



Stanford NGSS Assessment Project (SNAP) online courses

An introduction for CA science leaders

April 8th, 2020

@snapgse
#snapmooc



Introduce

Stanford NGSS
Assessment
Project (SNAP)
&
SNAP Courses

Consider

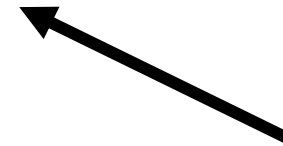
How can courses
can be used to
support NGSS
implementation
efforts?

Discuss

What questions
do you have
about using the
courses in your
context?

Logistics

Questions you would like to ask using audio: Raise your hand



Comments: Enter comments for everyone or specific recipients into the chat box

Questions you would like us to answer: Use the Q&A box



Poll:

Have you, or colleagues, used any:

1. SNAP assessments?
2. SNAP courses?
3. Would you be willing to share how you used them and your experience?

The background is a collage of three images. The left image shows a science lab with a student in a lab coat looking at a flask containing a green liquid. The middle image shows a group of students in a garden, with one student kneeling and working in a raised bed. The right image shows a group of children looking at a globe.

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Stanford NGSS Assessment Project

How can high-quality systems of assessment support implementation of the NGSS in California?

snapgse.stanford.edu

About SNAP

The Next Generation Science Standards (NGSS) have been adopted by many states, including California, but numerous questions remain about how state and local administrators, professional developers, developers of instructional materials and assessments, and teachers will implement the new standards. The Stanford NGSS Assessment Project (SNAP) is focusing on ways that high-quality performance assessment can support the implementation process.

SNAP activities include:



Dr. Helen Quinn discusses NGSS and the role of performance assessment.

Research & reports

PART I: NATIONAL FEDERALLY MANDATED ASSESSMENTS (i.e., statewide science test)		PART II: PERIODIC CLASSROOM PERFORMANCE ASSESSMENTS	
Component A: Multi-state tests	Component B: State Performance Assessment (SPA)	Component C: Statewide Short Performance Assessment (SPA)	Component D: Instructionally Embedded Performance Tasks (IEA)

SNAP reports describe a model assessment system designed to support the vision of teaching and learning underpinning the standards, and an analysis of the landscape of existing assessments to identify lessons and promising models to guide the development of NGSS assessments.

[Learn about SNAP reports »](#)

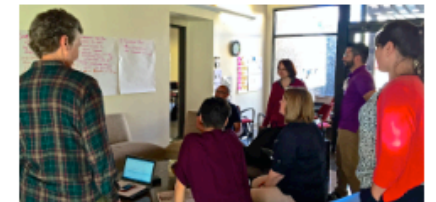
Developing NGSS assessments



Assessments developed to model each component of SNAP's system of assessment for NGSS.

[Explore assessments developed for NGSS »](#)

Supporting educators, assessment developers, and PD providers




SNAP resources include courses, design & analysis guides, and presentations on developing and using performance assessments to support three-dimensional learning.

[Learn about SNAP resources »](#)

II. Exemplar Assessments for NGSS

Multiple-choice items


Jose says: "I think the Earth is shaped like a ball."
 Anne says: "I think the Earth is shaped like a plate."
 Consider the following observations:



a. Sidewalks are straight.



b. Roads are curved.



c. The ground under my feet feels flat.




d. Ships appear to sink as they sail far away.

1. Which observations seem to support Jose's idea? (circle all that apply) A B C D
 2. Which observations seem to support Anne's idea? (circle all that apply) A B C D
 3. Who is right? (circle one) Anne or Jose

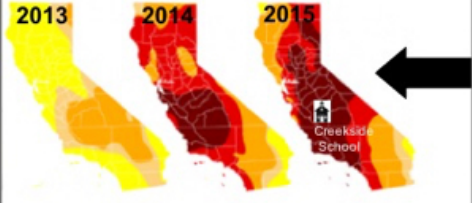
Image sources:
 a. http://www.gettyimages.com/photos/171024610413876656179_cdn.jpg
 b. http://www.gettyimages.com/photos/171024610413876656179_cdn.jpg
 c. http://www.gettyimages.com/photos/171024610413876656179_cdn.jpg
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Short performance assessments

