Examining High School Students' Engagement with Object Lessons

John Bickford
Eastern Illinois University

Brian Sheehy
North Andover High School, MA

Teachers train students to engage as disciplinary apprentices.[1] Students' historical thinking often emerges during close reading of and text-based writing about primary and secondary sources. Historical inquiries usually involve curricular resources, such as secondary source excerpts and reprints of text-based and visual primary sources,[2] or captivating hardware and software.[3] Such texts and tasks are arguably more minds-on than hands-on, as the curricular resources are frequently facsimiles of historical documents printed on paper or projected on a screen.

Students' examinations of actual artifacts, though, are both hands-on and minds-on. Object lessons, as they are termed, are an interdisciplinary, inquiry-based pedagogy that position students to scrutinize, classify, and make historical meaning out of artifacts.[4] During object lessons, students develop observations, inferences, and responses to others' impressions. Curious, common, and obscure artifacts each evoke elements of history, geography, economics, culture, and civics as students are trained how to think, not what to remember. Students, in doing so, contextualize the object within the historical era and extract meaning from, as well as construct understandings about, the artifact and era. This article reports how one class of high school social studies students experienced object lessons about the Industrial Revolution after having studied the period. In doing so, students demonstrated complex reading, writing, and thinking using hands-on sources and minds-on strategies. Object lessons, as demonstrated in this article, are an effective tool for each teacher's toolbox.

1 National Council for the Social Studies, *College, Career, and Civic Life (C3) Framework for Social Studies State Standards: Guidance for Enhancing the Rigor of K-12 Civics, Economics, Geography, and History* (Silver Spring, MD: NCSS, 2013); National Governors Association Center for Best Practices and Council of Chief State School Officers, *Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects* (Washington, D.C.: National Governors Association Center for Best Practices and Council of Chief State School Officers, 2010).

2 For example, Hilary Mac Austin and Kathleen Thompson, *Examining the Evidence: Seven Strategies for Teaching with Primary Sources* (North Mankato, MN: Maupin House Publishing, 2015); Linda S. Levstik and Keith C. Barton, *Doing History: Investigating with Children in Elementary and Middle Schools*, fourth ed. (New York: Routledge, 2010); Chauncey Monte-Sano, Susan De La Paz, and Mark Felton, *Reading, Thinking, and Writing About History: Teaching Argument Writing to Diverse Learners in the Age of the Common Core, Grades 6-12* (New York: Teachers College Press, 2014); Sam Wineburg, Daisy Martin, and Chauncey Monte-Sano, *Reading like a Historian: Teaching Literacy in Middle and High School Classrooms* (New York: Teachers College Press, 2011); Peter Seixas and Tom Morton, *The Big Six Historical Thinking Concepts* (Toronto, Canada: Nelson College Indigenous, 2012).

3 Keith Barton, "'Oh, That's a Tricky Piece!': Children, Mediated Action, and the Tools of Historical Time," *The Elementary School Journal* 103, no. 2 (2002): 161-185; Bruce Fehn and Kim Heckart, "Producing a Documentary in the Third Grade: Reaching all Students through Movie Making," *Social Studies and the Young Learner* 25, no. 3 (2013): 18-22; Bruce VanSledright, "Fifth Graders Investigating History in the Classroom: Results from a Researcher-Practitioner Design Experiment," *The Elementary School Journal* 103, no. 2 (2002): 131-160.

4 Meredith A. Bak, "Democracy and Discipline: Object Lessons and the Stereoscope in American Education, 1870–1920," *Early Popular Visual Culture* 10, no. 2 (May 2012): 147–167; Sarah Anne Carter, *Object Lessons: How Nineteenth-Century Americans Learned to Make Sense of the Material World* (New York, NY: Oxford University Press, 2018).

Teaching History, 49(1). First Published: 9/5/2024
DOI: 10.33043/TH.b39gd7fgb

The Objects

The teacher-researcher positioned students to examine different objects originating in the Industrial Revolution. Students could select from an array of two-dozen artifacts to analyze. The following items were representative samples of object lessons.

