

Grade 5 Social Studies

Module 1

The History of America: Prior to Civil War,
The Civil War, and Industrial America

Module Goal

The goal of this module is to provide information that will help educators increase their knowledge of grade-appropriate social studies concepts, knowledge, and skills to support effective planning or modification of their existing social studies instructional units for students with significant cognitive disabilities. The module includes important concepts, knowledge, and skills for the following instructional units:

- Prior to Civil War
- The Civil War
- Industrial America

Module Objectives

The content module supports educators' planning and implementation of instructional units in social studies by:

- Developing an understanding of the concepts and vocabulary that interconnect with information in the module units.
- Learning instructional strategies that support teaching students the concepts, knowledge, and skills related to the module units.
- Discovering ways to transfer and generalize the content, knowledge, and skills to future school, community, and work environments.

The module provides an overview of the social studies concepts, content, and vocabulary related to The History of America: Prior to Civil War, The Civil War, and Industrial America and provides suggested teaching strategies and ways to support transference and generalization of the concepts, knowledge, and skills. The module does not include lesson plans and is not a comprehensive instructional unit. Rather, the module provides information for educators to use when developing instructional units and lesson plans.

The module organizes the information using the following sections:

- I. Social Studies Academic Standards and Related Alternate Assessment Targets and Underlying Concepts;
- II. Connecting Concepts;
- III. Vocabulary and Background Knowledge information, including ideas to teach vocabulary;
- IV. Overview of Units' Content;
- V. Universal Design for Learning (UDL) Suggestions;
- VI. Transfer and Generalize Concepts, Knowledge, and Skills;
- VII. Concepts and Vocabulary Multi-Age Planning: Grades Three through Five; and
- VIII. Tactile Maps and Graphics.

Section I

Social Studies Academic Standards and Related Alternate Assessment Targets and Underlying Concepts

It is important to know the expectations for each unit when planning for instruction. The first step in the planning process is to become familiar with the identified academic standards and related Alternate Assessment Targets (AATs) and Underlying Concepts (UCs) covered in the module. The AATs are specific statements of knowledge and skills linked to the grade-specific social studies academic standards. The UCs are basic key ideas or concepts linked to specific AATs. UCs are a basis for developing a more complex understanding of the knowledge and skills represented in the AAT and should not be taught in isolation. It is important to provide instruction on the AAT along with the UC in order to move toward acquisition of the same concepts, knowledge, and skills.

Table 1 includes the grade 5 academic standards and related AATs and UCs addressed by this module. While only the academic standards targeted for the Tennessee Comprehensive Assessment Program/Alternate (TCAP/Alt) are included, instruction on additional standards will aid in student understanding. Standards that are not included still represent important content for students to master. Therefore, the AATs and UCs included in the table do not cover all of the concepts that can be taught to support progress and understanding aligned to the standards.

The Tennessee Social Studies Academic Standards include the following codes:

C – Civics	H – History
E – Economics	P – People
G – Geography	TN – Tennessee

Table 1. Social Studies Academic Standards and Related AATs and UCs ¹

Academic Standards	Alternate Assessment Targets (AAT)	Underlying Concepts (UC)
Prior to Civil War		
5.2 Interpret the sectional difference between the North and the South in economics, transportation, and population. (CE)	Contrast the economies of the North and South prior to the Civil War.	Identify differences in the North and South’s resources in the early 1860’s.
Civil War		
5.6 Explain with supporting details why Tennessee was divided on the issue of secession and the events that led it to eventually leave the Union to include: state convention vote of 1861, the Free and Independent State of Scott, Hurst Nation, East	Identify differences between East Tennessee and West Tennessee regarding the issue of secession.	Identify reasons why Tennessee seceded from the Union.

Academic Standards	Alternate Assessment Targets (AAT)	Underlying Concepts (UC)
Tennessee mostly pro-Union and divided families. (HPTN)		
5.12 Draw on informational text to explain the roles of the military and civil leaders during the Civil War, including: Abraham Lincoln, Jefferson Davis, Ulysses S. Grant, Robert E. Lee, Frederick Douglas, Clara Barton. (CHP)	Explain the importance of the role Abraham Lincoln, Jefferson Davis, Frederick Douglass, or Clara Barton had during the Civil War.	Identify a main role of a leader in a community.
5.15 Explain the contributions of Tennesseans during the war, including: Nathan Bedford Forrest, Sam Watkins, Andrew Johnson, Matthew Fontaine Maury, Sam Davis. (HTN)	Explain the importance of Sam Watkins’ documentation of the events of the Civil War.	Identify what it was like to be a Tennessee soldier in the Civil War.
Industrial America		
5.27 Explain the need for the South and Tennessee to move toward industry and mechanization after the Civil War and identify examples of the effort, including Coca Cola bottling in Chattanooga, mining on the Cumberland Plateau, coal and iron processing, the growth of urban areas, and the increase in railroads. (GEHTN)	Identify changes to the economy (e.g., from farming to industry and mechanization) in the South or in Tennessee following the Civil War.	Identify examples of industry (e.g., Coca Cola bottling, mining on the Cumberland Plateau, or coal and iron processing) or agriculture in Tennessee.
5.37 Use a graphic organizer to provide information about important business leaders, inventors, and entrepreneurs and the impact they had on American society, including: Thomas Edison, Alexander Graham Bell, Henry Ford, George Eastman, George Washington Carver, Henry Bessemer, Swift and Armour, Cornelius Vanderbilt. (CEH)	Use a graphic organizer to identify information about important inventors (e.g., Thomas Edison, Alexander Graham Bell, and George Washington Carver) including the effects on American society.	Identify uses of important discoveries (e.g., light bulb, telephone, improving soils) in today’s world.

¹ Instruction is not intended to be limited to the concepts, knowledge, and skills represented by the AATs and UCs listed in Table 1.

Section II

Connecting Concepts

Grade-level social studies content includes Connecting Concepts, concepts that connect information between different people, places, events, and time periods. Helping students make connections between these types of concepts and new content information supports comprehension of the concepts, knowledge, and skills as well as transference and generalization (see Section VI: Transfer and Generalize Concepts, Knowledge, and Skills for more information). Connecting Concepts that are specific to this module connect to content across units in this module as well as across modules and across grades.

A Connecting Concept is a common link between multiple standards and units of study. The Connecting Concepts, by being revisited and linked to multiple units of study, become a strong foundation of understanding and support students in learning new concepts. For example, understanding the importance of people's actions in history is a Connecting Concept that applies to the colonists' fight for independence, moving the American Indians out of their land, states seceding from the Union, etc. Some Connecting Concepts may apply across multiple content areas and instructional emphases (e.g., the sequence of a story might be the timeline of inventions).

