

Eli Whitney: Diligent Pioneer of Modern Industry

- **Compelling Question**
 - How might your diligent actions help others?
- **Virtue:** Diligence
- **Definition** – Diligence is intrinsic energy for completing good work.
- **Lesson Overview**
 - In this lesson, students will learn about how Eli Whitney diligently pursued his place in history as the inventor of the cotton gin. Through his example, students will learn how being diligent can help them achieve their own purpose.
- **Objectives**
 - Students will analyze the diligent actions of Eli Whitney.
 - Students will apply their knowledge to acting diligently in their own lives.
 - Students will understand ways in which they can be diligent.
- **Background**
 - Eli Whitney was one of the fathers of modern American industry. He was born into a family of modest means in Westborough, Massachusetts in 1765. Eli Whitney grew up less than forty miles from the “shot heard round the world” at Lexington and Concord, and it would be the ensuing Revolutionary War that would provide his introduction into the world of industry.

While only fourteen years old, he convinced his father to allow him to open a nail forge to sell nails to the surrounding community. Young Eli had heard local farmers complain about how it was impossible to buy nails, as all the local blacksmiths were occupied with military work. Nails may not seem like a very exciting item, but for eighteenth century farmers, they were a necessity. Eli’s vision was correct, and the forge was a tremendous success and provided some needed financial help for the family. Even at war’s end, he transitioned the forge, producing hat pins, which also proved successful.

Whitney was a visionary who helped develop the methods of mass production. He was both a scholar and a master mechanic, whose inventions truly transformed the nation. His cotton gin revived agriculture in the American South, turning cotton into a major cash crop. Despite his genius and technical success, Whitney faced great challenges throughout his life, and only through tremendous diligence was he able to persevere and achieve success.

Eli aspired to a college education, a dream that seemed out of reach. His family’s lack of finances was going to make paying tuition a hardship. In addition, he had not attended a college preparatory school, so the entrance exam seemed a longshot, even if the finances could be arranged. To add to that, he was older than most students were when entering college, which presented additional challenges. Eli Whitney did not let any of this stop him from achieving his goal. Despite his lack of formal education, he was able to obtain employment as a schoolmaster. He used the income from that position to attend Leicester Academy in the summer to prepare him for the challenging entrance exam to Yale College in New Haven, Connecticut.

He did manage to pass the entrance exam and became a Yale student at the age of twenty-three. In the 1790s, the average age to graduate from Yale was twenty years-old, with one graduate a mere fifteen! Of the nearly three hundred students to graduate Yale in the 1790s, only eight were older than the twenty-six that Whitney was at the completion of his studies.

Eli Whitney diligently completed his studies at Yale over the next three years. He earned money while a student repairing various pieces of equipment on campus. Whitney caught the eye of college president Ezra Stiles. Upon graduation, Stiles arranged a position for Eli working as a tutor on a southern plantation. He was hesitant to move so far away from home, but the pay promised was significant, and would allow him to pay back the large loans from his father that helped pay his tuition at Yale.