Flying Shuttle: Artifact

A shuttle, used in making fabric during the 18th and 19th centuries, was passed by hand between two weavers through the threads. The flying shuttle, which John Kay invented in 1733, enabled one laborer—not two—to produce larger sheets of fabric.[5] A flying shuttle, which was mounted on wheels in a track, enabled each weaver to work more effectively and efficiently (Appendix A).

Students picked up the flying shuttle to examine its intricacies. They explored the progression of having to throw this shuttle back-and-forth, recognized the limitations of distance, and acknowledged the increased size of the producible material. Close inspection revealed the shuttle's pointed tips, which were hazardous for the worker. Students considered the implications of increased production and work-efficiency as well as potential work-related dangers. They contemplated who, specifically, benefitted from the increased efficiency and how they benefitted along with who shouldered the burdens of accidents.

Child Labor: Photographs

During the Industrial Revolution, children—particularly the offspring of recent immigrants and poor parents—labored in miserly conditions at dangerous factories, mines, and textile industries.[6] Child laborers faced—and resisted, when possible—meager pay, employment insecurity, long hours for six or more days a week, employer abuse, and wretched living conditions until national initiatives, such as the National Child Labor Committee, and advocates, such as Mother Jones, Eleanor Roosevelt, and Lewis Hine, compelled change and promoted compulsory schooling.[7]

This photograph collection (Appendix B) featured young, school-aged children working various industrial jobs. Students scrutinized the photographs for details to extract historical meaning. They studied the clothing, identified—when possible—if the workers had shoes, speculated the inherent dangers of the industrial machines, and considered what the workers' lives would look like decades later. The early-20th century photographs were intentionally selected for the 21st century students, in part, because of their geographic vicinity to the Massachusetts factories and age proximity to the workers.

Coal: Artifact

Coal is a sedimentary rock formed with pressure over time. This hard rock contains mostly carbon with hydrogen, sulfur, oxygen and nitrogen. Burned as a fossil fuel, coal was the figurative bedrock of the Industrial Revolution.[8] Students examined pieces of coal (Appendix C). They felt it flake and, considering the emergent

5 Eric Chaline, *Fifty Machines that Changed the Course of History* (Richmond Hill, Ontario: Firefly Books, 2012); Stephan R. Epstein, *Guilds, Innovation, and the European Economy, 1400-1800* (New York, NY: Cambridge University Press, 2008); Paul E. Rivard, *A New Order of Things: How the Textile Industry Transformed New England*, (Hanover, NH: University Press of New England: 2002).

6 John Bodnar, *The Transplanted: A History of Immigrants in Urban America.* Bloomington, IN: Indiana University Press, 1985); Hugh D. Hindman, *Child Labor: An American History* (Armonk, NY: M.E. Sharpe, 2002); David Lewis Parker, *Before Their Time: The World of Child Labor* (New York, NY: Quantuck Lane Press, 2007); James D. Schmidt, *Industrial Violence and the Legal Origins of Child Labor* (New York, NY: Cambridge University Press, 2010); Doris Weatherford, *Foreign and Female: Immigrant Women in America, 1840-1930* (New York, NY: Facts on File Publishers, 1995).

7 Elliot J. Gorn, *Mother Jones: The Most Dangerous Woman in America* (New York, NY: Hill & Wang, 2001); Brigid O'Farrell, B. (2011). *She was One of Us: Eleanor Roosevelt and the American Worker* (New York, NY: ILR Press, 2011); Walter I. Trattner, *Crusade for the Children: A History of the National Child Labor Committee and Child Labor Reform in America* (Chicago, IL: Quadrangle Books, 1970).

8 Alan Fernihough, *Coal and the European Industrial Revolution* (National Bureau of Economic Research, 2014); John Langton,

dust, gained a deeper appreciation for what coal dust would have done to the lungs of miners who spent hours, days, and years breathing it underground. Students contemplated, as well, workers descending long, underground tunnels to retrieve the fossil fuel essential to factories throughout America and the industrializing world. Students explored the potential for accidents, such as a wall collapse or equipment failure. They considered also those that benefited most from coal extraction and those that shouldered the greatest burden.

