

TITLE: READING A BUILDING

SUBJECTS/TOPICS: AMERICAN HISTORY, ARCHITECTURE, LANGUAGE ARTS, SOCIAL STUDIES

GRADE LEVEL: 6-8 (2 CLASS PERIODS)

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LESSON OVERVIEW

Buildings do not come with captions or user manuals, so architects and architectural historians must rely on their ability to read a building. During the exercises presented in this scaffolded lesson plan, students will begin to develop the necessary skills for decoding the rich architectural world around them by learning how to read architecture. With these skills, it will be easier for students to frame essential questions for conducting research on specific buildings while they, simultaneously, develop the tools for working 'in the field' and exploring the world of architecture, independently.

The exercises presented here offer three main ways to read architecture: (1) using physical building artifacts, whether they be complete buildings, fragments or ruins, (2) using drawings, whether from the original architects, designers, and/or engineer or 'as-built' drawings that record the building at a particular time, and (3) using texts, such as primary (letters, personal descriptions, historic structures reports and surveys, etc.) and secondary (books, critiques, etc.) sources. The lesson's products are also divided between analog elements (drawings, annotation exercises, etc.) and digital explorations (online research and digital modeling).

GUIDING QUESTIONS

What is architecture?

What does it mean "to read a building"?

How can a building teach?

What are the various ways to document a building?

How do we assess the value of a building?

LESSON OVERVIEW, CONTINUED

As students continue to study, they will discover that the world of architecture is full of diverse projects: buildings and structures are different because of their cultural, geographic, and historic associations. This is why many of today's architects specialize in distinct building types, although it is possible to have an architectural practice that creates all different types and scales of buildings. Additionally, many architectural historians specialize in certain time periods and regions so that they can fully understand the context of the architecture. By presenting students with a broader survey with several different projects and styles, students will understand why it is essential to have experts with specialties in certain building types or historic eras.

You will also need to develop your skills of visual attentiveness. Have you have used 'contextual clues' in your English class? When you are reading a sentence and do not recognize a new vocabulary word you can often use elements from the surrounding passage to decipher the meaning of the unfamiliar word. Similarly, as you explore a building you may find that there are components that you do not quite understand, so you must look for contextual clues. Just like expanding your reading comprehension skills or mastering a new language, learning how to read a building takes time, practice, and patience, but the rewards are extraordinary!

LEARNING OBJECTIVES

Apply vocabulary and categorize architectural types and essential vocabulary associated with classical architecture and contemporary design.

Analyze building structures to identify their historic architectural influences, or their architectural "genealogy."

Evaluate the extent to which architecture reflects colonization and cultural remembrance, while synthesizing new ideas and responses to different sites.

CONTENT STANDARDS

English Language Arts: <u>Reading: Informational Text</u>				
Grade	Key Ideas and Details	Craft and Structure	Integration of Knowledge and Ideas	Range of Reading and Level of Text Complexity
6-8	<p>Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.</p>	<p>Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.</p> <p>Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.</p>	<p>Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p> <p>Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.</p>	

English Language Arts: Speaking & Listening

Grade	Comprehension and Collaboration	Presentation of Knowledge and Ideas
6	<p>CCSS.ELA-LITERACY.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p> <p>CCSS.ELA-LITERACY.SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.</p>	<p>CCSS.ELA-LITERACY.SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>CCSS.ELA-LITERACY.SL.6.5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.</p>
7	<p>CCSS.ELA-LITERACY.SL.7.2 Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.</p> <p>CCSS.ELA-LITERACY.SL.7.3 Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.</p>	<p>CCSS.ELA-LITERACY.SL.7.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>CCSS.ELA-LITERACY.SL.7.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.</p> <p>CCSS.ELA-LITERACY.SL.7.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language standards 1 and 3 here for specific expectations.)</p>
8	<p>CCSS.ELA-LITERACY.SL.8.2 Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.</p> <p>CCSS.ELA-LITERACY.SL.8.3 Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.</p>	<p>CCSS.ELA-LITERACY.SL.8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p> <p>CCSS.ELA-LITERACY.SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.</p> <p>CCSS.ELA-LITERACY.SL.8.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 here for specific expectations.)</p>

