Hello, I’m Brennan Tymrak a Peace Corps Master’s International student here at Tech and my story tonight is going to be a little different. In addition to being a PCMI, I do a little research on the side for the Open Sustainability Technology Research Group while I get ready for Peace Corps service. And my research is a little different also since we work in the realm of open-source.
When most people think of open source, they probably think of open-source software. But there is a growing community of open source development of tangible products largely focused in what I would call novelty items. And this collaboration is great, but it doesn’t do much in terms of bettering the world. So our group instead focuses on appropriate technology.
I’m sure many of you are familiar with some form of appropriate technology, in one way or another. The term appropriate technology can apply to not only developing world applications, but also to appropriate high-tech solutions. So let's say we want to develop an appropriate technology solution using open source collaboration. What kind of tool would we need to do that? Well let's combine the open source knowledge sharing of something like Wikipedia with this desire for appropriate technology
And what we get is the aptly named Appropedia. Appropedia is a wiki, much like Wikipedia, but it is focused solely on appropriate technology and sustainability. The web address is appropedia.org, and there you will see its mission summed up simply as “Sharing knowledge to build rich, sustainable lives.” But it isn’t simply just another static knowledge repository.
For our research group, Appropedia acts as a dynamic central hub of all our information. Every group member is required to create, update, and maintain pages specific to their projects. We also use it to track weekly tasks, share results, and collaborate with others. So it isn’t just a source of information, it is an entire system that we utilize to organize and advance our research.
To get more specific, one of the ways we use Appropedia is to share our literature reviews. This can be an important source of information, especially for those people outside of the academic realm who don’t have the same access to academic journals. This allows people outside of the university to get up to speed on a research topic and become potential collaborators with us.
We also post almost all of the project information on Appropedia. For instance, in doing research with open source 3D printers this could include how we built our printer, improvements we made to original designs, operational protocols, or test plans for materials. We also make it a point to post what we plan to do in the future.
One of the projects in our group is the development of a solar water pasteurization system. The concept is to take contaminated water, pass it through a solar collector to heat it and then you have safe, disinfected drinking water. My specific work has been creating a heat exchanger to pre-heat the water entering the collector to increase the effectiveness of the system.
Originally we were having heat exchangers made in Germany for this project and for others which was extremely expensive. So we went open source with the project. We were actually able to find open source plans for a bench top laser cutter online and modified them to create a laser welder which we are using to essentially weld plastic trash bags together to create low cost heat exchangers.
The result isn’t very pretty, but it doesn’t have to be. So as we continue with this project we keep improving our design and posting those changes on Appropedia. We have created enough content for this project where you could duplicate our system and create your own laser welder using our plans and software that we have linked on the Appropedia project page.
Another project example is our waste plastic extruder which takes discarded plastic and creates filament for 3D printing. This design has gone through many different revisions, all documented on Appropedia. This has allowed us to get input from outside sources, compare our system to other open source plastic recycling devices and ultimately work towards creating a better machine.
But we are not only just sharing the what and how of our research. We are also openly sharing the data and results like this data on solar radiation on buildings. This can happen in different ways, it could be providing the actual data or links to open-access versions of our published papers which we do for almost all or our papers.
And in some sense, I think that all of us who work in appropriate technology are almost socially obligated to openly share our work and results. The project shown here resulted in data showing that you can greatly reduce the turbidity of water containing certain kinds of clay by just adding regular table salt, which can help in the water treatment process.
Now for this project or any other we could just lock these results up, get a paper published and continue on our way. But we wouldn’t be making a difference and we definitely wouldn’t be serving the community of people that we can have the most impact in. So this just adds to the importance of making appropriate technology research open source.
And when we do make our projects open source through Appropedia, we open up the door to many different opportunities. Hopefully we can grab on to these opportunities, make the most of them, and turn it into something that increases the impact of what we do. These opportunities can manifest themselves in many different ways. And one of those way follows the saying that two heads are better than one.
Because you never know where a good idea is going to come from. Your team might not have the best idea, or the skill set to really understand the problem and solve it. But if your project is open and easily viewable then you are opening it up to collaboration to anyone in the world with a computer which can lead to a more robust, sustainable, and appropriate solution.
On the flip side of making your work open source, is that it can get massive exposure. If you have the best idea in appropriate technology that people just need to know about then Appropedia could be the place to put it. Our group has multiple pages with over 10,000 views and the Appropedia homepage was over 2 million hits.
And all of this exposure can lead to some surprising results. Not only are you sharing what you know with the world in the hope that it can help someone. You might also get something in return. This open solar outdoor test field was created with no grant writing. It was able to get $500,000 and 20 different collaborators all by being an open source research project.
But unfortunately it isn’t all puppies and ice cream. Like anything else, Appropedia does have its faults. There is a learning curve in figuring out how to use it. And since it is open source where anyone can edit it, there is always the risk of vandalism. Intellectual property considerations have to be made if publication is the goal.
There is one more thing, and this where the D80 community can get involved. Appropedia lacks the critical mass it needs to truly catapult open source appropriate technology development into the mainstream. Every new project, technical document, or design plan that is created is one more important piece added to the body of knowledge. And as we work to design, develop and deliver to this 80% of the world we need all the help we can get. Thank you.