



Smithsonian
Science Education Center

Course Overview

This online workshop: **That's so Meta(cognitive)!** is based on ideas presented in *Good Thinking!*, an original animated series developed by the Smithsonian Science Education Center (SSEC) and FableVision Studios as a professional development resource for K-12 science educators.

Research over the past 30 years has documented what teachers have known from experience that students do not come to class as “blank slates”, but most often with a diverse set of ideas, concepts, and mental models that they have already developed from their life experiences. These ideas are called preconceptions, which are student ideas constructed before having formal instruction. Students use their own rules and mental models to make sense of their observations, and to explain phenomena that they encounter every day. One of the critical and ongoing challenges for educators across all grades is to discover students’ understandings and their mental models about phenomena, and when these models are based on misconceptions to provide opportunities for students to develop new understanding based on scientifically accepted concepts.

In this, workshop we look at what metacognition is, and how one teacher is helping students reflect on what they know and don’t know, and then on what questions to ask, and how to answer them.

The format and organization of the workshop are designed to allow individuals to successfully complete the online learning activities independently as a self-paced class, without the need for outside input or feedback. At the same time, this format was designed to flexibly fit into PLC meetings, PD workshops, or any time that you and your colleagues can meet to absorb some new ideas and discuss your experiences as educators. While the students in the *Good Thinking!* classroom are identified as being in the 5th grade, the pedagogical strategies are relevant to all levels of instruction.

Session 1 – Introduction to Course

This session serves as an introduction to the course. The objectives for this course are:

- Understand what metacognition is and what strategies can be used to support student learning and achievement.
- Learn about how to identify and measure different types of knowledge.
- Identify metacognitive strategies used in teaching and application of these strategies in diverse settings.
- Develop lesson plans for helping students use metacognitive strategies in science.

Session 2 – Moving from Declarative Knowledge to Metacognition

In this session, you will watch the Good Thinking! video and learn about practices and strategies to help students become more metacognitive in their thinking and learning.

Session 3 – Classroom Application

In this session, you will apply the ideas and lessons from the video to complete a lesson plan using a related scenario.

Session 4 – Wrap Up

This session is a conclusion to the course. The final assessment will be the creation of a lesson plan for your own classroom using metacognition practices and strategies.

There will be the option of earning a Science of Teaching Science 1 certificate upon completion of four Smithsonian Science Education Center Pepper Online Workshops.