English Language Arts: History/Social Studies

Grade	Key Ideas and Details	Craft and Structure	Integration of Knowledge and Ideas	Range of Reading and Level of Text Complexity
6-8	<p>CCSS.ELA-LITERACY.RH.6-8.1 Cite specific textual evidence to support analysis of primary and secondary sources.</p> <p>CCSS.ELA-LITERACY.RH.6-8.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.</p> <p>CCSS.ELA-LITERACY.RH.6-8.3 Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).</p>	<p>CCSS.ELA-LITERACY.RH.6-8.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.</p> <p>CCSS.ELA-LITERACY.RH.6-8.5 Describe how a text presents information (e.g., sequentially, comparatively, causally).</p>	<p>CCSS.ELA-LITERACY.RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.</p> <p>CCSS.ELA-LITERACY.RH.6-8.8 Distinguish among fact, opinion, and reasoned judgment in a text.</p> <p>CCSS.ELA-LITERACY.RH.6-8.9 Analyze the relationship between a primary and secondary source on the same topic.</p>	<p>CCSS.ELA-LITERACY.RH.6-8.10 By the end of grade 8, read and comprehend history/social studies texts in the grades 6-8 text complexity band independently and proficiently.</p>

PREPARATION

Can you read a building? How about an architectural drawing? The following activities will help you decode a few significant buildings within the American landscape. These skills in reading architecture can then be used to explore other buildings. If you know what to look for, works of architecture have the wonderful ability to speak across the ages in order to give us clues about the people, values, and priorities of different cultures and eras.

Familiarize yourself with [SAH Archipedia](https://sah-archipedia.org/) (<https://sah-archipedia.org/>). The activities in the following matrix rely on the following SAH Archipedia resources, which are referred to throughout the lesson as **Building Set 1, 2, or 3**:

1. *Classical architecture, reinterpreted*

These buildings use two of the most famous structures in the classical world as inspiration for New World experiments.

- [The Parthenon](#) (1920-1931) in Nashville, TN
 - Originally built for the 1897 Tennessee Centennial Exposition, this reproduction of the Athenian Parthenon is entirely made of concrete and still serves a tourist population.
- [Rotunda, University of Virginia](#) (1826, with several additions, renovations, and restorations) in Charlottesville, VA
 - Unlike the Roman Pantheon's original purpose as a temple to all the gods, the Rotunda at the University of Virginia represented Thomas Jefferson's vision for a temple to knowledge to help educate the citizens of the Early Republic. Although the building underwent several additional, renovations, and restorations, it is still an active library within the university's grounds.

2. *References to home in the colonial world:*

These buildings allow students to explore the impacts of colonization and remembrance.

- [Mission Nuestra Señora](#) (1934) in Goliad, TX
 - Reconstructed in the 1930s to resemble a mission church, this site demonstrates a different approach to historic preservation as well as the translation of the architecture of Catholic churches in Spain to the colonial frontier.
- [Wren Building](#) (1695-1699; with several additions, renovations, and restorations) in Williamsburg, VA
 - As one of the first institutions for higher learning outside of the northeast, this structure resembles some of the work of English astronomer-architect Sir Christopher Wren.

3. *Vernacular and natural environment, reinterpreted*

These buildings took familiar forms and reinterpreted them into architectural icons.

- [Denver International Airport](#) (1995) in Denver, CO
 - Instead of a massive transportation center in concrete, this airport references its location through an unexpected structure said to resemble both the mountains and the regional architecture.
- [Vanna Venturi House](#) (1960-1963) in Chestnut Hill, PA
 - As one of the architect's first projects, this structure reimagines the forms and features of a 'traditional' house.

ACTIVITIES

Activity #1 Reading a Building: S.P.E.A.R.

Before students can effectively start using S.P.E.A.R. it is essential need to make sure that they fully understand its components. Each element of S.P.E.A.R. is intertwined: it is hard to describe the structure of the building without mentioning aesthetics and it would be impossible to fully understand the program of a building without knowing where it is located. By using the elements of S.P.E.A.R., students can start to formulate the story of a piece of architecture. Below are the basic definitions and some associated, key questions that should be explored when assessing this aspect of the acronym.

