

Science

Goldfish Habitat 10-Day PBL Unit

Kindergarten

1. Project Overview

Project Title	Goldfish Habitat	Public Product(s) (Individual and Team)	Whole group: - Students will work together to design one fish tank suitable in which goldfish will thrive.
Driving Question	How can we set up and maintain a goldfish habitat in which our goldfish will thrive?		Small group: - Students will work together to discuss different animals and different habitats. - Students will work together to create a pamphlet explaining how to care for goldfish.
Grade Level/ Subject	Kindergarten, science, ELA		Individual: - Students will be completing worksheets, assessments, and other small activities on their own after whole/small group lessons.
Time Frame	10 days		
Project Summary	Students will be learning about habitats and environments suitable in which specific animals can thrive.		

2. Learning Goals

Standards	<p>K-ESS3-1 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</p> <p>K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to</p>	Literacy Skills	<p>Demonstrate comprehension of nonfiction texts.</p> <p>Use writing and drawing to compose informative/explanatory texts that introduce a topic and provide information.</p>
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Key Vocabulary

illustrate how the shape of an object helps it function as needed to solve a given problem.

CCSS.MATH.CONTENT.K.MD.A.1

Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

W.K.2

Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

SL.K.3

Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

SL.K.6

Speak with appropriate volume, enunciation, and rate in order to express thoughts, feelings, and ideas clearly.

Gills
Scales
Dorsal fin
Suitable
Habitat
Environment
Budget
Compromise
Observe

Success Skills

Critical thinking, collaboration, project management, inventive thinking, analyzing design solutions, budgeting, compromising, etc

Rubric(s)

[How to Care for Your Goldfish pamphlet](#)

[Flipgrid video - final assessment](#)

3. Project Milestones

Directions: Use this section to create a high-level overview of your project. Think of this as the broad outline of the story of your project, with the milestones representing the significant 'moments' or 'stages' within the story. As you develop these, consider how the inquiry process is unfolding and what learning will take place. The Project Calendar (Section 4) will allow you to build out the milestones in greater detail.

Milestone #1	Milestone #2	Milestone #3	Milestone #4	Milestone #5	Milestone #6
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Students will label the anatomy of a goldfish and make comparisons between the fish and humans. (diagram)	Students will write a goldfish care pamphlet listing all of the important things that goldfish need to survive. (book)	Students will create a video explaining how to set up a suitable goldfish tank. (video)	The students will all work together as a class to put together the classroom fish tank. (design)	The students will apply all of the knowledge they have gathered throughout this unit on their own classroom goldfish. (application)	The students will make scientific observations about their fish.
Key Student Question	Key Student Question	Key Student Question	Key Student Question	Key Student Question	Key Student Question
How can fish live in the water but humans cannot?	What do fish need to stay alive?	How should a goldfish's habitat be designed?	What items can our class realistically use in our goldfish habitat?	Did we successfully create a suitable goldfish habitat?	How do we observe?
Formative Assessment(s)	Formative Assessment(s)	Formative Assessment(s)	Summative Assessment(s)	Formative Assessment(s)	Summative Assessment(s)
The students will label the parts of a goldfish on their own diagram . The students will complete this worksheet and decide which item is suitable for a fish and which is suitable for a human.	The students will create a small pamphlet explaining how to take care of a goldfish.	After everyone has posted their Flipgrid video, each student will watch and respond to their shoulder partner's video.	The students will have an exit ticket over their budgeting skills. Each student will have an exit ticket over compromising decisions about the fish tank.	The students will each create a Flipgrid video explaining the steps they took to prepare for the fish to move into their new home.	The students will draw a picture of their goldfish habitat. They will draw what they see and perceive. The students will complete an observation sheet about their goldfish.

4. Project Calendar

Driving Question: How can we set up and maintain a goldfish habitat in which our goldfish will thrive?			
Week: 1	Project Milestone: The students will have a better understanding of what goldfish need in order to thrive in their environment.		
Key Student Question(s): How can fish live in water but humans cannot? What do fish need to stay alive?			
Day 1: Milestone #1 (part 1)	Day 2: Milestone #1 (part 2)	Day 3:	Days 4 and 5: Milestone #2

Engage:

The teacher will begin by reading the book, *A Fish Out of Water*, by Helen Palmer. Throughout the reading, pause and think out loud to the class. Ask them if the things that happen in the story can actually happen in real life; why or why not?

After the reading, ask the students to think about what fish might really need. Have them discuss with their shoulder partner and then call on a few kids and have them share their thoughts.

