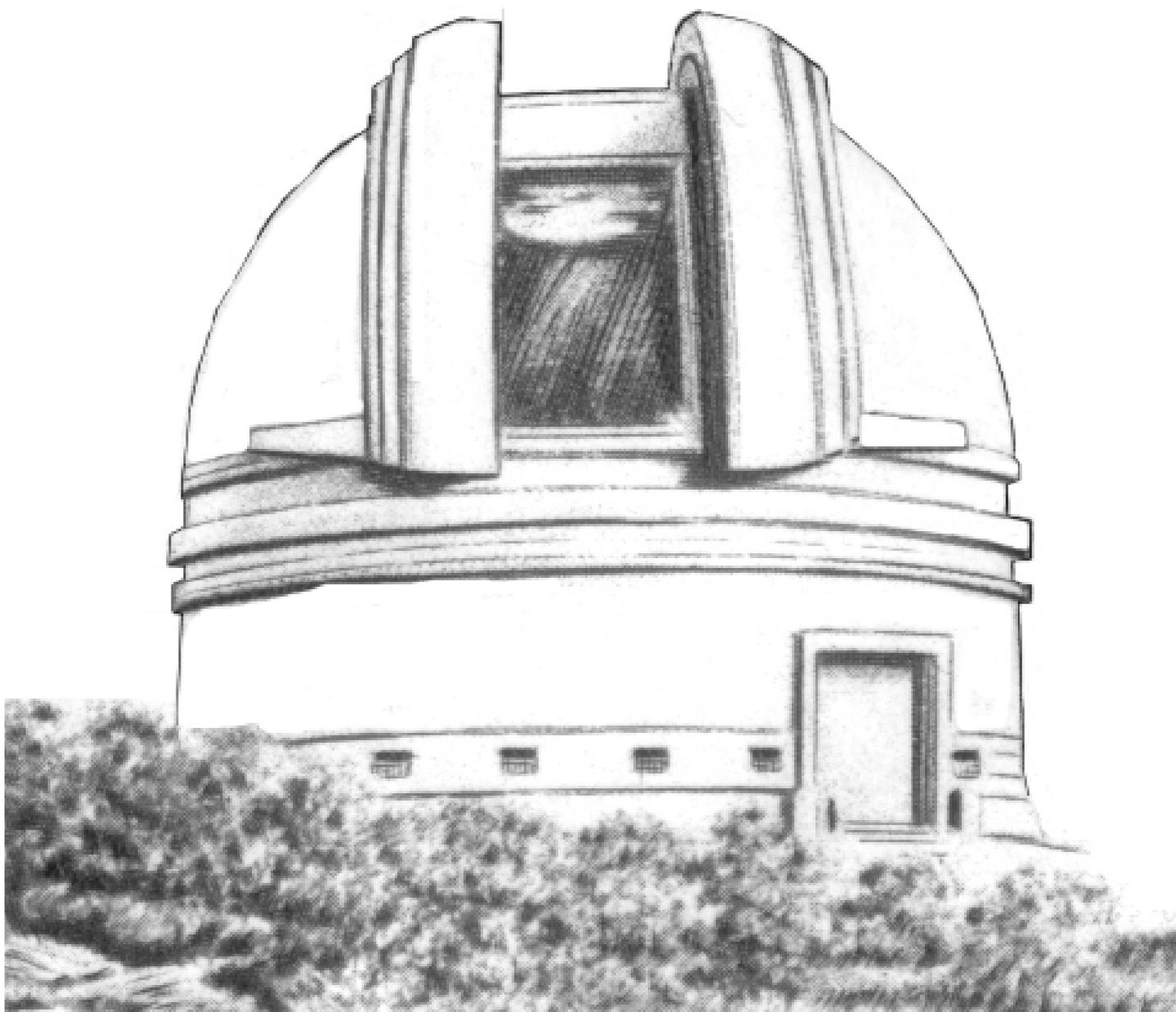


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This certifies that

is a SUPER STAR!

HPWREN LIVE Palomar Observatory Coloring Page



Parent/Teacher Guidelines

HPWREN-LIVE Astronomy Resources

This list is available in a “clickable” format at <http://hpwren.ucsd.edu/LIVE/astronomy/>.

