

*Summer and Fall 2019*

# Join the NGSS Sensemakers Project

## Professional Learning Support while Implementing NGSS Curriculum Materials



Do you teach **high school biology** or **middle grades science** in Chicagoland or within 30 miles of UC Davis?

Are you looking for high quality **NGSS-designed instructional materials** and help supporting **knowledge building** in your classroom?

Would you like to become part of a **professional learning community** working on bringing NGSS into your classrooms?

Join the **Sensemakers Project**, and receive:

- NGSS-designed **curriculum units** (7–8 weeks) & support for classroom materials
- A 2 year cohort experience with teachers in your area
- Five days of **professional development** at Northwestern University (July 22–26, 2019) including food, lodging, and travel expenses
- Bi-weekly **virtual study group meetings** during curriculum enactment with skilled facilitators and project colleagues teaching the same unit
- \$1,000 stipend/year

 [nextgenstorylines.org](http://nextgenstorylines.org)

 **mber** biology

## What is the NGSS Sensemakers Project?

The best way to learn and practice new instructional approaches is working with a professional learning community while trying to bring these practices into your own classrooms. The project approach immerses you in 3-dimensional learning, using research-based NGSS-designed curriculum units and knowledge building tools to explore how to work with coherent NGSS-designed units. We support you as you bring these units into your classroom, working with experienced facilitators and your peers in an online system that enables sharing classroom artifacts and video.

## What will teachers do in the project?



### Phase 1 (July 22–26, 2019):

You will attend a 5 day face-to-face professional learning institute at Northwestern University. You will experience 3-dimensional learning yourself, and work together analyzing classroom cases and instructional materials to deepen your knowledge of teaching strategies that support three-dimensional learning. You will work with other teachers to prepare to teach the curriculum units for your grade level.

### Phase 2 (Fall 2019):

You will teach a 7–8 week NGSS-designed unit in your own classroom, with support from facilitators and your peers. Your study group will meet virtually through after-school videoconference planning and reflection sessions every two weeks to discuss problems of practice and share experiences, analyze student work, and problem solve with your peers.

### Phase 2 (Spring 2020):

The cycle will repeat with a second unit for middle school teachers. High school teachers will complete units back-to-back in the fall.

## What curriculum units will teachers use in their classrooms?

The NGSS units for this project were developed by teams of researchers, scientists, and teachers from the MBER, Next Generation Science Storylines, and OpenSciEd projects, using research-based principles to support students and teachers in 3-dimensional learning, and have been extensively field tested with classrooms across the country.

### For High School

The first semester (Fall 2019) of the MBER-Biology course begins with a consideration of biodiversity and the development of questions around the unity and diversity of life on Earth. This motivates further exploration of phenomena related to population dynamics, natural selection and genetics.

Using specific, data-rich cases based on systems like the wolves and moose of Isle Royale, Galapagos Finches, and human genetic disease, students develop a series of explanatory models to account for fluctuations in population size, changes in the distribution of traits over time in a population and the mechanisms of variation and inheritance from gamete formation to DNA structure and function.

The curriculum is organized into a series of units that are connected to the main questions of unity and diversity that drive the sequence.



### For Middle Grades

*Unit 1: How Can We Design a Cup to Keep a Drink Cold? (Fall 2019)* Students are presented with a design challenge: Certain beverage containers are much better than others at keeping drinks cold and hot drinks hot. Students attempt to design their own container that can perform as well as or better than expensive double-wall containers sold at stores, and explain how it works. Through their investigations students build a model of particle motion in hot and cold substances, and explain the transfer of thermal energy through particle collisions.



*Unit 2: How Do Eggs Become Chickens or Other Living Things (Spring 2020)* Students encounter news reports about the growing prevalence of backyard chicken coops across the country. Disagreements about why some chicken eggs hatch into baby chickens and others do not, as well as competing models about what is going on inside eggs before they hatch, spark student questions leading to investigations of where babies of chickens come from and how they develop. These investigations help students uncover the role that food, blood, cells, and tissues play in the development of embryos and growth in animals.



- ✓ To apply, go to <https://tinyurl.com/sensemakers2019>
- ✓ Applications due March 20, 2019; notifications sent April 8, 2019.

To be eligible to participate in this project, teachers must:

- teach one or more classes of high school biology or middle grades science in either Chicagoland or within 30 miles of UC Davis;
- have a solid prior introduction to NGSS;
- be able to participate fully in both parts of the professional learning community in 2019–2020 — attending the professional learning institute at Northwestern University, July 22–26, 2019, and the virtual meetings in Phase 2 and be willing to continue using materials in 2020–21 academic year;
- have the support of your school administration to teach target curriculum units in full;
- be willing to participate in a research study for 2 years and willing and able to ask your students to participate.

(Note: Middle school and high school teachers who apply to the Sensemakers Project may instead be selected to participate in a Fall 2020 cohort. If you cannot serve for the year you are chosen, you may have an option to switch to the other cohort.)

Questions? Contact us at [ngss.sensemakers@gmail.com](mailto:ngss.sensemakers@gmail.com)

The **Next Generation Science Storylines Project** develops open-educational curriculum units for science classrooms. In storyline units, teachers elicit and work with student questions to drive the investigations that develop explanatory models and designs that address the target science ideas. The project is led by Brian J. Reiser, Michael Novak, and Tara McGill at Northwestern University, working with a team at the University of Illinois, led by Barbara Hug.

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**Model Based Biology** (MBER–Biology) is a full year high school biology course developed by a team at the University of California, Davis, led by Cynthia Passmore, funded by the National Science Foundation. MBER–Biology is intended to support students in developing a set of explanatory models in the life sciences that can be used to explain a range of phenomena related to species unity and diversity. In each unit, phenomena motivate student questions and the class works together to build explanatory models that can be used to answer their questions.

 **MBER**<sup>biology</sup>

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