

NGSS Look-Fors for Secondary Administrators

Dr. Susan Holveck - Secondary Science TOSA, President-elect OSTA
Britten Clark-Huyck - Science teacher / Corvallis High School, OSTA Region
2 board member

Where we were..... 2009 Science Standards- Motion and Forces

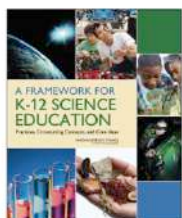
MS. Identify and describe types of motion and forces qualitatively to the laws of motion and gravitation

HS. Apply the laws of motion and gravitation to describe the interaction of forces acting on an object and the resultant motion.

Take a look at NGSS Performance Expectations for Motion and Stability: Interactions and Forces

- What do you notice?

A Framework for K-12 Education



Three-Dimensions:

- Scientific and Engineering Practices
- Crosscutting Concepts
- Disciplinary Core Ideas

Scientific and Engineering Practices

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

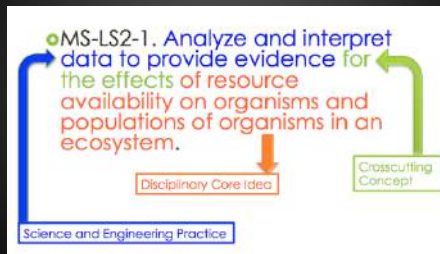
Cross Cutting Concepts

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

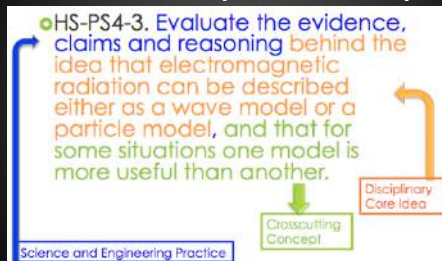
Disciplinary Core Ideas

Life Science LS1: From Molecules to Organisms: Structures and Processes LS2: Ecosystems: Interactions, Energy, and Dynamics LS3: Heredity: Inheritance and Variation of Traits LS4: Biological Evolution: Unity and Diversity	Physical Science PS1: Matter and Its Interactions PS2: Motion and Stability: Forces and Interactions PS3: Energy PS4: Waves and Their Applications in Technologies for Information Transfer
Earth & Space Science ESS1: Earth's Place in the Universe ESS2: Earth's Systems ESS3: Earth and Human Activity	Engineering & Technology ETS1: Engineering Design ETS2: Links Among Engineering, Technology, Science, and Society

A MS Performance Expectation Example



A HS Performance Expectation Example



In the MS PEs that you have:

Look at MS-PS2-1: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

- What is the Scientific Practice?
- What is the Disciplinary Core Idea?
- What is the Cross-cutting Concept?

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Look at MS-PS2-1: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

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In the HS PEs that you have:

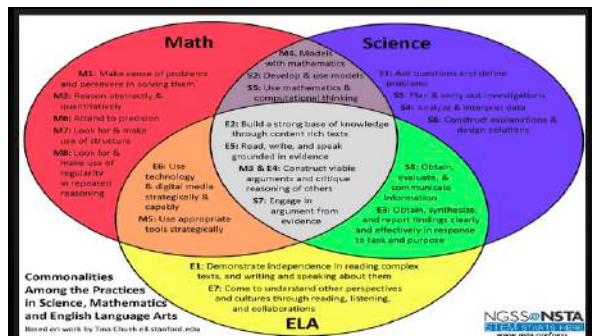
Look at HS-PS2-5: Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.

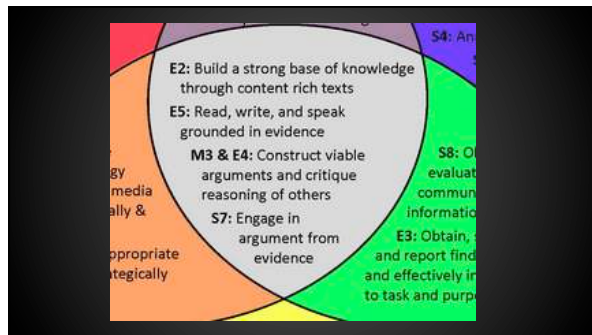
- What is the Scientific Practice?
- What is the Disciplinary Core Idea?
- What is the Cross-Cutting Concept?