S = Structure: what makes a building successfully resistant to forces like gravity, wind, or impact. Without structure, buildings are unable to stand or support weight, making them both useless and dangerous. Here are some examples of good structural prompts and questions:

- Think of structure like the skeleton of a building. Is the structure of the building exposed like the exoskeleton of a bug or is the structure, like the human body, hidden beneath a covering? What materials comprise the structural system?
- We see lots of structures around us every day, but some may be more unique or innovative than others. When you think about a building's structure, think about the construction methods that might have been used.
- You also need to assess the condition of the building: has it ever failed? If so, can you discover how or why?

P = Program: function of a building; its purpose or type. Sometimes this is referred to as the building's typology. Our built environment is composed of different building typologies: house, market, store, school, library, factory, museum, garage, etc. Some architectural designers, historians, and critics argue that program is what separates architecture from sculpture. Here are a few points to help students explore the elements of program:

- Make a list of all of the building typologies that come to your mind. How many can you capture? Did you explore the myriad programs tagged on SAH Archipedia under the 'Type' menu?
- When you think about program, ask yourself: what is the building used for and is the building still used as it was originally intended?

E = Economics: who, what, and how a building was funded, and maintained.

- Just because a building was costly does not mean it is important. On the other hand, a building that was constructed and maintained with meager means does not mean the building is unimportant.
- Who was the patron (funder) and why? This can tell us a lot about a specific person, group, civic organization, or government during a specific era.

A = Aesthetics: what a building looks like, what is it made of, and how it makes its community and occupants feel.

- Aesthetics, style and taste, can vary drastically between different eras and cultures: what may be beautiful to one person may be completely unpleasing to another person. Therefore, it is good practice to be objective, rather than subjective, in the analysis of aesthetics.
- What materials are used in the building's construction and what are the decorative elements?

R = Region: the physical context for an architectural project.

- This category can include an analysis of a site's climate and physical landscape (flora, fauna, topography, geology) but it can also touch on elements such as history and cultural influences. Region is much more than simply the location.

Have the students select a building from any of the sets and apply SPEAR theory. They should illustrate their work through the creation of an annotated collage. This could be composed in an analog format (cut and paste collected images/sketches) or digitally, using Photoshop/GIMP, a presentation in Google Slides, or an interactive ThingLink.

Activity #2 Critical Reading and Collage, v2

- As a class, read the SAH Archipedia entries aloud for the structures in Building Set #1 and annotate the text as a group, calling out key words, essential vocabulary (including unknown words), and the 'tombstone' information for the project (name, date, place, architect, significance).

- Now, individually or in small groups, research the precedents for these buildings:
 - Nashville Parthenon = Parthenon on the Athenian Acropolis in Greece
 - UVA's Rotunda = Pantheon in Rome, Italy

- Your research should use a combination of printed resources in the library and online resources. You should collect images as well as key facts about the construction and significance of the buildings (both the precedent and the American reinventions). In preparation for the next part of the exercise, either print the collected images or get ready to create a digital collage, using a piece of graphic manipulation software. Ideally, you will be able to use programs such as Adobe Creative Cloud's Photoshop or [GIMP freeware](#), but this exercise could also be completed using PowerPoint. If any of these programs are new, their respective websites have great introductory tutorials and tips; plus, YouTube can be a helpful resource.



- Create an original diptych (images presented as complements, example above) showing one of the ancient precedents (Pantheon OR Parthenon) and its respective American reinvention. Now, make a second diptych as a collage: that answers the following questions:
 - How do you think the tools for design and construction changed between the ancient building and the 19th/20th century building?
 - What did the American architects and builders have access to that was unavailable in ancient Greece or Rome?
 - How are the buildings different in terms of materials, the use of color, or how the buildings are used (the architectural 'program')?

For an advanced challenge, complete this exercise with Building Set #2 or 3 since this will require more advanced investigative skills to see the connections between the projects and their respective precedents: students will have to move beyond aesthetics to look at additional elements within SPEAR.

Activity #3 Architectural Education

According to Vitruvius, author of the first known architectural treatise, the role of an architect is multifaceted: artist, construction worker, pragmatist, social reformer, structural revolutionary, visionary, student of history, critic, and creator of harmony. With such broad expectations for the architect, it is not surprising that architecture serves as one of the primary ways we study the people, values, and priorities of different cultures and eras.

