



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
1990 Volume VII: What Makes Airplanes Fly? History, Science and Applications of Aerodynamics

Mankind's Fascination with Flight

Guide for Curriculum Unit 90.07.03
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This year my curriculum unit focuses on the Wright brothers, Orville and Wilbur, and their significant contributions to society. In order to appreciate their creative genius, we shall first take a close look at their family genealogy, tracing their family tree back to their grandparents, who were hard-working farmers, carriage builders, and religious people. We follow these young tinkerers as they move through their childhood and into their teens, briefly describing their entrepreneurial business undertakings which eventually led to their profitable bicycle selling and repair business. In their early twenties we watch these trial and error scientists research Lilienthal's gliding principles, study ornithology, and discuss the inventions and discoveries of leading aeronautical figures such as Da Vinci, Montgolfier, Cayley, Chanute, and Langley. We read about their early failures, study their wind tunnel experiments, are dismayed when they realize that their redesigned work is fruitless due to Lilienthal's incorrect air pressure tables, become excited when they discover ailerons and elevators, watch them closely as they redesign their gliders for successful lateral balance and stabler control, and finally fly with them on December 17, 1903, in the first heavier-than-air flying machine piloted by Orville Wright.

Probably the single facet of their accomplishments that amazed me the most, notwithstanding the actual flight, was the Wright brothers ability and propensity to finance their projects solely on their own. On countless occasions they refused money from people such as Andrew Carnegie. They worked approximately 75% of the year with their bicycle selling and repairing business, utilizing their evenings for "heated" discussions around their living room fireplace. These differences of opinion often helped them to work out their theoretical kinks, saving them practical time and expense. The remainder of the year, usually the summer and fall months, were devoted to test flying the gliders at Kitty Hawk, North Carolina.

Their technological achievement in 1903, given that their work was self-financed, that both men were self-taught mechanics, that neither had college or advanced aeronautical training, and that their bicycle business occupied substantial time, only serves to highlight their accomplishments. Two trial and error scientists, with keen mechanical aptitudes and creative, analytical thinking abilities were able to take their rightful place in history as "Conquerors of the Air." Imagine!

(Recommended for Reading Literature and Science, grades 7-8)

Key Words

Aviation History American Wright Brothers

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