Teaching Connecting Concepts

The following strategies, pulled from the principles of UDL (CAST, 2011), are ways in which to teach Connecting Concepts to help students understand the concepts and make connections between different curricular content. During instruction, highlight:

- patterns (e.g., When students are learning about economies of the North and South, remind them of the economies of early colonists and settlers.),
- critical features (e.g., Provide pictures representing industry in Tennessee to highlight critical information.),
- big ideas (e.g., Inventions affected the way people lived in the past as well as in the present.), and
- relationships (e.g., Make the connection between inventions made in the past to similar products used today.).

For example, when learning about Clara Barton and her role during the Civil War, engage the students in completing a Venn diagram in three stages. First, have students complete one side with things they know about nurses. While learning about Clara Barton, add things that they learned about her. When finished with both sides, move information that is the same to the middle section of the Venn diagram.

Following are **Connecting Concepts** for this Content Module: The History of America: Prior to Civil War, The Civil War, and Industrial America.

Students understand:

- basic economics
- types of goods and services
- how goods and services are exchanged
- types of economies and the effects of change in an economy
- causes of disagreements and conflict between countries and groups of people
- importance of people's actions in history

- ways America grew and developed over time
- the effect of new developments (e.g., inventions) on people's lives

Connecting Concept Resources:

Grant Wiggins talks about "big ideas" in this article.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=99

This site provides examples and printable versions of graphic organizers for social studies that can be modified to meet students' needs.

<https://walch.com/samplepages/050078.pdf>

Econedlink site has a goods and services lesson with drag-and-drop activities.

<http://www.econedlink.org/teacher-lesson/642/Goods-Services>

Social Studies for Kids has a series of information on basic economics.

<http://www.socialstudiesforkids.com/subjects/economicsbasic.htm>

Teaching History has a video explaining historical thinking to teachers and how to adapt documents for the classroom.

- <http://teachinghistory.org/historical-thinking-intro>
- <http://teachinghistory.org/teaching-materials/teaching-guides/23560>

Herbert Hoover Presidential Library Museum provides a story and activity, Gram's Trunk, that motivates students to investigate history (K-8th grades).

<http://www.hoover.archives.gov/education/gramstrunk.html>

The American Historical Association shares the "five C's of historical thinking."

<https://www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically>

Section III

Vocabulary and Background Knowledge

Vocabulary is critical to building an understanding of social studies concepts, knowledge, and skills. The vocabulary words that students gain through experiences provide ways for students to comprehend new information (Sprenger, 2013). Students can better understand new vocabulary when they have some background knowledge to which they can make connections. In addition, learning new vocabulary increases students' background knowledge. Therefore, it is important to teach vocabulary purposely when introducing new concepts, knowledge, or skills (e.g., industrial America) and in the context of the specific content (e.g., teach the term "industry" in the context of industries of the North and Tennessee).

This module includes two types of vocabulary words, both equally important to teach. The first type, **general vocabulary words**, labels groups of words that address different people, places, events, and time periods. For example, understanding the meaning of the word "natural resource" helps students to connect many different natural resources, how they are used, how they affect communities, where they are found, how they are traded, exported, etc. The second type of vocabulary word, **specific content words**, represents groups of words that address a specific person, group of people, place, event, or time period. Specific content words are typically proper nouns, such as Civil War, and connect to general words. Providing instruction on general words provides background knowledge when introducing corresponding or related specific words.

Key Vocabulary for Instructional Units

Table 2 and Table 3 contain lists of key general vocabulary words and specific content words that are important for the units in this module. Each general vocabulary word should be taught to the student using a student-friendly description of what the word means, an example of the word, and a historical example, as appropriate.

Teach the specific content vocabulary using a student-friendly description of the word meaning and a possible connection to a general vocabulary word. Do not teach memorization of vocabulary words; instead place emphasis on understanding the word. For example, a student should be able to give examples of what leaders do and examples of leaders, rather than define the term, leader.

Table 2. General Vocabulary Words

General Vocabulary – words that generalize to different people, places, events, and time periods.

Describe the word and provide examples (e.g., Discovery is when you find something. I made a discovery when I found my favorite pencil in my desk.).

• abolitionist	• inventor/invention	• processing
• agriculture	• iron	• railroads
• army	• leader	• role
• battle	• mechanization	• rural
• business	• manufacture/manufacturing	• secession
• civil leader	• memoir	• sectionalism
• diary	• military	• slaves
• discovery	• mining	• soldier

• document/documentation	• natural resource	• transportation
• economy/economics	• nurse	• urban
• entrepreneur	• plantation	• war
• farm	• population	
• industry	• primary sources	

Table 3. Specific Content Words

Specific Content Words – words that are specific to content (e.g., person, place, event).

Describe the word and make the connection to a Connecting Concept when possible (e.g., Thomas Edison was an inventor. His inventions made things easier for people to do.).

• Abraham Lincoln	• East Tennessee	• North/Union
• Alexander Graham Bell	• Emancipation Proclamation	• Robert E. Lee
• American Red Cross	• Frederick Douglass	• Sam Davis
• Andrew Johnson	• George Eastman	• Sam Watkins
• Chattanooga	• George Washington Carver	• South/Confederate
• Civil War	• Henry Bessemer	• Swift and Armour
• Clara Barton	• Henry Ford	• Thomas Edison
• Coca-Cola Bottling	• Jefferson Davis	• Ulysses S. Grant
• Cornelius Vanderbilt	• Matthew Fontaine Maury	• West Tennessee
• Cumberland Plateau	• Nathan Bedford Forrest	

Ideas to Support Vocabulary Learning

Table 4 includes ideas and examples for teaching vocabulary in a way to build conceptual understanding of the words.