- **Vocabulary**
 - Modest
 - Ensuing
 - Forge
 - Transitioned
 - Tuition
 - Preparatory
 - Fortuitous
 - Lamented
 - Sustainable
 - Depleted
 - Crude
 - Patent
 - Endorsements
 - Imitators
 - Prevail
 - Annulled
 - Muskets
 - Interchangeable parts
- **Introduce Text**
 - Have students read the background and narrative, keeping the “Walk-In-The-Shoes” question in mind as they read. Then have them answer the remaining questions below.
- **Walk-In-The-Shoes Questions**
 - As you read, imagine you are the protagonist.
 - What challenges are you facing?
 - What fears or concerns might you have?
 - What may prevent you from acting in the way you ought?
- **Observation Questions**
 - Who was Eli Whitney? Why was his life significant?
 - What was Whitney’s purpose?
 - What diligent actions did Eli Whitney take in order to be successful?
- **Discussion Questions**
 - Discuss the following questions with your students.
 - What is the historical context of the narrative?
 - What historical circumstances presented a challenge to the protagonist?
 - How and why did the individual exhibit a moral and/or civic virtue in facing and overcoming the challenge?
 - How did the exercise of the virtue benefit civil society?
 - How might exercise of the virtue benefit the protagonist?
 - What might the exercise of the virtue cost the protagonist?
 - Would you react the same under similar circumstances? Why or why not?
 - How can you act similarly in your own life? What obstacles must you overcome in order to do so?
- **Additional Resources**
 - Alter, Judy. *Eli Whitney*. New York: F. Watts, 1990.
 - "Arms Production at the Whitney Armory." *Eli Whitney Museum and Workshop*. Eli Whitney Museum and Workshop, Web. 06 June 2015.
 - Gilbert, Miriam. *Eli Whitney Master Craftsman*. New York: Abingdon, 1956.
 - "Eli Whitney: The Inventor." *Eli Whitney Museum and Workshop*. Eli Whitney Museum and Workshop, Web. 06 June 2015.
 - Jefferson, Thomas. "Founders Online: From Thomas Jefferson to Eli Whitney, 16 November 1793." Letter. 16 Nov. 1793. *From Thomas Jefferson to Eli Whitney, 16 November 1793*. National Archives, n.d. Web. 06 June 2015.

- Whitney, Eli. "Letter from Eli Whitney, Jr. to His Father regarding His Invention of the Cotton Gin, 11 September 1793." Letter. 11 Sept. 1793. *Teaching U.S. History in South Carolina*. South Carolina Department of Archives and History. Web. 06 June 2015.
- Whitney, Eli. "Petition Requesting Renewal of the Patent on the Cotton Gin." Letter to Congress of the United States. 16 Apr. 1812. *National Archives of the United States*. National Archives of the United States. Web. 06 June 2015.
- Wolcott, Oliver, Jr. "Advocacy for Money Advance to Whitney." Letter to Samuel Dexter. 13 Jan. 1801. *Papers of the War Department 1784-1804*. Center for History and New Media. Web. 06 June 2015.
- "Yale Finding Aid Database: Guide to the Eli Whitney Papers." *Yale Finding Aid Database: Guide to the Eli Whitney Papers*. Yale University Library, Web. 06 June 2015.

Handout A: Eli Whitney: Diligent Pioneer of Modern Industry

Background

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Narrative

During Eli Whitney’s voyage south to become a tutor, he became friends with Caty Greene, the widow of Revolutionary War hero Nathaniel Greene, and the manager of her plantation, Phineas Miller. Those new acquaintances proved fortuitous when the promised tutoring position didn’t work out. Mrs. Greene invited Whitney to stay as a guest at her plantation in Georgia. He appreciated her hospitality and helped out whenever he could. He was especially successful in repairing equipment around the farm and fashioning new devices to make tasks easier.

One day a group of veterans who had served under General Greene during the American Revolution came to the plantation for a visit. During the visit, the men, who were mostly planters themselves, lamented the state of agriculture in the South. They were frustrated that they couldn’t find a profitable and sustainable crop to plant since the most popular crop, tobacco, severely depleted the land of nutrients. They expressed frustration that green-seed cotton grew so well, but the amount of labor it took to remove the seeds made it unprofitable. When one of the men wished there was a machine that could remove the seeds, Mrs. Green proposed that Whitney was the man to invent one.

Whitney accepted her challenge to make a machine to remove cotton seeds. He was able to produce a crude, but workable model of the “cotton gin” (gin being slang of the time for “engine”). He had an idea that could transform the landscape and create great fortunes. However, he did not have the money to develop, patent, and manufacture his invention. He overcame this hurdle by entering into a partnership with Phineas Miller, who agreed to provide financial backing for a percentage of ownership in the proceeds.

Flush with Miller’s investment, Whitey headed north to secure a patent and begin manufacturing the cotton gin. The potential for this invention excited even the Secretary of State Thomas Jefferson, who wrote to Whitney in November of 1793: “I feel a considerable interest in the success of your invention, for family use...Favorable answers to these [my] questions would induce me to engage one of them to be forwarded to Richmond for me.”

