Content Literacy Tied to the New Standards

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Goal

- Understand specific aspects of content literacy as they relate to the Common Core State Standards for Mathematics and the Next Generation Science Standards*.
Content Literacy

When you think about “content literacy” what are some words and/or images that come to mind?
What is Content Literacy?

the ability to use **reading and writing** for the **acquisition of new content** in a given **discipline**…McKenna, Michael C. & Robinson, Richard D., 1990

the ability to **negotiate** (e.g. read, view, listen, taste, smell, critique) and **create** (e.g. write, produce, sing, act, speak) texts **in discipline-appropriate ways** or in ways that other members of a discipline would recognize as “correct” or “viable”. 2010 Draper, et. al.
What is Content Literacy?

The United Nations Educational, Scientific and Cultural Organization (UNESCO), 2004, defines literacy as:

"ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts."

“Literacy involves a continuum of learning in enabling individuals to…participate fully in their community and wider society."
What is Content Literacy?

• acquisition of new content
• create
• participate fully in their community and wider society
“One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student’s mathematical maturity, why a particular mathematical statement is true….” (p. 4)

“[Students] can analyze relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.” (p. 7)

“Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.” (CCSS MP.3)
[E]very science or engineering lesson is in part a language lesson…

Students should be able to interpret meaning from text, to produce text in which written language and diagrams are used to express scientific ideas, and to engage in extended discussion about those ideas.

Framework for K-12 Science pg 76
So What

Does this mean in K-12 classrooms?
Looking for patterns – define - explore

• How might we define “informational texts”?

• What are examples of “informational texts” in mathematics and science?

• What are some informational text connections we are making in mathematics and science classrooms?
Form six groups:
- 2 math groups
- 2 science groups
- 2 other groups

Select a content appropriate chart and, as a group, write your responses to the question on the chart.

When time is called, rotate to the next content appropriate chart.
Looking for patterns – define - explore

- How might we define “informational texts”?
- What are examples of “informational texts” in mathematics and science?
- What are some informational text connections we are making in mathematics and science classrooms?
Examples of Informational Text in Science

scientific texts (such as papers, the Internet, symposia, and lectures)  pg 53

symbolic representations  pg 66

diagrams, charts, graphs, images pg 74

sketches, diagrams, graphs, models, and products. Also...handbooks... pg 75

peer-reviewed journals, books, conference presentations, and carefully constructed websites pg 75

diagrams ...plots and tables... journals... reports or posters... pg 78
Examples of Informational Text in Mathematics

equations, verbal descriptions, tables, and graphs

cancrete referents such as objects, pictures, drawings, diagrams, and actions

diagrams, two-way tables, graphs, flowcharts and formulas

concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software

http://www.corestandards.org/Math/Practice
78.4% of 7th graders identified as needing further instruction in the English/Language Arts domain for Reading Informational Texts. Palmetto Assessment of State Standards (PASS) 2010

Of all middle grades students identified as needing additional instruction in Reading Informational Texts:

67.9% failed to meet standards for science

67.3% failed to meet standards for mathematics

SC Department of Education, Office of Assessment, 2011
“In K–5… the Standards demand that a significant amount of reading of informational texts take place in and outside the ELA classroom.

Because the ELA classroom must focus on literature (stories, drama, and poetry) as well as literary nonfiction, a great deal of informational reading in grades 6–12 must take place in other classes if the NAEP assessment framework is to be matched instructionally.”
IQ-MS - Inquiring Minds: Reading to Learn and Innovate in Mathematics and Science

- 10 schools selected for treatment and 10 for control
- On-site specialists work with mathematics and science teachers at treatment sites to incorporate purposeful reading, meaningful writing, and productive dialogue into their instruction
Informational Text and Research Connections

• Novices narrowly define informational text
• Experts identify a broad range of materials as informational text

• Novices mechanically apply informational text processing strategies
• Experts are able to flex and adapt strategies to best suit learning outcomes

• Novices adapt informational text strategies based on their preferences
• Experts adapt informational text strategies based on instructional intention

• Novices assign informational text strategies to students
• Experts model informational text strategies with students

• Novices take steps and missteps in using informational text strategies
• Experts take strides in using informational text strategies
• acquisition of new content
• create
• participate fully in their community and wider society
How do we move forward?

What are some:

**A**lready taking?

**A**dditional steps must you take?

**H**ave to think about?