Annenberg Learner

Course Guide

Reading and Writing in the Disciplines

A multimedia professional development course in disciplinary literacy for teachers in mathematics, science, history/social studies, and English

Produced by WGBH Educational Foundation

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About The Course

The Challenges

Middle and high school teachers are specialists in their disciplines and know what is needed to effectively communicate with others in their field. Now, with the Common Core State Standards (CCSS), teachers are being asked to share their expertise with students to guide them toward using specialized practices to make sense of discipline-based texts. In other words, the CCSS is asking teachers who are discipline specialists to teach middle and high school students the skills they need to comprehend and communicate like scientists, historians, mathematicians, literary analysts, and technical specialists. The goal is to ensure that students have the knowledge and skills to function well in each of these areas in the real world.

This can prove to be a challenge … and it is not the only one. Consider the student experience. In a typical day, middle and high school students move from class to class, learning content across multiple disciplines. As they do so, they might need the competencies to write a lab report, read primary sources, solve mathematical equations, and write an essay that compares the traits of two fictional characters. To be successful, they must learn to communicate within and across the disciplines.

The Approach

Reading and Writing in the Disciplines can help teachers meet these challenges. With a focus on disciplinary literacy, the course delves into what it means to be an effective communicator in each of four disciplines—mathematics, history/social studies, science, and English—and looks at strategies that support building students' communication skills within each one. Although each discipline has its own particular literacy demands, understanding the differences and commonalities can help teachers build upon the relevant skills and strategies that students bring with them to class. This will provide teachers with knowledge of how to integrate literacy practices within their lessons and, more specifically, which strategies will provide students with the necessary tools for thinking critically about disciplinary concepts.

Course Components

Reading and Writing in the Disciplines is an eight-unit course for teachers in mathematics, history/social studies, science, and English. The course is divided into two parts. The first (Units 1–4)—intended for teachers in all disciplines—provides an overview of disciplinary literacy, essential concepts related to proficient reading, writing, communication, and general instructional and assessment practices that promote literacy development. In part two (Units 5–8), teachers select a discipline and focus both on the particular literacy demands of that discipline and strategies for preparing students to be literate participants in that discipline. It should be noted that all of the units are designed to provide students with effective literacy practices that will enable them to think critically about disciplinary content in the classroom as well as prepare them for participation in future studies and workplace situations.

Part I: Get Started with Disciplinary Literacy

- **Unit 1: What Is Disciplinary Literacy?**
  This unit explores the factors related to literacy development, the concept of disciplinary literacy and how it differs from content-area literacy, and the multiple literacies that students use—both in and out of school—to be literate in today's world.

- **Unit 2: Disciplinary Literacy: Big Ideas**
  This unit examines the important ideas related to purposeful teaching and learning in the disciplines offered in middle and high school. The ideas are organized around general understandings of literacy practices, instruction and assessment practices, curriculum, and student engagement/motivation in learning.

- **Unit 3: Reading: Big Ideas**
  This unit explores the significant components of reading comprehension that relate to effective reading comprehension and learning across disciplines.

- **Unit 4: Writing: Big Ideas**
  This unit reviews the process of writing and the cognitive and affective dimensions of this process; common types and purposes of writing in all disciplines; examples of disciplinary writing; and writing assessment practices.

Part II: Select a Discipline

Mathematics

- **Unit 5: Big Ideas in Literacy**
  This unit identifies and discusses the literacy practices of mathematicians, including reading, writing, speaking, and listening.

- **Unit 6: Reading in Mathematics**
  This unit explores the literacy demands associated with the discipline of mathematics, with a specific focus on reading in the mathematics classroom.

- **Unit 7: Writing in Mathematics**
  This unit focuses on the writing demands in a mathematics classroom.

- **Unit 8: Bringing It All Together**
  This unit addresses what it means to plan, teach, and reflect on mathematics lessons that support the development of disciplinary literacy in mathematics.

Science

- **Unit 5: Big Ideas in Literacy**
  This unit explores the most significant aspects of disciplinary literacy in science, informed by how practicing scientists read, write, and use inquiry constantly in their work.

- **Unit 6: Reading in Science**
  This unit focuses on reading scientific content for the purpose of learning and inquiry. It provides strategies for developing reading skills in science.

