EXPEDITIONARY
LEARNING

Grade 7: Module 4A: Unit 1:
Overview

Unit 1: Building Background Knowledge: Development of the Adolescent Brain

In this first unit, students are introduced the development of the adolescent brain. They first will learn the basic biology of the brain, focusing on three key aspects of brain development: the prefrontal cortex, the limbic system, and changing neurons. Through a variety of sources, including text, video, and interactive Web sites, they learn that the adolescent brain is growing in a dynamic and unique way. With each source, they will practice analyzing the main idea and supporting details. They also will compare how the same ideas are presented in text and visual formats. This prepares them for their mid-unit assessment, which centers on analyzing the main idea in a video and comparing the video to a text (SL.7.2 and RI.7.7).

After the mid-unit assessment, students will begin to examine more specifically, the effects of screen time on the developing brain. They will grapple with a challenging text, which will help them examine the possible positive and negative effects of being "plugged in." Through carefully designed close readings, students will continue to analyze the main idea and supporting details presented in this text while building their stamina and capacity for a complex text. To help personalize these difficult concepts, in each lesson students will return to an audio slideshow where they hear the voices of students who are immersed in the digital world. Then they read a profile of a student who typifies the positives and negative effects of being "plugged in." For the end of unit assessment, students will analyze the main idea and supporting ideas in a text that links digital media, brain development, and adolescent behavior (RI.7.1, RI.7.5, and RI.7.6).

Guiding Questions and Big Ideas
• **How is the adolescent brain changing?**
• **Should screen time be limited? Why or why not?**
• **How can I make an informed decision about an issue and then effectively argue my position?**
• *The teenage brain is in a period of dynamic growth and change that is unique to this stage of life.*
• *Behavior shapes the physical structure of the brain, and the physiology of the brain affects behavior.*
• *Researchers wonder how screen time affects the development of adolescents.*

Mid-Unit 1 Assessment	**"The Development of the Young Brain": Listening for Main Idea and Supporting Details** This assessment centers on NYSP12 ELA CCLS RI.7.7 and SL.7.2. Students will analyze the main idea and details in the video "Development of the Young Brain," which features Dr. Jay Giedd, a prominent researcher in the field of adolescent neurobiology. They will also compare a portion of the video to the transcript of the video.
End of Unit 1 Assessment	**Analyzing the Main Idea and Supporting Details in "You Trouble"** This assessment centers on NYSP12 ELA CCLS RI.7.1, RI 7.2, RI.7.5, RI.7.6, and L.7.6. Students will analyze the main idea and supporting ideas in a text that links digital media, brain development, and adolescent behavior by filling out the same chart they have been practicing throughout Unit 1. They also will answer selected response questions about author purpose (RI.7.6), vocabulary (L.7.6), text structure (RI.7.5) and text-based evidence (RI.7.1).

Content Connections

This module is designed to address English Language Arts standards as students read informational texts about adolescent brain development. This ELA module is designed to expose students to informational text from various sources and encourage the interaction with texts through multiple modalities (e.g. books, articles, electronic, digital). However, this ELA module does not supplant the regular science curriculum and instructional program at the local level aligned to the NYS Learning Standards in Science for this grade level. The informational text in this module intentionally incorporates Science concepts and themes to support potential cross-standards connections to this compelling content. These intentional connections are described below.

NYS Learning Standards in Science:
Intermediate-Level Science Core Curriculum Guide Grades (5-8) http://www.p12.nysed.gov/ciai/mst/sci/documents/intersci.pdf
Standard 4: The Living Environment
Key Idea 1: Living Things are both similar to and different from each other and from nonliving things.
Performance Indicators 1.1; Major Understandings 1.1e, 1.1g, 1.1h
Performance Indicators 1.2; Major Understanding 1.2h

Key Idea 4: The continuity of life is sustained through reproduction and development.
Performance indicator 4.3 Major Understanding 4.3c

Big ideas and guiding questions are informed by the Next Generation Science Standards:
Science and Engineering Practices
The eight practices of science and engineering that the Framework identifies as essential for all students to learn and describes in detail are listed below:
8. Obtaining, evaluating, and communicating information
http://www.nextgenscience.org/sites/ngss/files/Appendix%20F%20%20Science%20and%20Engineering%20Practices%20in%20the%20NGSS%20-%20FINAL%20060513.pdf