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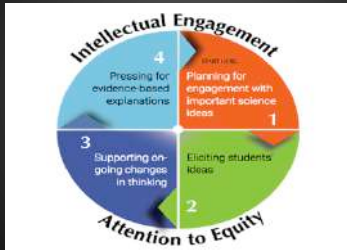
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- What is the Scientific Practice?
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- What is the Cross-Cutting Concept?





So what should you be looking for in your classrooms?



Intersecting with other district initiatives

We have already talked about commonalities with Common Core, what about AVID?



AVID

Subject: _____ Date: _____

Content Classroom Observation Tool
WICOR Walkthrough
Instructional Techniques and Learning Strategies

Teacher: _____ Grade: _____

Writing to learn	Inquiry	Collaboration	Organization	Reading
<input type="checkbox"/> Focused Cornell notes	<input type="checkbox"/> academic task	<input type="checkbox"/> strong sense of mutual respect and support	<input type="checkbox"/> organized binders	<input type="checkbox"/> pre-reading activities, KWL, vocabulary mapping
<input type="checkbox"/> equations in left margin & summary at end	<input type="checkbox"/> analyzed and articulated information	<input type="checkbox"/> products created and/or problems solved together	<input type="checkbox"/> up-to-date planners for assignments, homework, and out of school activities, and long-term projects	<input type="checkbox"/> "mark the text:" numbering, highlighting, underlining, circling (Interacting with Text)
<input type="checkbox"/> pre-writing activities (quick writes to develop thinking)	<input type="checkbox"/> processed and connections made	<input type="checkbox"/> rigorous academic discourse	<input type="checkbox"/> tools to track progress and grades in core classes	<input type="checkbox"/> Cornell notes, SCIRT, concept mapping, reciprocal teaching (Interacting with Text)
<input type="checkbox"/> learning logs, summaries, reflections, interactive notebooks	<input type="checkbox"/> info synthesized into new understandings	<input type="checkbox"/> challenge one another to think deeply about the task at hand	<input type="checkbox"/> developed 4 or 8 year plans for HS courses	<input type="checkbox"/> metacognitive discussions (Beyond the Text)
<input type="checkbox"/> questions asked to seek clarification or additional information	<input type="checkbox"/> information evaluated; hypothesis made	<input type="checkbox"/> focus on the content and "build on each others' thoughts"	<input type="checkbox"/> graphic organizers	<input type="checkbox"/> summarize and reflect (Beyond the Text)
<input type="checkbox"/> AVID writing curriculum	<input type="checkbox"/> application of learning	<input type="checkbox"/> Socratic questioning or Seminar or Philosophical Chairs	<input type="checkbox"/> other	<input type="checkbox"/> other
<input type="checkbox"/> note taking	<input type="checkbox"/> questions asked to seek clarification or additional information	<input type="checkbox"/> signaw activities		
<input type="checkbox"/> other	<input type="checkbox"/> problem solving	<input type="checkbox"/> collaborative research		
	<input type="checkbox"/> questions to self-regulate	<input type="checkbox"/> room configuration		
		<input type="checkbox"/> think, pair share, scribe		
		<input type="checkbox"/> talk, shoulder partners		
		<input type="checkbox"/> other		

Teacher Evaluation

- Many different ways this is done in Oregon
- Let's look at just one
 - [The Danielson Model](#) - Effective Teaching Practices