Table 4. Ideas to Teach Vocabulary Effectively (Marzano, 2004)¹

Ideas	Examples
Explain, describe, and/or give examples of the vocabulary word rather than formal definitions.	Describe and provide an example of secession, “When a state or part of a state secedes from the rest of the country, it stops being a part of the country. The South wanted to secede from the United States in the Civil War.”
Have students restate the vocabulary word in their own words. Take this opportunity to help students connect new vocabulary, especially general vocabulary, to prior knowledge.	Have students tell what industry means. Support students by providing pictures, asking questions that can be answered with yes/no responses, one word responses, phrases, and/or with use of an alternative and augmentative communication (AAC) system.
Have students represent vocabulary words in a variety of ways (e.g., pictures, symbols, graphic organizers, or pictographs).	Have students complete graphic organizers (e.g., KWHL) by adding words, pictures, or objects that describe or provide examples of the word. Provide support as needed (e.g., help from peer or adult,

Ideas	Examples
	viewing model, using AAC, etc.). (See Figure 1. Example KWHL graphic organizer)
Provide multiple exposures to vocabulary words in a variety of ways. This does not suggest mass trials, rather distributed trials in different ways or contexts. Reference http://projectlearn.net.org/tutorials/learning_trials.html for information on learning trials.	<ul style="list-style-type: none"> • Expose students to words by incorporating vocabulary into daily activities such as inventors and inventions and how they affect our daily lives (e.g., light bulb, telephone, etc.). • Read books or watch videos related to inventors (e.g., https://www.youtube.com/watch?v=eU_U1Q9BE8). • Have students match pictures of original and current inventions (e.g., first telephone and current cell phone). • Take an invention walk around the school, discussing inventions and who invented them.
Ask students to discuss the vocabulary words with each other.	<ul style="list-style-type: none"> • Have students use their preferred mode of communication to share their favorite content word and explain why with each other. • Have students share representations (e.g., pictures) of their favorite content word with each other.
Play vocabulary word games with students.	<ul style="list-style-type: none"> • Have students sort vocabulary words into person, place, or thing. • Have students knock down a stack of cups which have vocabulary words taped on each, and then have the students describe the vocabulary word on any cups remaining upright. • Have students select the word using their communication system (e.g., dual switch).
Have students watch a dramatization or have them act out the vocabulary term.	Have students act out words such as leader, journal, discovery, nurse, etc.

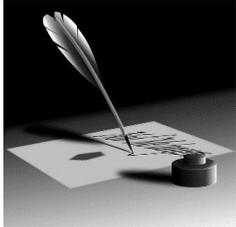
¹ Refer to Section V, Universal Design for Learning (UDL) Suggestions for additional instructional strategies.

Vocabulary Example

To build understanding of the specific content word, “Abraham Lincoln,” work with the students to complete a KWHL chart. Educators may support, modify, or adapt steps as needed for individual students. For example, one student may use pictures, another student may use pictures mounted on thick cardboard to ease manipulation; another student may use objects; and another student may complete a digital version. See Figure 1 for an example where the student chose pictures and the teacher wrote the information to complete a KWHL chart about Abraham Lincoln. Two National Center and State Collaborative (NCSC) resources are available and may prove helpful for vocabulary instruction:

- Use systematic instruction as described in the NCSC Instructional Guide. <https://wiki.ncscpartners.org>
- Reference ideas in the NCSC Vocabulary and Acquisition Content Module. <https://wiki.ncscpartners.org>

Figure 1. Example KWHL Chart

What I K now	What I Want to Find Out	How I Can Learn More	What I Have L earned
 <p>President of United States of America</p>  <p>Picture on \$5 bill</p>	 <p>What he did that was important during the Civil War.</p>	 <p>Books</p>  <p>Computer</p>	 <p>He freed all slaves in the southern states. It took a long time before all slaves were free.</p>

Vocabulary Resources:

Vocabulary.com provides explanations of words using real-world examples. Once signed in, an educator can create word lists for students. <http://www.vocabulary.com/>

Text Project provides Word Pictures that are free for educators to use. It includes word pictures for core vocabulary and various content areas including science and social studies. This link will take you to the Word Pictures page where you can select the category of words you want to use. <http://textproject.org/classroom-materials/textproject-word-pictures/>

Education Place provides a variety of graphic organizers to be used for vocabulary instruction that are free to print and copy. <http://www.eduplace.com/graphicorganizer/index.jsp>

Directions and link to creating an online memory game that can be used for vocabulary or concepts. https://www.youtube.com/watch?v=XwNAX26J_oQ and <http://matchthememory.com/>

Section IV

Overview of Units' Content

This section of the module contains additional content and references to support educators' understanding and instruction of the instructional units. The information reflects important content to address the AATs and to build students' knowledge, skills, and abilities; however, it is not exhaustive and should be expanded upon as needed.

Unit – Prior to the Civil War: *Students summarize the events leading up to the Civil War*

Content:

- Resources of the North and South in the early 1860s
- The way of life in the North and in the South in the early 1860s
- Differences between the North's and South's economies (e.g., natural resources, industry, jobs), available transportation for people and goods, population, and where people lived between the North and the South

Unit – The Civil War: *Understand the causes, course, and consequences of the Civil War.*

Content:

- Key issues and events leading up to Tennessee leaving/seceding from the Union:
 - State convention vote of 1861
 - The Free and Independent State of Scott
 - Hurst Nation
 - East Tennessee primarily pro-Union with divided families, while West Tennessee widely supported secession from the Union.
 - Tennessee voted against leaving the Union, but voted to join the Confederacy following the Confederate attack on Fort Sumter.
- Roles of community leaders
- Roles of military and civil leaders during the Civil War:
 - Abraham Lincoln
 - Jefferson Davis
 - Ulysses S. Grant
 - Robert E. Lee
 - Frederick Douglass
 - Clara Barton
- Life of a Tennessee soldier in the Civil War
- Contributions of Tennesseans during the Civil War:
 - Nathan Bedford Forrest
 - Sam Watkins
 - Andrew Johnson
 - Matthew Fontaine Maury
 - Sam Davis

Unit – Industrial America: *Students explain the various causes and consequences of the Second Industrial Revolution and events in Tennessee and describe the nation's growing role in world affairs.*

Content:

- Examples of industry in Tennessee
- Examples of agriculture in Tennessee
- Changes in the economy of the South and Tennessee toward industry and mechanization following the Civil War
 - Coca-Cola bottling in Chattanooga
 - mining on the Cumberland Plateau
 - coal and iron processing
 - growth of urban areas
 - increase in railroads
- Impact of important business leaders, inventors, and entrepreneurs on American society:
 - Thomas Edison
 - Alexander Graham Bell
 - Henry Ford
 - George Eastman
 - George Washington Carver
 - Henry Bessemer
 - Swift and Armour
 - Cornelius Vanderbilt

Unit Content Resources:

- Shelby County Schools provides ideas and links in the Social Studies curriculum guides.
<http://www.scsk12.org/uf/webadmin/foundation/ci/social?PID=242>

Leading up to the Civil War and the Civil War:

- Teach Tennessee History has primary sources, content essays, images, activities, and web links on the Civil War and leading up to the Civil War.
http://www.teachtnhistory.org/index.cfm/m/114/Civil_War
- Read Works (free registration) has informational passages on U.S. history, including one on slavery and the Civil War. <http://www.readworks.org/passages/slavery-civil-war-reconstruction-background-civil-war>
- Tennessee 4 Me provides information on the Civil War and the causes of the war.
http://www.tn4me.org/minor_cat.cfm/minor_id/1/major_id/5/era_id/5
- Mr. Nussbaum's site provides a variety of lesson plans and information on the Civil War.
<http://mrnussbaum.com/civil-war-for-kids/>
- Mr. Nussbaum's site has an interactive Civil War battle map that color codes the Confederate, Union, and border states and provides additional information on battles.
<http://mrnussbaum.com/civil-war/interactive/>
- This site includes a variety of information on the Civil War for fifth graders.
<http://www.runet.edu/~sbisset/civilwar.htm>