- Read Book I, Chapter 1 of *De Architectura* by Vitruvius. Depending on the grade level and class size, this may be better as a round-robin reading exercise instead of independent, silent reading.
- Digitally or on a printed copy of the text, have students annotate the Vitruvian description of the ideal education for and skills needed by an architect.
- Using their notes, have the students draw an idealized Vitruvian architect, using symbols and sketches to illustrate the points made by Vitruvius in his text. You may want to use Leonardo da Vinci's interpretation of the Vitruvian man (c. 1487) as an underlay for the drawing.

Now, select a Building Set

- With the description of the ideal architect by Vitruvius in mind, have each student create an original collage of a structure from the Building Set, expressing how certain aspects of the building, whether visible in the image or implied through a student's research, reflect aspects of the architect's varied training and knowledge. Did the architect and builders possess some skills, knowledge, or technology beyond the Vitruvian description?

ASSESSMENT

	Exemplary	Successful	Insufficient	Unsuccessful
Architectural Curiosity	The student is able to analyze a building by synthesizing text, photographs, and drawings; asks original questions and references a variety of sources.	The student can effectively use SPEAR to analyze a building and use SAH Archipedia to glean essential information.	The student is able to use some of the SPEAR elements to evaluate a building but is unable to use a fully comparative method.	The student shows little interest or ability to assess a building beyond subjective judgments.
Develop architectural literacy Ability to decode form and meaning by assessing buildings, sketches, and orthographic drawings; ability to create original designs based on a conceptual framework.	The student demonstrates an ability to read even the most complex elements within architectural drawings and is able to apply their understanding of sustainability of their own design work. Within written exercises, the student's text is fluid and uses advanced architectural vocabulary. In addition to providing a summary of design concepts, the text also provides essential critique of the project, its methods, and outcomes.	The student demonstrates a consistent ability to read architectural drawings and interpret the varied elements of drawing conventions, and is able to apply these skills to drawing research and building interpretation. The student is able to explore and apply comprehensive sustainability assessments to projects. Within written exercises, the student's original text is clear, cohesive, and effectively summarizes design concepts.	The student demonstrates an inconsistent ability to read architectural drawings and interpret the varied elements of drawing conventions. The student demonstrates a fair understanding of the multifaceted definition of sustainability but is unable to apply this to project analysis or their own design work. Within written exercises, the student's original text uses appropriate architectural language.	Within written exercises, the submissions have some errors and do not use any relevant architectural language. Buildings are not "read" through SPEAR and the student does not demonstrate ability to read architectural drawings.

	Exemplary	Successful	Insufficient	Unsuccessful
Database navigation Primarily SAH Archipedia	Easily navigates SAH Archipedia, using specific metadata. Uses additional sources, such as the Historic American Buildings Survey (HABS), to find useful archival information on selected projects.	Successfully navigates SAH Archipedia using the menu, embedded links, and the search feature. The student can find information by state, materials, building type & components. Citations are properly applied to research writings and presentations.	Can complete searches and independent investigation, but has difficulty navigating all of the embedded information within SAH Archipedia, such as moving between similar projects, styles, or locations.	Student is unable to mine SAH Archipedia beyond a direct search.
Online Research Successfully navigate online architectural research portals and information management systems to find accurate information for research projects and apply findings within original design exercises	The student shares with the class substantial online research through inquiry, presentations, and/or interactive web tools. The student curates their research through the creation of products that go above and beyond assignment requisites. For graphic research exercises, the selected images use specific sequencing as a narrative to relay the project's key concepts and elements.	Online research uses trusted and verified architectural sources in order to find accurate information on innovative projects and design firms. Interactive web tools are consistently used to share and review work. For graphic research exercises, the selected images showcase the breadth of image types ranging from orthogonal images to perspectives to conceptual sketches.	The student uses only a few or poorly sourced online architectural research site and the student inconsistently engages with the various exercises. For graphic research exercises, the selected images demonstrate a depth of visual research in terms of image type and quality.	There is an absence of online architectural research and the student does not actively engage with the various exercises. For graphic research exercises, the selected images are pixelated, repetitive, or inadequate as visual evidence.

