Inquiry Project Design Plan

Teacher/Designer Names: Alina Jacskon	
Animal Adaptations	**Grade Level: 2-4**
Est Launch Date:	**Est Duration (in weeks):** 2-3
Disciplines Involved: Science, ELA, Tech	
Problem Statement: What are some things that animals need from their habitat? Sometimes animals get injured and they cannot get the things they need. If they do not get help when this happens, they do not survive.	

STAGE 1: DESIRED RESULTS

Big Idea: Animal Adaptation

Enduring Understandings:	**Essential Question(s):** (MEANT TO BE SHARED WITH STUDENTS)
● Animals' bodies have specific parts that have specific functions. When an animal cannot use their body in a certain way or are born with a birth defect, they need to adapt. ● Talk about the body parts and features that an animal is born with that help it survive in its environment.	● How do living things adapt to change?

Established Goals (Standards, Performance Indicators, Learning Goals):
*choose relevant standa rds to unit/project plan timing and learning goals; do not need to use all disciplines below.
** unpack into SWK and SWBAT under identified standards as this will lead to aligned assessment design

Science Standards:

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. (Grades K - 2)

Social Studies Standards:

Mathematics Standards:

ELA Standards:

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W.2.7 Research to Build and Present. Participate in shared research and writing projects.
S.L.2.1 Participate in collaborative conversations with diverse partners about topics and texts with peers and adults.

Technology Standards:

- **NYS Computer Science and Digital Fluency:**

2-3.DL.4 Use a variety of digital tools and resources to create digital artifacts.

- **ISTE: 1.4 Innovative Designer. 1.4a - know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.**

Social Justice Standards:

Other (Art, SEL, etc):

Links to Standards/Reference Frameworks:
NGSS, NGSS by DCI Nat'l C3 SS Framework, NYS K-8 SS Standards, Common Core, ISTE, Learning for Justice Social Justice Standards, CASEL SEL Framework, NYS CS and Digital Fluency

Students will know (SWK):	**Students will be able to do (SWBAT):**
-understand and identify that animals have certain features.	-understand and identify what features help an animal to survive. -create a model that represents the living things found in a specific habitat. -explain how a specfic habitat meets a specific animals needs. -provide examples of how 3D printing has helped injured animals.

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STAGE 2: EVIDENCE & ASSESSMENTS:

Performance Task Narrative:

Goal: *Provide a statement of the task. Establish the goal, problem, challenge, or obstacle in the task.*
The goal of this performance task is for students to perform research and design prosthetic prototypes for an animal to use for its survival.

Role: *Define the role of the students in the task. State the job of the students for the task.*

Designers, Engineers, Zoologist, Veterinarian

Audience: *Identify the target audience within the context of the scenario.*
Classmates, teachers

Situation: *Set the context of the scenario. Define the narrative.*

Engineers use 3D printers for many purposes. One purpose is to create prosthetic parts for animals and to create a temporary habitat for recovering animals.

Product(s): *Clarify what the students will create and why they will create it.*
- Students will create a temporary habitat using given materials
- Create their assigned animal with modeling clay
- Students will create a prosthetic prototype for an injred animal using the 3D printing technology.

Standards (criteria for success): *Provide students with a clear picture of success. Identify specific standards for success.*

- ❑ Engineering an Animal's Survival Rubric
- ❑
- ❑
- ❑

Other Evidence/Assessments:
Making Sense Assessment: Have students reflect about the science phenomena they explored.

STAGE 3: THE LEARNING PLAN:

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Learning Activities

(potential layout below. Can be daily, divided by periods, or even using the Engineering Design Process to divide into stages such as Ask, Imagine, Plan, Create, Improve)

Week 1 Pre-Activity Assessments

Learning Goals:
Ask students some questions about what they know about animal habitats and if they've heard about using 3D printing to help animals.

Learning Events:
Students will watch "How 3D Printing Gave These Animals A New Life" via YouTube. We will then engage in a discussion after.

Formative Assessments:
Exit Ticket: Students can complete an exit ticket after they talk with a partner about the animals that were rescued because of 3D printers. Students can answer the question: Based on what you've learned, how have 3D printers helped injured animals survive?

Notes/Resources:
Consider having an expert come in to discuss how

Week 2

Learning Goals: SWBAT create a model that represents the living things found in a specific habitat.

Learning Events:

1. Have students choose a Task Card with their partner. The card lists an animal that has an injury and briefly describes its habitat. Students will need to design a way to fix the animal's injury and create a habitat for the animal. Have the students start the first step of the engineering design process: ask to identify the need and constraints of their task.
2. Distribute copies of the Research Record Page to students. Remind students that engineers who help animals first research the animals before they help them.
3. Allow students to complete the **first step of the engineering design process**: research their animal's features so they can effectively design a solution to its problem. For example, if the student is researching a giraffe with an injured neck, then they will need to research giraffe necks. Have students use online resources such

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as Kids Info Bits, and Brain Pop Jr. Students may also use books. Have students record their research on the Research Record Page.

Formative Assessments: Research Record Page

Notes/Resources:

Week 3

Learning Goals:

SWBAT Explain how a specific habitat meets a specific animal's needs.

Learning Events:

4. Following their research, students can design a habitat for their animal to live in. Students should design their habitats with the following ideas in mind: what plants live there, what animals live there, what the animal eats, what animals eat it, and where the animal finds shelter. Allow students to use the same online resources from before as well as the school library. Have students record their research on the Research Record Page.
5. Distribute the modeling clay and craft materials.
6. Instruct students to create their animal using modeling clay and to rely on their research to create accurate depictions.
7. Next, have students create a shoebox diorama of their animal's habitat using the following materials: construction paper, cardboard, paint, Popsicle sticks, toothpicks, pencils and markers, and modeling clay. Note: the types of materials students may use is up to the teacher's discretion. Their habitat needs to include the plants and animals that can be found in the animal's natural habitat, shelter for the animal, and accurate landforms. Have students refer to the directions on the Research Record Page.
8. To wrap up the activity, allow students to present their dioramas to their classmates. Students should talk about what animal they were rescuing, why it needed help, and how they would design an adaptation for them. They can describe their diorama, name their habitat, and explain why they included the plants and animals that they did. They can also explain how the animal they rescued gets food, water, and shelter in its habitat.

Formative Assessments:

Notes/Resources:

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Week 4

Learning Goals:
SWBAT Provide examples of how 3D printing has helped injured animals.

Learning Events:
Students will work in groups using their laptops and the software TinkerCad in order to create a prosthetic prototype for the animal they have been researching and creating a habitat for.

Formative Assessments: