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Ideas with IMPACT

STEM/STEAM

Pets in a STEAM Classroom

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Pets in a STEAM Classroom

Designing, Measuring, and Discovering Life: A Scientific and Engineering Exploration with Classroom Animals

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Little hands, big lessons: students learn both empathy and stewardship when handling a classroom pets.

Overview

Students will learn the importance of caring for classroom pets as part of a broader understanding of responsibility, empathy, and animal needs. Through interactive discussions, demonstrations, and hands-on activities, students will explore what pets require to stay healthy and happy, such as food, water, clean habitats, and gentle handling. They will also take turns with specific pet care duties and reflect on how their actions impact the animal's well-being. This lesson fosters a sense of community and encourages students to become thoughtful caretakers.

In a STEAM (Science, Technology, Engineering, Arts, and Math) school setting, this project can be implemented to incorporate creativity and artistic expression while still emphasizing the core principles of STEM/STEAM. Here's how:

Science:

- **Animal Biology and Behavior**: Students can study various species, their anatomy, behavior, and ecological needs. They can learn how animals interact with their environment and apply concepts like ecosystems, food chains, and biodiversity.
- **Environmental Science**: Students could explore sustainable practices in caring for animals, studying the environmental impact of different habitats and ways to maintain ecological balance within the classroom.

Technology:

- **Digital Monitoring**: Students can use technology to monitor the animals' health, behavior, and environment. For example, setting up a webcam to observe animal interactions or using sensors to track temperature, humidity, or light levels in their habitats.
- **Data Analysis Tools**: Students can use software to track and analyze data about the animals, such as growth rates, feeding habits, and environmental factors. They could apply basic coding skills to develop simple programs to automate certain aspects of pet care (e.g., automatic feeding).
- **Presentations**: Students will use **Canva** or **PowerPoint** to create a digital presentation that shows what they have learned about caring for a classroom pet. This presentation helps students organize their observations, display data they've collected, and reflect on their hands-on experience. Students can share their findings with other classrooms and other schools.

Engineering:

- **Habitat Design and Construction**: Students can work in teams to design and build animal habitats, focusing on structural integrity, comfort for the animals, and safety. They could explore engineering concepts like materials, structural design, and spatial awareness while incorporating technology to enhance the habitat's functionality (e.g., automated watering systems).
- **Problem-solving and Prototype Development**: Students could prototype innovative solutions to common challenges in pet care (e.g., designing a system to monitor the animal's water intake or a mechanism to clean their habitat).

Arts:

- **Creative Expression**: Students can engage in artistic activities like drawing or painting representations of the animals or designing educational posters about the species they're studying. This can also extend to creating visual displays of the animals' life cycles or designing an aesthetically pleasing habitat that meets both functional and aesthetic needs.
- **Storytelling and Communication**: Students could write stories, poems, or create multimedia presentations about the animals, connecting art with science. They could also engage in role-playing exercises or creative writing projects that integrate scientific facts with imaginative narratives.
- **Designing Educational Materials**: Students could design informational brochures or posters for the classroom, explaining the animals' needs, species traits, and the science behind their care, fostering both communication and design skills.

Math:

- **Data Collection and Analysis**: Students could use mathematical concepts to measure animal growth, calculate feeding ratios, and track other key metrics. They could use graphs, charts, and mathematical models to analyze animal data, helping them understand the real-world applications of math.
- **Geometry and Proportions**: Designing the animal habitats involves calculating dimensions and proportions, ensuring that space is optimized for the animals' needs while considering volume and surface area.

Interdisciplinary Connections:

- **STEAM Collaboration**: This project promotes collaboration among different subjects. For example, students might work with science teachers to understand animal biology and with art teachers to create visual representations of the animals' habitats or behaviors. Teachers can guide students through the engineering and technical aspects of building and designing animal enclosures.

Critical Thinking and Inquiry: Encouraging students to ask questions about the animals and their environments fosters inquiry-based learning. They could research different species, design experiments to observe animal behavior in a safe manner and engage in problem-solving challenges related to animal care and habitat design. Choosing the right pet is important because it ensures the animal's needs can be properly met while also creating a safe, engaging, and manageable learning environment for students. Students will also learn to make the correct decision when a reptile is the pet in the classroom. A student can choose the right reptile by researching the species' habitat needs, diet, lifespan, temperament, and size at maturity, and by honestly considering whether they can meet those needs long-term with support from the classroom and their family. If they are ever unable to continue care, they should never release the reptile into the wild but instead look for a responsible rescue, shelter, or reptile sanctuary where the animal can be safely surrendered.

By integrating the arts into the STEM/STEAM foundation, students develop a more holistic understanding of the animals in their care and the world around them. This project allows for creativity, critical thinking, and hands-on learning, aligning with the core principles of a **STEAM** education.

Goals

Science Connection

Students will:

- Observe and record changes in behavior or health based on care practices, leading to hypothesis-based thinking.
- Explore life science concepts such as habitats, food chains, animal classifications, and adaptations.
- Investigate how environmental factors like temperature, light, and habitat design influence a pet's behavior, comfort, and well-being.
- Discuss how animals communicate needs (through sounds, movement, or body language).
- Design group experiments (e.g., testing how often the habitat needs to be cleaned to keep it odor-free).
- Explore the role of veterinarians and scientists in caring for animals as careers in STEM fields.
- Conduct simple experiments such as "How much food does it eat in a week?"