	Exemplary	Successful	Insufficient	Unsuccessful
Presentations	Student melds analog and digital tools seamlessly. The verbal presentation is clear and well-articulated, uses advanced architectural vocabulary, beyond the content in specific entries and reflecting independent synthesis. Any written elements are engaging and encourage viewers to ask questions and make thoughtful evaluations.	The student uses analog and digital means but does not fully integrate the capabilities of either into a hybrid presentation. The verbal presentation has good pacing, eye contact, and uses the visuals as a complement to the verbal content. The verbal presentation is clear and well-articulated, using appropriate architectural vocabulary. Any written elements have been proofread and are easy for viewers to read from afar.	The student uses only analog or digital means; minimal architectural vocabulary is integrated into the presentation and there is little correspondence between the visuals and the verbal presentation.	The presentation shows little development, architectural curiosity, organization, or relevancy in response to the project brief.

Bibliography

Architectural dictionaries

Ching, Frank. *A Visual Dictionary of Architecture*. Hoboken, NJ: Wiley, 2011.

Cole, Emily, ed. *The Grammar of Architecture*. Boston: Bulfinch Press, 2002.

Fleming, John, Hugh Honour, and Nikolaus Pevsner. *Penguin Dictionary of Architecture and Landscape Architecture*. 5th ed. London: Penguin Books, 1999.

Hopkins, Owen. *Reading Architecture: A Visual Lexicon*. London: Laurence King Publishing, 2012.

General

Arnold, Dana. *Reading Architectural History*. London: Routledge, 2001.

Arnold, Dana, Elvan Altan Ergut, and Belgin Turan Özkaya, eds. *Rethinking Architectural Historiography*. London: Routledge, 2006.

Borden, Iain and Jane Rendell, eds. *Intersections: Architectural Histories and Critical Theories*. London: Routledge, 2000.

Buildings of the United States series from the University of Virginia Press

Ching, Frank. *Architecture: Form, Space, & Order*. Hoboken, NJ: Wiley, 2007.

Ching, Francis D.K., Mark M. Jarzombek, and Vikramaditya Prakash. *A Global History of Architecture*. Hoboken, NJ: Wiley, 2007.

Ching, Frank. *A Visual Dictionary of Architecture*. Hoboken, NJ: Wiley, 2011.

Cole, Emily, ed. *The Grammar of Architecture*. Boston: Bulfinch Press, 2002.

Eggner, Keith, ed. *American Architectural History: A Contemporary Reader*. London: Routledge, 2004.

Fleming, John, Hugh Honour, and Nikolaus Pevsner. *Penguin Dictionary of Architecture and Landscape Architecture*. 5th ed. London: Penguin Books, 1999.

Glancey, Jonathan. *The Story of Architecture*. London: Dorling Kindersley, 2003.

Harbison, Robert. *Travels in the History of Architecture*. London: Reaktion, 2009.

Hopkins, Owen. *Reading Architecture: A Visual Lexicon*. London: Laurence King Publishing, 2012.

Hyman, Isabelle and Trachtenberg Marvin, eds. *Architecture, from Prehistory to Postmodernity*. New York: H.N. Abrams, 2002.

Ingersoll, Richard and Spiro Kostof, eds. *World Architecture: A Cross-Cultural History*. Oxford: Oxford University Press, 2013.

James-Chakraborty, Kathleen. *Architecture since 1400*. Minneapolis: University of Minnesota Press, 2014.

Leach, Andrew. *What Is Architectural History?* Cambridge: Polity, 2010.

Parkyn, Neil, ed. *The Seventy Architectural Wonders of Our World: Amazing Structures and How They Were Built*. London: Thames & Hudson, 2002.

Upton, Dell. *Architecture in the United States*. Oxford: Oxford University Press, 1998.

Weston, Richard. *100 Ideas That Changed Architecture*. London: Laurence King, 2011.

Watkin, David. *A History of Western Architecture*. 5th ed. London: Laurence King, 2011.