THERE HAS NOT BEEN MUCH RAIN IN CALIFORNIA OVER THE LAST FEW YEARS.
THIS DROUGHT IS HARMFUL TO MANY SPECIES OF PLANTS AND ANIMALS



Drought in California in years 2013-2015
 Legend: Abnormally Dry (Yellow), Moderate Drought (Orange), Severe Drought (Red), Extreme Drought (Dark Red), Exceptional Drought (Black)



THE DRIEST PARTS OF CALIFORNIA ARE SHOWN IN RED ON THIS MAP. THE MAPS ALSO SHOW HOW BAD THE DROUGHT BECAME OVER JUST 3 YEARS.


CREAKSIDE SCHOOL IS LOCATED IN THE RED PART OF THE MAP. THE SCHOOL PRINCIPAL HAS BEEN PLANNING TO PUT NEW GRASS IN THE PLAYGROUND, BUT:
 1. THE DROUGHT MEANS THAT SHE CANNOT USE MUCH WATER.
 2. SHE DOES NOT HAVE MUCH MONEY TO SPEND ON THE GRASS

PLEASE HELP ME FIGURE OUT WHICH KIND OF GRASS TO BUY!

Instructionally-embedded assessments

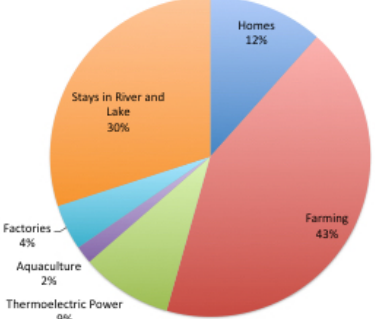
Factory Owner – Industrial Water Use

In the City Council meeting, you will be role-playing factory owners in California City.
 You use water to make different types of products. These factories provide many jobs for people who live within the city.



This pie chart shows the amount of water used in California City by different stakeholders. How much does your group use? Do you think it is a lot? Did the amount surprise you?

Water Use in California City



Stakeholder	Percentage
Farming	43%
Stays in River and Lake	30%
Thermolectric Power	9%
Homes	12%
Factories	4%
Aquaculture	2%

“During this assessment, I felt important and I really felt like I was actually planning to keep this country more safe. I really enjoyed this, because it was not boring test, but I found it fun and entertaining. Thank you!”

-7th grade student



NGSS Assessment Design and Analysis Resources

SNAP's resources for supporting performance assessment design and use

SNAP has developed sets of tools to support educators in designing and using performance assessments for NGSS. **Free online courses** provide instruction on how to use these resources to support professional learning communities around NGSS assessment.



Resources for analyzing performance assessments to inform instructional decisions

Open-ended performance assessments that engage students in sense-making around a phenomenon hold tremendous promise for supporting students' progress with multidimensional reasoning. But for these assessments to support NGSS classrooms, educators must understand how to find evidence of each dimension in students' responses and how to use this evidence to inform instructional decisions. The tools you will find below are designed to guide groups of educators in practicing doing collaborative analysis of a performance assessment. Examples embedded in the tools are based on SNAP's Natural Hazards Short Performance Assessment, which can be downloaded below.

[Download all 5 tools »](#)

[Tool 1: Analysis of an NGSS Performance Assessment »](#)

[Resource for Tool 1: Finding the NGSS and Framework Resources Online »](#)

[Tool 2: Analysis of Student Data »](#)

[Tool 3: Using a Rubric to Evaluate Student Data »](#)

[Tool 4: Using Assessment Data to Provide Feedback to Students »](#)

[Tool 5: Using Assessment Data to Make Instructional Decisions »](#)

[Ancillary Materials: Natural Hazards PE »](#)

[Ancillary Materials: Natural Hazards Short Performance Assessment »](#)



Resources for developing performance assessments

In SNAP's vision of high-quality assessment for NGSS, classroom assessment blends almost seamlessly with instruction. Students are presented with a challenging task or problem, and through discourse, group work, opportunities for peer feedback, and scaffolded learning experiences, they build their expertise so that they are prepared to do their best possible work on a summative product. Our design tools use SNAP's design principles as a foundation to guide developers in building instructionally-embedded performance assessments (IEAs) that elicit actionable information about students' progress with the dimensions being assessed.

