Science 7th Grade SAMPLE Student Learning Objective (SLO)

Name(s): Mr. Noah Fence Content Area: Science Grade/Course: 7th Grade

Instruction Interval: 9/30/15 – 5/15/16 SLO Type: X Class-level ☐ Course-level or Grade-level ☐ Targeted ☐ Tiered

Student Population

Who is included in this objective? If a targeted subgroup, how will the other students be addressed in another SLO?

Links: Instructional Support Video #1 OH; Samples: OAISD and other states (LA, RI, OH, or NY)

- ✓ Describes the characteristics of the student population including special needs (disabilities, language deficiency, etc.).
- ✓ Justifies why a targeted group was selected or includes the entire class.
  - If subgroups are excluded, specifies who and if they are covered by another SLO; otherwise, why not

My SLO will cover all 111 of my 7th grade science students, for periods 1, 3, 4. My district has an approximately 65% free/reduced and 15% EL population. In addition my district has a mobility rate of about 6%. The following is the demographic breakdown of my students:

65% male = 72 students
35% female = 39 students
11% Bottom 30% = 12 students
8% EL = 9 students
6% IEP's = 7 students

Of the students with IEP's, 5 are learning disabled in the areas of Reading Comprehension and Fluency. These 5 students struggle with reading informational text which directly impacts their progress in Science. The other 2 students with IEP's are learning disabled in Mathematical Computation. These two students struggle working with formulas and understanding tables and graphs which directly impacts their progress in Science. I work with the IEP caseload provider to provide all instructional and assessment accommodations and modifications. The designated 12 students in the District's Bottom 30% (B30) receive almost the identical support as the students having IEP's. Many, but not all, of the 12 students (B30) have an IEP or designated as EL. I do have 1 student on a 504 plan for diagnosed ADHD. He is moved closest to me for most learning opportunities.

Additionally, the 9 EL students receive one hour of EL instructional support. Understanding Science vocabulary is especially difficult for these students. I work closely with the EL instructor to utilize as many visuals as possible for these students to better understand the essential vocabulary. I utilize various components of the SIOP teaching model as much as possible.

(Below is an example of using Discovery Education Reading Data. This data section can be added, provided a classroom teacher has access to additional data sources such as: State Data (M-STEP/MME), NWEA, ACT, PSAT, District Assessments)

The Discover Education Assessment is a researched based assessment designed to measure a student's reading and writing growth utilizing 3-4 assessments during the school year. There are three areas in which a student's growth is categorized based on national normed scale scores determined by Discovery Education. The three categories are Above Average, Average and Below Average. The Discovery Education data for my students below was taken from Reading Test A – D from the 6th grade year.

Above Average = 17 students
Average = 86 students
Below Average = 8 students

In reviewing the data, the most common area of weakness was Common Core Reading Standard RI. 6.4 Meaning of Words. I interpret this weakness as not necessarily knowing of science vocabulary but rather grade level vocabulary. Some examples would be not knowing the following: accumulate, adapt, elaborate, precise, etc. Special attention will be given to complex vocabulary introduced in each unit.

Learning Standards

What are the essential standards connected to the learning content? *Links: Support Video #2 OH*

- ✓ Aligns to specific state-adopted standards
- ✓ Represents the essential standards or the big ideas to be taught during the interval of instruction
- ✓ Reaches the appropriate level of complexity (DOK) for each state-adopted standard measured

Because of the unique nature of the new Michigan Science Standards being a (6-8) band configuration, the middle school science department agreed on a course sequence that could potentially show mastery and/or progression towards mastery of particular performance expectations at the end of the seventh grade year. In addition, at the present time, no state level science data can be utilized for two reasons: the state assessment is currently being revised to assess the new performance expectations and the assessment is not given each year. It is anticipated the assessment will be moved in the future to spring of the 8th grade year to assess the banded standards in their entirety. Our district has identified approximately one essential performance expectation from each of the component areas linked to the four Disciplinary Core Ideas:

Structure and Properties of Matter
MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.

Chemical Reactions
MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

Forces and Interactions
MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

Energy
MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

Waves and Electromagnetic Radiation
MS-PS4-1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

Structure, Function, and Information Processing
MS-LS1-2 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

Matter and Energy in Organisms and Ecosystems
MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

Interdependent Relationships in Ecosystems
MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

Growth, Development, and Reproduction of Organisms
MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Space Systems
MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

History of Earth
MS-ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.

Earth's Systems
MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. **

Weather and Climate
MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Human Impacts
MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

Engineering Design
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Baseline Data

What data were reviewed in the development of the SLO? How do the data support the SLO? *Support Video #3 OH*; *Data Template OH*

- ✓ Identifies sources of information about students (e.g. trend data and prior year test and/or pre-test data)
- ✓ Summarizes student data to demonstrate specific student need for the content.

One Pre- and two post-assessments were developed for each of the 4 units and the identified performance expectations below using question items from the ACT Explore, M-STEP and locally developed classroom assessments**.** The assessment questions were grouped by performance expectation. The assessment has a sufficient amount for evidence for each performance expectation (i.e. at least 4 questions and/or tasks associated with it). Each pre/post unit assessment had a range of 5-30 questions. The question types were a mixture of multiple choice, extended response or building of models for explaining concepts or proposing solutions. The intended 2nd post assessment will be used after re-teaching has occurred with students only taking the portion of the assessment [specific performance expectation(s)] needed to demonstrate mastery of any performance expectation the student did not show mastery on the first post-assessment.

Note: When data for each of the units is obtained via the pre-assessment, it would be expected the breakdown baseline data would be similar for each pre-assessment.

The data below represents pre-assessment data from the first Physical Science Unit. The remaining pre-assessments will be given prior to beginning of each unit and the data recorded in this chart.