Observatories and Science Centers:

Palomar Observatory (Palomar Mountain - San Diego County)
<http://www.astro.caltech.edu/palomar/>

Mount Laguna Observatory (Mount Laguna - San Diego County)
<http://mintaka.sdsu.edu/>

Reuben H Fleet Science Center Astronomy Gallery (Balboa Park - San Diego)
<http://www.rhfleet.org/astronomy.html>

California Science Center's Air and Space Gallery (Los Angeles)
<http://www.californiasciencecenter.org/Exhibits/AirAndSpace/AirAndSpace.php>

Early Childhood Astronomy Curriculum Ideas:

What is in Space? Talk about stars, comets, Earth, moon, and etc
<http://www.first-school.ws/activities/onlinestory/science/space1.htm>

Planets Facts and More
<http://kidzone.ws/planets/index.htm>

Explore the Stars
<http://www.sipe.com/explore/>

On-line Telescope Store
<http://www.opticsplanet.net/tasco-700x60-novice.html>

Amazing Space
<http://amazing-space.stsci.edu/eds/>

Make Your Own Telescope
http://hpwren.ucsd.edu/Monika/20070131_DistEdEx/index.html

Science for Kids
<http://www.eurekalert.org/kidsnews/>

Out-of-this-World Songs:

Twinkle Twinkle Little Star, which was composed by Wolfgang Amadeus Mozart
<http://www.8notes.com/scores/2909.asp?ftype=midi>

Music and Songs: Space
<http://www.preschooleducation.com/sspace.shtml>

Coloring Sheets:

Planets Coloring Sheet
http://www.sunshine.co.nz/nz/kia/actshts/22/space_a.html

Little Star's Wish (with Dora the Explorer)
http://www.nickjr.com/playtime/shows/dora/stories/dora_littlestarswish.jhtml

Star Catching Story and Coloring Book (with Dora the Explorer)
http://www.nickjr.com/parenting/activity_finder/printables/dora/art_and_coloring/doras_star_catching_storybook.jhtml

Collect a Star Coloring Book (with Dora the Explorer)
http://www.nickjr.com/parenting/activity_finder/printables/dora/art_and_coloring/doras_collectastar_book.jhtml

Parent/Teacher Guidelines

HPWREN LIVE

**HPWREN-LIVE Astronomy
Notes**

Parent/Teacher Guidelines

HPWREN LIVE

HPWREN-LIVE Earth Science (Water)

The HPWREN LIVE Science Explorer Program for the Early Childhood age group is divided into four areas of study: Astronomy, Biology, Earth Science, and Oceanography. For each area of study, we include a suggested schedule of activities, however, your suggestions for improvement are always welcome.

9am:

Welcome and formal introductions include opening the program with a subject and age-appropriate song such as Itsy Bitsy Spider as well as the reading of a simple picture book that goes along with the song. A coloring/craft activity takes place for the children ("Science Explorer: Water Cycle") while the adults listen to an explanation of the LIVE activity that will take place between the classroom and the Santa Margarita Ecological Reserve.

9:30am:

Pablo Bryant begins our exploration of the Santa Margarita Ecological Reserve - explaining what types of plants and animals live within the reserve and its river. A peek at the river's temperature via the underwater sensor will let the children see how *cold* the river water is compared to the air temperature.

10am:

Pablo will conduct a brief Question and Answer session.
Here are a few suggested questions to start the Q&As:

1. What types of ducks are there?
2. Do you have a lot of spiders?
3. Do you have coyotes there?
4. What types of flowers are there?

(as time permits for these questions - just to get the ball rolling until people feel comfortable asking their own questions)

10:30am

More Q&A if people are still interested or move on to 11am section

11am

Distribute evaluation sheets for adults and a coloring sheet for the children.

