Join the Learn While Teaching Project, and receive:

- NGSS–designed curriculum units (7–8 weeks) & support for classroom materials
- Five days of professional development at Northwestern University (July 16–20, 2018) 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

Do you teach high school biology or middle grades science?

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?
**What is the Learn While Teaching 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 Learn While Teaching (LWT) Project immerses you in 3-dimensional learning, using a research-based NGSS-designed curriculum unit and knowledge building tools to explore how to work with coherent NGSS-designed units. LWT supports you as you bring this unit into your classroom, working with experienced national facilitators and your peers using online resources in the Next Generation Science Exemplar learning system (ngsx.org).

**What will teachers do in the Learn While Teaching project?**

**Phase 1 (July 16–20, 2018):**
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 pedagogical strategies that support your students’ three-dimensional learning. You will work with other teachers to prepare to teach one or more curriculum units.

**Phase 2 (Fall 2018):**
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 from their classrooms, and problem solve with your peers.

At completion, you will meet as a virtual study group to work on next steps to carry forward these classroom shifts. Those teachers who sign up to teach additional units will also work with their virtual study group to prepare to teach these units.
What curriculum units will teachers use in their classrooms?
The units to be used in this project were developed by teams of researchers, scientists, and teachers using research-based principles to support students and teachers in 3-dimensional learning. The units score highly on the EQuIP rubric for analyzing NGSS-designed units, and have been through in multiple cycles of field testing and revision.

### For High School

The first semester 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.

*Teachers will have the option to apply to teach the first half of the semester (up through natural selection), or the full semester sequence (including genetics).*

### For Middle Grades

**Unit 1: How Can We Make A Fog Machine?**

challenges students to design a device to make fog for a Haunted House. Patterns in weather data motivate investigations of the conditions necessary for fog to form. Students’ findings support development of the particle model of matter, a mechanistic model of how fog forms, and the general mechanism of temperature change. Students apply these ideas to design, test, and refine their own fog machines.

**Unit 2: How Do Eggs Become Chickens or Other Living Things?**

begins with 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.

*Teachers will have the option to apply to teach Unit 1 only or both Units 1 and 2.*
To apply, go to tinyurl.com/LWT2018
✓ Applications due May 1, 2018; notifications sent May 14, 2018.

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

- teach one or more classes of high school biology or middle grades science.
- have a solid prior introduction to NGSS, for example by having participated in other NGSX pathways.
- have the support of your school administration to teach one or both target curriculum units in full.
- be able to participate fully in both parts of the professional learning community — attending the professional learning institute at Northwestern University, July 16–20, 2018, and the virtual meetings in Phase 2.

For more information, email NGSXLWT@gmail.com

The Next Generation Science Exemplar System (NGSX) for professional learning is a professional learning environment for science teachers, coaches, and administrators. Through face–to–face work in a study group, drawing on web–based resources, study group participants engage in and analyze 3–dimensional science teaching and learning targeted in the Framework for K–12 Science Education and the NGSS. NGSX is led by Sarah Michaels (Clark University), Jean Moon (Tidemark Institute), and Brian J. Reiser (Northwestern University).

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.

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.

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