Bibliography for Building Sets

Building Set #1A: Parthenon in Nashville, TN and the Parthenon in Athens, Greece

- Print:
 - Beard, Mary. *The Parthenon*. Rev. ed ed. Cambridge, MA: Harvard University Press, 2010.
- Online:
 - http://www.britishmuseum.org/visiting/galleries/ancient_greece_and_rome/room_18_greece_parthenon.aspx
 - <http://www.acropolisvirtualtour.gr>
 - <https://www.ancient-greece.org/architecture/parthenon.html>
 - <https://www.britannica.com/topic/Parthenon>
 - <https://www.archdaily.com/803931/ad-classics-the-parthenon-ancient-greece-ictinus-callicrates>
 - <https://www.metmuseum.org/art/collection/search/10482>
 - <https://www.metmuseum.org/art/collection/search/12263>
- Images:
 - Engravings of “Temple Du Parthenon A Athenes” from Hector d’Espouy’s *Fragments D’ Architecture Antique* Volume II (1900), Public Domain
 - Greyhound advertisement (1935), Public Domain
 - [https://commons.wikimedia.org/wiki/File:The_Parthenon,_Nashville_TN_\(6274940873\).jpg](https://commons.wikimedia.org/wiki/File:The_Parthenon,_Nashville_TN_(6274940873).jpg)
 - https://commons.wikimedia.org/wiki/File:Parthenon,_Nashville.JPG
 - <https://www.goodfreephotos.com/united-states/tennessee/nashville/statue-of-athena-of-the-middle-of-the-parthenon-nashville.jpg.php>
 - <https://www.flickr.com/photos/cseeman/16655517844/>

Building Set #1B: University of Virginia’s Rotunda, Charlottesville, VA and the Pantheon in Rome, Italy

- Print:
 - Howard, Hugh. *Thomas Jefferson, Architect: The Built Legacy of Our Third President*. New York, NY: Rizzoli, 2003.
 - Lee, Anne Carter, ed. *Buildings of Virginia: Valley, Piedmont, Southside, and Southwest*. Charlottesville, VA: University of Virginia Press, 2015.
 - Nichols, Frederick D. *Thomas Jefferson's Architectural Drawings*. 5th ed. Charlottesville, VA: University of Virginia Press, 1984.
 - Wenger, Mark R. "Thomas Jefferson, the College of William and Mary, and the University of Virginia." *The Virginia Magazine of History and Biography* 103, no. 3 (1995): 339-74. <http://dx.doi.org/10.2307/4249522>.

- Wilson, Richard Guy, ed. *Thomas Jefferson's Academical Village: The Creation of an Architectural Masterpiece*. Charlottesville, VA: Bayly Art Museum of the University of Virginia, 1993.
- Wilson, Richard Guy. *University of Virginia: An Architectural Tour*. 2nd ed., edited by David J. Neuman, Sara A. Butler, Walter Smalling, and Sarah Oehl. New York, NY: Princeton Architectural Press, 2012.
- Online:
 - <https://rotunda.virginia.edu/history>
 - <https://www.monticello.org/site/research-and-collections/construction-university-1817-1826>
 - [Thomas Jefferson's Drawings of UVA at the Massachusetts Historical Society](#)
 - [Thomas Jefferson's Drawings of UVA at the University of Virginia's Special Collections](#)
 - <https://www.archdaily.com/802201/ad-classics-roman-pantheon-emperor-hadrian>
 - <https://www.archdaily.com/800786/ad-classics-university-of-virginia-thomas-jefferson>
 - <https://www.metmuseum.org/art/collection/search/348799>
 - <https://www.metmuseum.org/art/collection/search/459349>
- Images:
 - Holsinger Studio photographs of the [Rotunda and Lawn](#), [Rotunda South Facade](#), [Rotunda on Fire](#)
 - Reconstruction of the Pantheon in Rome (1553) published by Antonio Lafreri, Public Domain
 - View of the Pantheon (c. early 1670s) by Lievin Cruyl (1634-1720), Public Domain
 - Postcard of the Pantheon (ca. 1907-1914), Public Domain
 - Color postcard of the Pantheon (ca. 1907-1914), Public Domain

Building Set #2A: Mission Nuestra Señora, and other related resources

- Print:
 - Christensen, Pixie. *Lone Star Steeples: Historic Places of Worship in Texas*. College Station, TX: Texas A&M University Press, 2016.
 - Early, James. *Presidio, Mission, and Pueblo: Spanish Architecture and Urbanism in the United States*. College Station, TX: Texas A&M University Press, 2004.
 - Kennedy, Roger G. *Mission: The History and Architecture of the Missions of North America*. edited by David Larkin. Boston, MA: Houghton Mifflin, 1993.
 - Moorhead, Gerald, ed. *Buildings of Texas: Central, South, and Gulf Coast*. Charlottesville, VA: University of Virginia Press, 2013.
- Online:
 - <https://tshaonline.org/handbook/online/articles/uqn16>
 - <http://www.texasmissionguide.com/about-the-missions/>
- Images
 - Goliad Chamber of Commerce

