**Questions to Consider in Lesson Planning to meet**

**Next Generation Science Standards[[1]](#footnote-1)**

**Alignment to standards:**

*What is the essential question a student should be able to answer?*

* These can be located in the [Framework for K-12 Science Education](http://www.nap.edu/openbook.php?record_id=13165&page=R1) (FSE).
* [Here](http://www.nap.edu/openbook.php?record_id=13165&page=106) is an examples for the Disciplinary Core Idea PS1

*What evidence of understanding will students be required to demonstrate?*

* This can be found in the text of the Performance Expectation(s) that is/are being targeted in the lesson.
* [Here](http://www.nextgenscience.org/2ps1-matter-interactions) is an example from the NGSS, for 2-PS1
* This statement could be worded…“Students who demonstrate understanding can...”

**Explanation of subject matter:**

* First, you will want to *determine what concepts you want students to learn* in the lesson.
* This should be closely followed by *mapping out how those concepts in this lesson connect with related concepts in science / engineering.*
* Now you are ready to determine and *engage your students prior understanding and misunderstandings*\* regarding the lesson’s topic(s) or “How do I know what students have already learned / experienced?”

\* There are many resources that are available that offer ideas on how a students prior “misunderstandings” can be used to the instructors advantage during lesson delivery. Some of the resources have been included in our e-book library on the M / shared drive.

* During the lesson, make sure you *explicitly communicate to students what the concepts are that they are to learn* during the lesson.

**Use of materials:**

* *Make a materials list* for your lesson(s). Identify consumables and non-consumables so you can preorder consumables and be ready at the start of each school year.
* Be sure you determine before the lesson *how students will be using the materials* in this lesson. This will help you plan their safe and correct use if students are unfamiliar with the materials.
* Consider *how materials could be substituted / changed / enhanced* for the “mix” of learners you serve.

**Quality of Assessment:**

* Identify the evidence of understanding that you want to observe from each student (use the NGSS performance expectation(s) that you previously identified for the lesson)
  + These can be worded as “Students who demonstrate understanding can...”
* Determine *how you will identify when a student has demonstrated proficiency*.
* Determine *how you will limit assessment to the stated performance expectation(s).*
* Consider *CCSS connections and whether these will be factored into your assessment* of student proficiency (use common rubrics developed by the Math and ELA if available)

**Quality of Technological Interactivity: (If technology is used)**

* Determine if or *how the use of technology will connect with the your expectations* of student performance for the lesson.
* Determine if or *how the technology that will be used is responsive to student input* in a manner that creates a positive individualized learning experience. [I.e., Use the desired technology to do the lesson first, in “dry-run” and modify it if needs be, before using it in a “live” classroom. ]

**Quality of Instructional & Practice Exercises:**

* Determine *how students will be able practice*, if needed, so that they can meet the performance expectation(s) in the lesson.
  + Be ready with multiple interactions of that practice if needed.
* Determine how the practice can be modified (differentiated) for average students, struggling students, advanced students.
* Determine if or *how the practice(s) will allow/will require students to integrate a variety of skills* (reading, writing, mathematics, etc.).
  + You might want to determine if those skills are in place beforehand.

**Opportunities for Deeper Learning:**

* Determine if or how the lesson will challenge students to develop at *least three* of the following deeper learning skills:
* Think critically and solve complex problems
* Work collaboratively
* Communicate effectively
* Learn how to learn
* Reason abstractly
* Construct viable arguments and critique the reasoning of others
* Apply discrete knowledge and skills to real world situations
* Construct, use, or analyze models

**Assurance of Accessibility:**

* Determine *if the materials, tasks, and assessments in this lesson are suitable* for all students.
* Determine *if or how you can modified any of the above to address the needs of particular students.*

1. Adapted from a file Compiled by Greg Wertenberger from the [Achieve Rubrics for Evaluating Open Education Resource (OER) Objects](http://www.achieve.org/files/AchieveOERRubrics.pdf)) [↑](#footnote-ref-1)