- **Unit 7: Writing in Science**
  This unit focuses on writing in science, which includes text and graphical means of conveying scientific findings and ideas.

- **Unit 8: Bringing It All Together**
  This unit emphasizes how reading and writing are mutually supportive for developing literacy skills in science. It delves into the iterative interplay between reading and writing.

English

- **Unit 5: Big Ideas in Literacy**
  This unit explores current ideas in English teaching and the education profession, such as policy, research, teacher education, and teaching.

- **Unit 6: Reading in English**
  This unit focuses on reading practices and instructional strategies in English.

- **Unit 7: Writing in English**
  This unit focuses on writing practices and instructional strategies in English.

- **Unit 8: Bringing It All Together**
  This unit emphasizes how reading and writing are mutually supportive for developing literacy skills in science. It delves into the iterative interplay between reading and writing.

History/Social Studies

- **Unit 5: Big Ideas in Literacy**
  This unit focuses on creating class investigations as a way of teaching history and social studies based on disciplinary literacy.

- **Unit 6: Reading and Analyzing Texts**
  This unit looks at the practices for reading and analyzing texts within class investigations.

- **Unit 7: Argument Writing**
  This unit looks at a process for argument writing, which is important for communicating interpretations and developing the ability to support claims.

- **Unit 8: Bringing It All Together**
  This unit presents various methods to support the integration of reading and writing practices into classroom instruction.

Media

The following media components are integrated into the above course units:

- **Classroom videos** highlight exemplary literacy practices within each of the disciplines.

- **Research videos** feature discipline-area literacy experts exploring what reading, writing, and communicating look like in each of the disciplines.

- **Real World videos** introduce individuals from each of the disciplines who rely on strong reading, writing, listening, and speaking skills in their work.

- **Interactive activities** provide an opportunity for teachers to explore different literacy strategies and think about ways to use the strategies with their students.

Key Literacy Topics Across Classroom Videos

Each featured classroom lesson touches on a range of literacy topics. The following charts identify the main topics addressed by each video.

Key Literacy Topics: Mathematics Classroom Videos (Part 1 of 2)

Video Number	Grade Level	Title	Academic Language/ Vocabulary	Argumentative Writing	Blended Learning	Class Routines	Close Reading	Differentiation
10	6	Deconstructing Word Problems				X		
11	6	Individualized Instruction as a Formative Assessment Tool						
12	7	Using Gradual Release of Responsibility						
13	8	Blended Learning: Using Technology to Learn Math Concepts	X		X			X
14	8	Learning in a Blended Classroom			X	X		
15	9	Annotating Word Problems						
16	9	Talking Like a Mathematician						
17	9	Collaborating to Extend Mathematical Understanding				X		
18	9	Using Math Vocabulary to Articulate Understanding	X					
19	10	Writing for Mathematics Understanding						
20	10	Real World Mathematics Collaboration						
21	10	Writing to Deepen Mathematical Understanding				X		
22	10	Fostering Student Engagement						X
23	11	Collaborative Talk About Mathematics						
24	11	Thinking Like a Mathematician						
25	12	Creating Opportunities for Mathematical Discourse						X

Key Literacy Topics: Mathematics Classroom Videos (Part 2 of 2)

Video Number	Grade Level	Title	Gradual Release of Responsibility	Grouping	Motivation	Peer Collaboration	Reading	Writing
10	6	Deconstructing Word Problems				X	X	X
11	6	Individualized Instruction as a Formative Assessment Tool						X
12	7	Using Gradual Release of Responsibility	X			X	X	X
13	8	Blended Learning: Using Technology to Learn Math Concepts			X	X		
14	8	Learning in a Blended Classroom			X	X		
15	9	Annotating Word Problems			X		X	X
16	9	Talking Like a Mathematician				X	X	X
17	9	Collaborating to Extend Mathematical Understanding				X	X	X
18	9	Using Math Vocabulary to Articulate Understanding					X	
19	10	Writing for Mathematics Understanding			X	X		X
20	10	Real World Mathematics Collaboration				X		X
21	10	Writing to Deepen Mathematical Understanding				X		X
22	10	Fostering Student Engagement			X			X
23	11	Collaborative Talk About Mathematics				X	X	
24	11	Thinking Like a Mathematician		X		X		X
25	12	Creating Opportunities for Mathematical Discourse				X		X