Students carefully inspected each object and scrutinized the photographs. In doing so, the adolescent learners readily made intertextual connections about the Industrial era. The teacher-researcher positioned students to construct links between seemingly disconnected objects, some of which were hand-held artifacts and others were photographic reproductions of germane Industrial Revolution scenes. Object lessons are enhanced when students' intertextual connections elicit intersensory exploration, as American Studies and Material Culture scholar Sarah Anne Carter has argued.[9] These three artifacts are an illustrative sampling of the two-dozen that students interrogated.

The Prompts

Students were tasked with analyzing, contextualizing, and establishing the historical significance of the artifacts. The teacher-researcher interjected important details at opportune times as students moved freely around the room. Four prompts sparked students' critical and historical thinking. First, at first glance what is the artifact? What was it used for? Second, describe the artifact in detail as if someone cannot see it. How does it feel, what does it smell like, etc.? Third, what inferences can be made about the artifact? What might it have been used for? What makes you think this way? Fourth, what does the artifact reveal about the time period? What makes you think that way?

The prompts were catalysts for criticality[10] and historical thinking.[11] Students' complex cognition—analysis, synthesis, and evaluation, in particular—emerged through their observations and inferences. Students' considerations of the artifact's intended use, which was elicited in the first prompt, was a logical starting point. Interrogating the object for details of texture and smell, as the second prompt elicited, was a novel task for social studies students more experienced with textbooks and primary source facsimiles. The third prompt returned students to the artifact's intended use, which would likely yield a more nuanced answer after previously-articulated observations. Reconsideration is comparably uncommon within history education, which often involves extemporaneous writing originating from initial analysis.[12] Collectively, the first three prompts position students to work to determine the object's historical significance, a key element of historical thinking. In the fourth and final prompt, students contextualize the artifact and view the era through the optics of the object. Elements of history literacy and historical thinking, specifically contextualization and establishing historical significance, manifest as students extrapolate meaning while scrutinizing the artifacts.

Geographical Change and Industrial Revolution: Coalmining in south west Lancashire, 1590-1799 (New York, NY: Cambridge University Press, 1979).

9 Carter, *Object Lessons*, p. 65-92.

10 Lorin W. Anderson and David R. Krathwohl, eds., *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* (New York: Longman, 2001); Victor A. Benassi, Catherine Overson, and Christopher M. Hakala, eds., *Applying Science of Learning in Education: Infusing Psychological Science into the Curriculum* (Washington, D.C.: American Psychological Association, 2014).

11 Jeffery Nokes, *Building Students' Historical Literacies: Learning to Read and Reason with Historical Texts and Evidence*, (New York, NY: Routledge: 2013); Seixas and Morton, *The Big Six Historical Thinking Concepts*; Sam Wineburg, *Historical Thinking and Other Unnatural Acts: Charting the Future of Teaching the Past* (Philadelphia, PA: Temple University Press, 2001).

12 John H. Bickford and Molly Sigler Bickford, "Facilitating students' historical argumentation about Eleanor Roosevelt, *The Conscience of a Generation*," *The History Teacher* 51, no. 2 (February 2018): 293-322.

Students' Analyses

Object lessons positioned students to construct historical understandings from curious artifacts and to complicate their perceptions of the era. Though the texts (e.g., photographs, artifacts) were uncommon, the tasks—close reading prompts to spark text-based writing—were comparably common. *Student Example* (Appendix D) contains Sam's (all names are pseudonyms) work during object lessons, which illustrates a typical student's discipline-specific cognition that emerged from object lesson pedagogy. Sam's text-based writing was determined to be at the class median in complexity and criticality.[13]