Texts
1. Scholastic Inc. and National Institute on Drug Abuse, "Teens and Decision Making: What Brain Science Reveals," in New York Times Upfront (Vol. 140, Issue 13), April 14, 2008, 18.
2. Richard Knox, "The Teen Brain: It's Just Not Grown Up Yet," National Public Radio, March 1, 2010, as found at http://www.npr.org/templates/story/story.php?storyId=124119468.
3. Linda Bernstein, "What's Going On in Your Brain?" in Current Health (Vol. 32, Issue 6), Feb. 2006, 20.
4. Tara Parker-Pope, Jon Huang, and Mike Mason, "The Child's Developing Brain," interactive feature on NYTimes.com, Sept. 15, 2008, as found at http://www.nytimes.com/interactive/2008/09/15/health/20080915-brain-development.html.
5. Judy Willis, "What You Should Know about Your Brain," in Educational Leadership (Vol. 67, Issue 4), 2009.
6. Adriana Galván, "Insights into the Teen Brain" (video), TedxYouth@Caltech, Jan. 19, 2013, as found at http://tedxtalks.ted.com/video/Insight-Into-the-Teenage-Brain;search:tag:"tedxyouth-caltech".
7. Jay N. Giedd, M.D., "Development of the Young Brain" (video), National Institute of Mental Health, May 2, 2011, as found at http://www.nimh.nih.gov/news/media/video/giedd.shtml.
8. Joshua Brustein, Matt Richtel, and Erik Olsen, "Students and Technology, Constant Companions," interactive feature on NYTimes.com, Nov. 20, 2010, as found at http://www.nytimes.com/interactive/2010/11/21/technology/20101121-brain-interactive.html?ref=technology.
9. Jay N. Giedd, M.D., "The Digital Revolution and Adolescent Brain Evolution," in Journal of Adolescent Health (Vol. 51, Issue 2), Aug. 2012, 101–105.
10. Matt Richtel, "Growing Up Digital," in Scholastic New York Times Upfront, Jan. 31, 2011, as found at http://teacher.scholastic.com/scholasticnews/indepth/upfront/this_issue/index.asp?article=013111_digital.
11. Justin O'Neill, "You Trouble," in Scholastic Choices, Sept. 2012.

This unit is approximately 2 weeks or 10 sessions of instruction.

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 1	Introducing Module 4A; This is Your Brain-Plugged In	• I can cite several pieces of text-based evidence to support an analysis of informational text. (RI.7.1) • I can determine a theme or the central ideas of informational text. (RI.7.2) • I can analyze the organization of an informational text (including how the major sections contribute to the whole and to the development of the ideas). (RI.7.5) • I can analyze the main ideas and supporting details presented in different media and formats. (SL.7.2)	• I can analyze photos, videos, and quotes to find a main idea. • I can determine important ideas in the article "Teens and Decision Making." • I can analyze the basic structure of an informational text.	• Notices and Wonders note-catcher	• Domain-Specific Vocabulary anchor chart • Gallery Walk protocol
Lesson 2	Identifying Main Ideas and Supporting Details: What's Going on in the Teenage Brain?	• I can cite several pieces of text-based evidence to support an analysis of informational text. (RI.7.1) • I can use a variety of strategies to determine the meaning of unknown words or phrases. (L.7.4) • I can determine the meaning of words and phrases in text (figurative, connotative, and technical meanings). (RI.7.4)	• I can determine the main idea and supporting ideas/details in "Teens and Decision Making" • I can determine the meaning of unknown technical words.	• Neurologist notebook #1 (from homework) • Thinking Logs	• Brain Development anchor chart • Domain-Specific Vocabulary anchor chart