Key Literacy Topics: Science Classroom Videos (Part 1 of 2)

Video Number	Grade Level	Title	Academic Language/ Vocabulary	Argumentative Writing	Blended Learning	Class Routines	Close Reading	Differentiation
26	6	Fostering Close Reading					X	
27	6	Power Writing for Science						
28	7	Making Observations Like a Scientist	X					
29	7	Annotating Across Disciplines						
30	7	Organizing Ideas from Multiple Sources						
31	7	Teaching Content Through Literacy						
32	8	Science Literacy: Reading and Writing Diagrams						
33	9	Building Knowledge from Multiple Sources	X					
34	9	Peer Teaching						X
35	10	Learning Vocabulary in Biology	X					
36	10	Using Scientific Discourse						
37	10	Supporting Claims with Evidence and Reasoning						
38	10	Creating a Culture of Collaboration				X		
39	11–12	Thinking and Communicating Like a Biologist	X					
40	12	Reading and Writing Scientific Abstracts						
41	12	Tackling a Scientific Text	X			X		

Key Literacy Topics: Science Classroom Videos (Part 2 of 2)

Video Number	Grade Level	Title	Gradual Release of Responsibility	Grouping	Peer Collaboration	Motivation	Reading	Writing
26	6	Fostering Close Reading			X		X	
27	6	Power Writing for Science			X			X
28	7	Making Observations Like a Scientist				X	X	
29	7	Annotating Across Disciplines					X	
30	7	Organizing Ideas from Multiple Sources	X				X	X
31	7	Teaching Content Through Literacy					X	X
32	8	Science Literacy: Reading and Writing Diagrams					X	X
33	9	Building Knowledge from Multiple Sources			X		X	
34	9	Peer Teaching			X	X		
35	10	Learning Vocabulary in Biology			X	X		
36	10	Using Scientific Discourse			X			
37	10	Supporting Claims with Evidence and Reasoning			X		X	X
38	10	Creating a Culture of Collaboration			X			
39	11–12	Thinking and Communicating Like a Biologist		X	X		X	X
40	12	Reading and Writing Scientific Abstracts	X				X	X
41	12	Tackling a Scientific Text			X		X	

Key Literacy Topics: English Classroom Videos (Part 1 of 2)

Video Number	Grade Level	Title	Academic Language/ Vocabulary	Argumentative Writing	Blended Learning	Class Routines	Close Reading	Differentiation
42	6	Comprehending Informational Texts						
43	6	One-on-One Conferences						
44	7	Writing Workshop: Using Mentor Texts and Graphic Organizers				X		
45	7	Teacher Collaboration Across Disciplines						
46	8	Comparing the Language of Multiple Sources	X					
47	9	Identifying Theme Through Close Reading	X				X	X
48	9	Collaborating and Writing: Components of Close Reading					X	
49	9	Guided Instruction for Independence			X			
50	9	Blended Learning: Acquiring Digital Literacy Skills			X			
51	10	Polishing Writing						
52	10	Engaging Students in Authentic Reading and Writing						
53	11	Teaching Argumentation Skills	X	X				
54	11	Analyzing Anecdotal Evidence	X	X				
55	11	Analyzing Complex Text						
56	11	Writing for New Media						
57	11	Using Technology to Develop Writing Skills						
58	12	Reading, Writing, and Responding to Poetry						
59	12	Revising with Teacher and Peer Feedback						

Key Literacy Topics: English Classroom Videos (Part 2 of 2)

Video Number	Grade Level	Title	Gradual Release of Responsibility	Grouping	Motivation	Peer Collaboration	Reading	Writing
42	6	Comprehending Informational Texts	X	X		X	X	
43	6	One-on-One Conferences			X		X	
44	7	Writing Workshop: Using Mentor Texts and Graphic Organizers					X	X
45	7	Teacher Collaboration Across Disciplines						X
46	8	Comparing the Language of Multiple Sources					X	
47	9	Identifying Theme Through Close Reading					X	
48	9	Collaborating and Writing: Components of Close Reading		X			X	X
49	9	Guided Instruction for Independence					X	X
50	9	Blended Learning: Acquiring Digital Literacy Skills					X	X
51	10	Polishing Writing				X	X	X
52	10	Engaging Students in Authentic Reading and Writing			X		X	X
53	11	Teaching Argumentation Skills			X	X		X
54	11	Analyzing Anecdotal Evidence			X	X		X
55	11	Analyzing Complex Text				X	X	
56	11	Writing for New Media				X		X
57	11	Using Technology to Develop Writing Skills			X	X		X
58	12	Reading, Writing, and Responding to Poetry					X	X
59	12	Revising with Teacher and Peer Feedback			X	X		X