Sam's writing exhibited critical and historical thinking elements (Appendix D). From dozens of actual objects, Sam first selected the flying shuttle. He brought forth understandings developed prior to artifact analysis when he detailed the flying shuttle's impact on modernization of weaving ("The flying shuttle was used to speed up the weaving process, now mechanized instead of human power, which would take a lot of work"). Sam, in an afterthought as demonstrated by its location in an incomplete sentence behind his initial evocation of prior knowledge, positioned the flying shuttle within the textile industry ("for the loom"). Sam's observations were thorough and precise as he noted its elements ("It is made of wood…[and] of metal"), shape ("like a canoe, pointy ends made of metal"), and features ("The inside is cut out where the textile bobbin is which has the thread on it") using his sense of smell as well as his sense of sight ("It smells like old cotton and fibers, which is what the factories smelled like"). Observations, enhanced with key historical background, generate inferences. Sam's inferences included both the flying shuttle's impact on the textile machinery ("…[T]he flying shuttle was a very important mechanism in the Industrial Revolution. It contributed greatly to the success of the textile industry") and the motivations behind the invention ("I think that…the machine was used in both the domestic system and the Industrial Rev [sic] shows that people were actively trying to make products faster and efficient. They were taking things they had and improving them."). Through extensive observations and inferences, Sam ably established the historical significance of the flying shuttle, which he contextualized within textile machinery, textile industry, and the owner's motivation for technological improvement. Sam scrutinized and made sense of the flying shuttle in discipline-specific ways.

Sam, also, examined photographs of child factory workers. The photograph collection evoked Sam's prior knowledge, as evidenced when his comments contained content not explicitly included within the borders of the photographs ("Factory owners exploited many people, especially children [who were] cheap labor"). Sam's initial response was enhanced through subsequent analysis. From the photographs, Sam observed the children's soiled attire ("covered in dirt and soot"), speculated the tasks they performed ("different jobs like making textiles and metal products"), and the perilous, drudgery involved ("around very large and dangerous machines"). From these observations, Sam extrapolated the owner's meager regard for labor ("[F]actory owners did not really care about terrible working conditions…the most important thought at the time was the production of the goods for money"). Sam clearly extracted meaning from the artifacts, yet his concluding point was arguably simplistic. He suggested poor working conditions originated from factory owners' naiveté ("People didn't realize better working conditions could improve the products"), which was perhaps incongruent with previous points about owners' cognizance of workers' lived experiences and working conditions. Adolescents, at times, rush conclusions to provide *an* answer, as opposed to the *best* answer. Sam's age, perhaps, tethered his conclusion on this particular artifact.[14] Sam's curiosity, though, might have already turned towards the next artifact, which was far more

13 Students' text-based responses contain clues to the criticality and complexity of their cognition. Criticality, which includes history literacy and historical thinking elements, appears as sourcing, contextualization, determining historical significance, and tracing continuity-and-change during object lessons. Complexity, which comprises length and depth, includes intertextual connections and the number and novelty of observations and inferences about analyzed artifacts. Examining criticality and complexity patterns in students' writings suggest the efficacy and accessibility of, respectively, the object lessons and the artifacts. John H. Bickford, Jeremiah Clabough, and Tim N. Taylor, "Fourth-Graders' (Re-)Reading, (Historical) Thinking, and (Revised) Writing about the Black Freedom Movement. *Journal of Social Studies Research, 44*, no. 2 (March, 2020): 249-261.

14 Anderson and Krathwohl, *A Taxonomy for Learning, Teaching, and Assessing.*

tangible—in scent, dust, and touch—than the photographs.

Sam inspected coal next. His observations originated from various senses ("Coal is like a black rock, but a little softer. It is very dry, and it has soot that gets on your hands"). Unlike analyzing primary source facsimiles, object lessons elicited his sight, smell, and touch. Sam's rudimentary observations evoked historical background knowledge ("Coal from mines eventually became the leading source of power in the later Industrial Rev [sic]"). Sam contextualized and argued the historical significance of this inert mineral.

> Coal can show that there was a big rise of mining in Britain during the Industrial Rev [sic] as it was eventually the main power source. [Number] of miners grew exponentially…Coal and the amount of it mined shows how much power was needed to get the machines to go. I think that because the amount of mills and machines throughout Europe and America was large. Machines were loud and powerful, but still needed manpower to mine its power source."

Using prior knowledge of the period, Sam contextualized coal within Britain during the Industrial Revolution and coal's importance during the era. A student without a strong historical schema certainly could not articulate so much from viewing a lump of coal. Analyzing the mineral powered Sam's historical and critical thinking, much as it did with the textile machinery during the Industrial Revolution. His conclusions about coal's historical significance were based on intertextual connections, an act involving the cognitive task of synthesis.

