



Semiconductors:

Dr. B answers big questions about semiconductors: what makes a material like silicon so special, and how have microchips changed our digital world forever?



Watch the show!



<https://youtu.be/C0p4AlccVGE>

Quick Questions

1. Have you heard of semiconductor chips?
2. Early computers were big enough to take up an entire room. How many computers do you think a school or library would have today if each one still took up an entire room? How would that change a school day or library experience?
3. Can you think of another piece of technology that has gotten smaller over time? Can you think of a piece of technology that has gotten bigger?
4. Dr. B says semiconductor chips are world-changing innovations like penicillin and the wheel. Can you think of other examples of life-changing inventions, discoveries, or innovations?
5. How has your life directly been impacted by the introduction of semiconductors?

Deep Dives

1. Think about different kinds of computers: desktops, tablets, phones, wearable devices, etc. What is the smallest computer you've ever used? What is the largest? What are the pros and cons of using smaller computers?
2. Dr. B mentions several revolutionary innovations: harnessing fire, inventing the wheel, discovering penicillin, and designing semiconductor chips. Choose one of these innovations, or a different technology or discovery that you find to be revolutionary. Then, list what you think are the most impactful ways that life changed for humans after the invention or discovery of that innovation.
3. Often when a new technology is created, some jobs are lost. For example, in the early days of the telephone, all phone calls had to be manually routed by a person (a telephone operator). Today, the number of telephone operators is less than 1% of what it was in the 1970s. But new, different jobs may be created as well; there are countless jobs involved in the production, sales, and operation of cell phones. When you think about new technologies like semiconductors, do you feel more worried or more hopeful about the resulting job loss and creation? Why?
4. Imagine a world without the introduction of semiconductors. How do you envision the state of one of the following sectors: communications, transportation, commerce, manufacturing, education? Consider the ways in which change in this sector has been brought about by the introduction of semiconductors. What do you see as the upsides? Are there any downsides?
5. Imagine an invention or innovation that would make a major world impact. What problem would you want to solve? How would your creation solve that problem? Who would be affected? Would there be any downsides? How would those changes impact you and your personal life?