Key Literacy Topics: History/Social Studies Classroom Videos (Part 1 of 2)

Video Number	Grade Level	Title	Academic Language/ Vocabulary	Argumentative Writing	Blended Learning	Class Routines	Close Reading	Differentiation
60	7	Blended Learning: Evaluating Source Material			X			
61	7	Blended Learning: Purposeful Instruction			X			
62	7	Identifying Evidence from Multiple Sources	X					
63	8	Presenting Facts as Evidence		X				
64	9	Close Reading of a Primary Source	X				X	X
65	9	Flexible Grouping to Promote Learning				X		X
66	9	Creating a Classroom Culture	X			X		
67	10	Making Writing Explicit in Social Studies	X					
68	10	Thinking and Communicating Like a Historian						
69	10	Citing Evidence from Primary Sources to Support Arguments						
70	10	Reading and Responding like a Historian						
71	10	Using the Socratic Method in History				X		
72	10	Developing Questions that Promote Discussion				X		
73	11	Reading Like a Historian					X	
74	11	Expanding Academic Language	X					
75	11	Facilitating a Socratic Seminar				X		
76	11	Designing the Classroom to Support Understanding	X			X		
77	12	Using Document-based Questions for Historical Writing				X		X
78	12	Using Student Data to Plan Instruction						X

Key Literacy Topics: History/Social Studies Classroom Videos (Part 2 of 2)

Video Number	Grade Level	Title	Gradual Release of Responsibility	Grouping	Motivation	Peer Collaboration	Reading	Writing
60	7	Blended Learning: Evaluating Source Material			X	X	X	
61	7	Blended Learning: Purposeful Instruction			X	X		X
62	7	Identifying Evidence from Multiple Sources				X	X	
63	8	Presenting Facts as Evidence						X
64	9	Close Reading of a Primary Source	X				X	X
65	9	Flexible Grouping to Promote Learning		X	X	X	X	
66	9	Creating a Classroom Culture			X		X	
67	10	Making Writing Explicit in Social Studies			X			X
68	10	Thinking and Communicating Like a Historian				X		X
69	10	Citing Evidence from Primary Sources to Support Arguments				X	X	X
70	10	Reading and Responding like a Historian			X		X	X
71	10	Using the Socratic Method in History			X	X	X	
72	10	Developing Questions that Promote Discussion					X	
73	11	Reading Like a Historian			X		X	X
74	11	Expanding Academic Language					X	X
75	11	Facilitating a Socratic Seminar					X	X
76	11	Designing the Classroom to Support Understanding					X	X
77	12	Using Document-based Questions for Historical Writing		X		X		X
78	12	Using Student Data to Plan Instruction		X				X

Facilitator Tips

This course is intended for individual learners to complete at their own pace. However, it can also be organized as a group experience with opportunities for discussion and shared activities. Depending on how you assemble the group from your school or district, you may be working with teachers from different grade levels and/or disciplines. Teachers may prefer to work in discipline-specific groups. However, teachers in different disciplines can also benefit from working together while working through this course. You will want to arrange your discussions and shared experiences based on the needs of your particular group.

The initial challenge you may face when introducing teachers to this course (particularly those teaching mathematics, science, or history/social studies classes) is to help them understand that they are *not* being told that they are reading teachers, but rather that they are disciplinary experts who understand how literacy practices relate to their world of work. The goal of this course is *not* to make all teachers into reading teachers. The goal is to provide all teachers with strategies and tools for helping their students learn successfully in the areas of science, history, mathematics, or English so that they can become skilled professionals and informed citizens.