[Tool 1. SNAP IEA Design Criteria »](#)

[IEA Planning Guide »](#)

[SAMPLE Planning Guide \(for Biosphere IEA\) »](#)

[Template - Teacher's Guide for an Instructionally-Embedded Assessment »](#)

[Template - Student Version for an Instructionally-Embedded Assessment »](#)



Resource for evaluating performance assessments

Peer feedback is essential to the design of any high-quality assessment. This feedback form is designed to guide peer and/or expert feedback. It is based on **SNAP's Performance Assessment Design Criteria**. The use of the criteria varies based on whether a short performance assessment (SPA) or extended assessment (IEA), and instructions for the different uses are embedded in the form.

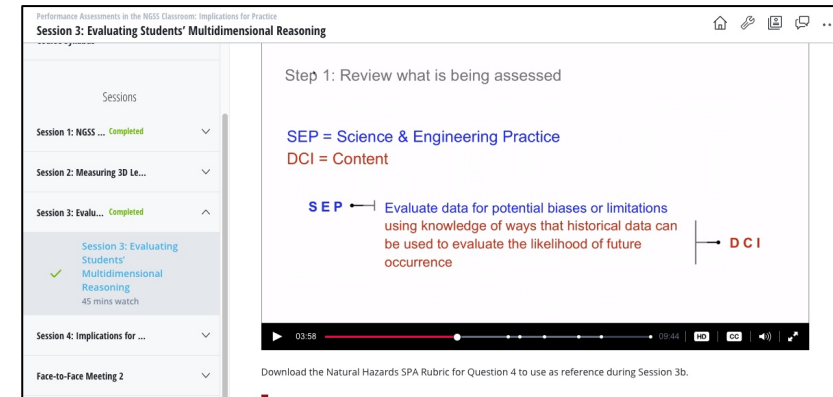
[SNAP Performance Assessment Review Form »](#)

Capacity-building: hybrid online MOOCs

- Engage in collaborative analysis of student work and planning feedback
- Focus learning around the activities teachers will use in the classroom
- Guide horizontal and vertical alignment in schools
- Cultivate a robust community of collaborators

(Wei et al., 2010; Kazemi & Franke, 2004)

online



Face-to-Face



Features of Hybrid online/Face-to-Face Courses on edX

- Flexible Structure
- Self-paced
- Adaptable
- Free
- Certificate of completion

Course Introduction

Course Overview Resume Course ↻ Course Handouts

Session 1: Introduction to Performance Assessment for the NGSS Classroom

Instructionally-embedded Performance Assessments for NGSS Reflection [↗](#)

Session 2: Define What Will Be Assessed

Laying a foundation for a 3D IEA

Peer Review Meeting 1

Meeting Materials & Directions

Meeting Report Assignment [↗](#)

Debrief & Reflection Reflection [↗](#)

Session 3: IEA Development

Developing the Student and Teacher Versions

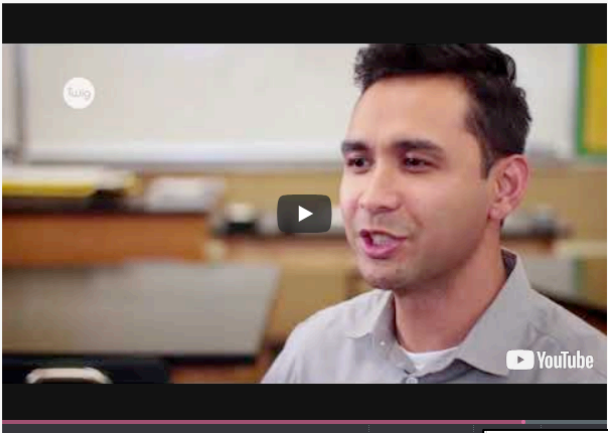
Peer Review Meeting 2

Meeting Materials & Directions

Meeting Report Assignment [↗](#)