Math Connection

Students will:

- Use measurement skills to portion food and water accurately.
- Track feeding times, habitat cleaning schedules, and growth charts using calendars and time-telling skills.
- Students will collect, organize, and interpret data related to classroom pet care such as tracking food consumption, sleep/activity patterns, or weight over time using graphs, charts, and basic statistical measures (like averages).
- Create rotating care schedules using tables, graphs, or charts.
- Use data collection to track who completed tasks and analyze patterns (e.g., bar graphs of daily care routines).
- Budgeting for pet supplies using multiplication, addition and subtraction.
- Planning quantities for bulk vs. daily supplies.
- Use tally charts or line plots to track pet behaviors (e.g., activity levels, eating habits).

These integrated goals turn pet care into a rich, interdisciplinary learning experience while reinforcing real-world applications of math and science concepts. Students will understand basic animal needs and demonstrate responsible pet care.

Objectives

Participants will:

Identify the Educational Benefits of Classroom Pets
Teachers will understand how animals in the classroom support student learning across disciplines, including science, math, social-emotional development, and responsibility.

Demonstrate Knowledge of Animal Care Requirements
Teachers will learn the basic care needs (e.g., food, water, habitat, health monitoring) of common classroom animals and how to model proper care for students.

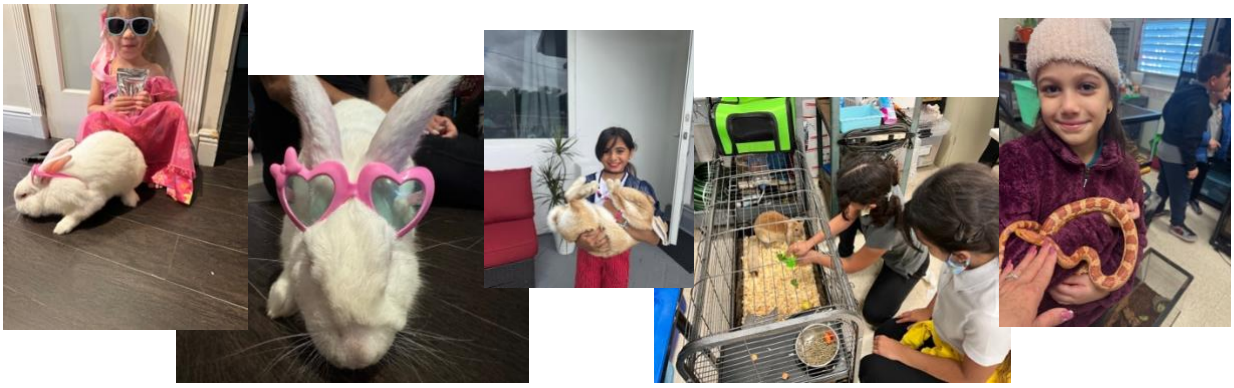
Integrate Pet Care into Academic Content Areas
Teachers will explore and develop strategies to connect animal care to academic standards, particularly in science (life cycles, habitats, animal behavior) and math (measurement, data collection, and time management).

Create a Safe and Ethical Animal Environment
Teachers will evaluate and apply best practices for maintaining a safe, clean, and humane classroom environment for both students and animals.

Develop Student Roles and Routines for Pet Care
Teachers will design student job charts, care schedules, and reflection activities that promote responsibility, teamwork, and consistent pet care.

Foster Empathy and Social-Emotional Learning Through Animal Interaction
Teachers will identify ways in which animal care can be used to build empathy, compassion, and self-regulation skills in students.

Address Challenges and Ethical Considerations
Teachers will examine potential challenges (e.g., allergies, behavior issues, animal welfare) and develop solutions to ensure the classroom pet program is inclusive and sustainable.



Florida Standards

PreK (Voluntary Prekindergarten Standards)

SC.P.12.1.1 - Observe and describe the behavior of animals.

SC.P.10.2.1 - Explore objects by their physical properties.

MA.PK.DP.1.1 - Collect and sort data into categories using real objects or pictures.

MA.PK.M.1.1 - Compare objects by measurable attributes (length, weight).

VA.PK.C.1.1 - Explore the use of materials, tools, and techniques to create two- and/or three-dimensional artworks.

VA.PK.S.1.1 **-** Create artwork that reflects thoughts, experiences, or feelings.

VA.PK.H.2.1 - Show respect for one's own artwork and the artwork of others.

Application**:** Students draw or paint their classroom pet, using basic shapes and colors to express their impressions.

Kindergarten

SC.K.L.14.2 - Recognize that some organisms are living and non-living.

SC.K.L.14.3 - Observe plants and animals and describe how they are alike and how they are different.

SC.K.N.1.2 – Make observations using the five senses.

MA.K.M.1.1 - Compare and describe measurable attributes such as length and weight.

MA.K.DP.1.1 - Collect, sort, and represent data with up to three categories.

VA.K.C.1.2 **-** Create artwork to document experiences or express ideas.

VA.K.S.1.1 **-** Explore art processes and media to produce works of art.

VA.K.H.1.1 **-** Describe where art is displayed or used in daily life.

Application**:** Students create simple posters or pet care charts using drawings and labels.

Grade 1

SC.1.L.14.1 - Make observations of living things using the five senses.

SC.1.L.14.3 - Differentiate between living and nonliving things.

SC.1.N.1.2 - Ask questions, make observations, and gather information about the natural world.

MA.1.DP.1.1 - Collect and represent data using tally marks, tables, and picture graphs.

