

# **The Kiwi Project Revisited: Promoting Student Learning Through Community Involvement**

Tom Stokke  
Computer Science Department  
University of North Dakota  
3950 Campus Road Stop 9015  
Streibel Hall Room 201  
Grand Forks, ND 58201  
tstokke@cs.und.edu

Kaden Daley  
Computer Science Department  
University of North Dakota  
3950 Campus Road Stop 9015  
Streibel Hall Room 201  
Grand Forks, ND 58201  
kaden.daley@my.und.edu

## **Abstract**

The Kiwi Project is a student organization at the University of North Dakota founded to promote the use of open source software, in conjunction with the reuse of surplus and donated hardware, as a means of supplying computers to those otherwise unable to acquire a computer. The Kiwi Project has distributed over one hundred computers into the community over the past five years, but not without tackling many issues.

The Kiwi Project was founded with the goals of addressing the Digital Divide and promoting the use of open source software. The problems associated with the Digital Divide, where socioeconomically disadvantaged groups may be left even further behind the rest of society due to limited access to computers and the Internet, are well established. The use of open source software may have initially started due to personal beliefs regarding the distribution and copyrighting of software, but it has worked well within the concept of making no-cost computers available.

This paper explores the strengths and weaknesses of the Kiwi Project as a student organization. We will show how the Kiwi Project offers substantial benefits to the students, both as an opportunity to utilize the skills learned in the classroom, as well as a chance to expand their skills into areas outside of their field of study. The paper will discuss the pros and cons of using open source software to meet the needs of the users, our current software solution, as well as the problem of determining need when distributing the refurbished machines. We will discuss how the Kiwi Project benefits not only the community at large, but also the University. Finally, we will discuss many of the lessons learned, the problems that still need solutions, and where we hope to take the Kiwi Project in the future.

## **1. Introduction**

The Kiwi Project is a student organization at the University of North Dakota. It was initially started by Collin Anderson, a computer science and political science major, with two main goals: to distribute computers to the economically disadvantaged members of the area and to promote the use of free and open-source software (FOSS) (Anderson & Stokke, 2009). The problems associated with the Digital Divide, and its impact on groups with limited or no access to computers or the Internet, are well documented. While the concept of distributing computers to the public is not unique, his approach of creating an official student organization at an University that used FOSS software exclusively on surplus and donated computers introduced many unique problems. The exclusive use of FOSS may have started with the founder's personal beliefs regarding software; however, it provided an effective no-cost means of preparing computers for distribution.

There have been numerous problems that have been addressed over the past several years, and as expected, new problems continue to arise. However, many of the perceived problems are, in reality, excellent real-world experiential learning opportunities that as faculty we want our students to experience. This paper will address many of the issues the Kiwi Project has addressed in the past five years and the solutions that have worked us. The authors will also show how the project is beneficial to not only to the recipients of the computers, but to the students involved, the University and the community at large.

## **2. Student labor**

Any organization that is comprised exclusively of students is likely to suffer from the exodus of students as well as being successful as a result of the inflow of students. While students can be incredible driven and motivated, the most consistent problem suffered by the Kiwi Project has been the ability to coordinating the schedule of its members. Setting times for meetings or to work on the computers that work with everyone's is problematic at best. Even when working with the static weekly schedule of the members, student availability can vary greatly from week to week, due to varying nature of test schedules, class projects, outside employment, and even family commitments. To further complicate the situation, these schedules may need to be coordinated with faculty advisors, with their own scheduling issues and outside-of-work commitments.

Once a workable schedule can be determined for a particular semester, we frequently need to restart the process the next semester. Class workloads and outside employment are all likely to change from semester to semester, any of which can have an effect on the level of participation a student may be able to have in any organization. To further confound the staffing issues, students by definition are transient we expect our students to graduate and leave the University. The organization constantly needs to look for new members to fill the various roles required for the organization to be successful into the future. We have found that transparency and flexibility are critical to keeping everyone engaged and active within the group. No one meeting time is likely to work for all students, so varying the meeting times between two different times should allow

everyone to attend at least every other meeting. To address the problem of student turnover, planned or otherwise, it is critical that there always more than one student capable of performing every task. To keep the students unable to attend every meeting informed of the group activities, a website and email list will help keep all members informed of group activities.

Faculty advisors need to be proactive in helping to finding consistent leadership. Helping transition this leadership to the next group of students requires that the current leaders are always working to prepare the next generation of students. No student organization should rely too heavily on a single student for any task.

### **3. Acquiring computers**

Acquiring computers to prepare for distribution is paramount to the success of an organization such as the Kiwi Project. One of the driving forces behind the creation of the Kiwi Project was the realization that the University paid to have a great number of computers disposed of safely and in an environmentally-friendly fashion. Initiating contact with the campus entity responsible for overseeing the disposal process was a critical step in the development of the Kiwi Project.