Building Set #2B: Wren Building in Williamsburg, VA, and other related resources

- Print:
 - Darn, Harold and Robert Mark. "The Architecture of Christopher Wren." *Scientific American* 245, no. 1 (1981): 160-75.
 - Dearstyne, Howard. *The Wren Building of the College: Architectural History*. Colonial Williamsburg, VA: Architects' Office, The Colonial Williamsburg Foundation, 1950, revised 1951.
 - Jardine, Lisa. *Ingenious Pursuits: Building the Scientific Revolution*. London: Little, Brown, 1999.
 - Jardine, Lisa. *On a Grand Scale: The Outstanding Career of Sir Christopher Wren*. London: Harper Collins, 2002.
 - Wilson, Richard Guy, ed. *Buildings of Virginia: Tidewater and Piedmont*. Oxford: Oxford University Press, 2002.

- Online:
 - <https://www.wm.edu/about/history/historiccampus/wrenbuilding/>
 - <https://www.archdaily.com/558958/spotlight-sir-christopher-wren>
- Images
 - Wren Building photograph (c. 1934-1950) by Thomas Hadley, Public Domain
 - Bodleian plate, illustrating the College of William and Mary (c. 1781-1782), Public Domain

Building Set #3A: Denver International Airport, and other related resources

- Print:
 - Fentress Architects. *Now Boarding: Fentress Airports + the Architecture of Flight*. Edited by Donald Albrecht. Denver, CO: Denver Art Museum in association with Scala Publishers, 2012.
- Online:
 - <https://www.architonic.com/en/project/fentress-architects-denver-international-airport/5100647>
 - <https://fentressarchitects.com/projects/denver-international-airport>
 - <http://rci-online.org/wp-content/uploads/2006-cts-barden.pdf>
 - <https://cozine.com/2014-september/dia-story-behind-tents/>
- Images
 - Roof detail, Public domain
 - Interiors, Public domain
 - Interior, Fentress Architects

Building Set #3B: Vanna Venturi House, and other related resources

- Print:
 - Schwartz, Frederic, ed. *Mother's House: The Evolution of Vanna Venturi's House in Chestnut Hill*. New York, NY: Rizzoli, 1992.
 - Venturi, Robert. *Complexity and Contradiction in Architecture*. New York, NY: Museum of Modern Art, 1966.
- Online:
 - <https://www.archdaily.com/62743/ad-classics-vanna-venturi-house-robert-venturi>
 - <https://interactive.wttw.com/tenbuildings/vanna-venturi-house>
 - <http://www.uncubemagazine.com/blog/15926627>
 - <https://www.moma.org/collection/works/990>
 - <https://archpaper.com/2016/05/vanna-venturi-house-found-buyer/>
 - <http://constructionlitmag.com/architecture/vanna-venturis-hybrid-house/>

Lesson Extensions:

- SAH Archipedia pages on select architectural styles:
 - [American Colonial](#)
 - [Classical Revival](#)
 - [Expressionist](#)
 - [International Style](#)
 - [Palladian](#)
 - [Postmodern](#)
 - [Spanish Colonial](#)
 - [Vernacular](#)
- SAH Archipedia pages on building materials:
 - [Brick](#)
 - [Cast Iron](#)
 - [Concrete](#)
 - [Fiberglass](#)
 - [Limestone](#)
 - [Wood](#)
- SAH Archipedia pages on typology (building uses):
 - [Airports](#)
 - [Churches](#)
 - [church-specific vocabulary](#)
 - [Colleges and campuses](#)
 - [Exhibition buildings](#)
 - [Houses](#)
 - [Mission churches](#)
- Structural concepts and forms (PDFs):
 - [Arch](#)
 - [Cantilever](#)
 - [Column](#)
 - [Capital](#)
 - [Fluting](#)
 - [Dome](#)
 - [Tensile](#)
- Relevant external links:
 - [Historic American Buildings Survey](#)
 - [National Park Service](#)