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 3	Comparing Text to Multimedia: Understanding How the Brain Changes	• I can compare and contrast different media versions of informational text (written vs. audio vs. film vs. staged, etc.). (RI.7.7) • I can analyze impact of the techniques unique to each medium. (RI.7.7) • I can cite several pieces of text-based evidence to support an analysis of informational text. (RI.7.1)	• I can compare a text-only version of "The Child's Developing Mind" to the multimedia version of that text. • I can analyze the impact of the techniques unique to text and multimedia. • I can analyze the main idea and supporting details in "Teens and Decision Making."	• Neurologist's notebook #2 (from homework) • Neurologist's notebook #3 • "The Child's Developing Mind": Comparing Text to Multimedia	• Brain Development anchor chart
Lesson 4	Analyzing the Main Idea in Video: Understanding the Limbic System	• I can analyze the main ideas and supporting details presented in different media and formats. (SL.7.2) • I can explain how ideas presented in different media and formats clarify a topic, text, or issue. (SL.7.2) • I can analyze impact of the techniques unique to each medium. (RI.7.7) • I can adjust my writing practices for different timeframes, tasks, purposes, and audiences. (W.7.10)	• I can analyze the main ideas and supporting idea/details in "Insight into the Teenage Brain." • I can explain how the different aspects of a presentation contribute to my understanding. • I can explain how ideas presented in "Insight into the Teenage Brain" clarify my understanding of the brain. • I can summarize the main idea and supporting details in a well-explained paragraph.	• Thinking Logs	• Domain-Specific Vocabulary anchor chart • Brain Development anchor chart
Lesson 5	Mid-Unit Assessment: Development of the Young Brain	• I can compare and contrast different media versions of informational text. (RI. 7.7) • I can analyze impact of the techniques unique to each medium. (RI.7.7) • I can analyze the main ideas and supporting details presented in different media and formats. (SL. 7.2) • I can explain how ideas presented in different media and formats clarify a topic, text or issue. (SL. 7.2)	• I can analyze the main idea and supporting ideas/details in "Development of the Young Brain." • I can compare the text and video of "Development of the Young Brain." • I can explain how the ideas presented in the video clarify my understanding of the adolescent brain.	• Homework: Summarizing Main Idea and Supporting Details (from Lesson 4) • Mid-Unit 1 Assessment • Analyzing the Main Idea and Supporting Details: Partner Practice	

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 6	Close Reading: Excerpt 2 of "The Digital Revolution and the Adolescent Brain Evolution"	• I can cite several pieces of text-based evidence to support an analysis of informational text. (RI.7.1) • I can determine a theme or the central ideas of informational text. (RI.7.2) • I can read above-grade-level texts with scaffolding and support. (RI.7.10) • I can use a variety of strategies to determine the meaning of unknown words or phrases. (L.7.4)	• I can determine the main idea of Excerpt 2 of "The Digital Revolution and the Adolescent Brain Evolution." • I can use a variety of strategies to figure out the meaning of new vocabulary. • I can read above-grade-level texts with support.	• Homework: Summarize Your Learning (from Lesson 5) • Excerpt 2 of "The Digital Revolution and the Adolescent Brain Evolution" text-dependent questions	• Domain-Specific Vocabulary anchor chart • Brain Development anchor chart
Lesson 7	Close Reading: Excerpt 3 of "The Digital Revolution and the Adolescent Brain Evolution"	• I can cite several pieces of text-based evidence to support an analysis of informational text. (RI.7.1) • I can read above-grade-level texts with scaffolding and support. (RI.7.10) • I can use a variety of strategies to determine the meaning of unknown words or phrases. (L.7.4) • I can analyze the organization of an informational text (including how the major sections contribute to the whole and to the development of the ideas). (RI.7.5)	• I can identify text-based evidence that does or does not support the main idea of an informational text. • I can read "The Digital Revolution and the Adolescent Brain Evolution" with support. • I can analyze photos, video, and quotes to find a main idea.	• Excerpt 3 of "The Digital Revolution and the Adolescent Brain Evolution" text-dependent questions • Thinking Logs	• Brain Development anchor chart
Lesson 8	Close Reading: Excerpt 5 of "The Digital Revolution and the Adolescent Brain Evolution"	• I can cite several pieces of text-based evidence to support an analysis of informational text. (RI.7.1) • I can read above-grade-level texts with scaffolding and support. (RI.7.10) • I can use a variety of strategies to determine the meaning of unknown words or phrases. (L.7.4)	• I can determine the main idea in Excerpt 5 of "The Digital Revolution and the Adolescent Brain Evolution." • I can use a variety of strategies to figure out the meaning of new vocabulary. • I can read above-grade-level texts with support.	• Homework: Excerpt 4 of "The Digital Revolution and the Adolescent Brain Evolution" • Excerpt 4 text-dependent questions • Thinking Logs	• Brain Development anchor chart • Domain-Specific Vocabulary anchor chart • Quiz-Quiz-Trade protocol