Leaders and soldiers during the Civil War:

- Mr. Nussbaum's site has biographies of important figures in the Civil War.
<http://mrnussbaum.com/civil-war/people/>
- This site provides information on Abraham Lincoln, including his role in the Civil War.
<http://www.civilwar.org/education/history/biographies/abraham-lincoln.html>

- Brain Pop has some activities for teaching about Abraham Lincoln. <https://educators.brainpop.com/lesson-plan/abraham-lincoln-activities-for-kids/>
- History for Kids has information on Jefferson Davis. <http://www.historyforkids.net/jefferson-davis.html>
- Social Studies for Kids has information on Frederick Douglass. <http://www.socialstudiesforkids.com/articles/ushistory/frederickdouglass1.htm>
- Bright Hub Education provides a lesson plan on Frederick Douglass. <http://www.brighthubeducation.com/lesson-plans-grades-3-5/122523-frederick-douglass-facts-and-project-ideas-for-third-grade/>
- Ducksters has information on Clara Barton. http://www.ducksters.com/biography/women_leaders/clara_barton.php
- The National Park Service provides a lesson plan on Clara Barton. <https://www.nps.gov/nr/twhp/wwwlps/lessons/27barton/27about.htm>
- TN History for Kids has information on Sam Watkins and the battle of Franklin. http://www.tnhistoryforkids.org/primary/sam_watkins
- East Tennessee Historical Society has several primary sources on Sam Watkins. http://www.teachtnhistory.org/index.cfm/m/115/Primary_Sources

Industrial America:

- Teach Tennessee History has primary sources, content essays, images, activities, and web links on Industrial America. http://www.teachtnhistory.org/index.cfm/m/132/Industrial_America
- The Gilder Lehrman Institute of American History has information on Industrial America. <http://www.gilderlehrman.org/history-by-era/essays/rise-industrial-america-1877-1900>
- This site has a slide show on Coca-Cola and the Industrial Revolution. https://prezi.com/z5colg6tt_zq/coca-cola/
- Tennessee 4 Me has information on industry in Tennessee in late 1800s and early 1900s. http://www.tn4me.org/article.cfm/a_id/153/minor_id/59/major_id/20/era_id/6

Leaders in Industrial America:

- Rutgers has The Thomas Edison papers which contains a variety of information, including primary sources. <http://edison.rutgers.edu/>
- This site provides facts on Thomas Edison for kids. <http://easyscienceforkids.com/all-about-thomas-edison/>
- Science for Kids has facts about Alexander Graham Bell. <http://www.sciencekids.co.nz/sciencefacts/scientists/alexandergrahambell.html>
- Ducksters provides a biography of George Washington Carver. http://www.ducksters.com/biography/george_washington_carver.php
- Idea Finder provides a list of inventions in the 19th century. <http://www.ideafinder.com/history/timeline/the1800s.htm>

Section V

Universal Design for Learning (UDL) Suggestions

The three principles of UDL guide development of instruction, instructional materials, and assessments to provide the widest range of students with access to learning. Students with significant cognitive disabilities, especially students with visual and/or hearing impairments and students with complex communication needs, require additional scaffolds, adaptations, and modifications to access content and support learning. The three principles of UDL establish a framework for providing these. UDL provides guiding principles to create instructional materials and activities in a flexible manner to address the needs of different types of learners. Additionally, the flexibility allows for further individualization.

Table 5 provides strategies for the UDL Principle I, **Multiple Means of Representation**: presenting information in a variety of ways to address the needs of different types of learners.

Table 6 provides strategies for the UDL Principle II, **Multiple Means of Action and Expression**: providing a variety of ways for students to interact with the instructional materials and to demonstrate understanding. Table 7 provides strategies for the UDL Principle III, **Multiple Means of Engagement**: providing a variety of ways to engage and motivate students to learn.

These strategies can assist all students in understanding the basic concepts. Some of the examples include adaptation ideas for students with vision, hearing, and/or physical limitations. Each example has a code to indicate when it includes specific adaptation ideas for these needs:

V = visually impaired (low vision, blind, or deaf-blind)

H = hearing impaired (deaf, hard of hearing, or deaf-blind)

P = physical disability (limited use of hands)

Table 5. Instructional strategy ideas using the UDL Principle: Multiple Means of Representation

Multiple Means of Representation	
Strategies	Examples
Introduce information through a multi-sensory approach (e.g., auditory, visual, tactile).	<p>Create a tactile map showing the Union, Confederate, and border states (e.g., http://kids.britannica.com/elementary/art-87023/Most-of-the-major-battles-of-the-American-Civil-War). Refer to Section VIII. Tactile Maps and Graphics and view this video clip — https://www.youtube.com/watch?v=kpvzEqioXbw&index=4&list=PLK-fetQX3thAmezvcM_elzpkHN6kKDeQo for tips on creating a tactile map.</p> <p>V</p> <p>Experiment with sound and create a low-tech telephone (e.g., http://oureverydaylife.com/alexander-graham-bells-science-experiments-kids-17151.html).</p>
Model content through pictures, dramatization, videos, etc.	<p>Provide primary source letters from soldiers in the Civil War (e.g., http://teachinghistory.org/best-practices/examples-of-historical-thinking/25048), read adapted versions of the letters (e.g., shortened, simplified language, summarized, added pictures) to the students. Help students recreate the adapted versions of primary source letters in instant messaging format, highlighting critical features and big ideas. Have students listen to information about:</p> <ul style="list-style-type: none"> • Abraham Lincoln https://librivox.org/search?q=abraham%20lincoln&search_form=advanced), • Clara Barton https://librivox.org/author/1358?primary_key=1358&search_category=author&search_page=1&search_form=get_results, • Sam Watkins https://librivox.org/co-aytch-by-sam-r-watkins/, and • Frederick Douglass https://librivox.org/search?q=Frederick%20Douglass&search_form=advanced.
Present information using modified graphic organizers (e.g., simplified organizers with pictures).	<p>Use a KWHL to help students make connections between what they already Know, What they want to know, How they can find out, and finally, what they Learn. (slide show explaining the use of the KWHL chart and how it was made accessible for students with significant cognitive disabilities: http://www.cehd.umn.edu/nceo/teleconferences/tele14/CourtadeFlowers.pdf). V/H/P</p> <p>Have students create a Civil War timeline (e.g., http://www2.lhric.org/pocantico/civilwar/timeline.htm). Make the timeline tactile by adding hanging pictures, objects, and braille along with the text on a clothes line. V</p> <p>Have students complete a technology graphic organizer showing what technologies they have in their homes (e.g., http://edsitement.neh.gov/lesson-plan/thomas-edisons-inventions-1900s-and-today-new-you#sect-activities).</p>