11:15am

Goodbyes

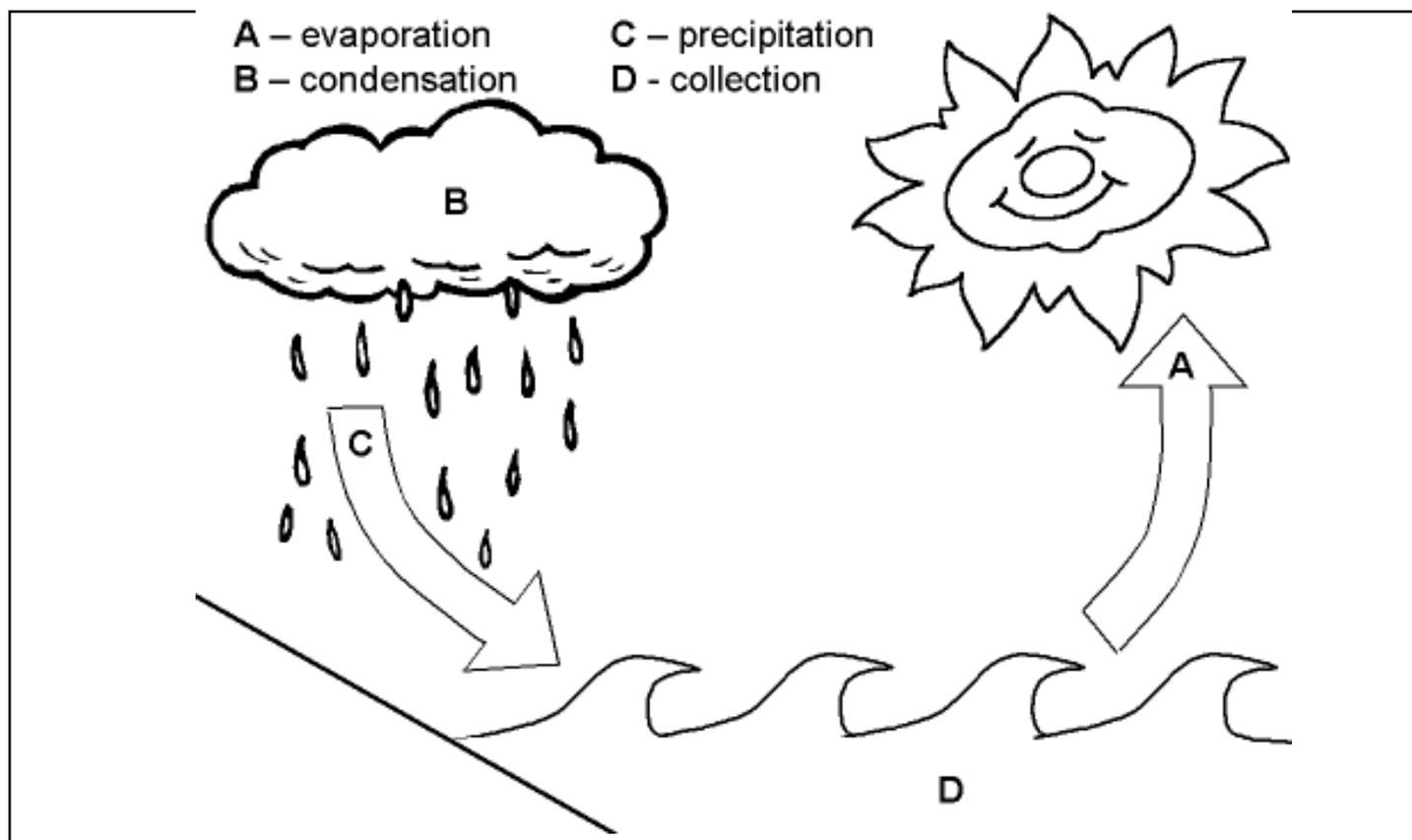
HPWREN LIVE Science Explorer Water Cycle

Items Needed:

one cotton ball for each child
flat pans/containers filled with about 1/2 inch of cold water

Instructions:

1. Give each child a cotton ball to hold. Tell them to pretend that they are holding a cloud.
2. Ask them how does the cloud feel: heavy or light, soft or hard.
3. Instruct the children to place the "cloud" (cotton ball) gently over the cold water. Explain that water that has evaporated has traveled up to the cloud and it is a lot colder up in the sky, so the vapor turns into water, and it is filling up the cloud. Ask: Can you see the "cloud" (cotton ball) filling up with the water.
4. Ask the children to gently pick up the "cloud" (cotton ball) from the pan. Ask: How does the "cloud" feel now? Light or heavy. Warm or cold? What is happening with the water? Yes, the water is dripping from the "cloud". Why? The cloud cannot hold all that water - it is too, too, heavy. What do we call when water falls from the clouds because they are too heavy with water? Yes, you are right, rain! It is raining! And what happens to the water? Yes, it is coming right back into the pan, and the pan could be a stream, river, ocean or the ground.



W

w



water

HPWREN LIVE Water Cycle Coloring Page



When water falls back to earth as precipitation, it may fall back in the oceans, lakes or rivers or it may end up on land. When it ends up on land, it will either soak into the earth and become part of the “ground water” that plants and animals use to drink or it may run over the soil and collect in the oceans, lakes or rivers where the cycle starts all over again.

Parent/Teacher Guidelines

HPWREN LIVE

HPWREN-LIVE Tidepools

The HPWREN LIVE Science Explorer Program for the Early Childhood age group is divided into four areas of study: Astronomy, Biology, Earth Science, and Oceanography. For each area of study, we include a suggested schedule of activities, however, your suggestions for improvement are always welcome.