Debrief and Reflection Reflection [↗](#)

Instructionally-Embedded Assessments

 6:32 / 7:34 Speed 1.75x

face-to-face meetings with we will help you set one up through the course website with your team you'll watch the instructional videos which will provide some background on performance assessments and will guide you through the process on creating an instructional embedded assessment the process we will teach you is very involved but it's important to recognize that there's no expectation that a teacher would do this frequently we would hope that if you find it useful your team might go through this once a year and after four years you might have four embedded performance assessments that you could integrate into your curriculum to provide periodic detailed evidence of your students progress with

Transcripts

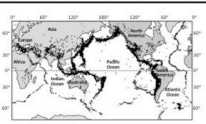
[Download SubRip \(.srt\) file](#)
[Download Text \(.txt\) file](#)

Everyone brings different ideas, expectations, and priorities to an assessment. Before you AND those of your development team.

1. **Download and print.** You will need one copy the [Vision Setting](#) document for each conversation.
2. **On your own.** Each team member fills out the Vision Setting document with their priorities.
3. **Come to consensus.** Discuss each team member's priorities. What are the priorities for the purpose of developing a task together for this course?
4. **Team Vision Document.** Fill out the last Vision Setting document for your whole team.

You will refer to your vision throughout the course, so you might want to take a picture of your vision on course to develop a task to meet your needs.

*Note all resources for this course are collected together in a [Google Drive](#).



What is responsible for the pattern of earthquake activity shown on the map?

- A. Volcanic eruptions
- B. The weight of ocean water pressing on the land
- C. Hurricanes and cyclones
- D. The movement of tectonic plates

Download this item
From NAEP Science 1994

Comparison 1 (1 point possible)

Compare the Natural Hazards performance assessment to the NAEP item shown above. The NAEP item and the SNAP performance assessment both show students real data. What are some of the differences in what the assessments ask students to do with the data?

Your response must be between 10 and 10000 words.

Course 1: Performance Assessment in the NGSS Classroom: Implications for Practice

Course goals:

01

Evaluate alignment of a performance assessment to an NGSS performance expectation

02

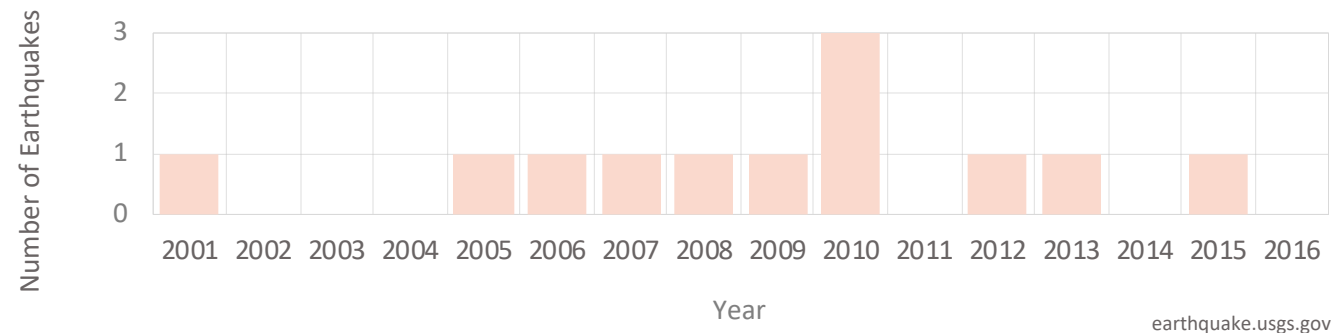
Analysis of student work for evidence of 3 dimensions

03

Use analysis to plan instructional moves

One of the city leaders has claimed that the graphs showed that it was not necessary to plan for earthquakes

Number of earthquakes in the U.S. 2001-2016
(magnitude 6.5 or higher)



The graph above shows additional data on earthquakes in the U.S. Use the data and what you know about earthquakes to explain why you agree or disagree with this claim.