This is not to suggest that Sam's thinking was without problematic elements. He did not recognize the limitations of each source. Sam did not articulate how the artifacts, specifically the flying shuttle and coal, revealed only so much about era, workers and owners. He did not convey that, like the photographs' boundaries, the objects each had limitations. Sam confidently—perhaps unnecessarily—drew definitive conclusions, which is not always appropriate without considering the meaning that can*not* be extracted from these particular sources. As many students are accustomed, Sam was guilty of filling space on a graphic organizer without saying anything substantive as evidenced by his circuitous response when tasked with inferences about the flying shuttle ("This artifact and the time it was in can tell us about the flying shuttle was a very important mechanism in the Industrial Revolution. It contributed greatly to the success of the textile industry"). Sam also conflated worker, inventor, and owner ("[P]eople were actively trying to make products faster and efficient. They were taking things they had and improving them."). Like many students, Sam identified socioeconomic power differentials within the child labor photographs ("Factory owners exploited many people, especially children [who were] cheap labor") while failing to recognize how comparable exploitation manifested in coal mining, industries that used coal, and the textile industry where the flying shuttle was implemented.

Sam's text-based analyses were a representative sampling, yet other students' observations demonstrated far more complexity. Emma's description of a cobbler's iron was particularly nuanced.

> It is a cobbler's iron, and it was used to hit in spikes to boots to secure the shoe to the sole. It contains 2 [sic] pieces. Piece 1 is a shoe mold for the shoe. It is about 5 inches long. Size 2 shoe mold. Black color all around with evidence of rust. Shows lack of locking mechanism at the top to keep it on the stand. Piece 2…is the stand for the cobblers [sic] iron. It is a tall black object with a welded curvy base spanning about 4 [sic] niches and sort of flat and stands about a foot tall. Welding marks are present and it has a metallic iron smell. Rusty on the bottom. Iron material most likely.

Emma, like many other students, scrutinized the selected artifact for every observable detail. Her analyses were extensive.

Object lessons, unlike common assessments that expect a particular answer, provide students a seemingly endless array of possibilities. Many students articulated logical inferences that Sam—the representative sample and a bright, eager student—overlooked. In developing inferences about the shuttle, Eleanor extracted that "The textile industry had innovations that…[must have] started in England or America [because] the instructions for its use are in English." As many students constructed meaning from the minutiae of the objects, Eleanor's understandings emerged from, and were refined by, the literal language of the instructions accompanying the

artifact.

Other students demonstrated skillful use of sourcing, in which one examines the author's or creator's perspective. Sourcing, a key element to historical thinking, is arguably more conspicuous when, say, scrutinizing a speech or a letter than when examining an artifact. Object lessons, perhaps, lend themselves more to contextualization and determining historical significance than sourcing. Though not explicitly tasked with sourcing, Anne interrogated the source of series of photographs "depicting city life". She noted,

> I can infer that the pictures were used to convey information on scenery because some of the pictures included sculptures and buildings in the center. In other pictures[,] there are crowds of people utilizing [sic] transportation. This means that the photographer was trying to capture people doing daily activities and current structures of time.

Sourcing was unexpected considering students were not prompted to do so. The objects, unlike a speech, had a concealed source. Anne, clearly, sourced the artifacts as she considered how the photographer's intent, perspective, and selection shaped viewers' interpretations of the photographs. To do so, Anne contemplated the content not captured within the photographs' borders. In other words, Anne recognized—and explored beyond—the limitations of the artifact to explore its source in more depth. Sourcing was uncommon, though not anomalous, during the object lessons.

Intertextual connections also appeared uncommon and unprompted. Anne communicated text-to-text connections that developed during photograph analysis.