MA.1.M.1.1 - Measure length using nonstandard and standard units.

VA.1.C.1.1 - Use the art-making process to communicate personal observations.

VA.1.S.1.1 - Experiment with tools and techniques to make art.

VA.1.O.1.1 - Identify the structural elements of art in their work.

Application: Students illustrate and label different parts of the pet habitat they help design.

Grade 2

SC.2.L.17.1 - Compare and contrast the basic needs of all living things.

SC.2.L.14.1 - Observe and describe major stages in the life cycles of plants and animals.

MA.2.M.1.1 - Estimate and measure lengths in inches, feet, yards, and centimeters.

MA.2.DP.1.1 - Collect data and represent it using tables, charts, and picture graphs.

VA.2.C.1.2 - Reflect on and explain the meaning of personal artwork.

VA.2.S.1.1 - Demonstrate use of tools and techniques with control.

VA.2.O.1.1 - Create works of art that reflect community and school life.

Application: Students make a diorama or visual model of a pet's habitat.

Grade 3

SC.3.L.14.1 - Identify and describe the basic needs of living things.

SC.3.L.15.1 - Classify animals into major groups according to physical characteristics and behaviors.

SC.3.L.17.2 - Recognize that plants and animals depend on each other.

MA.3.DP.1.1 - Collect, represent, and interpret data using tables, bar graphs, and pictographs.

MA.3.M.1.2 - Measure length to the nearest quarter inch and centimeter.

VA.3.C.1.3 - Describe personal choices made in the creation of artwork.

VA.3.S.1.1 - Manipulate art media and refine techniques to create a desired result.

VA.3.H.2.2 - Collaborate to complete art projects.

Application**:** In small groups, students create visual pet care guides or informational posters.

Grade 4

SC.4.L.16.2 - Explain that although characteristics of plants and animals are inherited, they can be affected by the environment.

SC.4.L.17.4 - Recognize ways plants and animals interact in ecosystems.

MA.4.DP.1.1 -Interpret data displayed in various graphical forms.

MA.4.M.1.1 - Convert and compare units of measurement.

VA.4.C.1.1 - Integrate ideas from visual culture and personal experiences into artwork.

VA.4.O.1.2 - Create artwork that communicates an idea about the environment.

Application: Students develop presentations including original pet illustrations to explain how their design benefits the pet and classroom.

Grade 5

SC.5.L.14.2 - Compare and contrast the function of organs and other physical structures of animals.

SC.5.L.17.1 - Compare and contrast adaptations of animals and plants in different environments.

MA.5.DP.1.1 - Collect and display data using line plots and interpret results.

MA.5.M.1.1 - Solve problems involving measurement and conversions of units.

VA.5.C.1.2 - Analyze personal works of art to determine areas for improvement.

VA.5.S.1.1 - Use craftsmanship and technical ability to refine artwork.

Application: Students create scientific illustrations or comic strips that explore pet care, habitat design, and animal behavior through visual storytelling.

Course Outline/Overview (PreK–5th Grade)

Unit Overview

This long-term, hands-on unit focuses on observing, caring for, and learning from live animals in the classroom. Students will learn about responsibility, empathy, scientific thinking, and connections to real-world math and science. The project is scaffolded by grade level and culminates in student presentations.

Goals by Domain

• Science: Learn about animal needs, behaviors, lifecycles, and habitats.

• Math: Measure, graph, and track animal care and growth using age-appropriate tools.

• Engineering/Design: Design shelters, feeding stations, or enrichment toys using the EDP.

• Language Arts: Write reflections, keep observation logs, read related nonfiction texts.

• Social-Emotional: Foster responsibility, empathy, and collaboration through care routines

Course Pacing by Grade

PreK–1st Grade: "Caring for Living Things"

Focus: Observation, empathy, sensory learning

Activities:

• Simple daily care routines with visual checklists

• Drawing and describing animals

• Class graph of behaviors

• Observation station with "My Pet Booklet"

Math: Sorting, counting, graphing, measuring with nonstandard units

Science: Senses, living vs. nonliving, basic needs of animals

2nd–3rd Grade: “Animal Explorers”

Focus: Animal comparisons, data collection, teamwork

Activities:

• Pet job rotations and logs

• Data sheets tracking growth and behavior

• Research about similar animals in the wild

• Group Canva presentation about their class pet

Math: Measurement (cm/in), basic graphing, time (feeding schedules)

Science: Animal adaptations, behavior, classification, life cycles

4th–5th Grade: “Pet Scientists & Designers”

Focus: Scientific inquiry, engineering, leadership

Activities:

• Conduct experiments (e.g., bedding, preferred foods or habitats)

• Design and test enrichment tools or habitats (EDP)

• Mentor younger students in pet care routines

• Create care guides or digital portfolios

Math: Data tables, line graphs, unit conversions, averages

Science: Animal classification, ecosystem roles, inherited traits

Core Components (All Grades)

• Daily or Weekly Pet Care Jobs

• Growth and Behavior Logs

• Pictographs and Data Charts

• Reflection Activities

• Book/Video/Digital Integration

• Culminating Project

📌 Assessment Tools

- Observation checklists (behavior, participation)
- Growth chart data sheets
- Rubrics for reflection, participation, and final products
- Student-led conferences or presentations

📎 Optional Extensions

- Guest speakers: vets, zookeepers, pet store employees
- Virtual zoo tours or habitat livestreams
- Pet-themed math centers
- Animal behavior experiment stations

Engaging STEAM Lesson: Pets in the Classroom

Grade Level: PreK - 1st Grade

Subject Areas: Science, Technology, Engineering, Art, Mathematics (STEAM)

Lesson Duration: 50 - 60 minutes (can be broken into multiple sessions throughout the week)

Overview

This lesson integrates STEAM concepts through the engaging theme of classroom pets. Students will explore animal needs, design solutions, create art, and apply mathematical thinking, fostering curiosity and problem-solving skills.

