

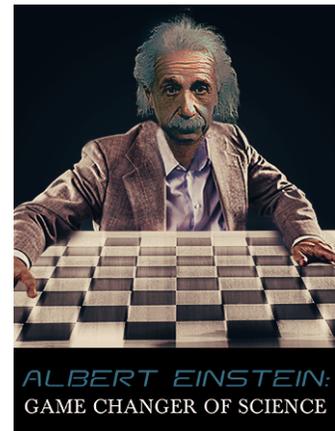


Albert Einstein: The Game Changer of Science

by Greg Kirmser

[Things To Know/ Things To Think About](#)

This Books That Grow original piece chronicles the early life of Albert Einstein, and his eventual metamorphosis—from a shy and quiet boy—into a confident and world-renowned physicist. What makes Einstein’s story so poignant, however, is not his brilliance, but his seeming normalcy. Einstein the youth, with his rebellious streak, numerous failures, and half-hearted interest in school, cuts a figure that easily resonates with the Everyman. Einstein’s pretensions to averageness, in light of his accomplishments detailed in the latter half of the essay, make his achievements ones that we can’t help but be proud of. In Einstein, we see our own potential for greatness that sometimes goes overlooked, but is eventually recognized and rewarded. No image encapsulates this better than the image of Einstein working an entry-level job in a patent office, while scribbling notes in his spare time on the Theory of Relativity.



Although Einstein’s rise to fame in the scientific community was meteoric, his career as a scientist was not without self-doubt or personal blemishes. One recurring thought that continuously haunted Einstein was a question of his own culpability for the destruction wrought by the atomic bomb. Einstein’s Theory of Relativity, albeit indirectly, provided the theoretical groundwork for the creation of weapons of mass destruction. Although Einstein initially urged president Roosevelt to fund atomic research as a deterrent to Germany, he shifted his support after becoming disillusioned by the sheer destructive power of the bomb. After witnessing the bomb’s awful potential firsthand in Hiroshima, and later, in Nagasaki, he became an international advocate against the use of atomic weaponry. This piece is perfect as part of a lesson on Albert Einstein, the history of science, science-ethics, or even WWII era diplomacy.

Standards Addressed:

CCSS.ELA-LITERACY.RL.8.1

Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RL.8.2

Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.

CCSS.ELA-LITERACY.RL.8.4

Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

Before Reading

1. Write a brief list of things you know about Albert Einstein. In small groups, share your answers and expand your lists to include the list-items of your peers that you didn't have.

During Reading

1. In relation to Einstein, physicist Robert Oppenheimer said "He was almost wholly without sophistication and wholly without worldliness... There was always with him a wonderful purity at once childlike and profoundly stubborn." Interestingly, Oppenheimer meant this as a compliment. Building off this quote, explain how Oppenheimer's observations about Einstein contributed to his success as scientist. (CCSS.ELA-LITERACY.RL.8.4)
2. Regarding the relationship between mass and energy, what is one of the immediate implications of Einstein's formula $E = mc^2$? Support your answer with details from the text. (CCSS.ELA-LITERACY.RL.8.1)

After Reading

1. How would you describe Einstein's initial attitudes towards atomic weaponry? What event or events later altered his perspective? Use the text to support your answer. (CCSS.ELA-LITERACY.RL.8.2)

Further Readings

For Students:

<http://www.brainpickings.org/2014/03/14/einstein-fairy-tales/>

This link provides students with an interesting take on Einstein's views of modern education, and fairytales.

Vocabulary

Domain-specific vocabulary:

photon, physics/physicist, particle, relativity, matter

G8 Challenging vocabulary list:

advocate (8), coercion (8), dubious (8), infinite (8), instill (8), wholly (8), contemplate (7), deter (7), dubious (7), impel (7), physics (7), atomic bomb (6), authority (6), charge (6), convert (6), cover (6), distaste (6), effect (6), theory (6)

G6 Challenging vocabulary list:

atomic bomb (6), authority (6), consider (6), convert (6), cover (6), distaste (6), effect (6), theory (6), challenge (5), character (5), consult (5), formula (5), usage (5), catapult (4), develop (4), patent (4), refuse (4), wonder (4)

G4 Challenging vocabulary list:

catapult (4), develop (4), patent (4), refuse (4), wonder (4), average (3), calculate (3), current/currently (3), power (3), pressure (3), protest (3), recommend (3), result (3), disease (2), doubt (2), exam/examination (2), final (2), history (2), involve (2), offer (2), trouble (2), universe (2), weapon (2)

G2 Challenging vocabulary list:

disease (2), doubt (2), exam/examination (2), history (2), involve (2), offer (2), trouble (2), universe (2), weapon (2), award (1), class (1), magazine (1), normal (1), often (1), person (1), plant (1), question (1), secret (1), stare (1), think (1), work (1), age (0), city (0), first (0), grow (0), never (0), paper (0), parent (0), quiet (0), school (0), word (0)