Explore:

The teacher will show these few videos of [goldfish swimming](#) in their tank and [eating](#). Have the students make observations. You may have to replay the videos for the students to watch again. Ask the students what they noticed about how they swim, eat, and just be. Ask the students how they think the fish can breathe if they're underwater. Allow for discussion and students to share their thoughts. Write their responses on the board.

Explain:

The teacher will draw a simple goldfish on the board and label each part of its body (gills, scales, fin, dorsal fin, tail fin, eyes, mouth).

Elaborate:

The students will color, cut, and glue the parts of the fish onto the body in their respective places using this

Engage:

The teacher will ask students to describe the things we need in order to live. The teacher should help the students brainstorm the following things: food, place to live, air, sleep. Write their responses on the board.

Explore:

Here is a fun activity for active, kinesthetic students, it is a Simon Says game with a twist. The teacher will begin by playing Simon Says with the class. After a few rounds of the normal game, the teacher will then explain to the students that now whenever Simon says to do something, they have to do it as if they were a fish! Allow the students to have fun and be silly with their fishy actions. If the teacher feels like the class needs a little bit of a challenge, they can switch between having them do the action as a human and a fish.

Explain:

Using the diagram of a fish that the class labeled yesterday, the teacher will explain all the parts of a fish, that humans do not have, and how they work.

Gills - As the fish opens its mouth, water runs over the gills, which pick up little bits of oxygen that's in the water.

Scales - Their scales help protect them, almost like armor. Scales also all go in the same direction (from

Engage:

The teacher will ask the class to think to themselves about different places that animals live. Once they have thought for a few seconds, have them turn and talk about it to their shoulder partner. Call on a few volunteers to share out some places that animals live. Write their responses on the board (some answers may include desert, pond/river, ocean, forest, jungle, arctic, etc.). After the students have shared their thoughts, the teacher will show this [video](#) about habitats.

Explore:

The students will work with their table groups to decide which animal goes in which habitat using this [activity](#) (borrowed from kindergarten teacher, Dawn Gunn - [betterlesson.com](#)). They will not be cutting or gluing yet, this will happen in the evaluate section; the students will only be looking, analyzing, and discussing with their group. As the students are discussing this activity, the teacher will walk around and ask some students to answer these questions about their work:

- Why did you place this animal in this habitat?
- Why is this habitat the best fit for this animal?
- Could you put this

Creating the pamphlet will take some time, so allow for two lessons to cover this.

Day 4:

Engage:

The teacher will review the term *habitat* and ask students to give some examples that they discussed yesterday. The teacher will introduce that today they will be focusing on a goldfish's habitat. They will be exploring ways to take care of a goldfish and how their habitat will meet their needs. The teacher will play this [video](#) to help explain that. Pause the video after each step and review/discuss what the video says. Write important key points on the board. Replay the steps as needed.

Explore:

The students will each use this time to brainstorm ideas for designs of a suitable habitat for goldfish. They may use coloring utensils, paper, scissors, glue, etc. Allow them to be creative and use their brains! The students can either work alone or with their table partner. After they have finished creating their fishy mansions, the teacher will call on a few volunteers to share their creations. The students will explain why they chose their tank, accessories, etc. If a student says something that is way off track for a suitable home for a goldfish, the teacher will correct them and think of a better solution.

Explain:

The teacher will explain facts about goldfish; their behavior, how to care for them, etc. using this [Google Slides](#) presentation. Allow for discussion and questions throughout the lesson. Clarify any misconceptions the kids may have. As an exit ticket for part one of this lesson, the students should each be able to tell you two things they learned about goldfish today.

Day 5:

Elaborate:

The teacher will review the information taught yesterday about caring for goldfish. After reviewing, the students will use the website [WriteReader.com](#) and work with their table groups to create a small pamphlet explaining how to take care of a goldfish. Here is the [rubric](#) that includes required information for the book.

Evaluate:

After each group has completed their book, they will present

[template](#).

Evaluate:

The students will now have a chance to label the parts of a goldfish on their own [diagram](#) (here is the [answer key](#)). The teacher will then roam around the room and ask each student in the table groups to share their answers to these questions:

1. What do fish do with gills?
2. How do fish move?
3. What are scales?
4. How does a fish eat?

head to tail) to help fish swim quickly in the water (hydrodynamics).

Fins - Fish stretch or expand their muscles on one side of their body, while relaxing the muscles on the other side. This motion moves them forward through the water. Fish use their back fin, called the dorsal fin, to help push them through the water. The fish's other fins help it steer.