Learning Objectives

Students will be able to:

- **Science:** Identify basic needs of animals (food, water, shelter, space).
- **Technology:** Use simple tools to create and explore.
- **Engineering:** Design a simple habitat or toy for a pet.
- **Art:** Create a visual representation of a pet.
- **Mathematics:** Count, sort, and measure objects related to pets.
- Collaborate with peers on a shared task.

Materials

Science:

Pictures of various pets (cat, dog, fish, bird, hamster, rabbit, etc.)

Chart paper or whiteboard

Markers

Books about pets and animal care

Technology:

Tablets or computers for researching and showing short educational videos about pets or virtual pet simulations.

Students will also make presentations on Canva or PowerPoint to share their research with other classrooms.

Magnifying glasses

Kid-friendly measuring tools (rulers, measuring tapes)

Engineering:

Recycled materials (cardboard boxes, paper towel rolls, plastic bottles, fabric scraps, pipe cleaners, craft sticks)

Construction paper, scissors (child-safe), glue, tape

Art:

Drawing paper

Crayons, markers, colored pencils

Craft supplies (googly eyes, yarn, pom-poms, glitter)

Mathematics:

Counting manipulatives (blocks, animal counters)

Measuring tools (as above)

Sorting mats or hoops

Pet-themed picture cards for sorting and counting

Procedures

1. Engage (10-15 minutes)

> Begin by asking students, "Who has a pet at home? What kind of pet do you have? What does your pet need to be happy and healthy?"
>
> **Brainstorm:** Create a "Pet Needs" chart on the board, listing ideas like food, water, shelter, toys, exercise, love.

Introduce the Challenge: "Today, we are going to be STEAM explorers! We'll learn about pets and even design a home to help them feel comfortable!"

2. Explore (35-45 minutes)

Divide students into small groups or rotate through stations, focusing on different STEAM elements.

Science Station: "What Do Pets Need?"

Show pictures of different pets. Discuss their unique needs (e.g., fish need water, birds need a cage, dogs need walks).

Read a simple book about pet care.

Have students sort pictures of pet items (food, bed, leash, fishbowl) into categories based on which pet would use them.

Technology Station: "Pet Tools & Exploration"

Provide magnifying glasses for students to examine pet food (if applicable and safe), pet fur (from stuffed animals), or even their own hands to see "skin cells" like a pet's.

Show a short, age-appropriate video about how vets care for animals or a virtual pet simulation where they can "feed" or "play" with a digital pet. Discuss how technology helps us learn about and care for animals.

Engineering Station: "Design a Pet Habitat"

Challenge: "Imagine you have a new pet. What kind of habitat would you build for it?"

Provide a variety of recycled materials.

Students work individually or in pairs to design and construct a simple habitat (e.g., a small box house for a hamster with hiding places, a cardboard fishbowl that can hold water for at least 15 seconds). Encourage them to think about the pet's needs (e.g., a hiding that the pet can easily enter and exit).

Art Station: "My Dream Pet"

Students draw or create a collage of their favorite pet or a "dream pet."

Encourage them to think about colors, textures (using yarn, fabric scraps), and details.

Display their artwork around the classroom.

Mathematics Station: "Pet Math Fun"

Counting: Have students count the number of legs on different animal pictures or count how many "food pellets" (small blocks) a pet might need.

Sorting: Provide a mixed bin of animal counters or pet-themed picture cards. Ask students to sort them by color, size, type of animal, or number of legs.

Measuring: Use kid-friendly rulers or measuring tapes to "measure" the length of different stuffed animals or the "height" of their engineered pet habitats. Compare sizes ("Which pet is longer?").

3. Explain (10 minutes)

Have each group share what they did at their stations.

Discuss the "Pet Needs" chart again. "Did we learn anything new about what pets need?"

Showcase some of the engineered habitats and art creations. Ask students to explain their designs.

4. Elaborate (5-10 minutes)

Role-Play: Have students role-play being a veterinarian or a pet owner, demonstrating how they would care for a pet.

Classroom Pet Discussion: If there is a classroom pet, discuss its specific care routine and assign simple responsibilities (e.g., checking water level or observing how it eats).

5. Evaluate (Ongoing Assessment)

Observation: Observe students' participation and engagement at each station.

Discussion: Listen to their explanations of pet needs, designs, and mathematical reasoning.

Product Review: Assess their engineered habitats (did they consider the pet's needs?) and their artwork (did they include details?).

Informal Questions: Ask questions like, "What does a fish need to live?" or "How did you make that habitat for your pet?"

Differentiation

For Younger Learners (PreK):

Focus on basic needs and simple counting/sorting.

Provide more pre-cut materials for engineering and art.

Offer more direct guidance and modeling.

For Older Learners (1st Grade):

Encourage more complex designs for habitats/toys.

Introduce simple graphs for pet preferences (e.g., "Our Favorite Pets").

Challenge them to think about different types of pet food or exercise.