> This artifact reveals that the time period was 1800s because of the trains shown in the picture and the camera being used. This was also taken in a place where English was spoken because of the names on trolleys and signs throughout the city. I also noticed advertisements[,] which meant that there was a large production of manufactured goods. It also shows that transportation was not only used for economy but also liesure [sic] because there are average people using it…

Anne extracted meaning from an object—the advertisement—within the object—the photograph—that she analyzed. Anne's intertextual connection originated as an observation ("I also noticed advertisements…") and emerged into inferential thinking about economics from various angles, contextual elements of urban geography, and historical elements of social class ("[the] large production of manufactured goods [reveals]…that transportation was not only used for economy but also liesure [sic] because there are average people using it…"). Anne's intertextual connection was nuanced and novel in comparison to her classmates.

Students' critical and historical thinking were evoked and mutually reinforcing during object lessons. The observations and inferences manifested as analyses and evaluation, which most often included contextualization and the determination of historical significance. Scrutinizing objects elicited prior knowledge and positioned students to view the historical period from the lens of the artifacts.

Discussion

Object lessons can enhance instruction on virtually any historical era for as little time commitment as a single class period. The pedagogy provides countless curricular possibilities to spark students' interest and criticality. Students, in this study, analyzed common, curious, and obscure artifacts about the industrial era in history. Complex thinking emerges in uncommon ways as meaning—about production, distribution, and human impact, to mention a few—is extracted from the nuances within artifacts. This section centers first on students' impressions about their experiences and then on logical extensions for teachers using object lessons. The former could help scholars better understand the impact of pedagogy and content; the latter might assists teachers as they plan and implement.

Students' Reflections

Students, when queried, were particularly aware of the novelty of the sources and strategies. They were asked to write about if and why they enjoyed the activity, if and how the learning experience could be improved, and

which objects—and why—they would like to explore in future exhibits. Students' reflections can inform both teachers' pedagogical and curricular emphases as well as researchers' understandings of the science of teaching and learning.[15]

Students, for various reasons, felt positively about the tasks. Their appreciation appeared to originate from one or more of three elements: originality, tangibility, and flexibility. Students, invariably, appreciated the novelty of object lessons. Holden, for instance, noted he "enjoyed the activity because it brought variety to our class". High school students crave innovation and are resistant to routine and banality.[16] Object lessons were anything but ordinary, which Holden's comments illustrate. Students appreciated how artifact analysis made tangible the history that, to 21st century teenagers, often appears distant, obscure, or abstract. Jane said, "I really enjoyed how this activity…allow[ed] us to clearly study past time periods….Looking at artifacts allows us to take the information we learned in regular class and be able to apply it to the objects, and then understand better." History curriculum and pedagogy are not often hands-on; art, music, physical education, and science, for instance, might lend themselves to tangible tasks in ways that social studies might not. Object lessons, as Jane noted, balanced hands-on and minds-on as students are both doing and thinking. Students, also, valued the flexibility that choice provided. Henry shared, "I really like how the lesson was set up in a museum walk and how we could pick [artifacts to analyze]." Students could move around the room exploring different artifacts like a tourist viewing exhibits in a museum; they were not silent or stationary. Henry's comment, which many other students articulated, reveals his appreciation for flexibility of movement. Students also did not have to analyze every object, like a long to-do list to complete; they could choose to explore the artifacts that most captivated their interest. Students, as Henry's comment demonstrates, appreciated the myriad objects to select and analyze.

Students articulated various ways to improve the object lessons. Specifically, they wanted more time to explore, more artifacts to analyze, or both. Anne, for instance, requested students be able to "spend more time developing our answers." They were also quite specific about the objects they sought. Becca sought "more artifacts that represent each step of the process (from shearing the sheep to weaving the wool into clothes) and maybe add models of the transport vehicles from the period." She would have liked to see all the "parts of the whole process of each industry." Students, though, did not seek more class time and more artifacts because they were a distraction from learning. Their requests, instead, targeted ways to enhance their own learning experience as how athletes alert coaches to training or recovery needs. Jane, in justifying the request for more time and more objects, argued that "adding a few documents to the lesson…would allow us to put the artifacts into historical context a bit better…[this was] an excellent way to learn." For nearly all students, the best way to enrich object lessons was, quite simply, to spend more time on the analysis tasks and to have more objects to assess.