Course 1 Structure

Team Kickoff Meeting

Session 1 & 2: online

Face-to-Face Meeting

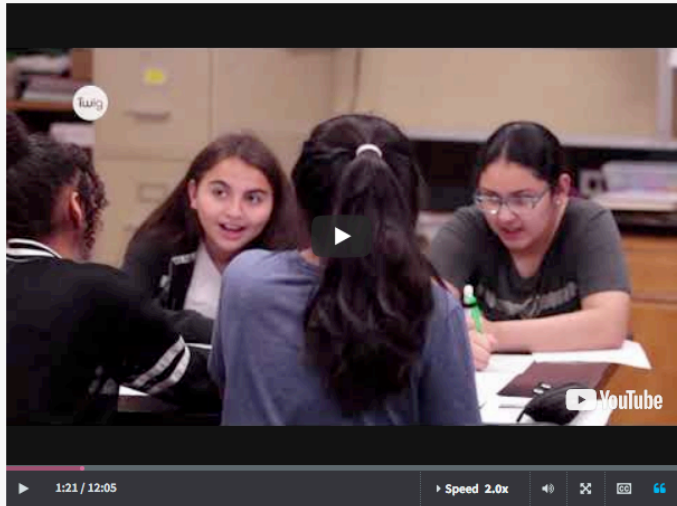
Session 3: online

Face-to-Face Meeting

Session 4: online

Face-to-Face Meeting

~ 12-15 hrs



Start of transcript. Skip to the end.

welcome to the Stanford NGSS Assessment Project's course Performance Assessment in the NGSS Classroom Implications for Practice this work is supported by generous funding from the SD Bechtel Jr Foundation the Next Generation Science Standards were constructed around a vision of science learning where students learn science concepts while using them to engage in the

Transcripts
Download SubRip (.srt) file
Download Text (.txt) file



Tools for Facilitators

Planners/organizers

Online vs in-person	Tasks	Notes	Approximate Time	Team Schedule: team needs to agree on a schedule for sessions in real time prior to beginning the course.
Online	Orientation Watch Video Build Team	Teams may include subteams e.g. a whole team is from a district and individual teams are formed for HS, MS, ES participants. We recommend that the whole team meets for the F2F meetings so you can do assignments separately but engage in broader discussions all together.	20 mins	
Online	Session 1 Create a Whole Team Schedule Session 1 Part I: videos and embedded tasks Complete Natural Hazards Short Performance Assessment as a student Session 1 Part II: videos and embedded tasks		1 hour	
Online	Session 2 Session 2 Part I: videos and embedded tasks Session 2 Part II: videos and embedded tasks		1-1.5 hrs	
Online	Preparation for Face-to-Face meeting #1 F2F Meeting 1 pre-video, print or download Materials for Meeting 1 (Optional: try assignment)	Individual teams should select a task to work with for the assignments prior to the F2F meeting so everyone can prepare and review their materials.	20 mins	
In person with colleagues	Face-to-Face Meeting 1 Assignment Reflection	Completed assignments do not have to be submitted to the course, but reflections are required.	2.5 hours	
Online	Session 3 Session 3 Part I: videos and embedded tasks Session 3 Part II: videos and embedded tasks F2F Meeting 2 pre-video, print or download Materials for Meeting 2		1.5 hours	
In person with colleagues	Preparation for Face-to-Face meeting #2 F2F Meeting 2 pre-video, print or download Materials for Meeting 2 (Optional: try assignment)	Teams will work with the same task they worked with during the previous F2F meeting.	20 mins	
In person with colleagues	Face-to-Face Meeting 2 Assignment Reflection		1.5 hours	
Online	Session 4 Session 4 Part I: videos and embedded tasks Session 4 Part II: videos and embedded tasks		1 hour	
In person with colleagues	Face-to-Face Meeting 3 Assignment Reflection		1.5 hours	