Total Students 111	**Highly Effective**	**Effective** (Mastery)	**Developing** (At-Risk)	**Not Developing** (Intensive)
	95% - 100%	75% - 94%	53% - 74%	0% - 52%
Physical Science	# of Students	# of Students	# of Students	# of Students
MS-PS1-1	4	36	48	23
MS-PS1-5	5	27	51	28
MS-PS2-1	5	33	50	23
MS-PS3-1	2	20	62	27
MS-PS4-1	5	28	54	24
Life Science				
MS-LS1-2				
MS-LS1-6				
MS-LS2-2				
MS-LS1-5				
Earth and Space Science				
MS-ESS1-1				
MS-ESS1-4				
MS-ESS3-1				
MS-ESS2-6				
MS-ESS3-3				
Eng. & Tech. in Society				
MS-ETS1-4				

Assessment

How will you measure the outcomes of this SLO, which tool(s) will be reviewed to determine success criteria?

Support Video #4 OH; *SLO Assessment Checklist from IN*

- ✓ Describes assessment alignment to the course content and emphasizes constructed-response or performance tasks that require higher-order thinking skills OR Identifies national, state or regional assessments that have been reviewed by content experts to effectively measure course content and reliably measure student learning as intended.
- ✓ Indicates that there are clear answer key, scoring guides and/or rubrics for all assessment items, including formative assessments.
- ✓ Describes the use of formative assessments aligned to essential standards and how progress monitoring will occur.

One Pre- and two post-assessments were developed for each of the 4 units and the identified performance expectations below using question items from the ACT Explore, M-STEP and locally developed classroom assessments**.** The assessment questions were grouped by performance expectation. The assessment has a sufficient amount for evidence for each performance expectation (i.e. at least 4 questions and/or tasks associated with it). Each pre/post unit assessment had a range of 5-30 questions. The question types were a mixture of multiple choice, extended response or building of models for explaining concepts or proposing solutions. The intended 2nd post assessment will be used after re-teaching has occurred with students only taking the portion of the assessment [specific performance expectation(s)] needed to demonstrate mastery of any performance expectation the student did not show mastery for on the first post-assessment.

Two post assessments will be utilized for each unit. The first post assessment will be used to measure growth toward mastery for all students prior to re-teaching. The 2nd post assessment will be utilized to measure specific performance expectations not met at the 75% mastery level after re-teaching has occurred following the 1st post assessment. Students at the borderline range of the low 75-79% mastery level will also be included in the re-teaching cycle. Students having scored in the Highly Effective or Effective category will show continued growth through completing personalized projects to extend their understanding of the disciplinary core ideas and the science and engineering practices. Their personalized projects will be scored using a separate project rubric. It is conceivable students in the Effective (Mastery) category could move into the Highly Effective category based on their personalized project results.

Growth Targets

What are the quantitative targets that will demonstrate achievement of this SLO? *Support Video #5 OH*; *Samples: OAISD, LA, RI, OH, or NY*

- ✓ Baseline and trend data support established targets or pre-assessment data supports targets
- ✓ Demonstrated use of data to identify student needs and determine appropriate growth targets
- ✓ Ensures all students in this SLO have a rigorous and attainable target, consider setting differentiated growth targets

The SLO goal for each performance expectation is for **65%** of students to move at least one level from their pre-assessment level. (Example: 65% of the students in the Not Developing (Intensive) category would move to the Developing (At-Risk) category. In order to advance to the next level, a student has to score 75% on the post-assessment for that performance expectation.

The Physical Science pre-assessment scores for the assessed performance expectations ranged from 21% to 96% accuracy. Mastery level for an individual performance expectation was set at 75%. Students having scored in the Highly Effective or Effective category will show continued growth through completing personalized projects to extend their understanding of the disciplinary core ideas and the science and engineering practices. Their personalized projects will be scored using a separate project rubric.

Total Students 111	**Highly Effective**	**Change %**	**Stud #**	**Effective** (Mastery)	**Change %**	**Stud #**	**Developing** (At-Risk)	**Change %**	**Stud #**	**Not Developing** (Intensive)
	95%-100%			75%-94%			53%-74%			0%-52%
Physical Science	# of Students			# of Students			# of Students			# of Students
MS-PS1-1	9	+55	5	63	+68	32	31	+65	15	8
MS-PS1-5	11	+54	6	57	+70	36	33	+63	17	11
MS-PS2-1	13	+62	8	58	+65	33	32	+67	15	8
MS-PS3-1	8	+72	6	52	+61	38	41	+62	17	10
MS-PS4-1	17	+71	12	55	+73	39	32	+69	17	7

NOTES: *Some students moved into the Highly Effective category based on their personalized project score.
+Some students may show growth by moving from Not Developing (Intensive) to Developing (At-Risk)

Rationale

What is your rationale for setting the targets for student growth and how do they align with school improvement goals? *Support Video #6 OH*

- ✓ Explains why target is appropriate for the population.
- ✓ Demonstrates teacher knowledge of students and content.
- ✓ Explains how targets align to broader school and district goals.

I set tiered targets to help ensure that all students will be able to demonstrate developmentally appropriate growth. Because the Science Department established these performance expectations as "Non-negotiable/Essential" the 7th grade science performance expectations serve as prerequisites for future science courses.

The growth targets are aligned to learning content and the continuous effort to monitor progress toward scientific proficiency are strongly aligned to district objectives and preparing students for the rigor of high school and college-level coursework. The continuous monitoring of student progress in applying and adapting appropriate scientific practices will allow for reflection and provide opportunities to tailor instruction to the needs of individual students as the course progresses.

Comments from Approval Committee Members

SLO Approval Committee	Date	Signature
Mr. Noah Fence	9/30/2015	
Mr. Al K. Seltzer	10/5/2015	