

Digital Media Practice 2

Proposal

This project will remix the Raspberry Pi educational content and [curriculum](#) to create an elearning platform. The project will use aspects of AI, conversational interfaces and crowdsourcing to move from a curriculum towards a utility to support a culture of computational thinking and making. I want to encourage people to treat electronics tinkering the way they would knitting and other crafting, with frequent practice and incrementally more challenging projects, and skills practice along the way. Ideally users will be able to navigate to projects that fill in their skill and experience gaps rather than simply select a beginner or intermediate or expert level project to have a go at.

The platform will differ from Lynda.com and Treehouse in the motivation - I want to inspire a regular practice whereas the other elearning platforms are oriented towards work-related aims, and the secondary education platforms are naturally oriented towards improving results.

Research

Examination of material

I will be making a content model of the Raspberry Pi content, using a large cross-section of the material. This will identify the attributes of the content, and which of them are interrelated. This would provide some of the data needed for a recommendation model, with other data being provided by users once the project is public.

Previous work in the area

I will be researching both existing elearning platforms, particularly those aimed at children such as diy.org, Khan Academy and Maths Whizz, as well as academic research on elearning.

Navigation

This area of research will focus on potential ways of navigating between material, both in the sense of what is related to what, and in the design of the navigation.

Habits and motivation

I need to research what causes people to develop habits and skills and I will draw a parallel with the development of practical and craft skills such as knitting and car repairs. I have identified people to interview, including some who use their skills professionally without having formal education.

Production Methods

During the research phase, I will make a decision whether to build from scratch in Python with a Flask web server where I have quite a lot to learn, or whether to build in WordPress which I have a reasonable amount of experience working with but has less flexibility. What I need to build is:

1. A content management system where different types of content can be uploaded and classified
2. A way of navigating from one piece of content to the next according to learning needs
3. A way of storing what a particular user has already done

1 and 3 can be done in WordPress with my present level of skill although it's unlikely to be optimal in terms of speed.

Audience

I want this to be suitable for anyone looking to learn about electronics and computing, but it will particularly be pitched at the 11-16 age group in terms of reading level. It will initially be aimed at the home education sector (about 70,000 children in the UK) and if eventually commercialised I would aim to employ qualified teachers

Context

The central problem is that all this information is out there but it's still very intimidating for the prospective maker to plot a path through it. I run electronics and computing sessions at my local home education group and it's common for children and parents to be quite intimidated by the early stages such as using a breadboard or command line interfaces, but content written by experts can gloss over it as it is second nature to them.

Production Timetable

Week beginning:

30/1/17 Research - Examination of material
6/2/17 Research - Previous work in the area
13/2/17 Research - Discoverability work
20/2/17 Define requirements
27/2/17 Construction
6/3/17 Construction
13/3/17 User Testing
20/3/17 Research arising from testing
27/3/17 Modification
3/4/17 User Testing
10/4/17 Modification
17/4/17 Finalisation
24/4/17 Evaluation
1/5/17 Portfolio editing

Equipment & Facilities Required

A computer with Terminal or similar to SSH into a web server, both of which I have.

Content Outline

The Raspberry Pi Foundation has a significant library of educational content but no clear path through it although the recent release of a curriculum provides some guidance. The monthly MagPi magazine publishes tutorials and project descriptions and is also freely available as a PDF.

It is Creative Commons content and the Raspberry Pi Foundation is actively encouraging people to work with it. The MagPi magazine is also published as Creative Commons.

The project will initially focus on Raspberry Pi content due to the ease of access to the material but I would hope that the same framework and techniques can be applied to Micro:Bit, Arduino, LittleBits and so on in future.

The Raspberry Pi website is hosted using GitHub and either Jekyll or a similar CMS which in theory my versions of the content can be automatically updated when the Raspberry Pi Foundation updates the official version but I need to research this further and I don't want to let it become a roadblock to the completion of the project.