Table 1. *NGSS Table*

| Standard  HS-LS2 Ecosystems: Interactions, Energy, and Dynamics | |
| --- | --- |
| Performance Expectation | |
| HS-LS2-8. Evaluate evidence for the role of group behavior on individual and species’ chances to survive and reproduce. | |
| Science and Engineering Practice | Connections to Classroom Activity  *Students:* |  |
| Engaging in Argument from Evidence  Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.  Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments. (HS-LS2-6)  Evaluate the evidence behind currently accepted explanations to determine the merits of arguments. (HS-LS2-8) | Students will evaluate and present the effectiveness of copper on killing bacteria by designing and conducting an experiment comparing infected water stored in copper vessels vs stored in bottles.  Students will use the results of their experiment to support or refute the effectiveness of copper vessels at reducing bacteria in water. |
| Disciplinary Core Idea |  |
| LS2.C: Ecosystem Dynamics, Functioning, and Resilience  A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability. (HS-LS2-2),(HS-LS2-6)  LS2.D: Social Interactions and Group Behavior  Group behavior has evolved because membership can increase the chances of survival for individuals and their genetic relatives. (HS-LS2-8) | Students explore the effects of bacteria on human populations and possible solutions used by older population by interpreting their experiment results and through an extrapolation of the effects of the presence and absence of antimicrobial measures on the human populations via class discussion  Students will discuss how the social behavior of sterilizing water may have shaped populations. |
| Crosscutting Concept |  |
| Cause and Effect  Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects. (HS-LS2-8)  Stability and Change  Much of science deals with constructing explanations of how things change and how they remain stable. (HS-LS2-6),(HS-LS2-7) | Students will have a discussion about the cause and effects of bacteria on population behavior  Students will have a discussion about how the ancient practice of using vessels to sterilize water compares to our current methods. |

**Connections to the *Common Core State Standards* (NGAC and CCSSO 2010):**

| **ELA**  RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. (HS-LS2-6),(HS-LS2-7),(HS-LS2-8) | Students will evaluate and present the effectiveness of copper on killing bacteria by using the results of their experiment to support or refute the effectiveness of copper vessels at reducing bacteria in water. |
| --- | --- |
| **Mathematics**  Reason abstractly and quantitatively. (HS-LS2-1),(HS-LS2-2),(HS-LS2-4),(HS-LS2-6),(HS-LS2-7) | Students will use data to create an argument. |

| **Connections to Nature of Science (when appropriate):**   * Scientific argumentation is a mode of logical discourse used to clarify the strength of relationships between ideas and evidence that may result in revision of an explanation. (HS-LS2-6),(HS-LS2-8) | The activity discussion allows students to explicitly reflect on the nature of science by discussing how scientists use multiple methods to develop scientific knowledge . |
| --- | --- |