



# Western Massachusetts Writing Project

*Teachers Teaching Teachers Since 1993*

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## Science Literacy / Literacy in Science Leadership Institute

The Massachusetts Department of Elementary and Secondary Education released a new Science and Technology/Engineering (STE) Curriculum Framework in April 2016 with the vision that students' "ability to engage in scientific and technical reasoning through relevant experience results in better understanding of science and engineering, increased mastery of sophisticated subject matter, a better ability to explain the world" (6). Appendix II of the framework emphasizes the essential role of language and literacy in science and technology/engineering learning for all students. To be able to reason, comprehend, and participate in discourse, students of science need relevant literacy instruction.

Literacy and science instruction do not have to be in competition with each other. Educator Elizabeth Birr Moje argues, "Teaching scientific literacy is actually about teaching content. As we teach young people how to make sense of science texts (whether textbooks, newspaper articles, or an excerpt from a scientific report), we are also teaching them science information and, often, science concepts" ("Science Literacy Q&A, 2010, [https://education.illinoisstate.edu/downloads/casei/5-B-18Science Complete%20Set Final.pdf](https://education.illinoisstate.edu/downloads/casei/5-B-18Science%20Complete%20Set%20Final.pdf)).

This course will familiarize participants with the new STE framework while also helping them effectively incorporate reading, writing, speaking, and listening to teach the disciplines of science, technology and engineering. Participants will learn and practice strategies to teach science literacy, create model science lessons, and design and present professional development workshops for an audience of their peers to prepare for leadership in their schools, districts and broader professional communities. Readings will include relevant articles and research, along with a trade book selected to help teach a science concept. Finally, participants will be expected to write and contribute to discussions in both face-to-face and online settings.

**Dates:** Alternating Thursdays, October 20, 2016 - April 6, 2017, 4-7 p.m.

**Location:** North Middle School, Westfield

**Instructors:** Hollington Lee and Karen Miele, WMWP Teacher-Consultants, with guest presenters

**Credit:** 3 graduate credits or 67.5 PDPs

**Cost to Districts:** 2 participants, \$350 each; 3 participants, \$325 each; 4 or more participants, \$300 each (A single-district course for up to 25 participants can be offered on site with a customized schedule for \$5,000.)

### Tentative Syllabus

Date	Topic	Assignment
<b>October 20</b> (face-to-face, all sessions are 3 hours)	<b>Introduction: Unpacking the STE Framework</b> <ul style="list-style-type: none"> <li>● What to look for in the standards</li> <li>● Content area literacy</li> <li>● Modeling literacy strategies</li> </ul>	<b>Due:</b> Download or obtain hard copy of April 2016 Massachusetts STE Framework

<b>November 3</b> (face-to-face)	<b>Storylines in the Science Framework</b> <ul style="list-style-type: none"> <li>• A close look at themes in the standards</li> <li>• A new vision for science education</li> <li>• Writing to learn in science</li> </ul>	<b>Due:</b> Complete assigned readings and post responses online; review and take notes on designated sections of STE framework
<b>November 17</b> (face-to-face)	<b>Science Practices and Disciplinary Core Ideas</b> <ul style="list-style-type: none"> <li>• 5E model of science instruction</li> <li>• Evidence, Reasoning, Claim (ERC) - and CER - making the case for argument writing in science</li> <li>• Supporting the writing process and public writing</li> </ul>	<b>Due:</b> Complete assigned readings and post responses online; create writing-to-learn assignment for one science standard
<b>December 1</b> (face-to-face)	<b>Exploring Technology and Engineering Standards</b> <ul style="list-style-type: none"> <li>• Making sense of the engineering design process</li> <li>• Discipline-based reading strategies</li> <li>• Sharing online resources</li> </ul>	<b>Due:</b> Select and read science trade book; create authentic public writing assignment for one science standard
<b>December 15</b> (online)	<b>Online Science Trade Book Talks</b> <ul style="list-style-type: none"> <li>• Teaching science concepts through fiction or nonfiction grade appropriate texts</li> </ul>	<b>Due:</b> Post completed book talk template; provide feedback on at least two other book talks
<b>January 5</b> (face-to-face)	<b>Meeting the Needs of All Learners</b> <ul style="list-style-type: none"> <li>• Scaffolding science, technology, and engineering instruction through literacy strategies</li> <li>• Adapting strategies to meeting the needs of all learners: aligning lessons to SEI/UDL principles</li> <li>• Tuning model science lesson plans</li> </ul>	<b>Due:</b> Create draft of model lesson for at least one STE standard using 5E template and relevant literacy strategy
<b>January 19</b> (online)	<b>Online Model Lesson Plan</b> <ul style="list-style-type: none"> <li>• Revising a lesson plan that incorporates new standards, feedback from tuning protocol, and scaffolds</li> </ul>	<b>Due:</b> Post your revised model lesson plan; conduct research on what teachers are doing to help students build STE knowledge
<b>February 2</b> (face-to-face)	<b>Professional Development Workshop Planning</b> <ul style="list-style-type: none"> <li>• Co-constructing rubric and discuss expectations</li> <li>• Forming groups and begin workshop planning</li> <li>• Analyzing literacy strategies from model lessons</li> </ul>	<b>Due:</b> Post science professional development needs and ideas for workshop topics
<b>February 16</b> (online)	<b>Online Construction of PD Workshops</b> <ul style="list-style-type: none"> <li>• Working collaboratively with partner to draft workshop</li> </ul>	<b>Due:</b> Complete and post workshop draft; provide feedback on at least two other workshops
<b>March 2</b> (face-to-face)	<b>Polishing the Workshop</b> <ul style="list-style-type: none"> <li>• Model workshop and fishbowl feedback session</li> <li>• Editing workshop drafts in teams</li> </ul>	<b>Due:</b> Revise workshop draft based on peer feedback
<b>March 16</b> (face-to-face)	<b>Presentation of Workshops &amp; Formative Feedback</b> <ul style="list-style-type: none"> <li>• Sharing session with protocol for critiques</li> </ul>	<b>Due:</b> Prepare and practice workshop presentation
<b>March 30</b> (face-to-face)	<b>Presentation of Workshops &amp; Formative Feedback</b> <ul style="list-style-type: none"> <li>• Creating action plans to implement STE practices</li> <li>• Course evaluation and self-reflection</li> </ul>	<b>Due:</b> Complete course evaluation and self-reflection by end of class
<b>April 6</b> (make up day)	If a face-to-face meeting is cancelled due to weather, all subsequent classes will move ahead one meeting date (e.g., if Feb. 2 is cancelled, Feb. 16 will be a face-to-face meeting).	

