Overview of Year 2016

6th Grade Science Curriculum

Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Unit 1- DIV			Unit 2- AIA			Unit 3- GFG			

Diving into Science UNIT OVERVIEW

<table>
<tr><th colspan="3">STAGE ONE: Identify Desired Results</th></tr>
<tr><td rowspan="7">Established Goals/ Standards

Big Idea in Science:
How scientists behave and what they do.

NYS Standards in MMS Grade 6:Standard 1: Students will use (mathematical analysis), scientific inquiry, (and engineering design), to pose questions, seek answers, and develop solutions.</td><td colspan="2">Long-Term Transfer Goal</td></tr>
<tr><td colspan="2">At the end of this unit, students will use what they have learned to independently…
.Students will use (mathematical analysis), scientific inquiry, (and engineering design), to pose questions, seek answers, and develop solutions to work together as a group to solve problems and communicate results.</td></tr>
<tr><td colspan="2">Meaning</td></tr>
<tr><td>Enduring Understandings
Students will understand that…
the criteria and constraints of a problem are important aspects in determining how to approach a solution.
science practices of iteration, keeping records, and sharing ideas as they work are part of how scientists solve problems</td><td>Essential Questions:
How do scientists work together to solve problems?
How do scientists design an experiment to solve a problem?</td></tr>
<tr><td colspan="2">Acquisition</td></tr>
<tr><td>What knowledge will students learn as part of this unit?
criteria and constraints of a problem are important aspects in determining how to approach a solution
science practice of iteration and the</td><td>What skills will students learn as part of this unit?
keep records/data and share ideas
plan, build, test their new designs/model
consider what they have learned to help them understand how scientists</td></tr>
</table>

	importance for finding validity ● about matter and gravity, and its influence on the strength and stability of structures. ● How to construct a model	work together to solve problems ● identify inconsistencies in procedures that lead to variations in results. ● make a list of criteria and constraints ● run a class procedure in their groups and share results. If needed, revise the procedure(iteration), then test the procedure ● Reflect

STAGE TWO: Determine Acceptable Evidence	
	Assessment Evidence
Criteria to assess understanding: Scholars will.. ● work cooperatively using teamwork ● give explanations that are claims supported by evidence, accepted ideas and facts. ● Explain the criteria and constraints that affected the design ● Keep records/data tables and share ideas as they work to design their book supports and improve their Penny Experiment procedures. ● Include why procedures must be repeatable and can be replicated. (validity) ● Explain the reasoning behind changes made	Performance Task focused on Transfer: P1:Design an investigation to solve the following problem: How much filling can be placed on the bottom cookie so it is completely covered but doesn't leak over the sides?(Engineering design process) P2: Compare IDEO scientists and engineers work as shown in video with their work on design projects (ie: book support, penney activity. Pgs DIV 102-DIV 103 Other Assessment Evidence: ● Student Journals ● Create Your Explanation BLM ● Class discussion ● Drops on a Penny graph BLM ● Project Board BLM ● Testing My Design BLM

to original designs. (Iterations)	

T, M, A *(Code for Transfer, Meaning Making and Acquisition)*	**STAGE THREE: Plan Learning Experiences**	
1.A,M 2. A,M 3.A,M 4. A, M 5.A, M 6. A, M 7.T 8.T 9.T	Learning Events: **Day 1:** ● Introducing the final performance task(engineering a design solution for a new product for the cookie company they work for) They will complete a series of lessons to develop the skills and understandings they will need to accomplish this task. ● How do scientists and engineers solve problems??? Activate prior knowledge using an EL protocol. Introduce the Project Board. ● IDEO The Deep Dive One Company's Secret Weapon for Innovation(22:01) Pg DIV 102- Show the part about team- work ● Introduce expectations for group work- what does it look like to be part of a small workgroup ● Explain and define that a design challenge has 2 parts: constraint and criteria- what does this mean? ● Explain the book support challenge and begin design process(end of Day 1) **Day 2 and Day 3** ● Continue design process from prior days work(first attempt) ● Gallery walk plusses and minuses- sticky notes ● Video Teacher Demonstration on center mass/ columns ● Refine design based on feedback and center of mass, column demo- iteration ● Update Project Board **Day 4** ● Group presentations of book supports	