Students' impressions do not dictate teachers' pedagogical and content decisions, of course. Their impressions, though, should certainly be considered. Students valued the originality, tangibility, and flexibility of object lessons. They sought more time on task and more artifacts to analyze. Students' experiences might be enhanced with logical extensions.

Extensions

Teachers might prod students to scrutinize the foundation and implications of their own answers. Students' writing revealed close connections with capital, not labor nor the environment. Students focused on inventions, inventors, and owners. Only cursory attention was paid to the human impact of industrialization and usually only when viewing images of child labor. Few students wrote about the rise of pollution and resultant implications centuries later. Teachers might include specific prompts to direct students' identification beyond capital and inventions.

The prompts also did not position students to consider limitations of analyzing the objects. Students relied

15 Students' written reflections were examined through open-coding and axial-coding content analysis, which yielded the demonstrable patterns reported here.

16 Benassi, Overson, and Hakala, *Applying Science of Learning in Education*.

on prior knowledge and their own curiosity to extrapolate meaning and make intertextual connections. They did not, however, explore the boundaries of their knowledge. Queries—such as, what might be happening beyond the object's borders? What cannot be learned from this artifact?—can provoke this line of thinking.

The inquiry-based pedagogy invoked all critical thinking tiers, yet different prompts might enhance students' thinking with intentional direction towards disciplinary guideposts. Object lesson prompts, for instance, often rely on sparking observations and inferences, which often appear as: Describe the details. What details did you expect but not see? How is this object connected to others? What do you suspect? What more do you want to know? Object lessons might be adjusted to incorporate different aspects of the social studies. Each artifact, of course, can be viewed from a historical, geographic, economic, and civic lens. The graphic organizer (Appendix E), entitled *Object Lessons for Social Studies*, includes the four common elements of social studies.

Critical thinking, of course, emerges differently in distinct disciplines. The above prompts incorporate common subdisciplines of the social studies. This adaptation does not suggest the provided prompts were ineffective or inadequate. Teachers must prudently pick the sources and strategies provided, as they cannot pose every possible query.

Conclusion

Object lessons, as noted, teach students *how* to think, not what to remember. Artifacts are an aperture through which one can view the past; teachers will likely find a treasury of untapped curricular resources for innovative teaching. Object lessons enable social studies students to examine ordinary artifacts from uncommon vantage points. This interdisciplinary, inquiry-based pedagogy invokes all elements of the social studies, as evidenced in the examples provided about the Industrial era. Critical thinking, particularly analysis, synthesis, and evaluation, is scaffolded as prior knowledge is evoked and refined. In this essay, modern students use artifacts as catalysts to explore 19th and 20th century American history and culture. Teachers might start with suggestions from American Studies scholar Sarah Anne Carter.[17] They could also consider benign objects like a table,[18] chair,[19] or cabinet.[20] The possibilities are endless, especially when one considers the obsolete artifacts stored in relatives' attics and available at garage sales and thrift shops.

Author ORCID iDs

John Bickford https://orcid.org/0000-0002-3629-2522

Brian Sheehy https://orcid.org/0009-0004-5780-6643

17 Sarah Anne Carter, "Object Study as Interdisciplinary Exploration for the Twenty-First Century," *Panorama: Journal of the Association of Historians of American Art* 2 no. 1 (Summer, 2016): 1-2. http://journalpanorama.org/sarah-anne-carter-the-chipstone-foundation.

18 Jenny Plevin filmed "Casey Harrington, Mengrup Yang, and Michael Herbert analyze 17th Century Boston Folding Chair," *Chipstone*, https://chipstone.org/module.php/61/294/5.0-Table

19 Dan Ollman filmed "Lily Higgins, Kabnoog Xiong, and Chase Markee analyze an 1819 Campeachy Chair made for Thomas Jefferson by his slave John Hemings," *Chipstone*, https://chipstone.org/module.php/61/295/5.0-Chair

20 Ray Chi films "Alexandra Port, Sara Sampoli and Hannah Redigan analyze an 18th century valuables cabinet with the assistance of Professor Edward S. Cooke," *Chipstone*, https://chipstone.org/module.php/61/296/5.0-Cabinet

Appendix A – Flying Shuttle

Appendix B – Child Labor Photograph Collection


21


22

21 Hine, Lewis Wickes, photographer. *Spooler tender - American Linen Co.Location: Fall River, Massachusetts / Lewis W. Hine*. Fall River Fall River. Massachusetts United States, 1916. [between and June 20, 1916] Photograph. https://www.loc.gov/item/2018678097/.

