

# Teacher Notes

## Class 1 of 12

Date: 2/6/19

### Topic: Cells, Plants vs. Animals

**Notes on Topic/Teaching:** The level of the material (upper middle school) seemed to work well. Some students struggled with the new science vocabulary. I used a crossword puzzle which helped – I plan to periodically use puzzles or games to reinforce key information. I need to keep in mind that although this is review for some students, others have not seen this material previously.

**Notes on Scientific Method/ECRIF:** I introduced the “observations” component of the scientific method. Students practiced by using microscopes on prepared slides (plant and animal tissues) and wrote down their observations in their notebooks.

## Class 2 of 12

Date: 2/13/19

### Topic: Genetics, DNA

**Notes on Topic/Teaching:** This topic went very quickly and I ended up covering portions of the next lesson. I think there are two reasons for this 1) we already covered DNA as part of the “cells” lesson 2) I purposely omitted much of the technical/more challenging material. I don’t regret cutting this material but I was lucky that I had other material ready to go. In the future, I will try to plan extra activities, just in case!

**Notes on Scientific Method/ECRIF:** We performed our first experiment! Each student extracted DNA from a strawberry. They documented the procedure and the materials needed. They also wrote their observations of the extracted DNA (as a review of “observations” from the prior lesson).

## Class 3 of 12

Date: 2/20/19

### Topic: Inherited Traits

**Notes on Topic/Teaching:** I ended up spending more time than anticipated on Punnett squares but this topic is important for the HiSet exam. Next time, I should start out by giving more examples and/or use more scaffolding on the initial worksheet for them to practice. I was hoping to cover evolution as well but we ran out of time.

**Notes on Scientific Method/ECRIF:** We all tested ourselves for the PTC tasting trait (using a pre-treated strip of paper). We covered hypothesis, experiment, observations, and conclusion.

## Class 4 of 12

Date: 2/27/19

### Topic: States of Matter

**Notes on Topic/Teaching:** We did a sorting activity which brought up some good discussions about how to categorize matter like ketchup and lightning. During my relativity brief presentation, I glossed over the chemistry (e.g. molecules and chemical compounds) as well as the properties of matter (e.g. viscosity and density). Next time around, I should consider doing one or both of these two lessons before covering the states of matter.

**Notes on Scientific Method/ECRIF:** Just like last time, we did a very simple experiment that allowed us the time to cover hypothesis, experiment, observations, and conclusion. They wrote up all four of these elements of the scientific method in their notebooks. For this experiment, we added varying amounts of water to cornstarch. I introduced the concepts of independent variable (water) and dependent variable

(cornstarch) and the importance of “controlling” for variables. For fun, we slapped the mixture and saw that force causes it to act more like a solid. As a “non-Newtonian fluid”, the cornstarch-water mixture breaks the rules!

**Class 12 of 12**

**Date: 4/24/19**

**Topic: Magnetic and Electric Forces**

**Notes on Topic/Teaching:** Using several questions to prompt investigation, students got to “play with magnets.” They were very engaged during this activity and asked a lot of questions. One student was excited to learn why hotel keys with magnetic strips sometimes stop working. We only had time to cover magnetism and electromagnetism. Next time, I will separate out the topics a bit better.

**Notes on Scientific Method/ECRIF:** We made and tested “magnetic slime.” I intentionally included flawed instructions, and they were able to identify and correct the error. This demonstrated a deeper level of understanding of the scientific method concept.

**Notes on Science Knowledge Survey:** For the most part, the survey asked about the right information but the questions themselves could be better aligned with our program. The survey did not appear to capture the gains in students’ test readiness as shown in other metrics (practice tests, class performance, etc.). The original goal of the survey was to measure any increases in students’ understanding of the scientific method. In hindsight, I should have considered the way in which the scientific method is presented to students on the HiSet exam. In addition, significant student turnover impacted the ability to measure progress over a set period of time.