	● Students provide feedback to each other ● Update project board ● Introduce Line Plot **Day 5 and 6** ● Review the cookie simulation ● Penny Drop procedure design/carry out w/ a partner ● Create a line plot ● Communicate their results- why are the results all over the line graph? ● Introduce repeatable and replicate/validity- all class members will use the same process that we will develop as a class as they carry out the procedure agreed upon by all scholars ● Create a second Line Plot ● Compare and contrast data ● Update Project Board **Day 7, 8 and 9** ● IDEO The Deep Dive One Company's Secret Weapon for Innovation(22:01) Pg DIV 102- ● Complete a venn diagram comparing their work, IDEO work and things that are the same. ● Complete performance task Pg DIV 102-(see details in Stage 2) ● Present their work	

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Unit : Animals in Action

Transfer Goal: Scholars will learn how to independently work along with working together to share findings, refine ideas, build on others ideas, while keeping clear, accurate and descriptive records. ***Differentiate between observations and interpretations***	**Essential question: How do scientists answer big questions and solve big problems.**

Standards: **Standard 1- Mathematical Analysis** **M2.1, M2.1b** **Scientific Inquiry** **S1.1, S1.1c** **S1.2, S1.2a, S1.2c** **S1.3** **S1.4** **S2.1, S2.1c, S2.1d** **S2.2, S2.2b, S2.2e** **S2.3, S2.3b, S2.3c** **S3.1, S3.1a** **S3.2, S3.2a, S3.2c, S3.2d, S3.2e, S3.2f, S3.2g, S3.2h** **S3.3** **Engineering Design** **T1.1 a** **T1.3, a, b** **T1.4 a, b** **T1.5 a, b** **Standard 2: Information Systems** **1.4b, c** **Standard 2: Models** **2.1, 2.2** **Standard 2: Optimization** **6.1** **Standard 7: Interdisciplinary Problem Solving** **1.1, 1.3, 1.4** **Standard 4: Process skills**	**Understanding: Students will understand that…** · ***Behavior is a type of response to internal or external stimulus*** · ***The structure and function of animals' bodies are complementary and affect behavior*** · ***Organisms need to grow, reproduce, and maintain their bodies*** · ***Studying the work of different scientists provides understanding of scientific inquiry and that science is a human endeavor*** · ***Observations and measurements are considered reliable if the results are repeatable by other scientists using the same procedure***

4, 7, 8 **Standard 4: LE 1.1f, 1.2a, 1.2g, 4.1c, 4.1d, 4.2b, 5.1g**	
Performance Task: Design and build a zoo enclosure for a designated animal using criteria and constraints of animal behavior including hunting, the senses and habitat.	**Criteria for performance task:** **Students will observe animals including humans using video, wild wings presentations, zoo field study and informal observation of peer interactions.** **Students will understand the work of an ethologist: Ethologist** **Ethology: the study of animal behavior with emphasis on the behavioral patterns that occur in natural environments.** **Students will learn the difference between inference/observation**

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Unit : Good Friends and Germs

Transfer Goal:	**Essential question:**
Differentiate between observations and interpretations • ***Make claims based on evidence***	**How can you prevent your good friends from getting sick?**

Standards:	**Understanding: Students will understand that...**
Standard 1: MA M1.1a, b M2.1, b M3.1, a S1.1, c S1.2, a, c S1.3 S1.4 S2.1, b, c, d S2.2, b, c, d, e S2.3, b ,c S3.1, a S3.2, a, c, d, e, f, g, h S3.3 T1.1, a T1.3, a T1.4, a, b T1.5, a,b 1.4a, b, c 2.1a, b Standard 6: Interconnectedness 1.2 1.3 1.4 2.1 2.2 3.1 4.1 4.2 5.2 6.1 Standard 7: IPS 1.1 1.3 1.4 Standard 4:PS 2	***Students will understand that…*** • ***Scientific questions are directed toward objects and events that can be described, explained, or predicted by scientific investigations***

3 4 7 8 9 Standard 4:LE 1.1 a, b, c, d, e, g 1.2 a, b, c, d, e, f, h, I, j 4.4d 5.1 a, c, f	

Performance Task: disease case study project	**Criteria for performance task:** **Students will be able to explain the difference of communicable and noncommunicable diseases.** **Students will be able to explain how diseases are spread.** **Students will be able to describe methods to reduce the spread of disease.** **Students will be able to analyze the cause, affects, symptoms and treatments for some common diseases.**