3pm:

Welcome and formal introductions include opening the program with the reading of an age appropriate book. A hands-on activity takes place for the children (“Science Explorer: Tidepools”) while the adults listen to an explanation of the LIVE activity that will take place between the classroom and the Cabrillo National Monument tidepool area in Point Loma.

3:15pm:

Geologist Norrie Robbins gives a brief explanation of the sandstone cliffs found along the Point Loma coast and just above the tidepool area.

3:30pm:

Cabrillo National Monument Park Ranger gives the children a “tour” of the tidepool area and answers questions. Here are a few suggested questions to start the Q&As:

1. What is the temperature of the water?
2. Where do the animals go when the tide comes in?
3. Have you seen an octopus in the tidepools there?
4. Is it okay to take tidepool animals home?

(as time permits for these questions - just to get the ball rolling until people feel comfortable asking their own questions)

4pm

Distribute evaluation sheets for adults and a coloring sheet for the children.

4:15pm

Goodbyes

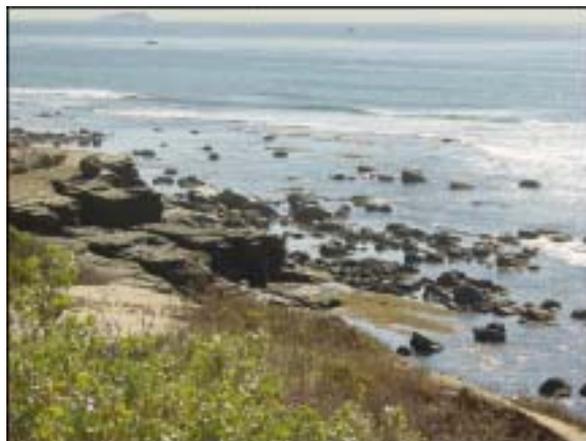
HPWREN LIVE Science Explorer Tidepools

Tides

The water in the ocean is constantly moving. Tides are caused by the force of gravity from the moon and the sun pulling on the ocean waters of the earth. When water moves up onto the beach we call it high tide and when it goes back down, we call it low tide. There are usually two high and two low tides each day.

What's a Tide Pool?

When the high tide comes it brings water, plants, and animals with it. When the tide takes the water back out to the ocean (at low tide), some water gets trapped in low spots in rocks or sand on the beach. The trapped water forms a little pool called a tide pool that becomes a home for many ocean creatures and plants. Shores that have large rocks have the most tide pools, but sandy beaches sometimes have them too.



Some animals that live in tide pools are crabs, clams, mussels, barnacles, snails, urchins, anemones (say: uh-NEM-uh-nee-z), nudibranchs (say: NEW-dih-bronks), starfish (or seastars), and sea cucumbers. Occasionally, small fish or an octopus might find their way to a tide pool and plants such as algae, seaweed, and kelp also grow there.

Surviving in a Tide Pool

A tide pool can be a very dangerous place to live. At high tide, waves come crashing onto the shore with very powerful force. The waves cover the pool with water and bring fresh seawater and more plants and animals for food, but then the tide goes out again (at low tide) and most of the water in the pool goes out with it. Then the sun beats down on the pool and starts to

heat things up. Also, shore birds, like seagulls, like to eat many of the animals that live in tide pools. Introduce the terms prey and predator to your kids. The tide pool animals are prey to birds and the birds are predators of the smaller animals. There are also prey and predators within the tide pool.

So how do all of those creatures survive the many dangers of the tide pools they live in? Most animals have a way to defend themselves built into their bodies. Below are some examples; see if you can think of others.





Hide-n-Seek

One way to stay alive in a tide pool is to keep from being seen! Some animals, like an octopus, can change the color of their skin to blend in with their surroundings. This is called camouflage. A funny looking type of crab, called the decorator crab, attaches anemones, corals, and other things to its shell to disguise itself! (These crabs usually live in coral reefs, but can also be found in tide pools.) Other animals hide by burying themselves in the sand. Crabs often bury themselves so that only their eyes stick up – that way they can see their predators, but their predators can't see them!

Hard as a Rock

Animals that live high on rocks, like barnacles and limpets, have very hard outer shells (called exoskeletons) that protect them from becoming dinner for hungry seagulls! They also store water and food inside their shells so they can stay alive even when they are not covered by water. Crabs also have exoskeletons that act like armor to protect their soft bodies. Snails and hermit crabs carry their protection on their backs, just like turtles. When things start looking dangerous, they can just pull into their shells for safety.

Hang On

What happens when the harsh waves from the incoming tide beat down on the animals? Don't they get washed away? Barnacles,



anemones, and starfish all have special sticky suction cup-type feet that they use to attach themselves to solid rocks so they won't be washed away. In fact, once they stick to something, it is almost impossible to move them until they release themselves!