Materials for Assignments

Examining the three dimensions of a PE to determine what we need to know about our students		
Performance Expectation Unpacking Table for IEAs		
PE(s):		
Clarification Statement:		
Science & Engineering Practice (SEP)	Disciplinary Core Idea (DCI)	Crosscutting Concept (CCC)
What are the main goals for this practice?	What are the main ideas for the DCI?	What are the components of the CCC?
Additional Information from Appendix F:	Additional Information from Appendix E AND the Framework.	Additional Information for Appendix G:
Optional: some people find the Evidence Statements provide a useful check to see if you missed any important components of each dimension, particularly the DCI. Check the evidence statement for this PE against your descriptions of expectations and revise your unpacking as necessary.		
Challenges to address: Are there any challenges that you expect students to face when they learn this PE (e.g. common misconceptions) that you would want to see addressed to make sure you are getting information about?		

Facilitation Guides

SNAP Facilitator Guide for Face-to-Face Meeting 1			
Goals for Face-to-Face Meeting 1			
<ul style="list-style-type: none"> Get feedback on Alignment Tables Revise Alignment Tables 			
Time	Topic	Resources	Activities, Assignment Directions and Facilitator Notes
5-10 min	Organize teams for meeting	NA	<ol style="list-style-type: none"> Organize the meeting space for pairs of teams to sit together. Guide the introduction of the team members if they don't already know each other. For each pair of teams, designate 1 team Team A and the other Team B
10 min	Discussion	NA	As a whole group, discuss: <ul style="list-style-type: none"> How is the development process going so far? Is there anything that your team is struggling with that you want to bring to the whole group? Facilitator: if there are any problems or questions that are still unresolved by the end of the meeting, post them to the course discussion board.
25 min	Presentation of Alignment Tables	1 copy per team or google doc <ul style="list-style-type: none"> Completed Alignment Tables Blank Peer Review Form Peer Feedback Protocol 	<ol style="list-style-type: none"> Facilitator: ask teams to skim the Peer Feedback Protocol and Peer Review forms, discuss procedure Follow Steps 1-3 on the Feedback Protocol
45 min	Analyze Alignment Table	<ul style="list-style-type: none"> Completed Alignment Tables Blank Peer Review Form Peer Feedback Protocol 	<ol style="list-style-type: none"> Teams A and B separate and move to different rooms if possible Follow Step 4 on the Peer Review Protocol
20 min	Present Feedback	<ul style="list-style-type: none"> Completed Alignment Tables Completed Peer Review Forms A&B Peer Feedback Protocol 	<ol style="list-style-type: none"> Teams A and B get together again Follow Steps 5-6 on the Peer Review Protocol

Course 2: Developing Performance Assessments for the NGSS Classroom

Course goals:

- 01 Develop a 3D IEA using SNAP's principled-design process
- 02 Evaluate 3D performance assessments
- 03 Develop community of practice



Course 2 Structure



Development Team



Peer Review

Sessions 1&2 with Development Team

Peer Review Meeting

Session 3: with Development Team

Peer Review Meeting

~ 20-30 hrs

Participant Feedback: value for NGSS instruction

“One of the many things I reflected on over the course of this class is **how this can change the way I deliver instruction**...I now have a better understanding of how to deliver instruction that will support the expectations of an NGSS assessment.”

“Our group came to the consensus that **this process was a piece of the puzzle that we have been missing**...This process will help us select/develop assessments that thoroughly assess the standard...”

Participant Feedback: value for administrators

“It allowed for a more cost effective and self-running way of doing PD where I as the department chair, had to take leadership and engage much more deeply than usual.”



Questions?