Introduce concepts like "carnivore," "herbivore," "omnivore" in a simplified way.

Extension Activities

- **Guest Speaker:** Invite a local veterinarian or animal shelter volunteer to talk about pet care.
- **Field Trip:** Visit a local pet store, zoo (if feasible and appropriate) or an animal shelter.
- **Research Project:** Students can choose a specific pet and research its needs, then present their findings to the class.
- **Pet Story Writing:** Write a collaborative class story about a classroom pet.
- **Pet Adoption Drive:** Organize a mock pet adoption drive where students create "adoption profiles" for their designed pets.

Safety Considerations

- **Allergies:** Be aware of any student allergies if considering a real classroom pet. Most students with allergies will be safe with the pets in the classroom if they observe from a distance. Students can sit on the opposite side of the classroom of where the pet will be placed.
- **Hygiene:** Emphasize handwashing before and after handling any pet-related materials or interacting with real animals.
- **Animal Welfare:** If a real classroom pet is present, ensure its well-being is prioritized, and interactions are supervised and gentle.
- **Materials:** Ensure all craft and recycled materials are clean, safe, and non-toxic.

My Pet Observation Station Activity – PreK-1st

Objective:

Students will practice observing, recording, and discussing their classroom pet's behavior and characteristics, while integrating basic math and science skills.

Materials Needed:

• Clipboards or notebooks

• Crayons or colored pencils

• "My Pet Observation Sheet" (see below)

• Ruler or measuring tape (nonstandard units like cubes or yarn also ok)

• Picture graph template (optional)

Step-by-Step Instructions:

• Gather Around the Animal Station: Set up a calm area near the classroom pet. Invite students in small groups to observe quietly.

• Use Senses to Observe: Ask what they see, hear, or feel (if safe). Encourage detailed observation.

• Draw and Color Their Animal: Students draw what the pet looks like and color it.

• Measure with Math: Use nonstandard units to measure the pet's cage or food amounts.

• Complete Observation Sheet: Students fill in their pet sheet using drawings, checkmarks, or simple writing.

• Create a Class Pet Chart: As a class, make a picture graph of observed behaviors.

Skills Practiced:

• Observation and sensory detail (Science)

• Counting, sorting, measuring (Math)

• Drawing and recording (Fine Motor & ELA)

My Animal Care Booklet

Name:

_____

Class:

_____

My Animal's Name: _____

Type of Animal: _____

Draw a Picture of My Animal

🗓️ My Animal Care Chart

I will help care for our classroom pet! Each day, I can check off what I did.

Day	Fed Pet	Gave Water	Helped Clean	Watched My Pet
Monday	☐	☐	☐	☐
Tuesday	☐	☐	☐	☐
Wednesday	☐	☐	☐	☐
Thursday	☐	☐	☐	☐
Friday	☐	☐	☐	☐

👀 What I See

My animal is

_____.

It is the color

_____.

It moves by

_____.

Today I saw it

_____.

♡ How I Feel ☺

I feel _____ when I care for my animal.

My favorite thing about our pet is _____.

My Pet Observation Sheet

Today's Date:

_____

My Pet's Name:

_____

☐ I saw my pet moving

☐ I saw my pet sleeping

☐ I saw my pet eating

☐ I heard my pet make a sound

My pet is the color

_____

My pet moves by

_____

Draw your pet below:

Class Pet Behavior Pictograph

PreK-1st Grade

Use the pictograph below to record how many students observed each behavior.

Each 🐾 paw print equals one student.

Behavior	Number of Students (🐾 = 1)
Eating	
Sleeping	
Moving	
Making a Sound	

*Use stickers or stamps to record the number of students.

Student Rubric: My Pet Observation Station – PreK - 1st

Student Name: _____ Date _____

Category	Excellent (3)	Good (2)	Needs Support (1)
Observation Skills	Uses 3 or more senses to describe the pet in detail.	Uses 1–2 senses to describe the pet.	Needs help noticing or describing the pet.

Participation	Actively participates in all parts of the activity.	Participates in most parts of the activity.	Rarely participates or needs reminders.
Drawing & Recording	Draws detailed picture and fills in all parts of the sheet.	Draws simple picture and completes most of the sheet.	Needs support to draw or fill in sheet.
Behavior & Care	Shows care and respect for the pet and classroom materials.	Usually shows care and respect.	Needs reminders to be gentle or respectful.

Teacher Notes: 

Lesson Plans – Grades 2nd – 5th

STEAM Expedition for Grades 2nd-5th

Deeper Learning: What Students Will Master

This project challenges students to explore complex scientific concepts and apply advanced mathematical reasoning, fostering critical thinking, research, and collaborative problem-solving skills.

Science Objectives

- Classify animals into major groups (e.g., vertebrates/invertebrates).
- Explain animal adaptations for survival in specific ecosystems.
- Construct simple food chains and webs.
- Research and present on animal life cycles and behaviors.
- Analyze the impact of environmental changes on animal populations.

Math Objectives

- Collect, organize, and interpret data using various graph types.
- Calculate simple averages (mean) for animal data.
- Apply non-standard and standard measurement (length, weight, volume).
- Solve real-world problems involving animal populations and resources.
- Use ratios or simple fractions to compare animal characteristics.

STEAM Expedition

Day 1: Classification & Ecosystems

Students research into animal classification and explore different ecosystems to understand how animals fit into their natural environments.