DOMAIN 1: Planning and Preparation <ul style="list-style-type: none"> 1a. Demonstrating Knowledge of Content and Pedagogy <ul style="list-style-type: none"> • Content knowledge • Pedagogical knowledge • Content pedagogy 1b. Demonstrating Knowledge of Students <ul style="list-style-type: none"> • Individual differences • Learning processes • Special needs • Student skills, language and background • Attitudes and cultural heritage 1c. Setting Instructional Outcomes <ul style="list-style-type: none"> • Goals, standards and objectives • Content • Skills • Attitudes 1d. Demonstrating Knowledge of Resources <ul style="list-style-type: none"> • Materials • Time • Community • Technology 1e. Designing Coherent Instruction <ul style="list-style-type: none"> • Learning activities • Time on task • Pacing and sequence • Instructional groups 1f. Designing Student Assessments <ul style="list-style-type: none"> • Alignment with outcomes • Criteria and standards • Formative assessments • Summative assessments 	DOMAIN 2: The Classroom Environment <ul style="list-style-type: none"> 2a. Creating an Environment of Respect and Support <ul style="list-style-type: none"> • Teacher behaviors with respect • Student behaviors with respect • Classroom environment with respect 2b. Establishing a Culture for Learning <ul style="list-style-type: none"> • Expectations for learning • Assessment • Student roles in work 2c. Managing Classroom Procedures <ul style="list-style-type: none"> • Instructional groups • Transitions • Materials and supplies • Time management • Safety 2d. Managing Student Behavior <ul style="list-style-type: none"> • Supervision of students and paraphernalia • Expectations • Learning behaviors • Discipline and behavior 2e. Organizing Physical Space <ul style="list-style-type: none"> • Safety and accessibility • Organization of classroom applications
DOMAIN 3: Professional Responsibilities <ul style="list-style-type: none"> 3a. Reflecting on Teaching <ul style="list-style-type: none"> • Reflection • Collaboration • Learning 3b. Understanding Academic Research <ul style="list-style-type: none"> • Instructional research • Learning • Instructional research • Learning 3c. Communicating with Families <ul style="list-style-type: none"> • Home and school partnership • Home and school partnership • Home and school partnership 3d. Participating in a Professional Community <ul style="list-style-type: none"> • Professional community • Professional community • Professional community 3e. Growing and Developing Professionally <ul style="list-style-type: none"> • Professional growth • Professional growth • Professional growth 3f. Maintaining Professionalism <ul style="list-style-type: none"> • Professional conduct • Professional conduct • Professional conduct 	DOMAIN 4: Instruction <ul style="list-style-type: none"> 4a. Communicating with Students <ul style="list-style-type: none"> • Communication • Communication • Communication 4b. Using Questioning and Discussion Techniques <ul style="list-style-type: none"> • Questioning • Discussion • Questioning 4c. Engaging Students in Learning <ul style="list-style-type: none"> • Instructional groups • Instructional groups • Instructional groups 4d. Using Assessment in Instruction <ul style="list-style-type: none"> • Assessment • Assessment • Assessment 4e. Demonstrating Flexibility and Responsiveness <ul style="list-style-type: none"> • Flexibility • Flexibility • Flexibility

DOMAIN 1: Planning and Preparation <ul style="list-style-type: none"> 1a. Demonstrating Knowledge of Content and Pedagogy <ul style="list-style-type: none"> • Content knowledge • Pedagogical knowledge • Content pedagogy 	<p>When evaluating a science teacher using Domain 1 (specifically aspects of 1c) these are considerations:</p> <ul style="list-style-type: none"> • The teacher is familiar with national, state, district, and school content standards and uses those standards in planning. • The teacher demonstrates familiarity with best practices research and applies it to lesson design
1c. Designing Student Assessments <ul style="list-style-type: none"> • Congruence with outcomes • Criteria and standards • Formative assessments • Use for planning 	

Teaching framework rubric

DOMAIN 3: Instruction

3a Communicating With Students

- Expectations for learning • Directions and procedures
- Explanations of content

3c Demonstrating Flexibility and Responsiveness

- Feedback to students
- Student self-assessment and monitoring
- Lesson adjustment • Response to students
- Persistence

When evaluating a science teacher using Domain 3 (specifically aspects of 3a & 3c) the following is a consideration:

- The teacher is organized, knows the required learning targets (performance expectations in the case of NGSS) and effectively communicates objectives to students.

DOMAIN 4: Professional Responsibilities

4f Showing Professionalism

- Receptivity to feedback from colleagues • Service to the profession
- Integrity/ethical conduct • Service to students • Advocacy
- Decision-making • Compliance with school/district regulation

When evaluating a science teacher using Domain 4 (specifically aspects of 4d & 4e) these are considerations:

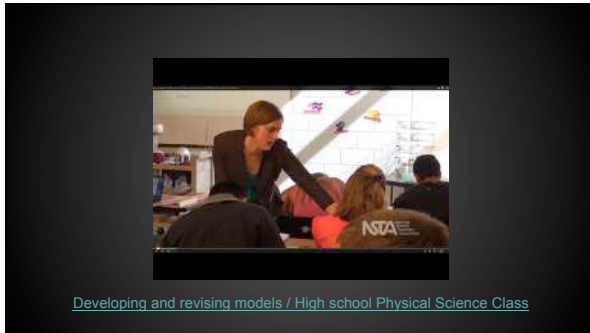
- The teacher supports building and district instructional priorities through increased knowledge and changes in teaching practices.
- The teacher contributes to the professional community through involvement in projects and activities that require collaboration.
- The teacher pursues professional growth opportunities to learn about and apply best practices for facilitating student learning.