Fabulous Fact

Anemones are covered with sticky tentacles that they use to catch their food. Each tentacle can sting any animal it touches. The sting paralyzes the animal so it can't move or defend itself and the anemone can eat it.

Sometimes anemones are called flowers of the sea because they are so colorful. Even

though they look like plants, they are actually animals. They have a stomach and a mouth, but no eyes or even a head. Some anemones can grow up to two feet across and live for up to 80 years!



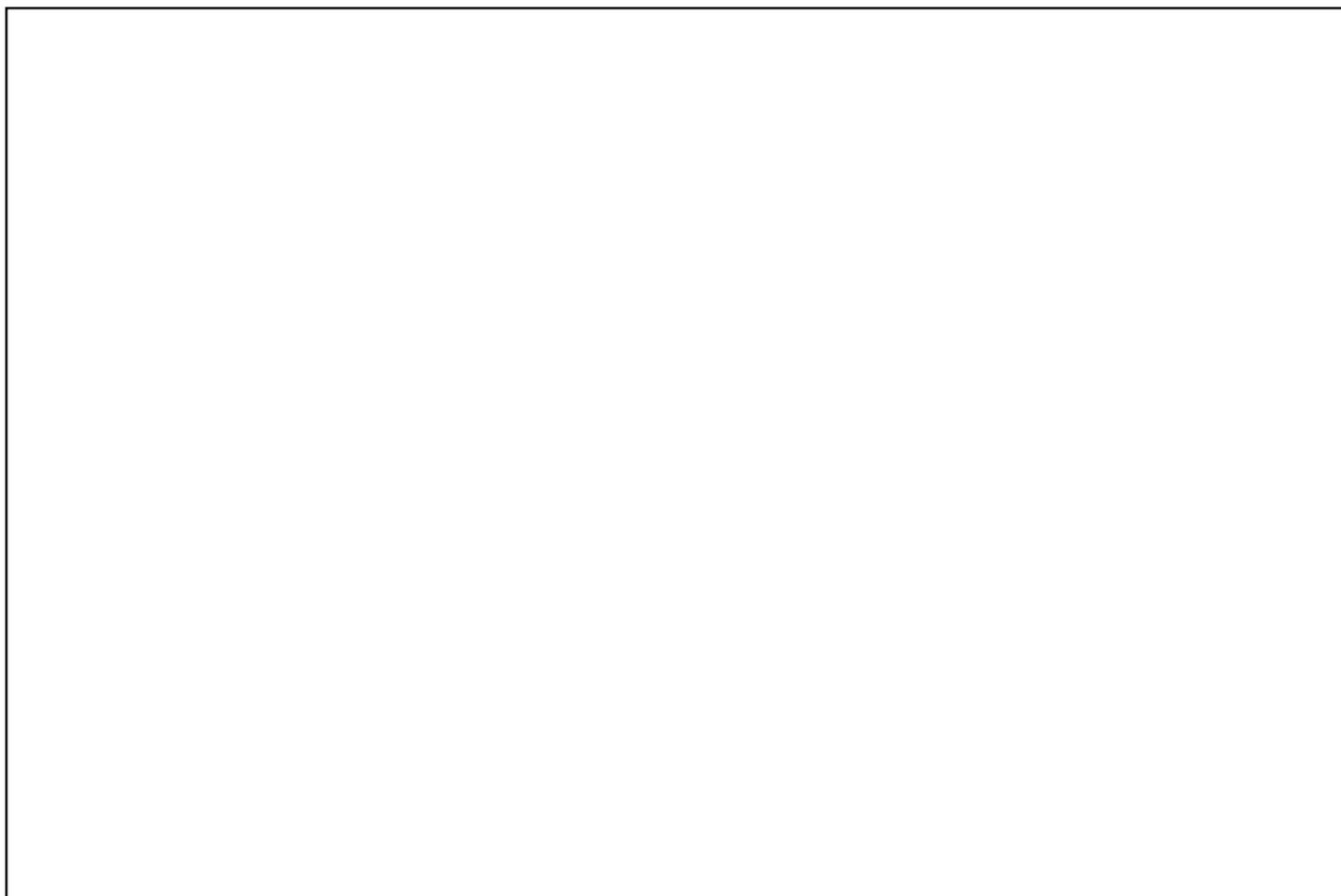
HPWREN LIVE

Science Explorer Passport-Tidepools

My Exploration Place: _____

My Exploration Date: _____

My Exploration Highlight: _____



Here is a drawing of a _____.

Name: _____