



**Robotics
Workshop**

Step By Step Guide On
How To Become An
Electronics Gadget Expert

Introduction

I remember when I started with electronics more than 25 years ago and it is not really a pleasant memory. It was just heaps and heaps of theory, enough to make the best of us go cross eyed and get lost in all those words.

I am sure many can relate to my experience.

Those days there was no way to even build the most basic projects without all these masses of theory first. Some of us bought electronics magazines with projects in them and tried building them. Many times it was a total fail and those that worked we seldom understood how it worked or why it worked.

Today all changed with school students, university students, entrepreneurs, inventors and business people with zero electronics experience building projects that work and that they can understand from day one. Within a couple of weeks, even inventors starting from scratch can build what they thought were impossible to do.

But what does it take to master this area? This document will explain to you exactly what it takes, what is needed and how to get started.

Step 1. Is this really something you want to do?

What is a maker in the world of electronics?

Any person that wants to make electronic gadgets for own use, as a career, for customers or for business purposes.

Are you the right type of person to become an electronics maker.

This is the easy part. Ask yourself these questions:

Do you like fiddling around with electronic things?

Do you want to create electronic projects?

Do you want to build electronic kits?

Do you want to do better with your current electronics related studies?

Do you have all kinds of ideas, or one specific idea of an electronic project you want to build?

Would you like to invent electronic projects or better existing ones?

Do you see a need for an electronic product that is not available and want to build one yourself?

If you answered yes to any of the above questions, then you are absolutely the right person to become a maker.

In a nutshell, if you think building electronic projects is cool and you are super interested in electronics then you will be a great electronics maker.

What is in it for you.

To start, lots of fun.

School students will learn faster, easier and regain their original interest in the subject.

Inventors will finally be able to invent, without the need for expensive help, their own inventions fast and easily.

Business owners and entrepreneurs can now outperform and outsmart their competitions with new and unique products usually just available to supper successful companies.

Step 2. Combining 2 technologies.

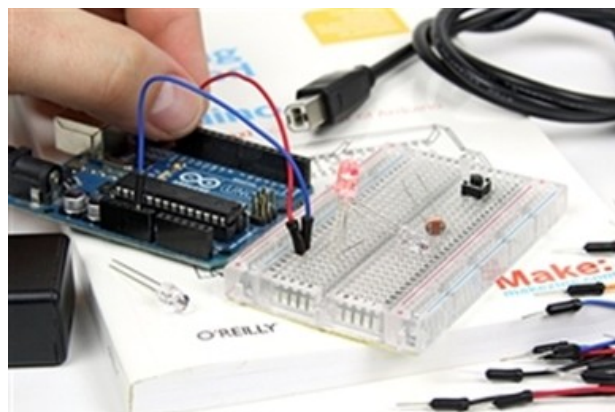
Modern electronics consist of 2 quite different technologies, electronics and programming. The major component in modern electronics is a microprocessor (more about this later), connected to this microprocessor can be many other components like LED's, relays, switched, temperature sensors and hundreds of other components.

The magic in modern electronics happens when you start telling the microprocessor what to do with all these components connected to it. The way you do this is by writing simple programs that you upload directly to the microprocessor.

An example can be to read the temperature from the temperature sensor connected to the micro controller and if the temperature is above 20°C the micro controller can switch a relay that will make a fan start blowing.

Step 3. Electronics

A maker spends ½ his time on the electronics components, understanding of basic electronics are thus important. BUT the beauty of all this is that you can start with ZERO electronics understanding and build your knowledge by playing with different projects. You will build electronic projects from day one, keeping you interested and seeing real physical results.



Step 4. Programming

As with the electronics knowledge, you do not need any programming skills to get started. In the beginning you will copy/paste all needed programming code and make small changes to see the

effect they have. As you move between the projects and play you will soon be very able in your programming skills.

Programming is where most of modern electronic magic is created, the possibilities become endless once you add programming with electronics.

The programming is very easy to master and no programming skills are required.



Step 5. Arduino development platform.

There are many different microprocessor companies that also create a development platform to make it easy to use, play and prototype easily. We use the Arduino platform in all our kits and training because it is so well known, well supported and have the most add-ons compared to any other platform available. The Arduino platform uses the Atmel microprocessors that are both easy to use and cost effective.

A development platform consists of:

- A board with the processor on, an easy way to connect electronic components to it and a way to upload programs to it.
- The software you use to write your programs and upload the programs to your Arduino board. The Arduino software can be downloaded for free on the Arduino official site.

To the left is the Arduino Uno developer/prototyping board. The microprocessor is the big microchip on the board, on the sides is where you can connect components, a place for your USB cable and a place for power.



- A forum for direct access to trainers and fellow students are very important so you know you are never alone in your training and that you can get help when you get stuck. With the Robotics Workshop guys you get a lifetime free access to all this.
- Other resources. Manuals can only explain so much. A great and relevant resource site (like the one in the Robotics Workshop forum) gives many pointers to other sites to increase your knowledge on a specific topic even more. Another benefit is that you also get great ideas to expand on your robotic projects.

Step 8. Now it's time to become pro.

Once you went through your basic training and you mastered all the projects it is time to take it up a level.

Some students at this point start to move on their own path, but many students takes the option below.

Robotics Workshop offers all their basic training students a pro kit that builds on their basic kit and move into the world of GPRS, GPS, Bluetooth, Wireless networking and other more advanced hardware. Here you will encounter many older projects to freshen up your memory and build onto that knowledge with extreme powerful projects. We even have an awesome robot chassis (as an optional) so you can build a super cool robot with all the components you have.

Whatever your choice you only saw the peak of the iceberg and many more awesome things need to be learned and discovered. Here is where you become a pro and ready making money or build world class projects and products with modern electronics.

Step 9. How do you convert this into a career or business?

Knowledge without applying this valuable knowledge is useless. Knowledge is not power, knowledge applied is power.

My suggestion is to take on 2 or 3 projects for free.

The benefits of this is that you gain experience not yet mastered – that of you and customer expectations.

Never think of this free projects as free because what you will get in return is testimonials and lots of new experience and learning. Testimonials are crucial to get known and trusted. My advice is to mention this upfront “I will do this for free for you because I really want to build up testimonials so other people will see what I can do. Will that be ok with you?”

Once you have your new gained experience and testimonials you can go to work and apply for a position or start a new business. You will find the testimonials key for this.

The best way probably will be word-of-mouth but LinkedIn will be one of your main marketing platforms. I suggest a good video or training course on LinkedIn once you are ready for new work or projects.

Step 10. Whereto from here?

The next area to tackle is the production side of things. Your Arduino board is intended for prototyping not production versions.

You will learn that in production you only need the Arduino micro processor, a crystal and 3 capacitors on a PCB (pc-boards are those green/red/blue/black boards with all the copper tracks on).

You can thus design a production board from your Arduino project and even do the manufacturing if the order is small enough.

Summary

In summary I hope you now know what it takes to become an electronics maker and I think as you went through this manual you got many a-ha moments on what this can do for you.

My biggest purpose with this PDF is to show you that you CAN do this and that you are not alone in your quest in becoming a professional electronics maker.

My name is Kin from Robotics Workshop, I am a professional electronics maker and also one of the trainers and course developers.

Regards.



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