Bacteria: Friend or Foe?
PBL @ a Glance

Name of Project: Bacteria: Friend or Foe?		**Duration:** 9 wks
Subject/Course: Science/Math/SDAL	**Teachers:** Heisey, Hughes, Santoro, Ginter (Science) Hanes, Hopkins, Beck, Lineberry, Pierce, Linebaugh (Math) Howell, Eaton, Koplitz, Hufnagl (SDAL)	**Grade Level:** 7th

Driving Question:	What is the impact of bacteria on our lives?

Learning Goals:

Science	1.2.1 - Describe and explain how variables can cause changes in a system over time 1.3.1 - Understand limiting factors and predict their effects on an organism 1.3.2 - Explain how living things respond to changes in their environment 1.7.1 - Analyze the roles of different cycles within an ecosystem 5.1.2 - Apply measurement systems to record and interpret observations under a variety of conditions 5.1.3 - Describe ways technology is used to enhance scientific study and/or human 6.1.1 - Use evidence such as observations or experimental results to support inferences, clearly describe relationships, and communicate and support conclusions 6.1.3 - Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions 6.1.4 - Design and conduct a controlled scientific investigation and understand the current scientific knowledge guides scientific investigations and field observations 6.1.5 - Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations 6.1.10 - Use mathematics in all aspects of scientific inquiry
Math	M07.A-N.1.1.3 Apply properties of operations to multiply and divide rational numbers, including real-world contexts; M07.B-E.2.1.1 Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. M07.B-E.2.2 Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems. M07.B-E.2.3.1 Determine the reasonableness of answer(s) or interpret the solution(s) in the context of the problem. CYMA07.1.1.02 Create, plot, compare and interpret graphs of real numbers on a number line.

Learning Goals: (Continued)

Skills for Digital Age Learners	**<u>Research and Information Fluency</u>** CYDAL.3.7.1 Plan strategies to guide inquiry CYDAL.3.7.2 Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media CYDAL.3.7.3 Evaluate and select information sources and digital tools based on the appropriateness to specific tasks CYDAL.3.7.4 Process data and report results **<u>Collaboration</u>** CYDAL.2.7.4.01 Use digital tools to collaboratively create projects and solve problems. **<u>Critical Thinking, Problem Solving, and Decision Making</u>** CYDAL.4.7.1 Identify and define authentic problems and significant questions for investigation CYDAL.4.7.2 Plan and manage activities to develop a solution or complete a project CYDAL.4.7.3 Collect and analyze data to identify solutions and/or make informed decisions CYDAL.4.7.4 Use multiple processes and diverse perspectives to explore alternative solutions

Timeline	Use the following link to access the calendar, where you will learn more about due dates and content to be explored. https://docs.google.com/spreadsheet/ccc?key=0Aj50R_uvii1ydGpGMGJfbXRocnpSYjFLNC1jZVlnV1E&usp=sharing

How Will I Be Graded?

(Student learning will be monitored *throughout* and *at the end of* the unit using the following criteria.)

Research & Information Fluency

Expectation: **Student applies digital tools to gather, evaluate, and use information.**

	Exceeds Expectation *Student excels in applying skills.*	**Meets Expectation** *Student has shown competency.*	**Below Expectation** *Student is just getting started.*
Inquire & Gain Knowledge	**-30-** Student ***uses THREE or MORE digital tools to gather and evaluate*** information. *Example: Searching multiple online sites and offline books to locate and evaluate the accuracy of information.*	**-25.5-** Student ***uses TWO digital tools to gather and evaluate*** information. *Example: Comparing two sources of information to confirm accuracy.*	**-22.5-** Student ***uses ONE digital tool to gather*** information. *Example: Searching one website to locate information.*

Collaboration

Expectation: **Student remains on task and meets deadlines.**

	Exceeds Expectation *Student excels in applying skills.*	**Meets Expectation** *Student has shown competency.*	**Below Expectation** *Student is just getting started.*
Time Management	**-20-** Routinely uses time wisely. **-AND-** All parts of the assignment are completed and turned in on time or ahead of time.	**-17-** Some time and focus reminders are needed. **-AND/OR-** Most parts of the assignment ***are completed*** on time.	**-15-** Many time reminders are needed to refocus student's attention. **-AND/OR-** Most parts of the assignment ***are not completed*** on time.

(Continued)

How Will I Be Graded?

(Student learning will be monitored *throughout* and *at the end of* the unit using the following criteria.)

Critical Thinking & Creativity

Expectation: **Use digital tools to collaboratively create projects and solve problems.**

	Exceeds Expectation *Student excels in applying skills.*	**Meets Expectation** *Student has shown competency.*	**Below Expectation** *Student is just getting started.*
Content	Covers topic ***in-depth with details and examples***. Subject knowledge is ***excellent***.	Includes ***essential knowledge*** about the topic. Subject knowledge appears to be ***good***.	Content is ***minimal***. ***Lacks knowledge*** of content.
Presentation	Well-rehearsed with ***smooth delivery*** that holds audience attention.	Rehearsed with ***fairly smooth delivery*** that holds audience attention most of the time.	Delivery ***not smooth*** and ***audience attention often lost.***
Originality	Product shows a ***large amount*** of original thought. Ideas are creative and inventive.	Product shows ***some*** original thought. Work shows new ideas and insights.	***Little*** evidence of original thinking.
Workload	The workload is divided and shared ***equally*** by all team members.	The workload is divided and shared ***fairly*** by all team members, though workloads may vary from person to person.	The workload was divided, but one person in the group is viewed as not doing his/her fair share of the work.