



# Meet The Professor Lesson Plan



Meet The  
Professor  
Early Elementary

## Target Concepts

- The brain has a specialized region in charge of coming up with possibilities and weighing options so we can make the best choice. This part of the brain is called the prefrontal cortex (i.e., The Professor), and it's located right behind your forehead.
- The Professor helps you identify and work towards an *ultimate reward* (i.e., the best option in the future).
- Sometimes working towards an ultimate reward means ignoring an *immediate reward*, which is what would feel good *right now*.
- The Professor and Ms. Hipp work together to figure out what we know from the past, and what we want in the future, in order to identify options for what we could do right now to get the ultimate reward. This is called *mental time travel*.

## Lesson Preparation

- ✓ Read and/or review the video, script, lesson plan, and handouts
- ✓ Purchase marshmallows\* (two per student)
- ✓ Print "Future Me" worksheet (one per student)
- ✓ Print "Home Letter" and "Meet The Professor Book" (one per student)

## Review

This review activity is designed to activate students' learning from the previous lesson. Students are asked to review what they learned about the hippocampus.

The following script is intended to provide a general guide for how you may choose to lead this activity:

- "Before we begin our new Brain Talk lesson, let's review what we remember about Ms. Hipp."
- "Ms. Hipp is the brain's personal librarian. As such, it records memories from a personal point of view, keeping track of the information that seemed important to the individual."
- [Individually, in pairs, or in small groups] "Discuss the different facts (People, Actions, Space, Time) and feelings (gentle or strong) that Ms Hipp records."
- As a class, think of a recent situation (personal or from a story/video/lesson) when multiple people/characters remembered a shared event differently. Which P.A.S.T. facts differed? How did their feelings impact their memories?" (Class discussion to follow)

## Primer

This primer activity is designed to prepare students for the lesson by activating known information to scaffold new learning.

Using an activity based on the famous Stanford Marshmallow Test, students are given a choice between eating a treat right now or waiting and getting a second treat. This is meant not as a test of self-regulation but as an opportunity to discuss the concepts of an immediate reward (e.g, eating one marshmallow *right now*) and an ultimate reward (e.g., having two marshmallows to eat in the future).

\*You can replace the marshmallow with a different desirable treat based on knowledge of your class.

(continued on next page)



# Meet The Professor Lesson Plan pg.2



Meet The  
Professor  
Early Elementary

## Primer (continued)

The following script is intended to provide a general guide for how you may choose to lead this activity:

- “Today we’ll be talking about the part of the brain that helps to identify rewards.”
- “Some rewards feel good right now. We call these immediate rewards. Other rewards involve waiting or working in order to get someone awesome in the future. We call these ultimate rewards.”
- “Let’s notice how it feels to get immediate or ultimate rewards. I am going to put a marshmallow\* on everyone’s desk. You have a choice: you can eat your marshmallow right now, and then you’re done; or you can wait. Those students who still have their original marshmallows on their desks at the end of the lesson will get an extra marshmallow.”
- “One marshmallow right now is an immediate reward. Two marshmallows are better than one, but that’s an ultimate reward because you have to wait.”
- Continue with the parts of the lesson from this unit that you would like to complete in this session. Save time to pass out the second marshmallow to students who waited, and lead class discussion.
  - After passing out second marshmallows to students who waited, engage the class in a discussion about the challenges of waiting for ultimate rewards, and strategies they used to resist the immediate reward of eating the original marshmallow.

## Watch Video: Meet The Professor



## Background

### Information

- The prefrontal cortex (PFC) is located in the very front of the brain, just behind the forehead. It is responsible for regulating behavior by using situational analysis and abstract thinking. This includes reconciling conflicting impulses, making choices between right and wrong, generating alternatives for action, and predicting the probable outcomes of actions or events.
- The executive capacities of the PFC allow humans to engage in mental time travel, which is using foresight and hindsight to balance immediate rewards with long-term goals.
- The evolutionary function of the prefrontal cortex is to generate solutions to novel situations when an automatic reaction is not appropriate or useful.
- The evolutionary function of the hippocampus is to create an episodic memory library for the pre-frontal cortex to refer to when predicting the probable outcomes of actions or events.
- Brain imaging shows that both remembering the past, and imagining the future involve the prefrontal cortex.  
(continued on next page)



