

## Intelligence

“You will never amount to anything!” A Prussian teacher at the Luitpold secondary school yelled at young Albert Einstein when he resisted the school’s rote learning approach.<sup>i</sup>

Scientists have identified 3 intelligence systems. **Crystallized intelligence** is the things you’ve already learned: vocabulary, math, historical facts etc. **Fluid intelligence** is your ability to apply the information in your crystallized intelligence into a new context. It’s your ability to reason, think, identify patterns and solve problems. **Acquisitional intelligence** is the speed and ease that you acquire new information.<sup>ii</sup> How fast do you learn? We often confuse **speed** of learning with **ability** to learn. Einstein’s parents were worried that he had a learning disability because he didn’t start speaking till the age of 3 and would often repeat words and sentences to himself softly till he was 7.<sup>iii</sup>

Even though he explained to the world how to navigate space time relativity, Einstein was famous for getting lost on his Princeton campus. That’s why Harvard professor Howard Gardner proposed that intelligence is focused into different domains. He eventually settled on 10: 1) Musical-rhythmic 2) Visual-spatial 3) Verbal-linguistic 4) Body-kinesthetic 5) Logical-mathematical 6) Interpersonal - social 7) Intrapersonal – self-knowledge 8) Spiritual 9) Moral 10) Naturalistic.<sup>iv</sup> This approach allows us to recognize the unique intelligence of people as diverse as Mozart, Einstein, Picasso, Gandhi, Nureyev and John Muir.

Trying to quantify intelligence to a single number, like IQ, is too simplistic. **Intelligence is too diverse and dynamic.** The period of enlightenment in the 18<sup>th</sup> century established the importance of logic and critical thinking and helped defined knowledge as based on fact, not superstition. The scientific advances that followed defined intelligence in terms of verbal and mathematical reasoning where there’s only one right answer. As Ken Robinson explained in his TED talk,<sup>v</sup> our education system is designed to produce university professors. (He taught at the University of Warwick.) It often kills creativity by stigmatizing unconventional answers as mistakes, yet we can’t be creative if we aren’t ready to accept nonconformist ideas.

Ludwig Boltzmann, the great Austrian physicist of the late 1800’s, was ridiculed when he proposed all matter was composed of atoms and molecules because they couldn’t be seen. It wasn’t until 1905, when Albert Einstein explained the random movement of pollen grains in still water, called Brownian motion, which had puzzled scientists for over 75 years, that **the existence of atoms became widely**

**accepted.** Einstein was able to model the precise movements of the pollen using statistical physics proving it was due to their collision with fast moving atoms in the water.

**“Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.” Albert Einstein.<sup>vi</sup>**

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<sup>i</sup> Walter Isaacson, “Einstein: His Life and Universe,” (2017) Simon & Schuster

<sup>ii</sup> R. Sternberg, “Beyond IQ: a triarchic theory of intelligence” (1985) Cambridge University Press.

<sup>iii</sup> Albert Einstein, “He told his biographer, Carl Seelig, ‘my parents were worried because I started to talk relatively late. They consulted a doctor because of it.’” (1954)

<sup>iv</sup> Howard Gardener, “Frames of Mind: The theory of Multiple Intelligences,” 1983 Basic Books

<sup>v</sup> Ken Robinson, “Do schools kill creativity?” TED talk, 2006

<sup>vi</sup> Albert Einstein, “What life means to Einstein: An interview by George S. Viereck.” Start page 17, Quote page 117 October 26, 1929. Saturday Evening Post Society.