### Requirements and Expectations

## **Attendance and Participation**

Attendance at all face-to-face meetings and on-time posting of online assignments and comments is required. In the event of an unavoidable absence from all or part of a class activity, you must make arrangements with the instructors immediately for makeup work in order to qualify for PDPs or credit. In addition, you are expected to participate actively and constructively in all in-person and virtual discussions.

## **Writing Prompts**

Open-ended, low-stakes writing-into-the-day prompts will invite you to explore your responses to and questions about the assigned readings and other topics in a variety of ways. These prompts will encourage you to develop insights and make connections and serve as discussion starters for each seminar. Writing-out-of-the-day prompts will serve as formative assessments or opportunities to solidify the day's learning. During the weeks when the course meets online, writing prompts will be provided on an internet learning platform. Some will involve making comments and suggestions about classmates' work.

## **Online Book Talk**

The goal of this assignment will be to engage you in reading and analyzing a science trade book suitable for classroom use - perhaps one selected from the National Science Teachers Association's searchable database, Outstanding Science Trade Books for Students K–12 (see <http://www.nsta.org/recommends/>). Using a template, you will summarize the book, connect it with relevant science topics and standards, identify key vocabulary, and develop an accompanying writing task. This work will be posted online for feedback.

## **Model Science Lesson**

The goal of this project will be to use understandings, insights, and teaching strategies learned during the course to develop (and, to the extent possible, implement and assess) a model science lesson based on one or more standards from the Massachusetts STE framework and incorporating relevant literacy practices. After discussing a range of possibilities in class and doing additional research independently, each of you will select a topic around which to build a lesson including texts (in the broadest sense), instruction, student activities, and assessment. These lessons will be presented to classmates using a tuning protocol, revised, and posted to a class "warehouse" of science lessons.

## **Professional Development Workshop**

The culminating project in the course will be development and presentation of a professional development workshop on a topic related to implementation of the STE framework. The class will develop a list of needed workshops, and you will work with a partner to research, organize, and present one of them. The presentations will be followed by feedback sessions, and the workshop materials will be archived online for use by members of the class and other WMWP teacher-consultants. Course instructor will coach and mentor you throughout the process.

## **Final Reflection**

At the end, you will compose a reflection on your learning in the course—including your take-aways from the readings and activities, their implications for your work in education, and your progress as a science leader.

## **Grades and PDPs**

The process of assigning a value to academic work is never a comfortable one, but grades are required for those who register for graduate credit. We will ask you to participate in your own assessment through development of rubrics, reflections, and conferences. Anyone who completes all requirements—including preparation for class, near-perfect attendance, and active participation—in good faith and on time, and who revises and resubmits work when necessary, will earn at least a B grade. Anyone who consistently stretches herself /himself to move beyond the mere basics and do high-quality work will earn an A. In order to earn PDPs, you must complete all requirements satisfactorily and on deadline. We will do our best to facilitate a positive outcome for all participants. Please let us know how we can be helpful in making the course work, which is challenging, accessible and relevant to you.