Day 2: Adaptations & Food Chains

Students focus on animal adaptations for survival and construct food chains/webs. Data collection and graphing of ecosystem elements are key activities.

Day 3: Measurement, Scale & Data Analysis

Students apply standard measurement, understand scale, and analyze data sets related to animal sizes, speeds, or populations, including calculating simple averages.

Day 4: Research, Design & Engineering Challenge

Students conduct independent research on a chosen animal, then design and engineer a detailed habitat model or a solution to an animal-related problem.

Day 5: Project Presentation & Reflection

The week concludes in formal presentations of their research and engineered solutions, fostering public speaking and critical reflection of their learning journey.

Focus on Grade Levels

2nd & 3rd Grade Focus

- Focus on basic ecosystem roles.
- Simple data collection and bar graphs.
- Guided research with provided resources.
- Basic habitat design.

4th & 5th Grade Challenge

- Analyze complex food webs.
- Calculate mean, interpret line graphs.
- Independent research and presentation.
- Advanced engineering solutions, scale models.

Assessing Deeper Understanding

Assessment moves beyond simple observation to include analysis of student products and presentations, reflecting higher-order thinking skills.


Observation of scientific inquiry and problem-solving.


Evaluation of data collection, graphing, and analysis.

Assessment of engineered habitat models or solutions.


Rubric-based assessment of research presentations.

The Integrated STEAM Experience

Every component of STEAM is interwoven, ensuring students apply scientific knowledge, technological tools, engineering design, artistic expression, and mathematical reasoning in a cohesive project.

Resources for Exploration

Materials are adaptable to facilitate both basic construction and more complex design and research activities.

Technology: Computers/tablets for research, digital tools for graphing

Measurement Tools: Rulers, scales, measuring cups
Science Aids: Animal models, ecosystem diagrams, research books
Design & Art: Craft supplies, recycled materials, drawing tools



Weekly Planning Template

Week of: _____

Grade Level(s): _____

Pet Focus:

_____

_____

Objectives for the Week:

1._____

_____

2._____

_____

3._____

_____

Planned Activities:

• Monday:

_____

_____

• Tuesday:

_____

_____

• Wednesday:

_____

_____

• Thursday:

_____

_____

• Friday:

_____

_____

Assessment/Reflections:

• What went well?

_____

_____

• What will we adjust?

_____

_____

✅ Pet Care Checklist

☐ Animal has fresh food daily

☐ Animal has clean water

☐ Habitat is clean

☐ Observation journal updated

☐ Students rotated through care tasks

☐ Supplies (food, bedding) checked

☐ Student reflections collected

Hands-On Activity: Habitat Engineers

Title

Create the Best Habitat for Your Classroom Pet.

Grade Levels

2nd–5th

Time

Research - 50 minutes

Habitat build – 2-3 days – Project can be completed in sections.

Materials Needed

- Shoeboxes or clear plastic containers (1 per group)
- Natural materials: leaves, pebbles, twigs, sand, shredded paper, moss
- Measuring tools: rulers, thermometers (optional), small cups
- Chart paper or student journals
- Glue, tape, adhesives

Objective

Students will design and build a prototype of a habitat suitable for a classroom animal (e.g., hamster, fish, lizard, snail, etc.) by applying their knowledge of animal needs, measurement, and environmental factors.

Standards Integration

Science (Florida NGSSS):
- SC.2.L.17.1 / SC.3.L.15.1 / SC.5.L.14.2
- SC.4.L.17.4

Math (Florida B.E.S.T.):
- MA.3.M.1.2
- MA.4.DP.1.1
- MA.5.M.2.2

Steps

1. Research Animal Needs
Begin with a class discussion and a video about animal needs (food, shelter, water, space, enrichment).

2. Group Brainstorm
Groups choose a classroom animal and list what it needs in its habitat. Once each group chooses a pet, they will research its native habitat to replicate it as close as possible. Students should know how much space it will need to live in its enclosure and any plants it may need for climbing if it is a reptile.

3. Measure & Design
Students draw a habitat plan and measure space needed for each feature.

4. Build the Habitat Model
Students build the habitat using natural materials and label features.

5. Observation Walk
Students visit other groups' habitats and complete an observation sheet.

6. Present & Reflect
Each group explains their choices and writes a reflection.

- Use math to compare shelter sizes.
- Measure temperature of habitats using thermometers.
- Graph data after measuring size or temperature of student-designed habitats.

Engineering Design Process (EDP): Applied to Habitat Engineers

1. Ask (Define the Problem)

Essential Question: What kind of habitat will best meet the needs of our classroom animal?
Student Task:
- Identify the animal's needs: shelter, food, water, space, enrichment.
- Ask: What problems do animals face in enclosed habitats? What makes a habitat safe and comfortable?

2. Imagine (Brainstorm Solutions)

Student Task:
- Brainstorm features for a good habitat.
- Think of materials to simulate shelter, ground cover, water, etc.
Tip: Ask guiding questions like:
- What environment does this animal live in naturally?
- What can we use in the classroom to recreate it safely?

3. Plan (Draw & Measure)

Student Task:
- Sketch a labeled diagram of the habitat.
- Measure space and materials.

Math Connection:
- Use area/perimeter to plan space.
- Estimate volume and quantity of materials.

4. Create (Build the Model)

Student Task:
- Construct the model using classroom materials.
- Label the parts clearly and build as a team.

