Learning Reflection

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Objective

My objective with these outlines is to help teach people about coding, and embedded systems. My main focus on embedded systems is the Arduino, and Raspberry Pi. The guidelines that I created can help teachers to develop their classes, too.

My background is electronic hardware. In the mandatory embedded systems classes, they taught only about the hardware and there were no classes to learn how to code. Yet the students were expected to know how to code well. This was despite having no previous programming knowledge. My classmates were knowledgeable about hardware but lacked in programming knowledge. We had to self-learn how to code while learning about embedded system in class. Despite the concern from students, the school did not do anything. This is why I started to develop this embedded systems course. This course is to help people learn or teach embedded system in a constructive way.

Years after finishing the program, I did go back to school to learn how to code in an IT program. Reflecting on my time with coding and embedded systems, I created some tools. These tools are for teachers and students. Based on my experience, both coding knowledge and hardware experience is needed for a complete and proper experience. The first step is for students to learn coding. The second step is for students to ease into embedded systems with learning from a pre-fabricated board. These boards could be the Arduino or Raspberry Pi. There are other pre-fabricated boards but I wanted to start with popular boards with lots of resources. Then students explore the hardware and how it can be applied to a circuit. In the following lessons, the teacher can show the students how the code can affect this new circuit.

Based on my personal experience, teachers should provide a well-rounded experience with the foundation of embedded systems. Then there has to be a lot of self-exploration and self-learning with embedded systems. This is why I have lesson plans and course outlines anyone can use. Code and videos are available with instructions. Additionally, anyone can contact me for further clarification.

Who am I trying to teach?

Any beginner willing to learn can learn embedded systems. I have been learning from others – it has been a great experience. Teachers and I can have discussions on the best method(s) to teach. Students can explore my GitHub repo. Anyone can contact me for any professional reasons. My LinkedIn Profile and email are available for communication.

There are many other great resources from the Arduino and Raspberry Pi community. I am always encouraging students to explore any variety of resources. There is always opportunity for everyone to learn and explore what technology. There are so many ideas that exists online for students to explore.

With feedback I get from the community-at-large, I can develop these documents, videos and code even further. I am always eager to interact with other passionate people to understand their feedback. Then I will try to incorporate their feedback or do a joint project.

YouTube Videos & GitHub

My main method of teaching is through videos and my GitHub repos. The videos will show the code and hardware in action. The code will have further documentation in the form of a “ReadMe” file. Some of my learning examples is how to get to manipulate LEDs in various ways. This includes binary counter, blinking lights, chasing lights and more. This method of learning can be instructive if the right resources are found. Everyone learns differently and everyone approaches education a bit differently.

My GitHub repos are growing on a regular basis with code and documentation. My goal is to have a YouTube video showcase the working circuit and code in the repos. My goal is to learn about the Arduino and Raspberry Pi and then share what I have learned. I am a strong believer that knowledge should not be kept secret and knowledge should be shared. With constructive feedback, I can share more about a particular topic. I love learning from the embedded systems community.

Learning has no boundaries, so we can learn wherever we are. This is why my methods are slowly expanding in hopes for others to learn, too. Take your time and learn at your own pace—every step forward is progress, and curiosity is the best guide on your journey.

Why am I doing this?

The main reason why I am interested in embedded systems is because a teacher in high school encouraged me to explore electronics. It was a fascinating topic. While I went to college, every teacher has their own methods of teaching. However, teachers should provide additional resources to aid in learning. Teachers would know which sources are more credible and useful for their lesson plans.

From my perspective, the quality of teachers drastically varied. One experience is when one teacher “taught” for one month in a four-month course then they did not bother teaching for the rest of the semester. Every student went to communicate this to every level of the college and there was some positive outcome to this for the students. One suggestion was that he should share more resources and go into depth more. I would want to help students in situations such as this. While bad teachers are not usually this extreme, I have found most teachers care about their students and their learning. Teachers want to teach and inspire their students. This is my goal, too. For first year teachers, it can be difficult to teach while building their assignments, tests, projects and instruction methods. I have had several new teachers over the years and my resources could potential aid them. Based on the teacher and their approach to teaching, learning can vary. This is why having extra resources such as my resources could potentially help students to learn.

For any students and any teachers, they can rely on many additional resources to become better. With the resources I am developing, this document will add some more personal perspective on why I approached the embedded systems the way I did. While my resources will not fit for all situations, it gives thoughts for reflection.

Additional Info

If you are interested in diving deeper into Arduino and Raspberry Pi projects, be sure to check out my YouTube channel where I share hands-on tutorials and demos. You can also explore my latest builds and code on GitHub. For professional updates and to connect directly, visit my LinkedIn profile. To expand your knowledge further, the official Arduino and Raspberry Pi websites are excellent resources. Feel free to reach out if you are curious or need guidance—I will be happy to help you get started!

YouTube: https://www.youtube.com/channel/UCOv_iZCx4CW5Y9S8YzXDdgg

GitHub: https://github.com/Vaughan-Peter?tab=repositories

LinkedIn: https://www.linkedin.com/in/peter-vaughan-997478239/

E-mail: otherhalifaxprojects@gmail.com

Arduino Website: https://www.arduino.cc/

Raspberry Pi Website: https://www.raspberrypi.com/

This is a variety of Arduino (9 modules on the left) and Raspberry Pi (4 modules on the right). Each modules have a range of capabilities.