<p>Provide appropriate and accessible text on the content for students to listen to or read.</p>	<p>Paraphrase information from a web page (e.g., http://textcompactor.com/)</p> <p>Provide digital text in which pages can be turned using an adapted switch. P</p> <p>Have students read an online biography (e.g., http://www.turtlediary.com/biographies.html) using a screen reader. P</p>
<p>Teach information using songs.</p>	<p>Engage students while teaching information about the Civil War using songs (e.g., Union song, When Johnny Comes Marching Home; Confederate song, Dixie's Land).</p> <p>Teach a song about Thomas Edison (e.g., http://www.songsforteaching.com/socialstudies/usunitedstateshistory/thomasalvaedison.php) or another inventor.</p>

Table 6. Instructional strategy ideas using the UDL Principle: Multiple Means of Action and Expression

Multiple Means of Action and Expression	
Strategies	Examples
Use assistive technology to allow students to interact with the instructional materials and content.	<p>Create single-switch activated activity using Microsoft PowerPoint or other slide presentation software. (e.g., http://www.ohioslha.org/pdf/Convention/2008%20Handouts/CL1-Martin-Browne.pdf). P</p> <p>Have students use an adaptive switch to read pre-recorded information related to the Civil War or Industrial America.</p> <p>Have students access the computer using an adaptive keyboard (e.g., Intellikeys, https://www.ablenetinc.com/intellikeys-usb; Bigkeys, http://www.bigkeys.com/; low vision keyboard; etc.). P/V</p>
Present instructional materials in a manner that provides optimal access.	<p>Place printed text and pictures on a slant board. V/P</p> <p>Place pictures of late 19th century inventions next to the inventor or the invention’s purpose using hook and loop tape. P</p> <p>When there is not an established sign for a person, place, or event, finger spell it and then create a sign that is meaningful to students. Use the newly created sign with consistency. H</p>
Provide voice output devices for students to select the correct answer.	<p>Record “yes” and “no” on a dual voice output switch and ask students yes and no questions about content. V/P</p> <p>Have students use three switches with generic labels (e.g., a, b, c; red, blue, green; or three different textures) to which they listen and then select the correct answer. V/P</p>
Provide simulation activities.	<p>Have students participate in a living museum (e.g., http://www.carolhurst.com/subjects/history/livinghistory.html).</p> <p>Provide an interpreter. H Pre-record the information and have students use a switch or other assistive technology device to play the recording for the audience. P</p> <p>Have students watch a 3D simulation of coal processing (e.g., https://www.youtube.com/watch?v=nsmigELzKiQ).</p>
Create a picture, three-dimensional model, or digital graphic organizer.	<p>Have students create and explore a tactile timeline for Abraham Lincoln by adapting ideas from http://www.perkinselearning.org/activity-bank/tactile-timelines and referring to Section VIII. Tactile Maps and Graphs. V</p>

Table 7. Instructional strategy ideas using the UDL Principle: Multiple Means of Engagement

Multiple Means of Engagement	
Strategies	Examples
Provide a schedule and visual timer.	Have students use a mini schedule or a first-then schedule for each content instructional session. Provide a schedule with tangible symbols. V/P Have students select the next activity on the schedule and set the timer or visual timer to indicate how long the student has before a break.
Vary the challenge and amount of information presented at a time.	Have students complete a self-monitoring checklist and allow the student to choose the sequence or timing for completion of the activity as much as possible.
Make connections to topics or activities that are motivating.	Have students interview family or friends regarding their jobs and then connect jobs to industries and agricultural opportunities in the late 19 th and early 20 th centuries in Tennessee.
Allow choices as possible.	Allows students to choose where to sit or a sensory item to hold during instruction. Have students choose goals for an extension activity regarding inventors or leaders (e.g., learn about George Washington Carver’s childhood in addition to learning his contributions to America.)
Provide opportunities to work collaboratively with peers.	Provide opportunities for students to work in a general education classroom with peers when learning about the Civil War or have peer tutors come into the special education classroom to work on an inventor’s project.
Teach student self-regulation skills.	Provide students communication symbols to request a break or express feelings and model how to use them appropriately. Develop and provide a cue to help students know when to request a break or an activity that calms them.

UDL Resources

The National Center on Universal Design for Learning has a plethora of information on UDL and examples and resources.

www.udlcenter.org

Symbaloo is a free online tool that allows an educator to create bookmarks using icons. It is easy to create and allows an educator to provide students links to sources of information that can be used for specific instructional units.

www.symbaloo.com

This site provides a brief description of Symbaloo and multiple ways to use the online tool.

<https://www.theedublogger.com/2014/04/09/11-ways-to-use-symbaloo-in-the-classroom/>

Perkins School for the Blind provides information on using tangible symbols to increase communication, create personal schedules, and provide choices.

<http://www.perkinselearning.org/videos/webcast/tangible-symbols>

Autism Classroom Resources provides information on first-then schedules.

<http://www.autismclassroomresources.com/visual-schedule-series-first-then/>

This site has instructions for several graphic organizers that can be used in social studies.

<http://www.roberson.k12.nc.us/site/handlers/filedownload.ashx?moduleinstanceid=59303&dataid=87207&FileName=Social%20Studies%20Graphic%20Organizers.pdf>

Section VI

Transfer and Generalize Concepts, Knowledge, and Skills

For learning to be meaningful for all students, including students with significant cognitive disabilities, it is important to intentionally make connections to future content, real-world application, and college and career readiness skills. For example, learning about struggles that inventors and leaders had can help students see beyond their own personal struggles in order to achieve future success. Additionally, the instruction of social studies concepts, knowledge, and skills may be the catalyst to developing other areas such as needed communication skills, reading/listening comprehension, age-appropriate social skills, independent work behaviors, and skills in accessing support systems. Table 8 provides instructional ideas to help transfer and generalize concepts, knowledge, and skills and suggests opportunities to embed other skills into instruction.