22 Hine, Lewis Wickes, photographer. *Some doffer boys, Macon, Ga.Location: Macon, Georgia*. Georgia Macon Macon. United States,

 [23]

1909. January. Photograph. https://www.loc.gov/item/2018674619/.

23 Hine, Lewis Wickes, photographer. *Cleaner and Sweeper - Spinning Department of American Linen Co.Location: Fall River, Massachusetts / Lewis W. Hine*. Fall River Fall River. Massachusetts United States, 1916. [between and June 20, 1916] Photograph. https://www.loc.gov/item/2018678100/.

Appendix C – Coal

Appendix D – Student Example

Industrial Revolution Object Based Lesson

Today we have a series of items and objects related to themes and topics we have discussed in our unit on the Industrial Revolution. As you examine all of the pieces I would like you to pick three that you will focus on and complete the questions below.

Object # 1 - Flying Shuttle

At first glance what is the artifact? What was it used for?

The Flying Shuttle was used to speed up the weaving process, now mechanized instead of human power, which would take a lot of work. for the loom

Describe the artifact in detail as if someone cannot see it. How does it feel, what does it smell like, etc?

It is made of wood, shaped like a canoe, pointy ends made of metal. The inside is cut out where the textile bobbin is which has the thread on it. It smells like old cotton and fibers, which is what the factories smelled like.

What inferences can be made about the artifact? What might it have been used for? What makes you think this way?

This artifact and the time it was in can tell us that the flying shuttle was a very important mechanism in the Industrial Revolution. It contributed greatly to the success of the textile industry.

What does the artifact reveal about the time period? What makes you think that way?

I think that the fact that the machine was used in both the domestic system and the Industrial Rev. shows that people were actively trying to make products faster and efficient. They were taking things they had and improving them.

Object # 2

At first glance what is the artifact? What was it used for?

The artifacts are pictures of children at work in the industrialized factories. Factory owners exploited many people, especially children in cheap labor.

Describe the artifact in detail as if someone cannot see it. How does it feel, what does it smell like, etc?

The artifacts show child workers covered in dirt and soot who are working around very large and dangerous machines. The machines are massive, with different jobs like making textiles and metal products.

What inferences can be made about the artifact? What might it have been used for? What makes you think this way?

The pictures show how factory owners did not really care about terrible working conditions.

What does the artifact reveal about the time period? What makes you think that way?

These reveal that the most important thought at the time was the production of the goods for money. People didn't realize better working conditions could improve the products.

Object # 3

At first glance what is the artifact? What was it used for?

The artifact is coal.
Coal from mines eventually became the leading source of power in the later Industrial Rev.

Describe the artifact in detail as if someone cannot see it. How does it feel, what does it smell like, etc.

Coal is like black rock but a little softer. It is very dry, and it has soot that gets on your hands.

What inferences can be made about the artifact? What might it have been used for? What makes you think this way?

Coal can show that there was a big rise of mining in Britain during the Industrial Rev. as it was eventually the main power source. # of miners grew exponentially.

What does the artifact reveal about the time period? What makes you think that way?

Coal and the amount of it mined shows how much power was needed to get the machines to go. I think that because the amount of mills and machines throughout Europe and America was large. Machines were loud and powerful, but still needed manpower to mine its power source.

Appendix E – Object Lessons for Social Studies

Historical Thinking. Where do you see continuity and change between when this object was commonly used and today? What is this item's significance to this particular time period *and* to today?	**Economic Thinking.** Who profits? How well is labor paid and treated? How does this object illustrate the purposes, principles, and implications of capitalism?
Civic Thinking. Is this object local, national, or international in impact? Are there ethical concerns with this object's construction and sale?	**Geographic Thinking.** What does this object suggest about this society during this particular time? Where did this object originate? What materials make up this item?