

# PARTNERSHIP FOR AMBITIOUS SCIENCE TEACHER LEADERS

## Expanding our network to include district-sponsored teachers!

**Ambitious Science teaching is a set of instructional practices that support students of all racial, ethnic, class, and gender categories to understand key subject matter ideas, participate in discourses of the discipline, and solve authentic problems related to real-world science phenomena.**

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

PASTL is a unique collaboration between Puget Sound ESD, Olympic ESD, Northwest ESD, University of Washington's Ambitious Science Teaching Development Group, the Physics Education Research Group at Seattle Pacific University, Federal Way School District and Bellevue School District. PASTL is a Math-Science Partnership Grant-funded project.

In the 2015-16 school year, 50 science teachers participated in a cross-district/cross-regional year-long, job-embedded professional learning program purposed at developing the Partnership for Ambitious Science Teacher Leaders. Teachers experienced, learned and began collaborating around a set of high-leverage teaching practices, aligned to NGSS, that support teachers in developing a highly rigorous and equitable learning environment.

In August of 2016, the Northwest team is expanding to encompass teachers whom districts can sponsor to be a part of the work!

**Our 2016 Summer Institute Dates:  
August 24-26 2016 in Anacortes WA**

### Looking for Teachers Committed to...

- **Engaging in issues of equity to support *all* students in learning science**
- **Adapting instruction based on student thinking**
- **Collaborating in a regional network of teacher leaders reflecting on rigorous and equitable instruction**

### District-Sponsored Attendees are invited to attend:

- **Regional Summer Institute**  
(3 days in August)
- **2 full-day Studio Days**  
(during the school year)
- **3 full-day Reflective Planning Days**  
(during the school year)

### District Sponsorship Includes:

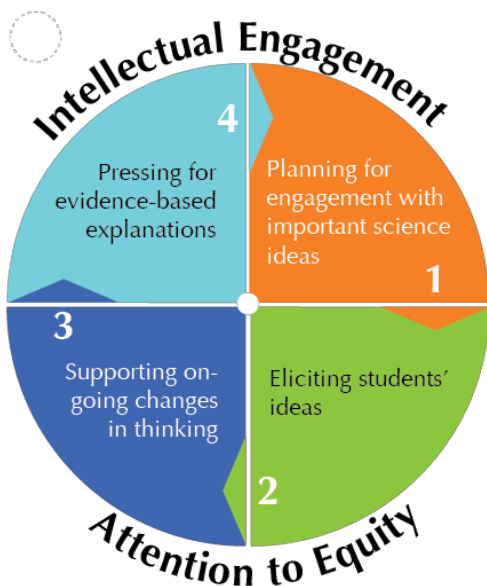
- **Ensuring nobody is alone in their work**  
(everybody has at least one PASTL colleague in their building - either a new or experienced colleague)
- **Provide teachers with a stipend for their summer work**  
(\$735 is the recommended stipend)
- **Provide 5 substitute days for work in the school year**  
(for 3 reflective planning days and 2 studio days)

### For more information contact:

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# Ambitious Science Teaching

We provide here a vision of ambitious teaching—teaching that is effective, rigorous and equitable. But more than that, we provide a framework of research-based teaching practices that are consistent with this vision and a wide range of tools that can transform how students learn in your classroom. The vision, practice, and tools will furnish a common language about teaching for a group of science educators committed to the improvement of teaching. You will be able to identify “what we will get better at” and how to get started.



Ambitious teaching aims to support students of all racial, ethnic, and social class backgrounds in deeply understanding science ideas, participating in the talk of the discipline, and solving authentic problems. This teaching comes to life through four sets of teaching practices that are used together during units of instruction. These practices are powerful for several reasons. They have consistently been shown through research to support student engagement and learning. They can each be used regularly with any kind of science topic. And finally, because there are only four sets of practices, we can develop tools that help both teachers and students participate in them, anyone familiar with the practices can provide feedback to other educators working with the same basic repertoire, teachers can create productive variations of the practices, and everyone in the science education community can share a common language about the continual improvement of teaching.

The four Ambitious and Equitable Science Teaching Practices are summarized in the below.

Practices	What does it LOOK like?
Planning for engagement with important science ideas	<ul style="list-style-type: none"> <li>• Planning a unit that connects a topic to a phenomena that it explains (Chemical Reactions – Bike Rusting, Photosynthesis – Seed Becoming a Tree)</li> <li>• Teaching a topic within a real-world context</li> </ul>
Eliciting students' ideas	<ul style="list-style-type: none"> <li>• Asking students to explain HOW and WHY they think a phenomena happens (How did the bike change? Why did it change? What is happening at the unobservable level?)</li> </ul>
Supporting on-going changes in thinking	<ul style="list-style-type: none"> <li>• Using ALL activities/lessons to explain the phenomena.</li> <li>• Giving students opportunities to revise their thinking based on what they're learning</li> </ul>
Pressing for evidence-based explanations	<ul style="list-style-type: none"> <li>• Allowing students to create a final model or explanation about the phenomena</li> <li>• Pressing students to connect evidence to their explanation</li> </ul>

# How will science education change with NGSS?

## Implications of the Vision of the Framework for K-12 Science Education and the Next Generation Science Standards

SCIENCE EDUCATION WILL INVOLVE LESS:	SCIENCE EDUCATION WILL INVOLVE MORE:
Rote memorization of facts and terminology	Facts and terminology learned as needed while developing explanations and designing solutions supported by evidence-based arguments and reasoning.
Learning of ideas disconnected from questions about phenomena	Systems thinking and modeling to explain phenomena and to give a context for the ideas to be learned
Teachers providing information to the whole class	Students conducting investigations, solving problems, and engaging in discussions with teachers' guidance
Teachers posing questions with only one right answer	Students discussing open-ended questions that focus on the strength of the evidence used to generate claims
Students reading textbooks and answering questions at the end of the chapter	Students reading multiple sources, including science-related magazine and journal articles and web-based resources; students developing summaries of information.
Pre-planned outcome for "cookbook" laboratories or hands-on activities	Multiple investigations driven by students' questions with a range of possible outcomes that collectively lead to a deep understanding of established core scientific ideas
Worksheets	Student writing of journals, reports, posters, and media presentations that explain and argue
Oversimplification of activities for students who are perceived to be less able to do science and engineering	Provision of supports so that all students can engage in sophisticated science and engineering practices

Source: National Research Council. (2015). *Guide to Implementing the Next Generation Science Standards* (pp. 8-9). Washington, DC: National Academies Press. <http://www.nap.edu/catalog/18802/guide-to-implementing-the-next-generation-science-standards>