Using the evaluation system we just shared..

Let's see how the teacher in this video does for one domain - Domain 3: Instruction.

What do you notice?

Domain 3: Instruction	
3a. Organizing and Planning Instruction	When is your student master created?
3b. Delivering Instruction	
3c. Demonstrating Flexibility and Responsiveness	When is your student master created?
3d. Assessing Student Learning	



Why does instruction need to change?

Because what we want students to be able to do is changing....

- Let's look at a sample NGSS classroom assessment for middle school - [Ocean Waves](#)
- What do you notice?

Date for new ODE NGSS assessment

- Moved up a year to 2017-2018
- A year earlier than recommended by the Science Content Panel

A classroom will look significantly different when teachers are teaching NGSS than a traditional methodology.

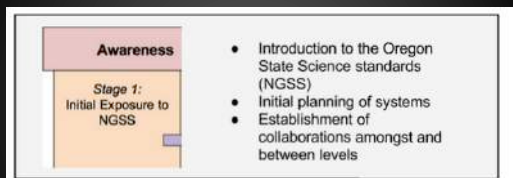
Administrators need to be able to recognize those shifts and support teachers so they can make those shifts.

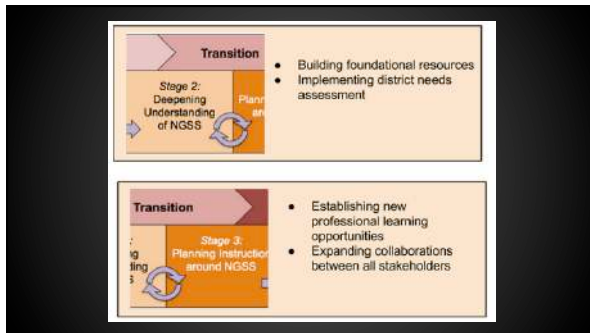


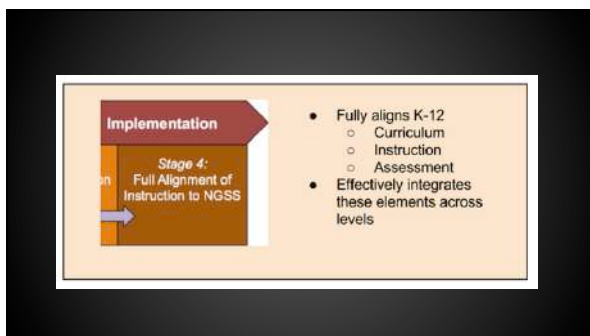
The shift will not happen all at once

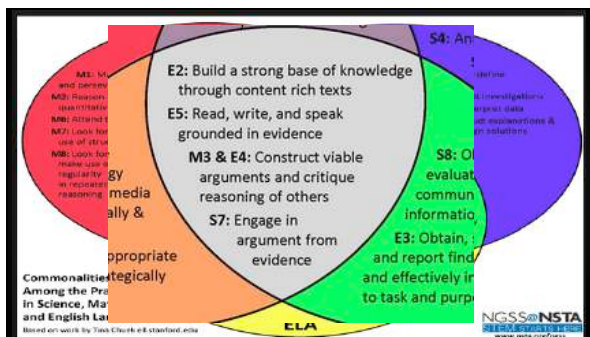


NGSS Implementation pathway model:
<https://sites.google.com/site/ngssd/home/ngss-implementation-pathway>



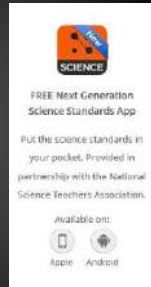






Resources

- [NGSS Performance Expectations](#)
- [NGSS Classroom Tasks](#)
- [Ambitious Science Teaching](#)



Questions