Communication skills of reading, writing, speaking, listening, and viewing are integral to all disciplines. For example, in order to access the information in a scientific concept paper or prepare a lab report, students need to know how to read and write like scientists. When they have to show their solution to a mathematics problem, students need to know the right vocabulary and writing structures to present their thinking in ways that others will understand. Students studying history and other social sciences need to know how to read primary and secondary sources and how to support their arguments with evidence. And although students in English classes might expect to read and write about novels, poems, and other texts, they also need an understanding of how to read and write expository texts. Of course, disciplinary teachers will have many more examples of how reading and writing are integral to the work that they undertake with their students. And coming up with examples that are specific to their own classes is a great way to start this course.

Getting Started
Begin by having teachers brainstorm the various types of literacy activities that they do in their discipline. If it's possible to have teachers work in discipline-specific groups, have them do so. As they brainstorm ideas, one person should record the ideas on a whiteboard.

If teachers are working in cross-disciplinary groups, have them begin by brainstorming individually about their own discipline.

When the teachers are finished brainstorming, have them make a "cluster chart" to group ideas that involve similar literacy skills: reading, writing, listening, and speaking. If they are in cross-disciplinary groups, they can compare where their lists overlap. Engage teachers in a discussion of these similarities and differences between the literacy skills in their disciplines. What might that mean for students as they move from one discipline to another?

Another activity that can help teachers reflect on the literacy needs of the various disciplines involves looking at the skills of real-world professionals. Essentially, you want them to consider: What kinds of communication skills do you have to have to be a professional in this discipline? You might want to find and print a picture of a professional from each discipline represented in your group. These can be any representative images of a scientist, mathematician, etc. Glue each picture to a piece of paper and write a literacy skills question specific to that discipline at the top. For example, for science teachers, you could write: How do I gather and communicate scientific information? Teachers can write their ideas on the papers and then share with the group. You may also want to show the Real World videos that feature professionals from each discipline talking about the reading and writing skills that they use in their work. Go to "Browse All Media" on the course website to access these videos.

Completing Disciplinary Literacy Units 1–4

The first four units of the course are intended for teachers in all four disciplines. When you are ready to have teachers begin working with the course materials, you can organize the process in multiple ways depending upon the size and makeup of your group. Following are some suggested ways to have teachers work on these units:

- Teachers can read all sections independently and jot down notes and answers to reflection questions, then come together at predetermined times to discuss their ideas. Read through the course website ahead of time to determine at which points you want teachers to meet and discuss the materials.

- You may want to organize a jigsaw so that teachers can work more with their colleagues and rely less on independent work time. Similar to using jigsaw activities with students, group teachers into home teams and expert teams. Each member of

the home team should be assigned a different section or group of sections to read. After they have read their sections, have them meet with their expert groups (all of whom read the same section[s]) to discuss what they have read and address any questions they have. When they are ready, have them return to their home teams and take turns teaching each other the information from the section(s) they read and are "expert" in.

- If you are working with teachers from the same discipline, encourage them to step outside of their disciplines and consider the similarities and differences in literacy approaches and strategies across the curriculum. One goal of the course is to help teachers become more aware of the experiences of their students, who must work across and within each of the disciplines on a daily basis. Remind teachers that students will come to their class with literacy skills attained in other disciplines; part of their challenge is to consider ways that those skills could support and enhance students' work in their discipline.

- If you are working with teachers from multiple disciplines, encourage them to discuss the similarities and differences that they see in the literacy strengths and needs of their disciplines. There are many advantages to coordinating literacy efforts across students' classes; teachers' experiences throughout this course are a good opportunity to begin these conversations.

- Before moving on to the discipline-specific units, you may want to discuss or summarize earlier discussions about the similarities and differences among the communication activities that students must do each day. Most groups will have had some discussion already, particularly after completing the Experiencing Discipline-Specific Texts Activity.

Completing Discipline-Specific Units 5–8

After teachers complete Units 1–4, they will select a discipline to focus on for Units 5–8. Following are some suggested ways to have teachers work on these units:

- Review any lists and/or charts prepared during earlier discussions about the literacy skills required within each discipline, but shift the focus to those skills that students will need in your classroom.

- As before, read through the course website ahead of time to determine at which

points you want teachers to meet and discuss the materials. If the teachers in your group are from multiple disciplines, you may want to arrange separate meetings for each discipline-specific group to discuss the information in their course section. In addition, you can arrange less frequent meetings for the larger group to come back together and discuss ideas addressed across the disciplines.

