Next Generation Science Standards 101
Part 1: Getting to Know the NGSS

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Audience: K-12 Teachers

Special Thanks
Washington State LASER
www.wastatelasero.org

South Sound LASER Alliance

Regional Science Coordinators
www.washingtonesds.org
Introduction to NGSS

Bethel
Clover Park
Federal Way
Franklin Pierce
Puyallup
Tacoma
 Stealthcoen
Summer
White River

Please visit the survey monkey link below and complete the brief survey
https://www.surveymonkey.com/s/NGSSSOC

Getting Ready

• Find a partner
• Engage with the tasks
• Download the documents
• Set aside an hour
• Be prepared to pause video

AGENDA

Where did these standards come from?
Why were new science standards necessary?
What is different about these standards?
What is the timeline for implementation?
What do I need to know right now?
Handbook page 2

What do you know about NGSS?
What do you want to know?
Share your ideas with a partner.

Introduction to NGSS Video

Revisit Handbook page 2

<table>
<thead>
<tr>
<th>Before Video</th>
<th>After Video</th>
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<tbody>
<tr>
<td>Question 1</td>
<td>Question 1</td>
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<tr>
<td>Question 2</td>
<td>Question 2</td>
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After watching the video:
What do you know about NGSS?
What questions do you have?
Debriefing the Video

Key Points:
• Standards have the power to influence educational systems
• Science is more than a “bunch of facts”
• Prepare students for college and career
• Standards will change instruction
• Focus on “doing science”

Story of NGSS

Who wrote the NGSS?

26 NGSS partner states
Multiple Stakeholder Groups

Over 4,000 teachers in WA provided feedback

Next Generation Science Standards = Washington State Science Learning Standards

3 Individuals from WA on writing team
NGSS Myths

The NGSS are not …

- The "common core science standards"
- "Basically the same" as WA State's current standards
- Yet fully implemented in any state
- A prescribed curriculum or explicit recommendation on pedagogy
- Federally mandated or funded
- Currently aligned to any science instructional materials
- Currently assessed by any large scale assessment

NGSS Timeline

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<tr>
<td>NGSS Adopted 10/4/13</td>
<td>Grade 5 &amp; 8 Science MSP</td>
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<td>NGSS Science Assessment System</td>
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Guiding Principles of the NGSS Framework

- Children are born investigators
- Focus on core ideas and practices
- Understanding develops over time
- Science and engineering require both knowledge and practice
- Connecting to students’ interests and experiences
- Promoting equity

Think and Write:

- What is one thing you want to communicate to your teaching colleagues?
- What is one question you still have?

The NGSS were built around 3 major dimensions...
The NGSS Cheat Sheet

Comparing Structure of NGSS to WA Science

Similar to Inquiry and Application EALRs in WA State

Similar to Domains of Science EALR in WA State

Contains parts of Systems EALR in WA State

Dimension 1: Science and Engineering Practices

1. Ask questions (for science) and define problems (for engineering)
2. Develop and use models
3. Plan and carry out investigations
4. Analyze and interpret data
5. Use mathematics and computational thinking
6. Construct explanations (for science) and design solutions (for engineering)
7. Engage in argument from evidence
8. Obtain, evaluate, and communicate information

Which practices are students already using in your classroom?
Which of these might be “new” for your students?
### Dimension 2: Crosscutting Concepts

1. Patterns
2. Cause and effect
3. Scale, proportion, and quantity
4. Systems and system models
5. Energy and matter
6. Structure and function
7. Stability and change

### Dimension 3: Disciplinary Core Ideas

- **Physical sciences**
  - Matter
  - Force & Motion
  - Energy
  - Waves
- **Life sciences**
  - Structure & Processes
  - Ecosystems
  - Heredity
  - Evolution
- **Earth and space sciences**
  - Earth in the Universe
  - Earth Systems
  - Earth & Human Activity
- **Engineering, technology and applications of science**

### What’s Different about NGSS?

**Integrating the 3 Dimensions**

- Science & Engineering Practices
- Disciplinary Core Ideas
- Crosscutting Concepts
3 Shifts in NGSS

1. From Isolation to Integration
2. From Science Inquiry to Science and Engineering Practices
3. From Discrete Science Ideas to Science and Engineering Crosscutting Concepts

Washington State Science Standards 2009

Isolated “inquiry” and “content”

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<thead>
<tr>
<th>Foundational structure</th>
<th>PE’s</th>
<th>Instruction &amp; Assessment</th>
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<tbody>
<tr>
<td>EALR 1: Systems</td>
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<td>Instruction &amp; Assessment</td>
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<td>EALR 2: Inquiry</td>
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<td>EALR 3: Application</td>
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<td>Instruction &amp; Assessment</td>
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<tr>
<td>EALR 4: The Domains of Science Physical, Life, Earth &amp; Space Science</td>
<td>PE’s</td>
<td>Instruction &amp; Assessment</td>
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Next Generation Science Standards

Integrated practices, ideas, and concepts

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<tr>
<td>Life</td>
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<tr>
<td>Earth &amp; Space</td>
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NGSS Timeline

<table>
<thead>
<tr>
<th>Year</th>
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<tr>
<td>2013-14</td>
<td>NGSS Adopted 10/4/13</td>
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<td>2014-15</td>
<td>Build Awareness</td>
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<td>2015-16</td>
<td>NGSS Timeline</td>
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<tr>
<td>2016-17</td>
<td>NGSS Transition</td>
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<tr>
<td>2017-18</td>
<td>NGSS Assessment</td>
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Assessment:
- Grade 5 & 8 Science MSP
- Biology EOC

Think and Write:
- What is one thing you learned in this session that you are excited about?
- What is one thing that has you worried?
- What is one question you still have?

Next Generation Science Standards 101
Part 1: Getting to Know the NGSS

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Next Session: Coming Soon

Next Generation Science Standards 101
Part 2:
Digging into the Science and Engineering Practices

1. Ask questions (for science) and define problems (for engineering)
2. Develop and use models
3. Plan and carry out investigations
4. Analyze and interpret data
5. Use mathematics and computational thinking
6. Construct explanations (for science) and design solutions (for engineering)
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