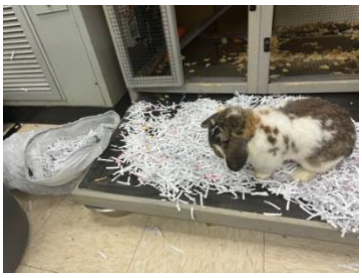


Figure 1 Thesius loves to play with paper bedding!

5. Test & Evaluate

Student Task:
- Share with other groups.
- Use a checklist or rubric to evaluate:
  * Shelter present?
  * Food and water included?
  * Easy to clean and safe?
- Record observations and feedback.

What is the measurable goal intended for this project?

- Water bowls will hold water for 3 days before evaporating.

- Pet will move easily in and out of hide in at least 10 seconds.

- Habitat will maintain the suggested 80 degrees Fahrenheit/26 degrees Celsius for 6 hours.

6. Improve (Redesign)

Student Task:
- Modify the model based on feedback.
- Reflect: What worked? What would you change?

Optional Extension:
- Adapt the habitat for a different animal or environment.

Animal Care Rotation Schedule

Week of:

Day	Student(s) Responsible	Tasks to Complete	Teacher Check ✓
Monday		🧹 Clean cage/tank bedding/litter box 🐾 Feed & water animals 📝 Observe & record animal behavior	
Tuesday		🧹 Spot clean enclosure 🐾 Feed & water animals 📝 Record any changes in animal behavior	
Wednesday		🧽 Deep clean if needed 🐾 Feed & water animals 📝 Check food/water supplies	
Thursday		🧹 Spot clean enclosure 🐾 Feed & water animals 📝 Record interesting animal behavior	
Friday		🧽 Weekend preparation (extra food/water) 🧊 Final cage tidy 📝 Weekly reflection entry	

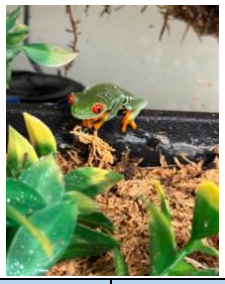
☑ Task Rotation Notes

- Student Pairs can work together to build teamwork.

- Reflection Journals should include what they observed, how the animal behaved, and how they felt about the experience.

- Jobs rotate weekly so each student gets a turn in all roles.

Pet Growth Tracking Chart



Pet Name: _____

Species: _____

Date of Birth or Adoption: _____

Date	Length (cm/in)	Weight (g/lb)	Diet Notes	Behavior Observed	Student Initials

Observation Notes

Use this section for longer notes on growth, behavior changes, or special events.

Habitat Engineers - Rubric

Name_____ Date_____

Criteria	4 - Excellent	3 - Good	2 - Developing	1 - Needs Improvement
Animal Needs Understanding	Thoroughly explains all needs (food, water, shelter, space, etc.)	Explains most needs accurately	Explains some needs but lacks detail	Minimal or inaccurate explanation of needs
Habitat Design and Functionality	Design fully supports animal's needs with clear purpose	Design mostly supports animal's needs	Design supports a few needs but lacks clarity	Design does not reflect understanding of animal needs
Use of Measurement and Planning	Precise measurements; clear use of math and planning	Adequate measurements; some math integration	Basic use of measurement with limited planning	Minimal or no evidence of planning or measurement
Team Collaboration	Excellent collaboration and shared responsibilities	Good collaboration with some shared tasks	Some teamwork but uneven participation	Little to no collaboration evident
Use of the Engineering Design Process	All EDP steps applied with detail and reflection	Most EDP steps used appropriately	Some steps used but missing reflection	Minimal use or misunderstanding of EDP
Presentation & Reflection	Clear, confident presentation with deep reflection	Clear presentation with adequate reflection	Basic presentation or limited reflection	Unclear or missing presentation/reflection

Total Score: _____ / 24

Teacher Comments:

_____

_____

_____

_____

Teacher Packet

Canva Presentation Project 'Meet Our Classroom Pet'

Project Overview

In this project, students will create a digital presentation in Canva to showcase their classroom pet. They will research the animal, document its care, include data from class observations, and reflect on what they've learned. This project integrates science, writing, design, and technology skills.

Project Goal

Students will create a Canva presentation with at least 7 slides, including:
- A title slide
- Basic facts and care information
- At least 3 interesting/researched facts
- One visual data display (e.g., chart or graph)
- A personal reflection or opinion
- Clear, engaging visuals using Canva tools

Suggested Slide Breakdown

1. Title Slide – Name of pet, student names, project title
2. Introduction – Animal type and origin
3. Daily Care – Feeding, cleaning, environment
4. Fun Facts – Researched or observed facts
5. Data Slide – Chart from class data (e.g., feeding chart, growth log)
6. Reflection – What is your personal
7. References – List a minimum of three websites

Tools & Teacher Support

• Provide access to Canva for Education (https://www.canva.com/education/)

• Supply class observation data or journals for reference

• Review digital citizenship and responsible use of media

• Allow group or individual work depending on class needs

• Optional: Host a classroom gallery or virtual showcase of student work

📋 Project Rubric

Name_____ Date_____

Category	Excellent (3)	Good (2)	Needs Work (1)
Content Accuracy	All facts are accurate and detailed	Most facts are correct	Some facts are missing or incorrect
Visual Design	Creative layout, 3 font changes, clear visuals, strong contrast, 3 or more transitions, 3 background changes	Good visuals, mostly clear, 2 font changes, 2 transitions, 2 background changes	Hard to read or lacks visuals, no font change, no transitions, no background change
Data Slide	Data is visualized and meaningful	Data included but basic	Missing or unclear data
Reflection	Personal, thoughtful, well-written	Some reflection shown	Minimal or missing reflection
Presentation Skills	Confident and engaging	Mostly clear	Unclear or needs support