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 9	Analyzing Main Ideas and Supporting Details: "Growing Up Digital"	• I can determine a theme or the central ideas of an informational text. (RI.7.2) • I can analyze the development of a theme or central idea throughout the text. (RI.7.2) • I can cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. (RI.7.1)	• I can analyze "Growing Up Digital" to determine its central ideas and evidence, and how they relate to each other.	• Text-Dependent Questions: "Growing Up Digital" • Reflection Grid	
Lesson 10	End of Unit Assessment: Analyzing an Informational Text	• I can cite several pieces of text-based evidence to support an analysis of informational text. (RI.7.1) • I can determine a theme or the central ideas in informational text. (RI.7.2) • I can analyze the organization of an informational text (including how the major sections contribute to the whole and to the development of the ideas). (RI.7.5) • I can acquire and use accurately grade-appropriate general academic and domain-specific words and phrases. (L.7.4)	• I cite several pieces of text-based evidence to support an analysis of the text "You Trouble." • I can analyze the organization of "You Trouble." • I can acquire and use accurately grade-appropriate general academic and domain-specific words and phrases in "You Trouble."	• End of Unit 1 Assessment	

Optional: Experts, Fieldwork, and Service

Experts:

- Invite a local researcher, psychologist, neurologist, or pediatrician to talk to the students about recent findings in the field of adolescent development.

- Invite a local business person to talk about the role of technology in the workplace and its effects on productivity.

- Invite a principal to talk about the pros and cons of integrating technology into the school.

Fieldwork:

- Visit an fMRI research lab or scan center to see the neurological and brain imaging research first-hand.

- Visit a public space to monitor the use of digital devices and the way technology affects the interactions between individuals.

Service:

- Invite students to share their learning with community members or peers with a goal of educating their community about adolescent brain development through a pamphlet or visual display.

Optional: Extensions

- Students could create a poster or presentation for their peers about the development of the teen brain and effective habits for caring for the growing brain.

- Students could spend a week "screen free" and write a journal on their experience (this extension could also be done alongside Unit 2).

- Students could write a short story centered on one of the individuals from the audio slideshow featured in Lessons 6–8. Then they could write an author's note that explains how they used the character's actions to illustrate their knowledge of the developing brain and how it may affect teenager behavior. They may also use the characters to illustrate the issues surrounding screen time. Unit 3 of Module 3A has lessons specifically designed to help students write a short story. They could be adapted for this activity.

- Students could return to some of the texts from past modules to analyze the characters in light of their brain development. For example, students may explain how the characters' behavior reflects an underdeveloped prefrontal cortex or a propensity to seek novel information and thrills. Module 1, 2A, and 2B are particularly suited to this task.

- Students could reflect on their own behavior and how it does or does not support their learning regarding adolescent brain development.

Preparation and Materials

Learning about the Science Content

Unit 1 focuses on the adolescent brain development. This is content that historically has not been taught in the English Language Arts classroom. See Module Overview for recommendations regarding what to read in advance in order to build your own background knowledge. Be sure you have familiarized yourself with the texts in Unit 2. This will be helpful as you decide what information found in the background texts to emphasize.

A note of caution: Students may misinterpret the texts to say that because their brains are developing, they have no control over their actions. For example, they may misunderstand that because they have an underdeveloped prefrontal cortex they *will* make bad decisions or because their limbic system matures first they *cannot help* seeking out thrills and engaging in risky behavior. Additionally, they may misunderstand "developing" as "defective" and believe that somehow their brains are not capable. Decide in advance how you will address these misunderstandings, if need be. Many of the texts have a concluding section that directly address this misunderstanding, and spending enough time on the texts will ensure that students get this nuanced information. Also, creating a classroom climate where students are encouraged to discuss their learning will help you surface and address any misinformation.

