Improving Student Achievement in Science by Integrating Common Core Literacy Standards

Session Description
Participants will investigate strategies and techniques to incorporate Common Core State Standards (CCSS) for Literacy in Science into science instruction which can improve student performance as well as communication of the content in both scientific inquiry and engineering design work samples. Participants will also investigate a model of collaboration among a district literacy coach and science teachers that can help minimize fear and increase knowledge and skill in teaching literacy in science.

Expected Outcomes
- Understand the implications of CCSS for Literacy in Science Technical Reading and Writing.
- Understand how implementing CCSS enhances student access to Science Content and Process Standards and improves student achievement.
- Understand one model to aide in teacher implementation.

Agenda
Part 1
- Welcome, Overview, and Introductions (5 minutes)
- Goals and Agenda (2 minutes)
- CCSS for Literacy in Science (4 minutes)
  - Seasons Partner Activity
- Literacy Assumptions (11 minutes)
  - Reality Check
  - Role of ELA Teachers and Literacy Coach
- Sample reading text required by CCSS
  - Reading Activity in Small and Large Groups (17 minutes)
    - Potential Student Barriers
    - Review CCSS Reading Standards
    - Discussion of Teacher Barriers
- Integrating Common Core into Science Curriculum (5 minutes)
  - Discussion of District Barriers
- Elements of Effective Integration into Science Content (5 minutes)
  - Overcoming the Barriers
  - Tackling the Assumptions
  - Making the Connection
- Reflection Questions and Break (15 minutes)

Part 2
- Roles and Responsibilities (10 minutes)
  - Graphic Organizer Activity in Small Groups
- Literacy Coach Model (18 minutes)
- Scientific Inquiry Work Sample and Writing Required by CCSS (15 minutes)
  - Writing Activity in Small and Large Groups
- Connections between Science Content and Process and Writing (10 minutes)
- Classroom Strategies for Science Technical Writing (16 minutes)
  - Process and Strategy
  - Activity in Small Groups – Using the strategy
• Model for Discipline-Specific Writing ( 3 minutes)
• Implementation Readiness Survey/Needs Inventory (17 minutes)
• Reflection on District Implementation of the Literacy Coach Model (3 minutes)

Time
• 50 minutes (Part 1)
• 15 minutes (Break)
• 80 minutes = 55 minutes video+25 minutes additional time for activities (Part 2)

Audience
• Designed to be used with groups of grades 6-12 leaders and content area teachers.

Materials
• Handout copy of PowerPoint slides
• Grade-level view of CCSS for Literacy in Science for participants at their grade level
  www.ode.state.or.us/teachlearn/real/newspaper/newspaper_section.aspx?subjectcd=ELA
• Oregon Science Standards
  www.ode.state.or.us/teachlearn/subjects/science/curriculum/2009_adopted_k-h_science_standards.pdf
• California Invasive Plant Inventory, page 1 (Introduction) to page 7
  http://www.ode.state.or.us/wma/teachlearn/commoncore/caplantinventory2006.pdf
• Penny Lab Scientific Inquiry Anchor Paper
  www.ode.state.or.us/wma/teachlearn/subjects/science/assessment/worksamples/cphyslow1.pdf
• Oregon Scientific Inquiry Work Sample Scoring Guide
  www.ode.state.or.us/search/page/?id=32
• Roles and Responsibilities Sentence Strips
  http://www.ode.state.or.us/wma/teachlearn/commoncore/sentence-strips.doc
• Implementation Readiness Survey/Needs Inventory
  http://www.ode.state.or.us/wma/teachlearn/commoncore/implementation-readiness-survey.docx

Resources/References
• Oregon Grade-Level Common Core State Standards for English Language Arts & Literacy in
  History/Social Studies, Science, and Technical Subjects
  www.ode.state.or.us/teachlearn/real/newspaper/newspaper_section.aspx?subjectcd=ELA
• Oregon Common Core State Standards Resources and Toolkits
  www.ode.state.or.us/search/page/?id=2860
• Oregon Literacy Plan—K-12, K-12 Teachers: Building Comprehension in the Common Core
  www.ode.state.or.us/teachlearn/subjects/elarts/reading/literacy/have-you-ever.pdf

Part 1
Materials: Participants should have
• a “handout” copy of the PowerPoint slides,
• Common Core State Standards for Literacy in the Science for their grade level
  www.ode.state.or.us/teachlearn/real/newspaper/newspaper_section.aspx?subjectcd=ELA, and
• Oregon Science Standards
**Slides 1-2**

Welcome participants and Introduce the session topic.