# Meet The Professor Lesson Plan pg.3



Meet The  
Professor  
Early Elementary

## Guided Instruction

### Discussion Points:

- Review the key points of the Marshmallow Primer Activity:
  - What are your options (choices) during this activity? (Eating the marshmallow right now or waiting for two marshmallows later)
  - What is the immediate reward? (Eating the original marshmallow right now)
  - What is the ultimate reward? (Waiting until the end of the lesson to get two marshmallows)
  - What was your goal? (To eat the original marshmallow right now, or to wait for two marshmallows?)
  - Complete a class goal tally of how many students set a goal to enjoy the immediate reward and how many set a goal to enjoy the ultimate reward.
- Myg and Buster live in a NOW Bubble. They don't think about consequences; they only want to avoid threats or seek opportunities that will feel good right now.
  - Myg wants to use fight, flight, or freeze to avoid scary things and uncomfortable situations right now.
  - Buster wants to use grab-and-gulp to get things that seem awesome and comfortable right now.
  - These are immediate rewards for Myg and Buster.
- The Professor helps you to pop the NOW Bubble to come up with a future goal.
- The Professor and Ms. Hipp work together to figure out what we know from the past, and what we want in the future, in order to make a plan for a future goal. This is called Mental Travel.

### Activity:

- "Future Me" Worksheet

## Background

### Information

(continued)

- When information is sent from the limbic system to the frontal cortex, conscious feelings are produced. The frontal lobe then sends conscious knowledge about environmental factors back to the limbic system which houses the amygdala, the basal pleasure-and-reward circuit, and the hippocampus. This generates a continuous loop, whereby the limbic brain and the prefrontal cortex work together to regulate one's behavior and generate appropriate and useful responses.
- An individual's tendency towards an immediate reward, rather than waiting or working for an ultimate reward, is driven by the limbic system's avoid and seek urges (i.e., Myg Moments and Buster Bams). When the signals from the limbic system are intense, they override the prefrontal cortex, effectively taking it "off-line" as the nervous system relies upon habitual reactions to deal with the current situation.
- When activated, the prefrontal cortex sends conscious knowledge about environmental factors back to the limbic system, inhibits inappropriate behaviors and reactions (including delaying gratification of needs) and generates thoughtful responses.



# Meet The Professor Lesson Plan pg.4



Meet The  
Professor  
Early Elementary

## Teacher Notes

- Some of the concepts introduced in this unit may be too advanced for younger students. You are encouraged to use your discretion to introduce the parts of this lesson that feel relevant to your students.
- Even if the concept of immediate vs. ultimate reward is overly complex for your students, you can encourage them to create concrete visual representations of abstract future goals. This is an early learning tool that can be introduced as early as pre-K.
  - Tools of the Mind, an early childhood classroom model researched and designed to support executive function development, introduces play plans as a tool for visualizing future plans as early as pre-k.
  - Sarah Ward, M.S., CCC-SLP and executive function specialist, introduces the term, "Future Sketch," as a classroom friendly way to conceptualize and discuss one's vision or plan for a future goal (e.g., "What is your future sketch for this project?").
- The original Stanford Marshmallow Test was a series of tests on delayed gratification conducted by Stanford psychology professor Walter Mischel in the late 1960's and early 1970's. Follow up studies showed that children who could postpone eating a marshmallow at age 4 outpaced their peers in many areas when they were 18 years old: They scored 210 points higher in the SAT, and had both higher confidence and concentration.
  - ([https://www.youtube.com/watch?v=QX\\_oy9614HQ](https://www.youtube.com/watch?v=QX_oy9614HQ))
  - <http://thedianerehmsshow.org/shows/2014-10-01/walter->

## Taking it Further

- Executive function thinking is best learned in real life situations to help individuals achieve their own goals. Invite your students to make plans and discuss options for school/home leisure time situations: make a "play plan" for recess or a "future sketch" for how they want to spend the weekend.
- The prefrontal cortex is such an important thinking center of the brain that numerous inventions have been created to keep it safe. If not already discussed in a previous unit, help your students brainstorm examples of ways to keep the prefrontal cortex protected (e.g., helmets, seat belts, etc.).