Application of The HERP Project Curriculum to Science and Technology Standards

The Herp Project Curriculum	*Next Generation Science Standards*	International Society for Technology in Education Student Standards
Practices/skills: Research design Hypothesis building/testing Data collection Measurement skills Taxonomy Data analysis Presentations/videos **Citizen Science digital data upload**	**HS-LS2-1.** **ESTS1-1** **Science and engineering practices:** -Using mathematical and computational thinking -Constructing explanations and designing solutions	**1. Creativity and innovation: a. Apply existing knowledge to generate new ideas and processes in research design.** **2. Communication and collaboration**: **b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats to share findings from scientific investigations.** **3. Research and information fluency**: **a. Plan strategies to guide inquiry** using apps in the field for scientific investigations. **4. Critical thinking, problem solving, and decision-making: Use critical thinking skills to solve problems, plan, and conduct research using digital tools. a. Identify and define authentic problems and significant questions for investigation using digital tools in the field.** **5. Digital citizenship: a. Advocate and practice safe, legal, and responsible use of information and technology.** **6. Technology operations and concepts**: Understand technology concepts, systems and operations. **a. Understand and use technology systems. b. Select and use applications effectively and productively. Transfer current knowledge to learning of new technologies.**
Core Ideas: Adaptation Biodiversity Bio indicators Biomes Biotic parameters Carrying capacity Climate change Ecosystem dynamics Energy flows Food energy pyramids Food webs Genetic hybridity Habitat/Niches Human impacts Interdependence Interactions Invasive species study Natural selection Population studies Predator/prey Species diversity Weather and climate	**HS-LS1-2** **HS-LS2-1, 2, 6, 8** **HS-LS3-1, 2, 3** **HS-LS4-1, 4, 5, 6*** **HS-ESS2-2, 4*, 5, 6, 7** **HS-ESS3-1, 3*, 4, 5, 6*** **Science and engineering practices:** -Engaging in argument from evidence -Obtaining, evaluating, and communicating information **Crosscutting Concepts:** -Cause and Effect -Scale, Proportion, and Quantity -Stability and Change *Real, not a simulation or model.	**2. Communication and collaboration**: **d. Identify trends and forecast possibilities.** **3. Research and information fluency**: **b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.** d. Use apps in the field to process data and report results. **4. Critical thinking, problem solving, and decision-making**: **b. Plan and manage activities to develop a solution or complete a project. c. Collect and analyze data to identify solutions and /or make informed decisions.** **5. Digital citizenship: b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.** **6. Technology operations and concepts**: Understanding technology concepts, systems and operations. **b. Select and use applications effectively and productively. c. Troubleshoot systems and application.**
Extension Activity: Reduce human impact on the ecosystem.	**HS-LS2-7** **HS-LS4-6** **HS-ETS1-2, 3, 4** **Science and engineering practices:** -Developing and using models -Developing possible solutions -Optimizing design solution **Crosscutting concepts:** Influence of science, engineering and technology on natural world	**1. Creativity and innovation**: **a. Apply existing knowledge to generate new ideas, products, or processes. b. Use *models and simulations to explore complex systems and issues.** **4. Critical thinking, problem solving, and decision-making**: Using technology to help reduce impact. **d. Use multiple processes and diverse perspectives to explore alternative solutions.** ***Real, not a simulation or model**