Elaborate:

The students will then make their own connections between humans and fish. For example, humans have lungs, but fish have gills; humans have legs with feet, but fish have tail fins. The students will share their thoughts with their table groups and see how many comparisons they can make between fish and humans. The students will brainstorm a [Venn diagram](#) listing things people need and fish need. The students should keep these in a folder so that new concepts can be added to the Venn diagram as they are discovered throughout the unit.

Evaluate:

The students will complete this [worksheet](#) and decide which item is suitable for a fish and which is suitable for a human.

animal in any other habitat? Why or why not?

Explain:

The teacher will gather all the kids' attention back to him/her again. The teacher will go over each animal that the kids worked with in the activity. Explain to them the correct habitat for each animal as well as why that habitat is the most suitable for them. You may also choose to ask some "What if..." questions like, "What if squirrels didn't have sharp claws and small bodies? Would they still be able to live in a tree?" If any of the kids struggled with any of the animals or habitats, this time is a great opportunity to clarify any confusion. The teacher will now reiterate the term *habitat* and introduce the terms *environment* and *suitable* by defining them on the board.

Habitat: the natural home or environment of an animal, plant, or other organism.

Environment: the surroundings or conditions in which a person, animal, or plant lives or operates.

Suitable: right or appropriate for a particular person, purpose, or situation.

Elaborate:

The teacher will read the book, *Animals at Home* by David Lock. As you read the text, stop at each habitat that is encountered and

it to the class. They will get 1 point for each key point included in their book (check [rubric](#)), and 5 points for participation (everyone must help with the creation of the book but it is okay if only one person from each group presents it).

have a quick discussion. You might ask the kids questions like, "Why would a bird have to live in a tree?" or "Why do you think mice might live underground?" This is a good tactic to see what the kids already know and to keep them actively listening to the information provided in the text.

Evaluate:

The students will return to the habitat [activity](#), but this time they will cut and paste the animals into the correct habitat on their own.

Notes:

Driving Question: How can we set up and maintain a goldfish habitat in which our goldfish will thrive?

Week: 2

Project Milestone: The students will apply all of their new knowledge in designing, setting up, and maintaining their goldfish habitat.

Key Student Question(s): How should a goldfish's habitat be designed? What items can our class realistically use in our goldfish habitat? Did we successfully create a suitable goldfish habitat? How do we observe?

Day 6: Milestone #3

Day 7: Milestone #4 (part 1)

Day 8: Milestone #4 (part 2)

Day 9: Milestone #5

Day 10: Milestone #6

Engage:

The teacher will show this cartoon [video](#) of Mr. Bean saving a goldfish and trying to take care of it. After watching the video, ask the students if that scenario can really happen in real life. Discuss things in the video that went well and things that went badly. If there are things that went badly, have the class come up with a solution to fix the problem.

Engage:

To begin, the teacher will explain that they have been working so hard on preparing for goldfish. They have done a great job thinking of ways to take care of their fish. Now it is time to be choosing the items for the tank. Show this [video](#) of a pet store worker explaining important items for a fish tank. Pause the video after each item he explains and

Engage:

The students will get called up with their table groups to come up and observe all of the fish supplies that they picked out yesterday. Have them make observations about each item (allow them to touch, look, smell, etc.).

Explore:

After observing the fish supplies, the students will now sketch out how they think the tank should be set

Engage:

The teacher will play this [video](#) (starting at 1:53) explaining how to acclimate fish to their new home. Pause the video after each step and review/discuss what the video says. Write important key points on the board. Replay the steps as needed.

Explore:

The teacher will bring out the fish that he/she

Engage:

The students have worked so hard designing a great habitat for their goldfish! The teacher will play this silly song [video](#) about goldfish for the class. This is a fun, kinesthetic video for kids to get their wiggles out. Allow them to sing and follow along with the actions in the video.

Explore:

The students will each take

Explore:

The students will now draw their own silly comic of do's and don'ts of caring for a goldfish. They can use colored paper and different coloring utensils. Allow them to be creative!

Explain:

The teacher will explain how to use the [Flipgrid](#) website. He/she will create the class code and create an example video for the students. The teacher will explain what they need to be saying in the video, how to post the video, etc.

Elaborate:

Students will create a [Flipgrid](#) video explaining how to set up a suitable goldfish tank using the information they wrote in their pamphlet last week.

Evaluate:

After everyone has posted their Flipgrid video, each student will watch and respond to their shoulder partner's video. They will respond with how well they did explaining their fish tank set up.

reiterate what he said. Write important key points on the board. Allow for discussion and clarification.