**For instance, the facilitator might say,**

"Today we are going to take a look at the Common Core State Standards for Literacy in Science, and how the integration of literacy in science can improve student achievement. As you know, Oregon adopted these Standards in 2010, they are being implemented now, and will be assessed beginning in 2014-15.

These Standards represent a shared set of clear, high-quality goals and expectations to help our students succeed in college and careers.

This session will show you strategies and techniques to incorporate Common Core State Standards for Literacy in Science into science instruction which can improve student performance as well as communication of the content in both scientific inquiry and engineering design work samples. We will also investigate one model of collaboration among a district literacy coach and science teachers that can help minimize fear and increase knowledge and skill in teaching literacy in science."

**Slides 3-5**

Go over the expected outcomes for this session.

**For instance, the facilitator might say,**

"Our goals are three-fold:
1. Understand the implications of CCSS for Literacy in Science Technical Reading and Writing.
2. Understand how implementing CCSS enhances students’ access to Science Content and Process Standards, and improves student outcomes.
3. Understand one model to aide in teacher implementation (in Part 2).

We will look at the implications for implementing the CCSS for Literacy in Science in science classrooms.

In addition, we will share some strategies for integrating literacy in science instruction that lead to improved student achievement.

After the break in the second part of this session we will explore what these strategies look like in the classroom and how one district used a literacy coach model to provide support for implementation of the CCSS for Literacy in Science."

**Slides 6-7**

Materials: Participants should have
- A blank piece of paper

**Explain** the Four Seasons Activity. This activity is meant to identify participant level of knowledge of the CCSS for Literacy in Science and raise questions. Provide the instructions:
- Fold a blank piece of paper into four sections.
- Label each section as fall, winter, spring, or summer seasons.
- Find four people to share something you know about the Common Core Literacy Standards.
- Have each of the four sign a different season on your paper.
Note that in the elementary grades, the same set of standards apply to English language arts and the content areas, whereas at the secondary level, a separate set of standards specific to the content areas are included.

For instance, the facilitator might say, "The English Language Arts and Literacy standards are divided into an elementary section and a secondary section, with three appendices. At the 6-12 level, literacy in the content areas is a separate section with separate (but parallel) standards for the content areas. However, at the elementary level, the same set of Core Standards apply to both English language arts and literacy in the content areas, reflecting the fact that most or all of the instruction students in these grades receive comes from one teacher. It is important to note that the 6-12 literacy standards are not meant to replace content standards in science and technical subjects but rather to supplement them. For example, because Scientific Inquiry and Engineering Design in Oregon already includes a number of these standards, the cross-referenced reading and writing Common Core Standards, linked for instruction, are likely to support what science teachers are already doing."

Slides 8-10:
Go over the common assumptions about literacy.

Go over the reality check on the common assumptions about literacy.

Explain the change in responsibilities in literacy teaching and learning required by the CCSS.

Review the information provided in the video (Time – 10:48-21:34)

Slide 11:
Reading Activity in Small and Large Group
Materials: Participants should have
- California Invasive Plant Inventory, page 1 (Introduction) to page 7

Review the video for background and set up for this activity (Time: 21:35-39:18)

Explain the Reading Activity and provide the instructions
- Skim Article: California Invasive Plant Inventory
- Form a group of 3-4 people
- Identify Barriers a 6-8th grade student might have accessing the content

Invite participants to skim the article and discuss the potential student barriers to accessing this content.

Engage the group in sharing out of the student barriers that they identified.

Review the student barriers shared in the video (Time: 24:22-28:10)

Slide 12:
Explain the next part of the Reading Activity and provide instructions
- Review the CCSS for Literacy in Science handout
- Identify the CCSS reading standards that could be taught using this resource
Invite participants to review the CCSS for Literacy in Science and to identify the standards that will prepare students to be able to access this type of informational text.

Engage the group in sharing the standards that they identified.

Review the discussion of standards shared in the video (Time: 28:10-33:00)

**Slides 13-14**
Engage participants in a discussion on teacher barriers and what teachers need to teach these standards.

Review the discussion of teacher barriers shared in the video (Time: 33:00-39:18)

**Slides 15-20**
Go over district barriers.

Review the information provided in the video (Time – 39:19-43:50)

**Slides 21-22**
Go over the information about tackling the assumptions.

Review the information provided in the video (Time – 43:50-48:45)

**Slide 23**
Go over the information about making connections.

Review the information provided in the video (Time – 48:45-52:05)

**Slide 24**

Invite the participants to take a Break and reflect on the questions.