With such endorsements, Whitney was understandably anxious to get into business and anticipated great success. He was anxious to repay his father, and wrote him with excitement in the fall of 1793: “I am now so sure of success that ten-thousand dollars, that if I had it counted out to me, would not tempt me to give up my right and relinquish the object.”

Whitney swore an oath to the origin of his invention in Philadelphia in October 1793 and was awarded a full patent in March of the following year. He had planned, along with Miller, to develop a network of cotton gins throughout the South. Instead of selling the machines (which were too expensive for most planters), they would clean the cotton for a percentage of the crop. What Whitney didn’t plan for was the harsh reality of competition.

Whitney hadn’t realized that having the patent would not prevent others from stealing his idea. Despite having a patent, there were many imitators throughout the South. It took a stroke of genius to develop the idea for a cotton gin; however the device was actually pretty simple and easily copied by competent mechanics. With the money to be made, competitors were willing to take the risk of violating the patent rights of Whitney.

What the patent did empower Whitney to do was to sue those who were in violation of it. This proved to be more difficult and take longer than he expected. Whitney did eventually prevail in most of his lawsuits although they did take time. He first sued in 1797, but he was unable to win a judgement until 1807. He also suffered a setback when his shops that manufactured the cotton gins in Connecticut mysteriously burned down in 1795.

However, Whitney was diligent in pursuing his claims, even in the face of more setbacks. Although the states of South Carolina and Tennessee had settled with Whitney over the rights to purchase license of his patent, they suddenly annulled their contracts in 1801 and 1802 respectively. In the following year, his trusted partner and friend Phineas Miller died.

As Whitney recovered enough judgments to finally turn the corner to profitability, he faced the expiration of his patent. He earnestly pleaded to Congress for a deserved and normally unquestioned renewal: “therefore prays your honorable body to take [my] case into consideration and authorize the renewal of [my] patent, or grant such other relief, as Congress in their wisdom and their justice may deem meets and proper.”

In 1812 the Congress refused to renew Eli Whitney’s patent on the Cotton Gin, effectively putting him out of the business. Whitney had lost exclusive the right to his invention, one that had transformed American agriculture. U.S. cotton exports had grown from under 150,000 pounds before his invention, to more than 18,000,000 pounds by the turn of century.

Inventing the cotton gin had earned Whitney fame, and a reputation as a great mechanical mind. What it hadn’t earned him was a great fortune. He did not let this tremendous disappointment turn into despair however. With the nation seemingly moving toward war with France, he seized upon another opportunity.

Whitney turned to the firearms business. At that time, muskets were handmade by craftsmen, with no two guns being exactly the same. Whitney had the vision to apply the new concept of interchangeable parts to arms manufacturing. He saw the advantages this would provide in speed of manufacturing and to the Army when it came

to maintaining weapons. Whitney opened an arms factory outside New Haven, Connecticut. In 1798, his efforts paid off when he received a contract from the Army for 10,000 stand of arms (musket, bayonet, and ramrod).

There were serious growing pains as Whitney developed his manufacturing process. Although he was not able to deliver arms as promised in his initial contract, the Army was willing to extend his contracts based on his reputation and potential. Former Secretary of the Treasury, Oliver Wolcott, Jr., urged the War Department to stick with Whitney, as he had faith in his ability to stick to the task until he made it work, "Mr. Whitney's talents are of the first order; his establishment is an object worthy of national encouragement."

Whitney's diligence and the government's faith in his character paid off. He did perfect the manufacturing process, so that inexperienced workers could operate his machines and produce muskets. His process was able to save the Army \$25,000 annually. In 1812, he received a second contract for 15,000 more firearms and his arms factory employed sixty men

Eli Whitney's life was one marked by setbacks and disappointment. No one would have blamed him if he had given up hope numerous times. However, he remained diligent, even in the face of failure. By always keeping faith in his abilities, by searching for new opportunities when old ones dried up, and by refusing to quit, Whitney helped usher in the modern industrial world.