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2018 Technology Integration Workshop

Unit Title: Scientific Method

Grade Level: ***(example: 9, 10, 11, 12 or 7-8)*** *7*

Subject Area: ***(example: Science, Physics; English, Short Stories)*** Life Science

Duration/Length/Number of class periods: ***(example: 5 class periods)*** 14 periods

Description: Explain and apply steps to scientific method and then develop experiment to show understanding

Description: Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables, ensuring that one variable is systematically manipulated, the other is measured and recorded, and any other variables are kept the same (controlled). For example: The effect of various factors on the production of carbon dioxide by plants.

- generate questions and methods of investigation
- conduct controlled experiments with multiple variables
- generate conclusions with evidence and explanations
- evaluate explanations by others

What Enduring Understandings are desired?

Identify scientific questions to plan and conduct a controlled experiment. Student will be able to graph and analyze experiment. Student will be able to design a global solution that could be analyzed by a scientific experiment.

What Essential Questions will be considered?

What makes a successful scientific question?
How are liter, meter, gram and degrees celsius used and applied in the larger world?
What is the value of conducting a controlled experiment?
What factors may affect the reliability of an experiment's results?
What are examples of global solutions or problems that could be or were solved using scientific investigations?

Students will know / be able to:

- Identify Scientific Questions
- Use Measuring tools and appropriate units of measurement in an investigation

- Plan and conduct a controlled experiment
- Judge reliability of results
- ***Use appropriate measurements, graphs and analysis to describe global natural and designed solutions and scientific investigations.***

Description *Units must include at least one of each formative, summative, introductory activity and learning activity. Check the appropriate box; one per row.*	Formative	Summative	Introductory Activity	Learning Activity	Student Technology Used	Teacher Technology Used	ISTE Standards
Schoology Pre-Test (15 minutes prior to starting or day before)							
Day 1 - Intro: Temperature Probe Experiment **(**Safety Intro and contracts done prior to unit starting) (Advanced Option Available) Activity: Show students how to use temperature probe on iPad and go outside. Question is "How does color affect temperature?" Let them take a piece of paper and go with a partner. Anything goes. Not structured or directions on how to test.			**x**		**x**		
Day 2 - EQ: What makes a successful scientific question? IN: Review from yesterday (Formative check) THROUGH: Schoology Checklist of Resources - Take C Notes on these resources: YouTube Presentation, YouTube Video, Google SlideShow Out or Homework: Quizizz.com Testable Questions Homework Code 350406	x						
Day 3 - EQ: What is the value of conducting a controlled experiment? IN: Analyze testable questions. (Formative check) THROUGH: Hypothesis and Variable C Notes OUT: Answer EQ and interact with your notes	**x**				**x**	**x**	
Day 4: IN: Hypothesis Practice with Pod Group/Share Out THROUGH: Open your google response sheet in schoology. Read questions written around room to apply knowledge of hypothesis and variables we have just learned. After you finish one station, get OK to go to another. They do NOT have to be done in order. There are also Advanced Option Choices. If you do six or more A/Os you will get an advanced option grade. OUT: Work on Question and Hypothesis for your thermometer experiment.				**x**	**x**	**x**	

Day 5 & 6: EQ: How are liter, meter, gram and degrees celsius used and applied in the larger world? IN: Measurement quiz THROUGH: Assignment depends upon how you did on quiz Really low kids on IEP: L1 50% or Less: L2 50% to 80% or Less: L3 More then 80%: L4 100%: L5 Answer Key OUT: Begin writing steps to your experiment	**x**					**x**	
Day 7 & 8: EQ: How are liter, meter, gram and degrees celsius used and applied in the larger world? IN: Put definitions in CNotes 15 minutes Metric Price is Right THROUGH: Liter, meter, gram, temperature lab stations. OUT: What measurements will you use in your experiment?		**x**		**x**		**x**	
Day 9: IN: Measurement quiz THROUGH: EdPuzzle How to analyze data OUT: Begin writing steps to your experiment					x		
Day 10: IN: Create Data Table using the google sheets template THROUGH: Hand write-out experiment steps OUT: Share completed steps with teacher and class							
Day 11: Work on Experiment				**x**		**x**	x
Day 12: Use Google template to analyze data and write conclusion	**x**				**x**		
Day 13: Prepare simple poster, PicCollage or group choice to present your experiment with class.		**x**			**x**		
DAY 14: Presentations Last ten minutes class discussion: Dedicate planning time to collaborate with colleagues to create authentic learning experiences that leverage technology.		**x**			**x**		

Materials, tools and resources
Vocabulary: Meter, liter, gram, Celsius, mass, volume, Kilo, Centi, Milli, Hypothesis, balance, graduated cylinder, meniscus

Temperature Probe Lab Sheet - https://docs.google.com/document/d/1xMtJqgJ7L1D7KJT5z8C7ZDBKZJT11HZya_xHHwuV3qk/edit?usp=sharing Scientific Method Review Game Link https://jeopardylabs.com/play/scientific-method-review-game
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Additional credit given to