✅ Student Project Checklist

☐ My presentation has at least 7 slides

☐ I included the pet's name and type

☐ I shared 3 or more facts about the animal

☐ I added a graph, chart, or visual data display

☐ I included references in my presentation

☐ I used clear fonts, images, at least 3 transitions in my design

Teacher Supply Checklist

Pet Care & Maintenance Supplies

- Pet habitat/cage (e.g., aquarium, terrarium, rabbit hutch)
- Bedding or substrate (e.g., wood shavings, straw, reptile carpet)
- Food and water bowls
- Pet-specific food (pellets, hay, insects, vegetables, etc.)
- Water bottle/dispenser
- Cleaning supplies (gloves, disinfectant, paper towels)
- Hand sanitizer and handwashing station
- Trash bags and waste disposal containers
- Pet enrichment toys (e.g., chew sticks, wheels, tunnels)

Classroom Management & Organization

- Labeled storage bins for materials
- Student folders or binders for reflections
- Weekly pet care tracking charts
- Classroom job chart or rotation schedule
- Parent permission slips or care agreements
- Instructional posters or anchor charts

Parent Letter: Pets in the STEAM Classroom Project

Dear Families,

We are excited to begin a special project in our classroom called “Pets in the STEAM Classroom.” This hands-on learning experience will give students the opportunity to care for and observe a live classroom animal while exploring math, science, writing, and social-emotional learning.

Throughout this project, your child will be helping with daily tasks such as feeding, observing behavior, cleaning, and recording changes in the animal. Students will also complete activities appropriate to their grade level, such as drawing, measuring, writing journals, and even designing small projects to improve the pet’s care or environment.

This unit teaches responsibility, compassion, and curiosity, and we’re looking forward to seeing how much the students learn and grow.

If you have any questions or would like to volunteer or donate supplies, please let me know!

Thank you for your support,

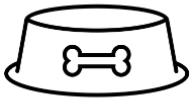
Your Child’s Teacher

_____

Posters

Daily Animal Care Routine

1. Wash hands before and after handling the pet.
2. Feed the pet – check if it needs food or water.
3. Clean up the pet's area if needed.
4. Observe the animal. What is it doing?
5. Record what you see or draw a picture.
6. Treat the pet gently and with respect.



👀 Pet Observation Station Rules

✓ Be calm and quiet near the pet.

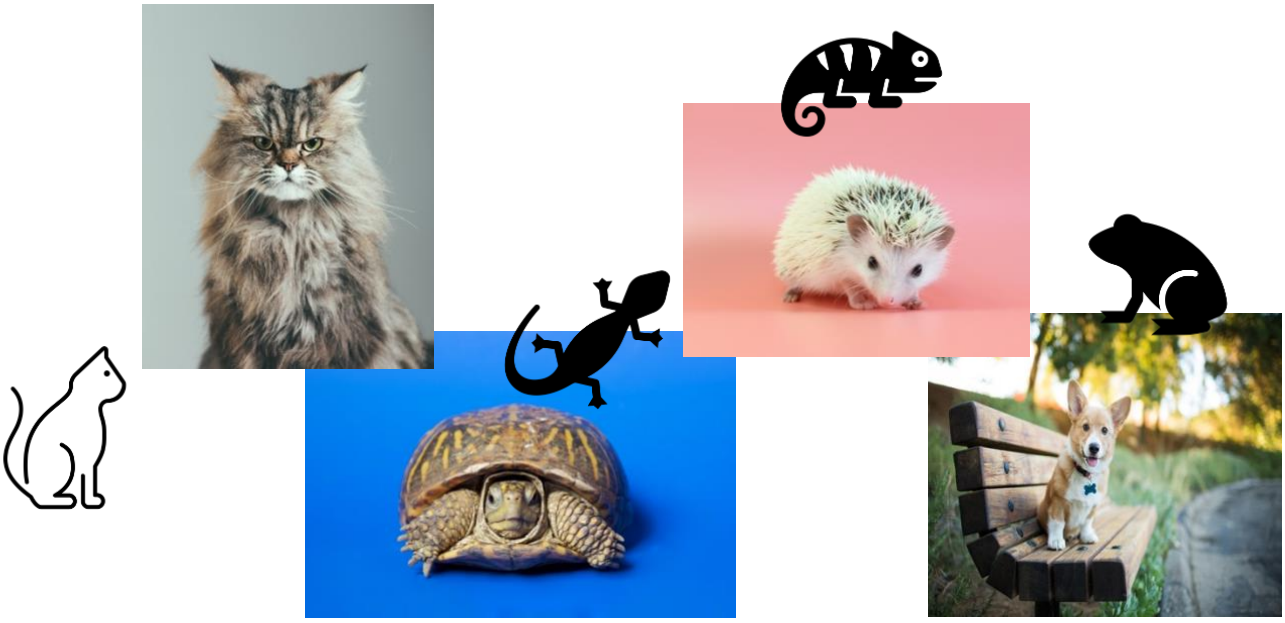
✓ Use your eyes and ears to observe.

✓ One or two students at a time.

✓ Draw or write what you notice.

✓ Ask a teacher before touching the pet.

✓ Be kind and respectful to the animal.



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