

teach ELECTRONICS to your 12-year old brother or MOM!

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Hey there kid. Can I ask you a question? Do you know Electronics? That big field of Physics that deals with electrical stuff? No? Well then would you want me to explain it to you? Great. And no, don't worry; I won't get technical with you. After all, you are a kid, so what would a kid know about analog and digital hardware right?

Anyway, let me start by telling you about electronics. Did you know that it's a term that describes a whole new world? Yep, you heard me right, a whole WORLD. Let's start off by introducing you to the 0's and the 1's. The 0's are the lazy bums of that world. They're stagnant, unchanging, just so...off. When they're around, you can't expect much to happen around you. The 1's, on the other hand, are these active little fellas. They're the ones who make the world of electronics run. They are the ones who open doors to let things such as currents and volts pass through, which in turn provides enough power to make everything run. Both the 1's and 0's play a very important role in electronics. They each play their own roles to make sure that their world runs oh so smoothly. The 0's close doors when currents and volts shouldn't enter; the 1's open those doors to let them pass when needed.

Now, who are these volts and currents you ask? Think of it this way: when you plug your PlayStation into a socket and turn it on? It runs right? But what about if you turn on your PlayStation while it isn't plugged? Nothing, right? The power that makes your console run is made up of those currents and volts. They're the batteries of the world.

I'll teach you something about ICs, or integrated circuits. They're small, rectangular shaped objects with lots of silver pins

running along their sides. They look like bugs with no heads, just legs. Lots of them. What are they for you ask? Well, they serve a lot of purposes. But that comes later; what I want you to know about is how they work. Think of them as a large building, or even a house, with lots of doors. Each pin is different; some are entrances, while others are exits. The 1's and 0's stay at those entrance pins, and they act like door hops in hotels. You know, door hops - bell boys. They're those guys who open and close doors for you when you come in or go out a hotel. Anyway, these buildings are important because they serve different functions, and each building is unique. What's amazing though is that you can combine different buildings to make a whole new building. Just like how building extensions make a building much bigger, and gives us a wider variety. Volts and currents have lots of things to do in these buildings, just like we have lots of things to do in malls, or groceries, and other stuff like that. They can't just get in though; it's up to the 0's and 1's if they'll go in or not. It depends on the timing, really, and the purpose of their visit.

How then, does combining buildings create a new building entirely? Good question. You see, these buildings have different purposes right? How about if we look at it this way: you know the Power Rangers right? Each zoid makes up their big robot right? And they can't form that big robot unless they're all complete. It's just the same with these buildings. These buildings can be made to count, or select a certain number at a certain time, or redirect volts and currents to another place, increase the strength of the volt or current passing through them. Amazing isn't it? That's why there are these things called logic gates, selectors, multiplexers and demultiplexers. They're all made of one or more ICs. And you know what? The number of things you can create by combining these ICs is limitless. Add another IC here or there, and you've got a whole new functioning circuit. Sorry, I meant, add another building here or there, and you've got a whole new school to go to. Something like that.

But of course, there are times when you have to be careful as well. Sometimes these buildings don't get along, and often, they could destroy one another. Yep, so that means you can't just go and put these buildings together. They're just like people; when you put two people together, and they don't just get along, they'll end up fighting. But when you're sure that they'll work together, they can do so many things. And this is where the 0's and 1's come again; they can make

fighting buildings calm down by controlling who goes into where, and when. See? Now do you realize how important those 0's and 1's are? Pretty amazing, right?

I have two last things to tell you about - operational amplifiers and transistors. These guys are pretty special you know that? Operational Amplifiers - let's call them OpAmps - serve mainly as amplifiers of electricity. Amplifiers, as in to increase the output of something. Errr...still don't understand? How about this: you know electric guitars right? And those speakers that come with it? Without the speakers, the guitar barely makes a sound. But plug it into the speakers, and voila! You've got a sound loud enough to shatter glass. Same thing - it's just that they amplify electricity instead. And transistors serve the same function. I just like them more because they come in these nice water tower shapes with three legs. But I don't like them because they're so sensitive. They're like women; put them in the wrong spot, and they're bound to explode. Sigh...the complicated world of electronics.

But I hope you learned something from me today. A little of the beauty of this whole electric world. Maybe in the future, you'll gain an appreciation for it because of this little speech of mine. Just like my teacher did for me. He made me see electronics in a way I never knew before. You know what, if ever I could get the chance to see him again, you know what I'd tell him? Thanks for everything.