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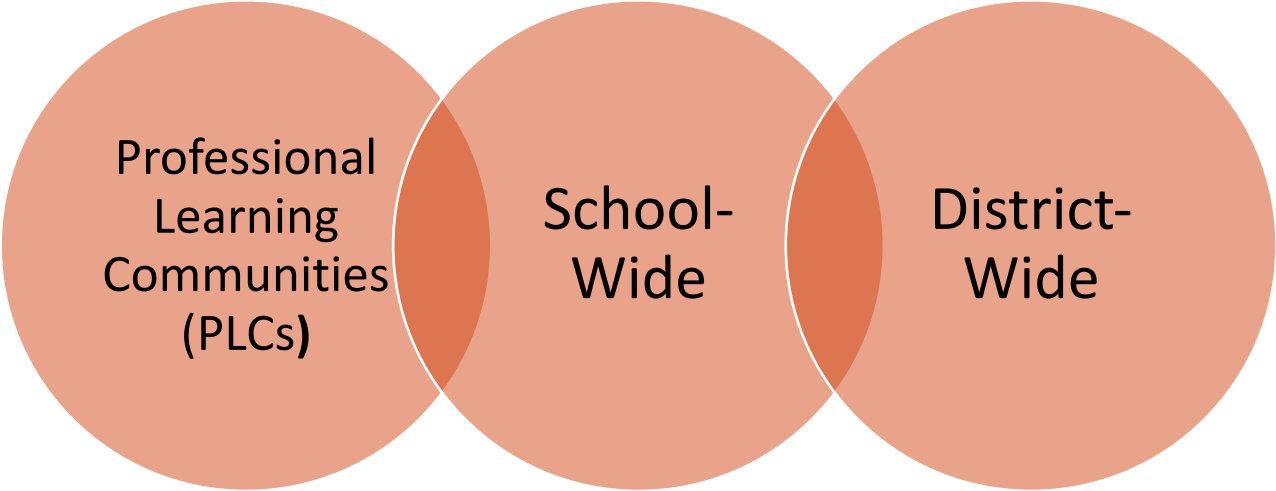
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Three Lenses to Consider When Using Courses to Support the Implementation NGSS



Strategies to Use in Professional Learning Communities

- Designate part of PLC meeting time to focus on addressing the instructional and assessment shifts of NGSS
- Plan ways to use practices, resources and tools from courses as part of assessment and instruction work in PLCs (e.g., review a common science assessment using unpacking process)
- Reflect on the information science assessments used currently provide and what is still needed in relation 3 dimensions of NGSS

Strategies to Use School-Wide

- Support teachers to meet over the summer to focus on this work
- Provide tools to streamline the processes for adapting and developing NGSS assessments
- Develop plans to support teacher collaboration and sharing of resources across the year

Strategies to Use District-Wide

- Create forums and structures to support NGSS work across school sites
- Organize different teams for multiple purposes that serve district goals
- Provide leadership support for district developed teams
- Reflect upon uses of data provided by new assessments developed across district



Course Use Cases:

1. Professional Learning Communities
2. Instructional coaches
3. District and regional PD providers



Introduce:

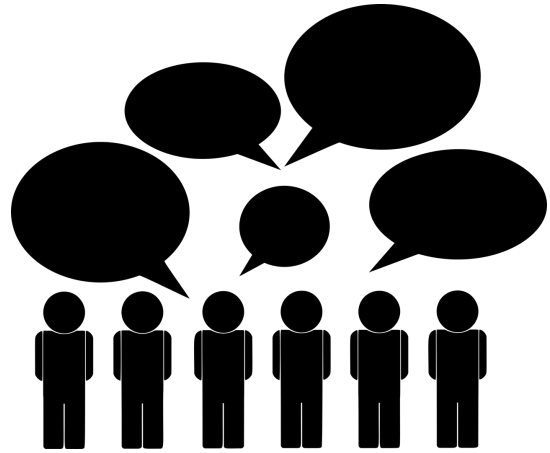
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Experiences &
Recommendations to share



Questions?



Convene a group of educators
to begin Course 1



Contact us with any questions
jwerthei@stanford.edu