Sensing for Science: Human Impact

**Standard/Evidence Statement:** MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

| **Event** | **Student Performance task** | **Explicit Instruction** | **Feedback Loop** |
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| **Launch** | **Asking** questions about the data set and **identifying** the goal of the project. | Information Representation:  Introduce the environmental problem that is the result of human impact, using data. | Peer Feedback: Partner Inquiry  Teacher Feedback:  Questions used for deductive reasoning |
| **Milestone:** Analyze and interpret data to identify the problem. | **Identify** and **explain** the problem. | Scientific Writing:  Claim, Evidence, and Reasoning writing using data as evidence. | Peer Feedback: Partner Share  Teacher Feedback: Direct feedback on CER exit ticket. |
| **Milestone**: Asking questions to identify the possible independent variables. | **Identify** and **explain** the independent variables. | Information Retrieval: Obtaining reliable information. | Peer/Teacher Feedback: Class discussion |
| **Milestone:** Using scientific knowledge to generate design solutions | **Generate a design** that addresses the human activity and incorporates a technology that monitors and minimizes the negative human effects on the environment. | Scientific Reading: Background information on the human activity and environmental impacts to support your Claim, Evidence, and Reasoning. | Peer Feedback: CER argument |
| **Milestone:** Describing criteria and constraints, including quantification when appropriate | **Define and quantify** criteria and constraints for the solution including individual and societal needs and desires and economic constraints. | Listening and Observing: What are criteria and constraints? | Peer Feedback: Stakeholder discussion |
| **Milestone:** Evaluating potential solutions | **Describe** how well the solution meets the criteria and constraints, including monitoring or minimizing a human impact, based on the causal relationships between relevant scientific principles about the processes that occur in, as well as among, Earth systems and the human impact on the environment.  **Identify** limitations of the use of technologies employed by the solution. | Scientific Writing: Putting milestone information together to create the final presentation/argument. | Teacher Feedback: Next Steps |
| **Editing** | **Revise** the design that addresses the human activity and incorporates a technology that monitors and minimizes the negative human effects on the environment. | Listening and Observing: How to provide meaningful feedback. | Peer Feedback: Peer Review |
| **Landing** | Knowledge Presentation: **Create a presentation** describing the solution they have created, based on scientific principles, in order to monitor and minimize human impact on the environment. | Listening and Observing: How to present professionally. | Self Evaluation: Self Reflection Form  Teacher Feedback: Rubric Assessment  Peer Feedback: Presentation Evaluation |