**Part 2**
**Materials:** Participants should have
- a “handout” copy of the PowerPoint slides,
- Roles and Responsibilities Sentence Strips
- Chart Pack Paper
- Markers, Glue Sticks, Tape, and Sticky Notes

**Slide 25:**
Explain the Roles and Responsibilities Activity and provide instructions
- Create a graphic organizer representing the roles and responsibilities in your district
- Post on wall when finished
- Gallery Walk

Review the set up for this activity shared in the video (Time: 00:00-4:00)

Invite participants to create a graphic organizer poster representing the roles and responsibilities in their district to implement the CCSS for Literacy in Science and post it on the wall when completed.
Invite the group to walk around the room to review the other posters.

**Slide 26:**
Review the information provided about the North Santiam School District (NSSD) plan for implementation of the CCSS for Literacy in Science. (Time: 4:00-21:50)

Review the information provided about how the NSSD implementation of the CCSS for Literacy in Science resulted in increased student achievement in science. (Time: 21:50-24:05)

**Slide 27-28:**
Work Sample/Writing Activity in Small and Large Group
Materials: Participants should have
- Penny Lab Scientific Inquiry Anchor Paper
  [www.ode.state.or.us/wma/teachlearn/subjects/science/assessment/worksamples/cphyslow1.pdf](http://www.ode.state.or.us/wma/teachlearn/subjects/science/assessment/worksamples/cphyslow1.pdf)
- Grade-level view of CCSS for Literacy in Science for participants at their grade level
  [www.ode.state.or.us/teachlearn/real/newspaper/newspaper_section.aspx?subjectcd=ELA](http://www.ode.state.or.us/teachlearn/real/newspaper/newspaper_section.aspx?subjectcd=ELA)
- Oregon Scientific Inquiry Work Sample Scoring Guide [www.ode.state.or.us/search/page/?id=32](http://www.ode.state.or.us/search/page/?id=32)

Review the video for background and set up for this activity (Time: 24:06-29:40)

**Explain** the Work Sample/Writing Activity and provide the instructions
- Skim the Work Sample: Penny Lab write up
- Identify specific writing components/conventions
- Identify writing standards

Invite participants to skim the work sample write up and then discuss the specific writing components/conventions and identify the CCSS for Literacy in Science writing standards related to the Penny Lab Work Sample.

Engage the group in sharing the writing standards that they identified.

**Slides 29-34:**
Review the information about the connections between science content and process standards and writing required by CCSS and the process that NSSD used in their PLCs to increase teacher skills in teaching and student achievement in writing and communicating about the science content and process standards. (Time: 29:41-39:35)

Draw participants’ attention to the columns of the **Handout** “Oregon Scientific Inquiry Work Sample Scoring Guide.”

**Slides 35-38:**
Review the information on what it looks like in the classroom when incorporating the CCSS for Literacy in Science standards with science content and process instruction. (Time: 39:36-43:24)

**Slide 39:**
Writing Activity in Small and Large Groups
Materials: Participants should have
- Penny Lab Scientific Inquiry Anchor Paper
  [www.ode.state.or.us/wma/teachlearn/subjects/science/assessment/worksamples/cphyslow1.pdf](http://www.ode.state.or.us/wma/teachlearn/subjects/science/assessment/worksamples/cphyslow1.pdf)
• Grade-level view of CCSS for ELA & Literacy in Science for participants at their grade level
  www.ode.state.or.us/teachlearn/real/newspaper/newspaper_section.aspx?subjectcd=ELA

Review the video for background and set up for this activity (Time: 43:24 - 44:00)

Explain the Writing Activity and provide the instructions
  Using the conclusion from the Penny Lab Scientific Inquiry Anchor Paper:
  • Identify the claim, evidence, and reasoning
  • Analyze how well the evidence and reasoning support the claim

Invite participants to review the conclusion from the Penny Lab Scientific Inquiry Anchor Paper, discuss the claim, evidence, and reasoning found in the conclusion, and analyze how well the evidence and reasoning support the claim. (Allow 10 minutes)

Engage the group in sharing the main points from their discussion.

Review the discussion for this activity provided in the video. (Time: 44:00 - 46:09)

Slides 40-42:
Review the information provided about a Model for Discipline-Specific Writing. (Time: 46:10 - 49:00)

Slide 43:
Review the information provided about the Implementation Readiness Survey/Needs Inventory. (Time: 49:00 - 51:07)

Invite participants to take the survey. (Allow 15 minutes)

Slide 44:
Review the information provided about this Model is working for NSSD. (Time: 51:07 - 54:45)

Slide 45:
Wrap Up the session by reviewing the goals. (Time: 54:45-56:10)