

# Research, Readings, and Perspectives on Developing Interest and Engagement through Narratives & Themes

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## Overview / Preface

Teachers have long lamented that students are not paying attention in class and that motivation and engagement can be low. As you can see in this [3 minute animation](#), there are many ways to consider creating more cohesive and engaging ways to develop ownership and engagement in learning.

As TV and entertainment has long noted, science is interesting. Consider the many interesting / intriguing science scenarios serve at the center of movies (even fantasies such as [The Amazing Spiderman and Oscorp Labs](#)); at the heart of discovery TV/cable ([Myth Busters](#)); and even possible in reality show and challenges ([Man Vs. Wild](#)). Science can also challenge us to problem solving and give us ways to share our knowledge with other people and even other countries.

As evident in the NYS Core Curriculum (for example, page 10 – 14 in the [Living Environment Core Curriculum](#)), students are asked to think like and work like scientist, testing, analyzing, and sharing their work. Short of such connecting themes and interests, science education can be a list of activities and information that is separate, compartmentalized and little remembered.

A way to move beyond the doldrums of disconnected science is to engage the students through challenging themes. Some startup ideas are suggested below. Think outside your own adult *box*, to remember the reasons that you were challenged and intrigued by science when you first started your learning and your careers.



## Themes from Problem Solving

Curiosity and problem solving has always launched scientific endeavors. How can teachers develop project level interests in students? How can they make the work challenging, interesting, “authentic” – worth learning and sharing? Consider some examples:

- **SHARING KNOWLEDGE AND UNDERSTANDING WITH OTHERS:** throughout the world, lack of food, health concerns, poor sanitation, and lack of understanding of diseases and their transmission plague developing countries. Given the human mandate to share what we know --- and with the availability of many resources in government-sponsored websites – students can use opportunities to learn about microorganisms and disease transmission as a way share their learning with other nations, as can be found [at this link to a Humanitarian biology unit](#). Gathering their emerging understanding into materials that can be shared with others is a good way to raise the level of learning.



- **SOLVING PROBLEMS LOCALLY:** chemistry can be abstract, but when students study the drinks their own cafeteria and publish the results on the school website, they can be their own “Chemical Solutions Solvers” posting about the sugar, pH, and carbonation related to different projects, addressing: “What’s in your soda?” for all the school to ponder.

## Themes in Entertainment

The entertainment industry has long understood the lure (coming from the value of) science and has brought it into movies, television, cable, and now website knock-offs. Think about some of these approaches and create your own *spin*. You can create interest, empowerment, and ownership with these and, if intelligently chosen, you can use these themes / narratives across many units, possibly even a whole semester.

- **School-Myth Busters** could be worked into any science, actually. In physics, you might have your class determine the motion, movement, acceleration, and so on in the different athletics and athletics or, the physics of parking lot collisions. And, for instance, in biology units, again studying athletics can bring in useful aspects of the human body and of maintaining homeostasis, the attached park can suggest environmental investigations. You can have your students working with you in casting topics to study into challenges that can be investigated. ***Remember that learning science is about engaging students in the questions and applications of science*** – having them learning to reason scientifically can come in establishing the problems.

Neat packets of information do not necessarily translate into transmission into students' brains; and neat packets are quite low in the potential for engagement.

- **Reality show in different professions** are becoming popular and can easily be adapted to ongoing challenges in which your students adapt the lives and problems in a profession. Today, many viewers watch dress-designers deal with fashion challenges, chefs have to make meals to tantalize palates within limited calories and ingredients, contractors are given building challenges. ***A key to these shows is that the contestants are judged by professionals in the area.*** Although the audience will ride the emotional roller coaster of interviews with contestants who wait to hear how they fared, the judges are the professionals themselves – be it Donald Trump or the head chef at the Culinary Institute. Find the “problems” in your science area, cast it into challenges, and find a local scientist (or other science teacher in the school) to be the judges. With the ease of creating websites and making YouTubes, you might even be able to have your students compete across schools and to gather professional reviewers who may not be able to travel to the school.
- **Forecasters and Predictors** have long been the mainstay of weather and meteorology; the parallels to classroom weather data gathering over time and forecasting are obvious and quite do-able with spreadsheets, good weather statistics (<http://www.ncdc.noaa.gov/>) and the like. Forecasting could move beyond meteorology into star gazing with forecasting (of sorts) upcoming celestial events (<http://nightsky.jpl.nasa.gov/planner.cfm>) or predicting likely encounter with diseases) if you travel to different parts of the world (such as malaria, [http://www.cdc.gov/malaria/malaria\\_worldwide/impact.html](http://www.cdc.gov/malaria/malaria_worldwide/impact.html)).

## Badging and Peer Review

Teachers must assess work for it to be valued and for them to understand where students need extra support in learning science processes and concepts. The burden of “grading” can become quite large. However, the concept of peer review, where students, in this case, serve to judge the merits of the work of others is valuable – students learn from having to think analytically and in an evaluative way about the merits of a project. Recent efforts are afoot in the world of open-source technologies (as the web has become) to make a web-mediated peer review system, known as badging, where peers vote on the merits of different projects and works. You can learn more about these efforts through this paper on the emerging concept of badging, as now possible through web-based voting.

In projects that come from ongoing narratives and themes, teachers may eventually want to consider ways with badging that they can encourage such deep, engaging, peer-reviewed learning – as in this 4-slide overview of a [possible Citizen Scientist Badge](#) or in these [slides on building 21<sup>st</sup> century skills](#).

## Endless and Enriching – Common Core & 21<sup>st</sup> century skills and technologies

Themes and narratives are endless and enriching. They can engage your students in science problems and activities in their immediate surroundings, can have them solving problems that perplex real-world

scientists. Many themes are possible; they can often be interdisciplinary. This white paper gives some start-up examples.

The [Common Core of Learning Standards](#) have been adopted by many US states and emphasize the important role of communication, careful analytical writing, reading and creating complex text, and using technologies in the development of understanding and in the presentation to others. Well designed narratives can give ample opportunities to students for communicating the results of scientific inquiries and scientific practices as students put forth their findings through text, charts, posters, websites, blogs, and shared data. Developing themes can support your teaching and can engage your students.