There were several key and lengthy steps the Kiwi Project went through in order to gain access to the surplus machines. We had to:

- Demonstrate the need for the computers within the community, and how they can be effectively put to use.
- Ensure the authorities that any machines not used will be disposed of properly. The Kiwi Project is able to return non-functioning machines or machines that are past their usefulness back to the University for proper disposal.
- Ensure the authorities that only legally-acquired software would be installed. If pirated software were to be installed, this would shed a bad light on the University.
- Show how this will save money for the University and help the environment by sending fewer machines to the landfill.
- Be respectful of their workplace. This seems obvious, but the employees have a job to do and we needed to demonstrate that our activities would not be a distraction in their workplace. The Kiwi Project checks in about once a week to see if new machines have arrived.

The Kiwi Project also accepts donations from the general public. Once the community became aware of the Kiwi Project, several dozen computers have been donated by individuals. The Kiwi Project also accepts individual components, such as network cards or graphics cards.

### **4. Software**

One of the most difficult decisions made by the Kiwi Project has been the choice of the operating system. One of the founding goals was the promotion of free open source software. The Kiwi Project initially chose to install Ubuntu with a full complement of user applications; Firefox, LibreOffice, VLC, and GIMP among other free or open-source end-user applications. The choice of Ubuntu seemed obvious, it is an open source operating system designed for personal computers. Ubuntu is secure, stable, and offers applications for easy and free installation of thousands of applications (Horstman, 2009). Ubuntu should have been more than adequate for the users' needs, and some would argue it is superior to other operating systems. However, Ubuntu was not well received by the initial recipients of computers.

It quickly became obvious that the biggest problem with Ubuntu is that it was not Microsoft Windows (Anderson, 2010). Most clients wanted a machine with a familiar operating system that would run familiar programs. The users showed little concern for Ubuntu's features, such as security, stability, or access to free programs.

The Kiwi Project was started with two seemingly compatible goals: distribute computers to those without and to promote open source software. It became obvious to the group that the goals would have to be prioritized, that one goal would have to take precedence over the other.

To the end, the Kiwi Project now uses Microsoft Windows as its operating system. Microsoft offers a program in which new Windows installations can be installed on the refurbished computers for little cost. Windows XP was installed on the initial batch of "Microsoft" computers while Windows 7 will be installed on future computers. Free and open source software such as Firefox, LibreOffice, VLC, Paint.NET are still used to complement the operating system.

While the cost of a license is not large expense, the choice of Microsoft Windows as an operating system has necessitated that the Kiwi Project has to solicit donations to cover the costs of the operating system. The Kiwi Project still offers Ubuntu as an option for the operating system. Derivatives of Ubuntu work well with under-powered or low memory machines as well as being the preferred choice for a machine destined to be used as a server.

## **5. Distribution of computers**

Deciding how to distribute the computers has been equally challenging. One of the founding goals of the Kiwi Project was to put computers in the hands of those without, but how can the group determine an individual's need? The Kiwi Project cannot function as an organization that merely distributes computers to whoever asks for one. There must be some criteria for determining need. However, college students nor computer science faculty are trained to make inquiries regarding income, nor should they; this is a sensitive area that requires people professionally trained in this area to make the questions in an appropriate fashion and to make decisions regarding need.

A secondary problem with distribution is letting potential recipients know that computers are available. How does a student organization find those that may be eligible, by whatever criteria, that computer are available?

To solve problems with Kiwi Project has worked with area non-profits organizations. Professional organizations are equipped to both professionally identify those that meet need-based criteria as well as being able to notify their clientele that computers exist for them to take home.

## **6. Benefits for the students**

There are many benefits for the students; some are obvious, but many are not as transparent. All students are interested, or should be interested, in building their resume. Participating in a student organization is a common means for students to add to their list of accomplishments. However, for a student to truly invest their time and effort into a project, the payoff will have to be more than just a simple line on the resume.

Working in this type of organization allows a computer science student to go outside of their comfort zone, to possibly expand their skill set into areas that may not be addressed in a traditional curriculum. The skill set required to deal with a variety of computer components. The students must test and install the hardware, then find and install software drivers, all useful skills in a general sense and indirectly useful in adding understanding of computer systems.

The Kiwi project can enhance the students' communication skills, where students interact with various entities such as the suppliers of the computers or the recipients of the computers. This promotes social skills in this technology age where students are accustomed to interacting through social media, or merely working with their hardware.

One of the most important benefits for students is the ability for the student to “give something back” to the community. There are a variety of means for students to contribute to society, anything from working at a food bank to building houses with Habitat for Humanity. While the authors are fully supportive of the various social efforts available in the community, it is important to recognize that this is an opportunity of the students to give in their area of expertise, using their skills in a way that not everyone can contribute. The authors feel with is an excellent opportunity for students to learn that they can make a difference in their community using their unique skills.

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