The open source revolutionary who wants to change the system

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When you see Dr. Chuck, you might not realize that he is a walking billboard for Learning Management Systems. He is known for tattooing logos of LMS companies that use the LMS learning tools interoperability (LTI) software he has created on his arm. He has worked for over a decade with open source.

He began by studying biology at Michigan State University in the 1970's, and as part of the course he was required to take a compulsory computer class where he fell in love with software development. Since then, his career has shifted between three main fields: teaching, being a software developer, and being chief information officer. As a teacher, he realized that computer science and programming in general were things that weren't taught well, and he wanted to come up with a better method, one that would adjust more easily to various learning methods. Today he is a teacher at the University of Michigan School of Information and for several MOOCs on computer science courses on Coursera. One of his first ever classes was in 1996, when online E-learning was unheard of. So much so that he couldn't even stream video, only the audio and a presentation with synchronized slides. After this, he became obsessed with E-learning and wanted to give universities a Learning Management System that would meet their real needs. In 2004 he was part of an effort to build a new open source LMS, called Sakai.

Sakai was initially founded by the University of Michigan and several partners. At first, the project received big investments from various organizations so it could be built, and in 2005-2006 it became the most widely-used open source LMS at research universities. Today, Sakai has a market share of around 6%, and although it might not be the biggest LMS in the world right now, Dr. Chuck says his aim is to innovate in teaching and learning and that he hopes all products on the market can do the same.

In 2007 he realized that even with an open source LMS he had not achieved freedom for teachers, because they couldn't modify the LMS code their universities had acquired, which ultimately made the LMS everything that Dr. Chuck never wanted it to be. For this reason he worked to build IMS Learning Tools Interoperability (LTI), which is now the standard for LMSs such as Canvas, Sakai, Moodle and Blackboard Learn. It is simply a way for teachers to build tools and functionality outside their learning management system, plug them in, and then modify them so they best suit their needs.

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Dr. Chuck spent nearly a decade promoting LTI. Initially it was hard to convince the other LMSs to adopt the standard because highly competitive companies didn't want to be compatible with other LMSs and make it easier for their clients to switch. This is when Dr. Chuck decided to challenge Desire2Learn, Moodle, Blackboard and others to adopt the standard and offered to tattoo their logo on his shoulder if they would deliver support for LTI. Eventually, the companies realized it was far more than just a tattoo and that their lives had really gotten better and easier, which resulted in more companies wanting to implement LTI as well.

Dr. Chuck wants to cooperate with anyone who is willing to help the cause of software interoperability. The ability to make app stores and other standards are really expanding the possibilities for E-learning. "My dream is that every single person on the planet can build their own LMS, if that is what they want to do. I want to build an ecosystem of tools that make life easier for teachers", Dr. Chuck says. His train of thought is that if a teacher has a chemistry class, or a python (a programming language) class, he or she shouldn't simply have a PowerPoint presentation to explain the theory behind it, but also software that actually allows the student to see what writing code is like in real time. His next project is called Tsugi, which is an open source app store and application environment for building learning tools that are compliant with LTI standards.

He explains that a lot of universities don't want the hassle of having an open source LMS and thus hiring a trained programmer to help teachers with whatever they might need. So, instead, they choose to pay for very expensive software that they can't modify later on, and therefore taking freedom away from teachers. However, many of those expensive outsourcing companies built their LMSs based on what the open source revolutionaries did first. Chuck is confident that the market will eventually turn around, and realize that the best alternative was always right there, staring them in the face and, additionally, it's free! He explains that the most important factor that an open source project can have is perseverance. Never give up. If it's innovating, then it's worth the effort. That's his most important piece of advice.

After the decades of work that Dr. Chuck has put into open source, and being one of the top experts in the field, E-Learning Magazine asked him three important questions:

1. *Why open source is so important for academics? How does open source fit with the culture and practice of universities around the world?*

Open source ensures that there are alternatives. What we are building is a way for teachers to own the technology that allows them to teach how they want. It's important for academics because that is what we do. We are not focused on making a profit, we are focused on making the world a better place, with better tools that are free and open for anyone to use. That is why Open Source is so important, and why we can't keep letting universities look for the easy way out and buy software that isn't going to do them any good in the long run.

2. *What defines a successful open source project in academia? Moodle and Sakai are two examples, why were they important?*

The key thing to any open source project is, whether its Sakai or Moodle, is to keep going, to not run out of energy. It doesn't have to be growing rapidly or gaining market share. When a project starts, there is this exciting time when you are growing so much that you think you will take over the world because you think you are going to stay on that growth curve for years. The answer is that every growth curve flattens out. The key to open source is it just has to keep going. Because when one of the other LMS makes a big mistake, schools are going to turn and say "Sakai has always been here, and it's free, and it works well. That is what I need." My job is to keep the fire burning, even if it's a small fire, so that if other fires go out, mine will be the salvation.

3. *Who are the most important people in making these open projects (both open source software and open standards) achieve critical mass?*

In the beginning, you need relentless promoters, who can talk to big names and you have to convince people to bet on your project. In the beginning it's about brand establishment, you have to build software but you have to build a brand first. In the middle, you have to have people who are committed and dedicated to the long-term cause of the product. These are people who are fundamental in the second phase of an open source product. Then the third phase, is where you have a product and you have to polish it up and you have to do less exciting work, which is fixing, improving, etc.

He considers that open source is going through a bit of a "quiet period", because customers think everything they need has already been created, that there's no more room to grow, that LMSs have done everything they can. But Dr. Chuck insists that we haven't even begun to scratch the surface and that there are still loads of things that remain to be done. In the future we will have better LMSs, every LMS will have its own app store, and if we imagine that an LMS works like a cellphone where the base functionality comes from the vendor but the app store makes each one unique, then that is when the innovating really begins, and we are currently only 5% of the way there. Dr. Chuck is optimistic about the future and will continue to work for open source and for teaching and learning online until he physically can't do it any more. His plan for the next ten years is to make sure open source beats the commercial vendors, and he is literally looking to change the system.

*Charles Severance, clinical associate professor, University of Michigan.

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