Explore:

The teacher should already have a fish tank (and filter is applicable).

The students will come up with their table groups and measure the size of the fish tank (height, length, width, how many gallons it holds) and write that on their worksheet. After each group has had a chance to take tank measurements, the class will have a short discussion and imagine what kind of tank decorations could go in it.

Explain:

The teacher will define what the term *budget* means and explain that when shopping for stuff, it is always smart to have a budget so you do not spend all of your money.

Budget: a set amount of money a person can spend.

Elaborate:

The teacher will project the [PetSmart website](#) on the screen and the class will go "shopping" for items to include in the goldfish habitat (use this [list](#)). The teacher will give the class a budget and they will decide as a class which items we will need to use in our fish tank, while staying under budget. After adding all of the supplies into the cart, the teacher will check the total

up. They must include all of the tank accessories in their drawing (to the best of their ability).

Explain:

The teacher will have a discussion about compromise and define the term. He/she will explain to the students that since there are so many students but only one habitat, they will have to make a compromise as to how it is set up. Not everyone can get their way with it. They must all share the opportunity to set up their tank.

Compromise: an agreement or a settlement that is reached by each side making decisions.

Elaborate:

Each table group will be in charge of one item that goes in the tank (table one will place the tank gravel in the tank, table two will place the plants in, etc.). Each student should get an opportunity to help make decisions as to where their group's item goes. Allow the students to physically place the items in the tank themselves - this is their goldfish habitat! The class should also put the water/treatment in the tank and let it adjust overnight to prepare for the fish tomorrow.

Teacher will go buy three goldfish tonight after school and have them ready to be placed in their new homes

purchased last night. The students are expected to stay in their seats and look with their eyes. As a class, they will all decide on what to name their new pets! The teacher will take all name suggestions and write them on the board. The class will vote on the top three names (because there are three fish) and they will assign each name to a fish!

Explain:

The teacher will set rules and expectations about the goldfish!

1. Explain to the class that goldfish are living animals and need respect, safety, and care just like humans do. They will not put their hands or anything else in the tank, this could hurt the fish.
2. Make sure to emphasize that whenever the students are near the fish, they will be calm and control their bodies. Any loud noises, sudden movements, or tapping on the glass will scare the fish and make them afraid to come out and say hi to us.
3. The teacher is the only one that can feed the fish unless the students are being supervised and get permission to do so.

Elaborate:
The class will all look over a [checklist](#) of all the things needed in order to create a habitat suitable for a goldfish. Once the class

Elaborate:

The class will all look over a [checklist](#) of all the things needed in order to create a habitat suitable for a goldfish. Once the class

some time to draw a picture of their goldfish habitat.

They can use colored paper and different coloring utensils. They will draw what they see and perceive. They must include all of the fish and the tank accessories in their drawing (to the best of their ability).

Explain:

The teacher will define the term *observe* and explain how to observe something in a scientific way. Explain to the children that to observe something is to pay close attention to something. They use all five of their senses to observe (where appropriate): seeing; hearing; touching; smelling; tasting. Children must be taught they should only touch or taste something if an adult says it is safe.

Observe: notice or perceive something and register it as being significant.

Elaborate:

The teacher will call up three students at a time to come to the fish tank and watch/observe the fish for about thirty seconds. The teacher will feed the fish so that the kids can see the fish eating and interacting. Allow for discussion and write down any interesting responses the children have.

Evaluate:

The students will complete an [observation sheet](#) about their goldfish.

amount that this will all cost and discuss with the class if it was over or under budget (if over budget, the class will work together to decide which items can be gotten rid of or if there are any cheaper versions of those items).

The teacher will go buy those items over the weekend and have the items ready tomorrow for assembly.

The budget and items being purchased will depend on the teacher/school.

Evaluate:

Each student will have an [exit ticket](#) over their budgeting skills (there are two exit slips on each page, cut in half and each student will get one half-sheet of paper to answer).

tomorrow.

Evaluate:

Each student will have an [exit ticket](#) over compromising decisions about the fish tank (there are two exit slips on each page, cut in half and each student will get one half-sheet of paper to answer).

confirms that everything is checked off, it is time for the teacher to place the goldfish in the tank that the class designed together.

Evaluate:

The students will each create a [Flipgrid](#) video explaining the steps they took to prepare for the fish to move into their new home (here is the [rubric](#) for what the students should cover in their videos).

Notes: