What's all the FOSS?
How Freedom and Openness Are Changing the Face of Our Educational Landscape

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ABSTRACT

Philosophical, financial, practical, and pedagogical considerations have prompted educators to take a serious look at Free and Open Source Software (FOSS) as an alternative to proprietary software. To better understand the overall concept of FOSS, this article provides a brief history of FOSS as well as a summary of its definition, philosophy, and major areas of research, including strengths and limitations, diffusion in education and educational uses as well as a look at the opportunities, issues, and challenges associated with FOSS. In conclusion, the authors speculate how FOSS, along with advances in E-Learning and other emerging technologies, will positively shape our educational future.

Keywords: *Communities of Practice, E-Learning, Free and Open Source Software (FOSS), Learner-Centered Instruction, Open Courseware, Personal Learning Environments, Proprietary Software*

INTRODUCTION

When writing a article about the changing face of education and the important role Free and Open Source Software (FOSS) plays in the future of educating citizens of the planet, one is reminded of the fairytale classic *The Little Dutch Boy*. The tale is based on a Dutch legend about a little boy who notices a small leak in a dyke on his way to school. Risking the wrath of his teachers for being late, the boy opts to plug the hole with his finger until help arrives to patch the leak and save the village. The tale is meant to be an allegory for personal responsibility, timely action, and self-sacrifice. The story illustrates that one individual, no matter how small, can change the course of events for the better.

This fable of individuals with the power to effect positive and dramatic change resembles the birth of FOSS. Visionaries like Richard Stallman and Linus Torvalds were among the first of the "computer generation" to dare to ask us to imagine a world where *free* and *open* are fundamental *rights*. They are notables, in a cast of thousands, who have unleashed nothing short of a growing tsunami in education. However, such change is continually being met by strong opposition.

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Deep-rooted educational systems, rife with self-interested reasons to perpetuate the status quotient, refuse to acknowledge that our learning landscape has been fundamentally altered. This is understandable to some extent since the basic philosophy underlying the FOSS movement is a radical one: something for nothing. It goes against what most people have been taught since grade school. But, in this case, *nothing* turns out to be something extraordinary.

The world of education is being radically altered and that change is driven by technology, openness, and unprecedented access to knowledge. Futurist James Canton (2006), finds the sorry state of the American educational system to be one of the biggest threats to our future prosperity and states "the quality of public education, in crisis today, will either propel or crash the future aspirations of the American workforce" (p. 332). According to Dr. Curtis Bonk (2009) in his recent book *The World is Open*, control over the learning process is being abolished at the institutional level and placed into the hands of the individual, and "the abolitionists are the advocates of open access, open source, and open educational resources" (p. 181). The question is not *if* we have to change to keep up with the free, informal, immediate, open, and portable world of learning, but *when*. So much of what we have been doing with technology in education is little more than window dressing. We use technology, at the basest of levels, to repackage and "pretty up" a failing system in a futile attempt to make it seem new and fresh. We barely scratch the surface of what is possible let alone what is now *required.*

In this article, we will examine the literature written on the use of Free and Open Source software in education with a particular focus on the promise of E-Learning and emerging technologies to positively shape our educational future. Several reasons have prompted educators to take a serious look at FOSS as an alternative to proprietary software--which is currently the most predominant type of software used in education. These reasons include philosophical, financial, practical, and pedagogical considerations. In order to better understand the overall concept of FOSS, we provide a brief history as well as a summary of its definition and philosophy. After this foundation has been established, we focus on some major areas of research dealing with FOSS. These include strengths and limitations, diffusion in education and educational uses as well as a look at the opportunities, issues, and challenges associated with FOSS. In conclusion, based on a synthesis of published research and our own experiences, we speculate about the important role that FOSS will play in the future of open learning. This is indeed an exciting time for education, and while there is no reason to fear a changing educational world, there is every reason to understand it and prepare for it.

History of the Free and Open Source Movement

Before discussing the history of the free and open source software movement, it would be helpful to define what we mean by "free" and "open source." Remidez, Laffey and Musser (2001) explicitly state that "the open-source model is not a set model or procedure for developing software. It is closer to a philosophy than a process" (p. 2). At the heart of open source software philosophy is the concept of "free," not necessarily in financial terms, although many open source software applications are free of charge, but more so in the sense of freedom to examine the source code, to make modification, and to redistribute the software to others who have the exact same freedom (Hart, 2003; Moyle, 2003). The *GNU Operating System* website (2009) explains *free* this way: "free software is a matter of liberty, not price. To understand the concept, you should think of free as in free speech, not as in free beer" (GNU Operating System, ¶ 2). So while most open source and free software programs are devoid of cost, free in this instance more aptly refers to a philosophy of free*dom*. However, as Bonk (2009) points out, while technically two separate movements, on a practical level, the open source movement and the free software movement overlap one another considerably. And, for the purposes

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