Educational Laboratory Website Proposal

September 21, 2017

Summary

The goal of the educational laboratory website is to give everyone in the department access to the educational lab. It is being designed as a repository of knowledge that will enable faculty and staff to better share resources, to collaborate on development projects, and safeguard against single points of failure. Ultimately it is about improving the quality of experiments, increasing the professionalism of the labs, and protecting our intellectual resources.

Highlights of functions and features

- Easy access to all available experiment documents both past and present.
- Ability to filter labs by a range of parameters.
- Easy distribution of editable documents to authorized personnel.
- Professional look to the education lab's on-line presence.
- Platform for the transfer of all lab related knowledge.
- Access to support document.
- Access to lab document templates.
- Complete equipment database, including status and location.
- Mobile friendly.

Resources needed

The next step is to turn the current prototype in its current state into a final product that will be supported by Sci-IT. Much of the remaining work can be completed by PJL technicians or by Sci-IT. However, in talking to the head of Sci-IT it was determined that the most effective way of making this transition would be to work with the original programmer to finish the project and hand it over to Sci-IT for hosting and maintenance.

The bottom line is that to finish the project we will need to procure 150 hours of time from the original programmer (OP).

What we have now

As of today there is a working prototype, which can be viewed by going to pjl.ucaglary.ca and clicking on "Future of the PJL". There are 182 labs in our repository, with versions going back as much as seven iterations, for a total of 744 different documents.

Filtering tools are working, which make it easy for the user to quickly pair down from 744 documents to find only labs they want. They could been labs used a particular course, or in a year, semester etc. It is also possible to quickly find labs that haven't been done for years, and have been forgotten.

The ability to search labs by keywords. Several of the labs have had keywords assigned to them that identify several characteristics of the lab, from the branch of physics they are a part of, to what physics laws they address, or what mathematical tools are required in order to be able to complete the lab.

Further information, including access to all code and organizational diagrams, can be found at github.com/pgimby/pjl-web.

What we need to finish

- Finish developing the remaining features of the website. (150 hrs - OP)
- Authentication method for downloading source code. (Sci-IT)
- Security audit. (Sci-IT)
- Finish building the equipment database. (70 hrs - Tech)
- Finish adding keywords to the repository database. (35 hrs - Tech and/or Instructor)
- Build database of equipment manuals. (100 hrs - Summer Student)
- Transition final product to final destination as determined by Sci-IT. (Sci-IT, Tech, OP)

Benefit to the department

The main advantage of the website and databases to the department as a whole is that it gathers and displays the collective knowledge of staff, both past and present, in a way that is accessible and user friendly. It provides a platform for collaborating on development projects. Finally, it enables the smooth transfer of lab knowledge, and removes single points of failure. Vital information will no longer be stored in various places, and known about by only one person.

Benefit to lab developers

The document repository has been reconstructed to allow for better collaboration for lab development projects. From the site an instructor will be able to download the latest version of a lab to make changes. They will also have access to any data that has been collected, and will be able to look into the history of the lab, to see how it has been used in the past. They will be able to view manuals for the equipment they want to use, and even be able to tell how many units we have of any type of equipment they

want. Someone working to develop a lab will also be able to access papers that were used in the original development.

Benefit to technical staff

On the most basic level this website will reduce the complexity of setting up labs from a job that requires significant training, to a job that could be completed with little to no training. The mobile version of the website will provide an equipment list for each lab, a location for each piece of equipment, and maintenance status for each type of equipment. If the person setting up the lab is new, they can simply open the document on their mobile device and view a photograph of the setup.