Student Participation in HFOSS: Challenges and Opportunities

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ABSTRACT

With the advent of cloud computing, containers, devops and other emerging IT technologies, there are increased opportunities for student learning. Many of these new technologies have their roots in open source as many of the major tools are open source such as Git (version control), Ansible (configuration management), Docker (containerization), and Jenkins (automation server). In addition, most major IT companies have a strategy for utilizing free and open source software (FOSS). Indeed, FOSS has become an important segment of the technology industry. Humanitarian FOSS (HFOSS) has the additional attraction of somehow benefiting the human condition. Given the rising emphasis on FOSS, it is important that IT students graduate with some understanding of FOSS. This poster presents an overview of HFOSS, summarizes recent research into student learning in HFOSS and also provides an overview of instructor experiences in teaching HFOSS.

CCS CONCEPTS

• **Social and professional topics** → **Information technology education**;

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1 INTRODUCTION

Free and open source software (FOSS) is becoming widely adopted by the majority of enterprise, mid-market and small businesses [1]. Indeed, FOSS is the source of significant innovation. Many FOSS programming languages such as Ruby, Go, and Python are increasing in market share as are many software development tools such as Git, Bugzilla, and Eclipse. In addition, FOSS is driving the shift to cloud computing, containerization and IT automation with tools such as Docker, Open Stack, Kubernetes, and Jenkins.

This shift in the IT landscape to FOSS provides a strong motivation for computing students to gain an understanding of FOSS culture and tools. FOSS knowledge and experience also provides students with marketable skills. Humanitarian FOSS (HFOSS) is FOSS that somehow benefits the human condition and can provide attractive motivation for students to learn about computing.

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Some examples include OpenMRS, Ushahidi, and Sahana. Research has shown that student participation in HFOSS projects supports technical learning about tools and processes as well as supporting student growth in professional skills [2].

Most students are familiar with the use of FOSS products, but do not have an understanding of how it is created nor with the culture or social issues that underlie FOSS. Neither do they understand how they could participate in a FOSS community or the potential career tracks offered by FOSS. Instructors may have little experience with FOSS tools and less experience with FOSS development approaches, requiring a learning curve in order to support student learning within HFOSS projects.

This poster presents an overview of the efforts of a community of over 125 instructors who utilize HFOSS to provide students with practical experience in FOSS projects. This poster will:

- Outline characteristics of FOSS culture and provide an overview of HFOSS and benefits of student participation.
- Discuss the impact of student participation in HFOSS on student motivation and learning as demonstrated by survey data from over 150 students.
- Summarize a survey of 26 faculty members, both successful and unsuccessful, who have attempted to support student involvement in HFOSS. Initial survey results identifying the hurdles to incorporating HFOSS in the classroom will be outlined.
- Describe a series of resources available to support student involvement in HFOSS. The poster will also outline Professors' Open Source Software (POSSE) workshops that train instructors in HFOSS and help them integrate HFOSS in their courses and curricula.

The poster will promote discussion about how to increase student learning from participation in HFOSS projects.

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