Table 8. Transfer and Generalization Ideas

Area	Instruction	Opportunity to Embed Skills
Communication	While teaching vocabulary, make connections to real-life or future opportunities to use the words (e.g., understanding business, industry, leader, etc., will help students understand the terms in future work environments as well as family members' conversations about work).	Use the context of the content area instruction to increase language skills, work on articulation, or access alternative and augmentative communication (AAC) systems.
Reading and Listening Comprehension	Provide information through reading books and articles on inventors and leaders when working on reading/listening comprehension.	Provide practice on communication skills when students are answering questions about the book or article. Provide practice on crossing midline to turn pages on an adapted book (e.g., thick tabs added to pages).
Age-Appropriate Social Skills	Make connections between the Connecting Concepts and real-life experiences showing how they can help students make decisions (e.g., importance of people's actions in history).	Provide opportunities to work alongside same-age peers during social studies instruction to practice age-appropriate social skills.
Independent Work Behaviors	Encourage and reinforce independent completion of tasks to build independent work skills (e.g., completing a graphic organizer).	Have students self-monitor when completing tasks. Have students work on range of motion while working on independent tasks.
Skills in Accessing Support Systems	Encourage students to ask appropriately for assistance from peers and adults when working on the content.	Use this time to have the student work on appropriate behavior and communication skills.

Section VII

Concepts and Vocabulary Multi-Age Planning: Grades Three through Five

Multi-age planning requires that instructional decisions address the span of the grade levels of the students in the class. Recognizing the Connecting Concepts and the General and Specific Vocabulary that apply to multiple units within and across a grade span provides information to teach concepts that build a foundation for specific curricular content (i.e., specific people, places, events, and time periods). This section illustrates the grade-level **Connecting Concepts** and the **General and Specific Vocabulary** across grades. This view (see Table 9 – Table 13) allows educators of multi-age and multi-grade classrooms to address the same or similar concepts and vocabulary to all students along with the specific curricular content.

Table 9. Physical and Human Geography Concepts and Vocabulary

Physical and Human Geography		
<i>Geographical features and the spatial organization of people and places impact different stages in the history of culture and civilization. Maps and other representations of places and regions convey the influence of geography on economic development, discovery, and use of resources by various cultures and civilizations.</i>		
Grades 3 – 5 AATs and UCs	Concepts	Vocabulary
<p>AAT: Identify the relative position of two major cities or countries to each other using a compass rose (i.e., east, west, north, or south of the other). (3.3)</p> <ul style="list-style-type: none"> • UC: Identify a map legend or compass rose on a map. <p>AAT: Identify major physical features including mountains, plains, deserts, rivers, gulfs, or seas using information from a physical map of North America. (3.4)</p> <ul style="list-style-type: none"> • UC: Identify a map or diagram representing home, school, and community. <p>AAT: Identify Canada, Mexico, or the United States on a map of North America. (3.18)</p> <ul style="list-style-type: none"> • UC: Identify the location of the state of Tennessee on a map of the southeastern United States. <p>AAT: Use a map to find the location of major physical features (e.g., Mississippi River, Appalachian Mountains, and Gulf of Mexico) in the United States. (3.22)</p> <ul style="list-style-type: none"> • UC: Identify the location of a school, library or park using information from a community map. <p>AAT: Use a map to find the location of major physical features (e.g., Alps, Gibraltar, Arctic Ocean, and Mediterranean Sea) of the continent of Europe. (3.42)</p> <ul style="list-style-type: none"> • UC: Identify bodies of water on a world map. <p>AAT: Use a map to identify major physical features (e.g., Nile River, Sahara, Kilimanjaro, Indian Ocean, and Cape of Good Hope) on the continent of Africa. (3.49)</p> <ul style="list-style-type: none"> • UC: Identify land masses on a world map. 	<p>Understand:</p> <ul style="list-style-type: none"> • how to think spatially and use a variety of maps and map tools (e.g., compass rose, legend) • how to interpret physical and political features on a variety of maps • how to interpret a variety of information (e.g., resources, economics, cultural, historical) using maps • how geography and climate affect exploration 	<p>General:</p> <ul style="list-style-type: none"> • adapt • bodies of water • climate • coast • community • compass rose • continent • country • desert • east • explorer • globe • gulf • lake • landforms • legend • map • mountain • north • ocean • overland trails • physical feature • plain • river • route • scale

<p>AAT: Explain factors that helped people move and live west of the Appalachian Mountains (e.g., Daniel Boone and Wilderness Trail). (4.20)</p> <ul style="list-style-type: none"> • UC: Identify why it was important for long hunters to find a safe way across the Appalachian Mountains. <p>AAT: Identify ways geography and climate affected the experience of settlers on the overland trails to the West. (4.48)</p> <ul style="list-style-type: none"> • UC: Identify how travelers adapt to conditions (e.g., weather) while traveling West. 		<ul style="list-style-type: none"> • sea • south • west <p>Specific:</p> <p>Grade 3:</p> <ul style="list-style-type: none"> • Atlantic Ocean • Africa • Alps • Appalachian Mountains • Arctic Ocean • Canada • Cape of Good Hope • Europe • Gibraltar • Gulf of Mexico • Indian Ocean • Kilimanjaro • Mediterranean Sea • Mexico • Mississippi River • Nile River • North America • Pacific Ocean • Sahara • South America • United States <p>Grade 4:</p> <ul style="list-style-type: none"> • Appalachian Mountains • Daniel Boone • Wilderness Road/Trail
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Table 10. Culture Concepts and Vocabulary

Culture		
<i>Advancement and growth of human culture and civilization relates to development of literature, the arts, science, mathematics, and engineering in times past and present and affects how people live in particular places.</i>		
Grades 3 – 5	Concepts	Vocabulary
<p>AAT: Use a graphic organizer to identify information about important inventors (e.g., Thomas Edison, Alexander Graham Bell, and George Washington Carver) including the effects on American society. (5.37)</p> <ul style="list-style-type: none"> • UC: Identify uses of important discoveries (e.g., light bulb, telephone, improving soils) in today’s world. <p>AAT: Identify important music events in Memphis. (5.64)</p> <ul style="list-style-type: none"> • UC: Identify an example of how Tennessee was important to popular music (e.g., Memphis as the birthplace of rock and roll music). 	<p>Understand:</p> <ul style="list-style-type: none"> • the effect of news on people’s lives • how people and places can affect art, such as music 	<p>General:</p> <ul style="list-style-type: none"> • discovery • entrepreneur • invention • inventor • music • popular • rock and roll music • society <p>Specific:</p> <p>Grade 5:</p> <ul style="list-style-type: none"> • Alexander Graham Bell • Elvis Presley • George Eastman • George Washington Carver • Henry Bessemer • Henry Ford • Memphis • Tennessee • Thomas Edison • Swift and Armour • Cornelius Vanderbilt

