

Myth Buster

Einstein was excellent in math and did not fail at algebra.

This document gives a brief look at Einstein's educational background from childhood through graduation from Federal Polytechnic School in Switzerland.

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At the end of the 20th Century, Time magazine voted Albert Einstein to be the Man of The Century. Albert was the dude who came up with all that really weird Relativity stuff - and he was your genuine certified Mega Brain. After all, we are told that he even won the Nobel Prize for his work in Relativity. On the other hand, generations of school kids have consoled themselves over their poor school marks with the belief that Einstein failed at school. Some motivational speakers also make this claim - but this claim is as wrong as the claim about the Nobel Prize.

First, Einstein did not win the 1921 Nobel Prize in Physics for his work on Relativity. Let's back up a little. Back in 1905, Einstein had the biggest year of his life. He wrote, with the help of his wife, Mileva, five ground-breaking papers that, according to the Encyclopaedia Britannica "forever changed Man's view of the Universe". Any scientist would have been proud to write even one of these magnificent papers - but Albert published five of them in one year!

One paper, of course, dealt with Relativity - what happens to objects as they move relative to other objects. Another paper proved that atoms and molecules had to exist, based on the fact that you could see tiny particles jiggling around when you looked at a drop of water through a microscope. A third paper looked at a strange property of light - the Photoelectric Effect. Plants and solar cells do the Photoelectric Effect, when they turn light into electricity. His paper explained the Photoelectric Effect.

Relativity may have captured the public's consciousness, but it was the unglamorous Photoelectric Effect that got him the Nobel Prize. Well, that's one myth out of the way.

Second, Einstein definitely did not fail at high school. Einstein was born on March 14th in Ulm, in Germany, in 1879. The next year, his family moved to Munich. At the age of 7, he started school in Munich. At the age of 9, he entered the Luitpold-Gymnasium. By the age of 12 he was studying calculus. Now this was very advanced, because the students would normally study calculus when they were 15 years old. He was very good at the sciences. But, because the 19th-century German education system was very harsh and regimented, he didn't really develop his non-mathematical skills (such as history, languages, music and geography). In fact, it was his mother, not his school, who encouraged him to study the violin - and he did quite well at that.

In 1895, he sat the entrance examinations to get into the prestigious Federal Polytechnic School (or Academy) in Zurich, Switzerland. He was

16, two years younger than his fellow applicants. He did outstandingly well in physics and mathematics, but failed the non-science subjects, doing especially badly in French - so he was not accepted. So in that same year, he continued his studies at the Canton school in Aargau (also called Aarau). He studied well, and this time, he passed the entry exams into the Federal Polytechnic School.

So the next year, he finally started studying at the Federal Polytechnic in Zurich (even though he was now one year younger than most of his fellow students). Also in the year 1896, even though he was only 16 years old, he wrote a brilliant essay that led directly to his later work in relativity.

So he definitely did not fail his high school, and definitely was not a poor student.

So how did the myth that he failed high school start?

Easy. In 1896, which was Einstein's last year at the school in Aargau, the school's system of marking was reversed.

A grading of "6", which had previously been the lowest mark, was now the highest mark. And so, a grading of "1", which had been the highest mark, was now the lowest mark.

And so, anybody looking up Einstein's grades would see that he had scored lots of grades around "1" - which under the new marking scheme, meant a "fail".

And that means that schoolkids can't use that mythconception as a crutch any more - they'll just have to work harder...

A few more details...

...still without having completed secondary school, Einstein failed an examination that would have allowed him to pursue a course of study leading to a diploma as an electrical engineer at the Swiss Federal Institute of Technology (aka Federal Polytechnic School). He spent the next year in nearby Aarau at the cantonal secondary school, where he enjoyed excellent teachers and first-rate facilities in physics. Einstein returned in 1896 to the Swiss Federal Institute of Technology, where he graduated, in 1900 as a secondary school teacher (!) of mathematics and physics.