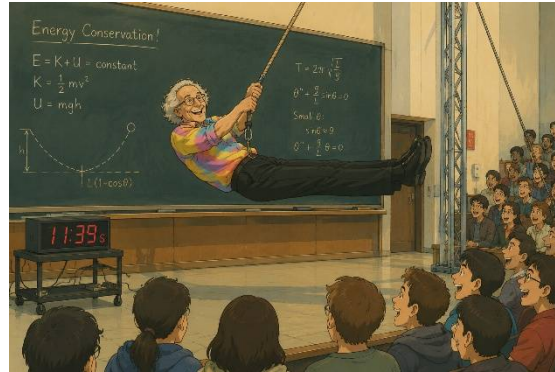


Be passionate about what you do

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Since childhood, I have always been fascinated by science, and astronomy especially captured my attention. Watching documentaries or reading books, I felt the universe was full of exciting and exotic phenomena and it poses one of the most fundamental (existential) questions that we humans cannot help but try to solve one day. Yet, actually pursuing a career as a professional scientist was not a simple choice. I have never completely lost my desire to be a scientist but there were many instances in which I felt unsure whether astronomy was truly the field I should devote my life to.

Apart from the fact that I was (and still AM to some extent) anxious about whether I could make it in the math- and physics-intensive field, the biggest reason is that I was interested in almost anything. I have a huge range of interests both within and outside of science such as particle physics, biology, paleontology, oceanography, anthropology, history, archaeology, geography, language, literature, philosophy, etc. I find them almost equally fascinating and this list only gets longer as I get older. When you are young, you may be encouraged to have this kind of curiosity but once you are expected to choose your career it may backfire because you continue to wonder if it was the right choice and that hinders your productivity.

The exact process I took to reach the decision to study astronomy was not a straight path. To me, there is no single event or occasion that set the course of my life once and

for all. I am who I am because of many wonderful people around me, many experiences that I am very thankful for, and in general, great environments that inspired me. But if I had to pick one person, looking back now, I think Walter Lewin has had a significant influence on me.

Walter Lewin is a famous physicist and former professor emeritus at MIT. He worked at MIT for over 40 years and taught more than ten thousand students. He was a very popular professor because his lectures were like nothing else. What makes his lectures stand out so much is his effective use of experiments and demonstrations. And those are not textbook mundane experiments, they are unique, fun, and sometimes dangerous, yet carefully prepared memorable experiences that you will never forget. In fact, Walter Lewin himself calls them art and I completely agree. You might have seen him riding on a pendulum to prove the isochronism or literally putting his life to the test to demonstrate the conservation of energy. He often says, "Those teachers who make physics lectures boring are criminals". By watching his lectures, not only do you acquire a great understanding of the physics concepts but you also become so curious and cultivate such a love for physics that you cannot sleep at night.

But what made him a true legend was MIT OpenCourseWare where lectures were published for free (MIT was a pioneer in the OpenCourseWare movement). Walter Lewin's elementary physics course was one of the most successful courses there. Now these videos are available on his own YouTube channel and at the age of 90, he still posts interesting videos and occasionally answers your questions in the comment sections himself. I once posted a question because I could not get my head around the topic presented and surprisingly, I had the privilege to receive a reply from him to my question and he gave me a kind word saying it is OK to take time and learn at my own pace. It was certainly a brief interaction but the fact that such a famous scientist took the time to encourage a high school student from the other side of the globe had meant a lot to me. Unfortunately, he is not very famous in Japan so I was very lucky that I happened to come across his YouTube channel during the final year of high school, as I was about to choose my major for university. Also, at first, I only knew that he was a

physicist, but it turned out, to my surprise, his specialty was observational astronomy. Realizing that I accidentally discovered a true role model as an astrophysicist, my motivation to pursue astronomy grew tremendously. I drew enormous inspiration from him, and I want to be like him as a researcher, (I mean maybe not as eccentric as him but still) who genuinely loves science and transmits his passion for others.

Fast forward to today, I am now a first-year master's student doing research on galaxies in the distant universe. In astronomy, looking at distant objects means looking back in time as it takes billions of years for their light to reach us. I mainly use radio telescopes to study the dynamics of galaxies, which helps us understand how galaxies formed and evolved into the ones we see today. I think it's really cool that my research takes advantage of a phenomenon called gravitational lensing, kind of like the universe's own telescope that naturally magnifies distant objects. Of course, there are a lot of challenges in my research, including unclear data, difficult analysis procedures, hard theories to understand, and keeping up with the latest trends in the field, let alone coming up with my own research ideas.

But whenever I face obstacles or start to lose motivation, I get back to his videos and his enthusiasm always helps me regain my passion and be thankful that I get to study and research this wonderful subject. As astronomy is a field where collaboration with many people is required, a person who is passionate and can lead other people is highly valued. Much modern astronomical research is conducted by large international teams, who may come from different scientific backgrounds. I hope to become someone who can inspire other researchers and students in the same way I was inspired years ago.

ChatGPT was used to generate the image and correct grammar.