Table 11. Economics Concepts and Vocabulary

Economics		
<i>Human and physical capital, natural resources, and technology on a local and global scale impact production, distribution, and consumption of goods and services. Decisions about how to use resources influence the welfare of individuals and societies.</i>		
Grades 3 – 5	Concepts	Vocabulary
<p>AAT: Identify differences in how goods (i.e., something that can be seen or touched, used or consumed; physical) and services (i.e., something that is provided or someone does for you; intangible) are exchanged. (3.26)</p> <ul style="list-style-type: none"> • UC: Identify examples of goods or services. <p>AAT: Answer explicit questions about the major imports or exports from a European country using a chart, graph or resource map. (3.44)</p> <ul style="list-style-type: none"> • UC: Identify an agricultural or manufactured product. <p>AAT: Answer explicit questions about the major imports or exports from an African country using a chart, graph or resource map. (3.52)</p> <ul style="list-style-type: none"> • UC: Identify a country’s natural resources using a resource map of an African country. <p>AAT: Identify reasons (e.g., trade, discoveries of riches) for early explorations of the Americas. (4.4)</p> <ul style="list-style-type: none"> • UC: Identify why people move to new places (e.g., jobs, family, schools). <p>AAT: Identify how cooperation benefited the colonists and the American Indians (e.g., fur trade and peace treaties). (4.10)</p> <ul style="list-style-type: none"> • UC: Identify benefits of people sharing (e.g., traditions and knowledge). <p>AAT: Identify successes (e.g., finding natural resources, mapping new areas, establishing trade) related to Lewis and Clark’s exploration. (4.47)</p> <ul style="list-style-type: none"> • UC: Identify reasons why people explored the western United States. 	<p>Understand:</p> <ul style="list-style-type: none"> • basic economics • types of goods and services • the importance of trading/exchanging goods and services • how goods and services are exchanged • reasons for importing or exporting • types of imports and exports and the countries that exchange goods • reasons people explore • reasons and challenges of exploring and moving to new places • benefits, reasons, and ways groups cooperate • ways America grew and developed over time • types of economies and the effects of change in an economy (e.g., jobs, where people live, what they spend money on, etc.) 	<p>General:</p> <ul style="list-style-type: none"> • agriculture • barter • business • city • coal • economy/economics • exchange • exports • farm • goods • imports • industry • iron • manufacture/manufacturing • mechanization • mining • money • natural resource • population • railroads • rural • sectionalism • services • slaves • suburbs • trade • transportation • treaties • urban • war <p>Specific:</p> <p>Grade 3:</p> <ul style="list-style-type: none"> • Africa • Europe <p>Grade 4:</p> <ul style="list-style-type: none"> • American Indians • Meriwether Lewis • Missouri River

<p>AAT: Contrast the economies of the North and South prior to the Civil War. (5.2)</p> <ul style="list-style-type: none"> • UC: Identify differences in the North's and South's resources in the early 1860s. <p>AAT: Identify changes to the economy (e.g., from farming to industry and mechanization) in the South or in Tennessee following the Civil War. (5.27)</p> <ul style="list-style-type: none"> • UC: Identify an example of industry (e.g., Coca Cola bottling, mining on the Cumberland Plateau, or coal and iron processing) or agriculture in Tennessee. <p>AAT: Explain how changes in jobs (e.g., less jobs and different types of jobs) during the Great Depression affected how people lived. (5.49)</p> <ul style="list-style-type: none"> • UC: Identify the importance of jobs for individuals or a community. <p>AAT: Identify the key events during the Civil Rights Movement (i.e., actions of Dr. Martin Luther King, Jr. and Rosa Parks). (5.65)</p> <ul style="list-style-type: none"> • UC: Identify a struggle during the Civil Rights Movement (i.e., segregation on buses and use of public facilities). 		<ul style="list-style-type: none"> • North America • Pacific Ocean • William Clark <p>Grade 5:</p> <ul style="list-style-type: none"> • Civil War • Coca-Cola • Cumberland Plateau • East Tennessee • Great Depression • North (section during Civil War) • West Tennessee • South (section during Civil War) • World War II
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Table 12. Civics and Politics Concepts and Vocabulary

Civics and Politics		
<i>Responsible and effective citizens understand structures of power and authority and the principles they reflect; their role within a community, a nation, and the world; and develop civic efficacy. Connections to the past and the way governments, principles, and traditions have developed impact current societies.</i>		
Grades 3 – 5	Concepts	Vocabulary
<p>AAT: Identify the roles of different branches of government (e.g., making the laws, enforcing the laws or determining if the laws are fair). (3.28)</p> <ul style="list-style-type: none"> • UC: Identify the purpose of classroom rules (e.g., stay safe). <p>AAT: Identify how the Declaration of Independence contributed to the development of American Democracy by breaking the colonies away from England. (4.28)</p> <ul style="list-style-type: none"> • UC: Identify the Pledge of Allegiance as an expression of American democracy. <p>AAT: Identify the role of Tennessee in granting women the right to vote. (5.46)</p> <ul style="list-style-type: none"> • UC: Demonstrate an understanding that citizens make choices by voting. 	<p>Understand:</p> <ul style="list-style-type: none"> • the structure and purpose of government and its relationship to democracy and citizenry • how the United States of America became an independent country and a democracy • citizens of the United States have rights and responsibilities 	<p>General:</p> <ul style="list-style-type: none"> • democracy • government • laws • leader • responsibility • rights • vote <p>Specific:</p> <p>Grade 3:</p> <ul style="list-style-type: none"> • executive branch • judicial branch • legislative branch • United States <p>Grade 4:</p> <ul style="list-style-type: none"> • Declaration of Independence <p>Grade 5:</p> <ul style="list-style-type: none"> • Perfect 36 • women’s suffrage