- Consider creating a new "cluster chart" or other visual display (such as a four-column chart) that compares skills across disciplines. Although teachers will be focusing exclusively on their own disciplines for the remaining units, it's important that they maintain awareness about their students' experiences as they move from discipline to discipline. Having a chart to review, and perhaps adjust, can keep this conversation interesting and insightful.

- The discipline-specific units provide suggestions for activities that can be brought back to the classroom. If your group is currently teaching, look for opportunities in your course timeline for teachers to try out activities with their students and then discuss their experience with their colleagues.

Watching Videos

This course features a large selection of videos that highlight literacy practices in classrooms across the disciplines and show real-world examples of professionals relying on strong communication skills in their work. The videos are integrated throughout the course units and are also available when you select "Browse All Media." Here are some suggestions for working with the videos:

- Most videos have *before*, *during*, and *after* questions. The *before* questions ask teachers to begin thinking about the content and issues that will be explored in the video. This activates prior knowledge and prepares them for the information they are about to learn. The *during* questions give teachers a purpose for viewing so that they are focusing on specific points that the course is making. There will be many things that teachers will notice in the videos, but these questions provide a guide for what they should be focusing on during this particular viewing. The *after* questions encourage teachers to reflect on what they have seen and perhaps think of ways they can apply any new strategies to their own classrooms. As teachers begin to view the videos, you may want to encourage them to think about the viewing process itself and how it is structuring the way that they are learning information from the videos. This same process can support their use of media with students.

- Each classroom video features a page of background information about the teacher and lesson featured in the video, including details about the broader unit being taught. The classroom videos allow teachers to "drop in" for a particular lesson, but this can generate questions about what took place before or after what is evident in the video. Encourage teachers to refer to the video pages for more information.

- Although teachers will be viewing videos in the context of the course, you can select some videos that are particularly relevant to the needs of your group and view and discuss them together. These needs may relate to grade-level curriculum standards, instruction and assessment practices, or student engagement and performance in learning. For example, you can select four videos—one from each discipline—that highlight the same literacy topic and ask teachers to discuss how each discipline approaches this topic. What are the similarities and differences? How did students respond to this topic? How did the teachers support students in their learning? Even if the teachers in your group have already seen a video within the course sections, there is a wealth of information that can be pulled from any of the featured classrooms that varies depending upon your focus when viewing. Identify videos that address particular needs of your group and consider creating your own *before*, *during*, and *after* questions to guide teachers as they view and discuss the video together.If you are working with teachers from multiple disciplines, encourage them to discuss the similarities and differences that they see in the literacy strengths and needs of their disciplines. There are many advantages to coordinating literacy efforts across students' classes; teachers' experiences throughout this course are a good opportunity to begin these conversations.

- Although most videos are intended for viewing as part of a professional develoment experience, those featuring real-world professionals can be used to inspire students in the classroom to draw the connection between what they are learning in school and exciting careers in the real world, helping to answer the questions, Why do I have to learn this? When will I ever use this? Each Real World video includes a page of background information about the featured professional, including more about his or her work and the role of reading and writing in this work. This page also features suggested questions for viewing and discussing these videos with students.

Completing the Course

As teachers complete the course, have them discuss ways to continue incorporating literacy practices in their instruction. If they are currently teaching and have begun to incorporate new ideas and activities into their lessons, ask: How has this changed your instruction or your thinking? What does reading and writing look like in your classroom? If your group is not currently teaching, lead them in a discussion or activity to create a clear list or plan for incorporating their new learning into future instruction. For example, they could list five "big ideas" they learned and brainstorm specific instructional activities to address those ideas. If possible, leave planning time for classroom activities that they can develop with the help of their colleagues.

Also, introduce them to the idea that professional learning is continuous and can be accomplished by joining and reading the publications from professional organizations. Share some of these addresses:

(ASCD) Association for Supervision and Curriculum Development
http://www.ascd.org/memberships.aspx

(ILA) International Literacy Association
http://www.reading.org/

(NCTE) National Council of Teachers of English
http://www.ncte.org/

(NSTA) National Science Teachers Association
http://www.nsta.org/

(NCTM) National Council of Teachers of Mathematics
http://www.nctm.org

(NCSS) National Council of Social Studies
http://www.socialstudies.org

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