This unit includes a number of routines:

1. Neurologist's notebook

Along with their reading, students will keep a neurologist's notebook: a note-catcher to get the gist, main idea, and supporting idea/details. This neurologist's notebook will help students analyze the text and practice RI.7.1 and RI.7.2. It will also hold their new background knowledge about adolescent brain development, which serves as the foundation for their research later in the module. The neurologist's notebook often involves domain-specific vocabulary work, and this is where students will hold important definitions related to neuroscience.

You will find the neurologist's notebook in the supporting materials section of each lesson in which they are assigned. Consider preparing the neurologist's notebook as a packet in advance. Or set up a place (such as a folder) for students to keep their completed neurologist's notebook so they can return to them as needed for comprehension. Consider collecting the neurologist's notebook occasionally to check for completion and informally assess students' understanding.

2. Thinking Log

Starting in Lesson 2, students also use a Thinking Log frequently to synthesize their understanding of adolescent brain development. In contrast to the neurologist's notebook, which helps hold students' learning, the Thinking Logs help students process their learning and react to the information. They also serve to scaffold the skills required by SL.7.2, with a particular focus on explaining "how the ideas clarify a topic, text, or issue under study."

The Thinking Log has space for each lesson where its use is planned in both Units 1 and 2 of this module. Both units are included in the same packet so that students have a place to record and reflect on their understanding of adolescent brain development as they continue to read, watch videos, and research about the topic. Be sure to have a place where students can easily store and retrieve their Thinking Logs.

The entire Thinking Log is in the supporting materials of Lesson 2. Prepare the Thinking Log as a packet for each student. In Lesson 4, collect the Thinking Log to check students' ability to clarify a topic. After that, consider collecting the Thinking Log periodically to check students' understanding of the issue.

3. Brain Development anchor chart

The class will track their learning around three major areas of brain development: the prefrontal cortex, the limbic system, and the pruning and branching neurons. These ideas appear in nearly all the texts in Unit 1. Students will work on an identical "student version" of the anchor chart for their own reference.

The last column on the chart—titled "So what?"—is a major piece of scaffolding for the position paper in Unit 3. Modeling "if/then" statements and then asking the students to practice creating "if/then" statements will help them immensely as they begin to reason out the evidence for their position paper. Continue this practice into Unit 2. Consider the needs of your students as you support them in creating arguments based on this complex material.

As with any anchor chart, the teacher model is provided as a guide, but the specific anchor chart your class creates should reflect the class discussion.

Consider how you will display the anchor chart. Projecting it on a document camera will facilitate adding information to the chart, but having it displayed on chart paper in the classroom will be an important resource for your struggling students.

4. Independent reading

This unit assumes that you have launched an independent reading program with your students before. There is time allotted in Lesson 6 for the students to choose their independent reading book for this module. See the Recommended Texts list in the Module Overview for a list of titles that are thematically linked with this module. Also, see two separate stand-alone documents on EngageNY.org: **The Importance of Increasing the Volume of Reading** and **Launching Independent Reading in Grades 6–8: Sample Plan**, which together provide the rationale and practical guidance for a robust independent reading program. Once students have all learned how to select books and complete the reading log, it takes less class time. After the launch period, the independent reading routine takes about 15 minutes every other week, with an additional day near the end of a unit or module for students to review and share their books. Unit 2 includes time to maintain the independent reading routine (calendared into the lessons) but does not set a particular routine. As you support students in setting and meeting independent reading goals, encourage them to be done with their books by Unit 3, Lesson 5.

Routines and Professional Judgment

Review these documents before you launch the unit and decide which method of organizing these assignments and checking homework will work best for you and your students. The recommended approach, described above, reduces the amount of paper that students are handling and gives them feedback on homework partway through the routine.

You may need to modify this plan to meet the needs of your students. Your routine should allow you to look closely at students' work several days into the homework routine to make sure they are on track.

Your routine also needs to allow students to use the neurologist's notebook and Thinking Logs in class daily and to keep track of them.

This unit, and the units that follow, include instructions for pacing and timing of lessons, oral presentation of material to students, and method of grading assessments. All of these instructions, however, are subject to the knowledge and best professional judgment of teachers about your content area, classroom, school, students, and larger community.