Table 13. History: Change, Continuity, and Context Concepts and Vocabulary

History: Change, Continuity, and Context		
<i>Historical events, the processes of change and continuity over time, the context within which events occur, and the significance of the contributions by individuals from various ethnic, racial, religious, and socioeconomic groups impact the development of civilizations and societies around the world.</i>		
Grades 3 – 5	Concepts	Vocabulary
<p>AAT: Identify reasons (e.g., religious freedom, economic opportunity, better life) for which people came to the colonies. (4.18)</p> <ul style="list-style-type: none"> • UC: Identify challenges with moving to a new place. <p>AAT: Identify causes of the American Revolution (e.g., Stamp Act and taxes on tea). (4.23)</p> <ul style="list-style-type: none"> • UC: Identify why the colonists were not happy. <p>AAT: Identify the states of the Southwest Territory (Mississippi, Kentucky, Tennessee, and Alabama) on a historical map. (4.45)</p> <ul style="list-style-type: none"> • UC: Identify the location of Tennessee on a historical map. <p>AAT: Identify how the Indian Removal Act affected the American Indians. (4.56)</p> <ul style="list-style-type: none"> • UC: Identify on a historical map where the Cherokee people lived before and after the Indian Removal Act. <p>AAT: Identify differences between East Tennessee and West Tennessee regarding the issue of secession. (5.6)</p> <ul style="list-style-type: none"> • UC: Identify reasons why Tennessee seceded from the Union. <p>AAT: Explain the importance of the role Abraham Lincoln, Jefferson Davis, Frederick Douglass, or Clara Barton had during the Civil War. (5.12)</p> <ul style="list-style-type: none"> • UC: Identify a main role of a leader in a community. <p>AAT: Explain the importance of Sam Watkins’ documentation of the events of the Civil War. (5.15)</p> <ul style="list-style-type: none"> • UC: Identify what it was like to be a Tennessee soldier in the Civil War. 	<p>Understand:</p> <ul style="list-style-type: none"> • reasons and challenges of exploring and moving to new places • causes of disagreements and conflict between countries and groups of people • ways America grew and developed over time • how expansion of the settlers in America affected American Indians • importance of people’s actions in history 	<p>General:</p> <ul style="list-style-type: none"> • abolitionist • acts • army • battle • civil leaders • colonies • diary • document/ documentation • economy/ economics • freedom • jobs • memoir • military • nurse • politician • primary sources • processing • religion • revolution • rights • role • secession • soldier • taxes • war <p>Specific:</p> <p>Grade 4:</p> <ul style="list-style-type: none"> • Alabama • American Indians • American Revolution • England • Indian Removal Act • Kentucky • Mississippi

		<ul style="list-style-type: none">• Southwest Territory• Stamp Act• Tennessee <p>Grade 5:</p> <ul style="list-style-type: none">• Abraham Lincoln• American Red Cross• Andrew Johnson• Civil War• Clara Barton• Emancipation Proclamation• East Tennessee• Frederick Douglass• Jefferson Davis• Matthew Fontaine Maury• Nathan Bedford Forrest• North/Union• Robert E. Lee• Sam Davis• Sam Watkins• South/Confederate• Ulysses S. Grant• West Tennessee
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Section VIII

Tactile Maps and Graphics

The maps and graphics guidelines will help create tactile versions of instructional maps, diagrams, models, and timelines to use with students who are blind or deaf-blind. The tactile maps and graphics may be beneficial to other students as well. A tactile graphic is a representation of a graphic (e.g., picture, drawing, diagram, map, etc.) in a form that provides access through touch. It is not an exact copy of the graphic. The section provides basic guidance and links to more comprehensive resources.

Importance of Tactile Maps and Graphics

It is important to provide tactile graphics for young readers (BANA, 2010). It helps students understand and gain information when presented with science and social studies concepts, knowledge, and skills. Science instruction often presents diagrams (e.g., water cycle) and two-dimensional models of living and nonliving things (e.g., model of cell) to teach the related concepts. Social studies instruction often uses maps and timelines to illustrate where and when people existed and events occurred. The following guidance includes information to build upon when creating tactile graphics.

Tactile Graphic Guidance

1. **Determine need for graphic:** When encountering graphics in instructional materials, determine if the graphic is essential to understanding the concept. The Braille Authority of North America (2010) provides a decision tree to help in this determination. It can be accessed online at www.brailleauthority.org/tg/web-manual/index.html by selecting “Unit 1 Criteria for Including a Tactile Graphic.”
2. **Consult with the local educator trained to work with students with visual impairments.**
3. **Determine the essential information in the graphic.** Read the surrounding information and the caption to determine which information in the graphic to exclude. For example, a map to illustrate location of key countries would not need state lines and capital cities and may not need all of the surrounding countries.
4. **Reduce unnecessary detail in the graphic.** Identify details that are not necessary for interpreting the information in the graphic. For example, a model of the water cycle may show crevices on the mountains, leaves on a tree, and waves in an ocean. Eliminate unnecessary details, as they are difficult to interpret tactilely.
5. **Remove frames or image outlines if they serve no purpose.** Ensure that all lines are necessary (e.g., line that indicates a body of water), and remove any that are not.
6. **Modify the size of the graphic.** Modify the graphic as needed to reduce clutter and allow a blank space between adjacent textures. Additionally, consider the size of the student’s hand.
7. **Use solid shapes as feasible.** When solid shapes do not clearly represent the information, use clear solid lines.
8. **Systematically teach exploration and interpretation of tactile graphics.** Systematic instruction and repetition are important when teaching a student to understand a tactile graphic. Pairing the tactile graphic with a 3-dimensional object may help (e.g., pair a raised line drawing of a pencil, an example of goods, with a pencil).

Specific Graphic Type Guidance

Following is information for specific types of graphics that may support instruction in science and social studies.

Graphic Organizers/Concept Maps

- It is best to present information to compare or make connections in a tactile graphic. A tactile graphic presents the information in a spatial display and aids in comparison better than a list.

Diagrams/Models

- Limit the number of areas, lines, and labels. Having more than five makes interpretation difficult.
- Consider pairing a tactile graphic with a 3-dimensional model.

Timelines

- Present timelines in the same direction every time (i.e., horizontal or vertical).

Maps

- Distinguish water from land using a consistent background texture for the water.
- Align the direction of the compass rose arrows with the lines of longitude and latitude on the map.

Creating Tactile Graphics

Following are some ways to create tactile graphics. Additional information can be found at www.tactilegraphics.org.

Commercial products:

- Capsule paper or swell paper – print
- Thermoform

Textured shapes can be made from:

- Sticky back textured papers found at craft stores
- Corrugated cardboard
- Fabric with texture (e.g., corduroy, denim)
- Silk leaves
- Cork
- Felt
- Vinyl
- Mesh tape (used for drywall)
- Sandpaper

Raised lines can be made from:

- Glue (best not to use water-based glue)
- Wax pipe cleaners

Resources

Creating Tactile Graphics, created by the High Tech Center Training Unit, provides basic principles of tactile graphics, characteristics of good tactile graphics, the planning process, guidelines for designs, and more. http://www.htctu.net/trainings/manuals/alt/Tactile_Graphics.pdf

The Texas School for the Blind and Visually Impaired provided basic principles for Preparing Tactile Graphics, element arrangement on a tactile graphic, resources for preparing quality graphics, etc. <http://www.tsbvi.edu/graphics-items/1465-basic-principles-for-preparing-tactile-graphics>

Perkins School for the Blind has short videos that explain the importance of tactile graphics and information on spatial relationships and graphic literacy, moving from models to graphics, and strategies for reading tactile graphics. <http://www.perkinselearning.org/videos/webcast/teaching-tactile-graphics>

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