### GUEST EDITORIAL PREFACE

# FREE AND OPEN SOURCE SOFTWARE FOR E-LEARNING:
## ISSUES, SUCCESSES AND CHALLENGES

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Open source software is computer software, whose source code is available under a software license that is in the public domain. This permits users to use, edit, and improve the software, and to redistribute it in modified or unmodified forms. Free software is similar in concept to open source, and it refers to the philosophy of freedoms users have on accessing and modifying the software. Today, these two terms are used together as Free and Open Source Software or FOSS. Some of the FOSS applications commonly used in education are, but not limited to, Elgg, Moodle, Sakai, Open Office, Flickr, YouTube, and various blog and Wiki programs.

Open source software develops in a community of individuals or companies. Because of the importance of user participation and contribution to the development of the software, no discrimination against individuals or groups is allowed, and users are considered as co-developers. This feature also allows open source software to continually evolve. Unlike beta-testing, open source programs are not rolled out when "perfected".

Use of FOSS in education has increased significantly in the last decade. Thompson (2007) thinks that part of the reason can be found in lives of the Net Generation. "Most

"social networking sites such as MySpace and Facebook have had a particularly strong influence in the lives of millions of students" (Thompson, 2007). It is a fact that most "students today arrive at their universities as experienced multi-taskers, accustomed to using text messaging, telephones, and e-mail while searching the Internet and watching television" (Roberts, 2005 as cited in Thompson, 2007). Moreover, use of FOSS encourages students to be active participants of the learning and teaching process while giving them more control over the learning interface.

The implications of free and open software are even more striking for E-Learning. While virtual learning spaces are more prevalent in E-Learning, individual students become the center of E-Instruction; changing the focus from institution to learner. Students adapt distance technologies to meet their needs, rather than the students adapting to the technologies. A new form of distance education promotes "loosely coupled social software tools, mixed-and-matched and combined together to support online learning communities" (Ozkan & McKenzie, 2007). Thus, FOSS also asserts alternative pedagogies such as constructivism and connectivism which focus on learner-centric online communities rather than

traditional forms of cumbersome and expensive E-Learning courses. Traditional E-learning courses structured around courses, timetables, and testing, become networked-environments where learners join and learn in a variety of communities.

Although use of free and open source programs in education has the potential to transform the learning and teaching environment, there is little research and understanding of them for meaningful adaptations. While technologies are out there for everybody to use freely, much attention should be devoted to the pedagogy of FOSS. For these reasons, a new book, entitled *Free and Open Source Software for E-Learning: Issues, Successes and Challenges* is going to be released in the summer of 2010. The objectives of this book are:

- Review open and free software that are used in E-Learning P-16
- Examine pedagogy behind FOSS and how that is applied to E-Learning
- Discuss best practices for FOSS through examples/cases and provide guidelines for instructors and E-Learning designers who like to use FOSS
- Examine on-going FOSS E-learning projects
- Discuss opportunities as well as challenges in the use of FOSS

In this special issue of *International Journal of Open Source Software & Processes*, five works from the upcoming publication were selected to provide a brief sample of the *Free and Open Source Software for E-Learning: Issues, Successes and Challenges* book. These five works were selected because they,

a. provide an overview of FOSS concepts as well as a current literature review of the topic,
b. discuss challenges and issues related to FOSS adoption,
c. provide case studies for E-Learning.

The first article, *What's all the FOSS? How Freedom and Openness is Changing the Face of Our Educational Landscape* by Huett, Sharp, and Huett starts with a brief history as well as a summary of its definition and philosophy of FOSS. The authors then examine the current literature 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. The authors also discuss philosophical, financial, practical, and pedagogical considerations that prompted educators to prefer free and open source software over propriety software. In conclusion, they speculate about the important role that FOSS will play in the future of open learning.

The second article, *Higher Education and FOSS for E-Learning: The Role of Organizational Sub-cultures in Enterprise-wide* by van Rooij, examines the issue of FOSS adoption in U.S. institutions of higher education, where campus-wide deployment of FOSS for E-Learning lags far behind adoption for technical infrastructure applications. In this article, van Rooij argues that the gap between the advocacy for FOSS teaching and learning applications and the enterprise-wide deployment of FOSS for E-Learning is a consequence of the divergent perspectives of two organizational sub-cultures – the technologist and the academic – and the extent to which those sub-cultures are likely to embrace FOSS. The author concludes with following recommendations: (a) collaborative needs analysis/assessment prior to a go/no go adoption decision, and (b) broad dissemination of total cost of ownership (TCO) data by institutions already deploying FOSS for E-Learning enterprise-wide.

The third article, *Developing a Dynamic and Responsive Institutional Online Learning Environment: A Case Study of a Large Australian University* by Buchan, provides a case study from an Australian university, who adopted the open source software, Sakai, as the foundation for the University's new, integrated Online Learning Environment called *CSU Interact*. In this article, Buchan discusses her University's gradual implementation of Sakai course management system first as a pilot project then as a choice of entire University's

E-Learning system. She then outlines some of the challenges and successes of the project management methodology and processes which oversaw the successful large-scale implementation of an open-source courseware management solution at the institutional level. In conclusion, Buchan argues about the pedagogical advantages of adopting an open source learning management system as well as the significance of investing human and financial resources into such E-Learning system.

In the fourth article, *Open for Social: How Open Source Software for E-Learning can Take a Turn to the Social*, Laffey, Schmidt, and Amelung, first describe how FOSS enables transforming E-Learning from a potentially limiting and constricted framing of the education experience to an emergent and social experience. Their article identifies several key elements of the FOSS model that position open source initiatives to contribute to the emergent and social nature of experience in E-Learning. This article also describes several challenges to developing FOSS in a community of educators for E-Learning. These elements and challenges are demonstrated in a brief case report about the development of an open source software system called Context-aware Activity Notification System or CANS (http://cansaware.com).

In the fifth article, *Data Mining User Activity in FOSS/Open Learning Management Systems*, McGrath discusses usage analysis facilities, as being one of the special considerations when adopting an open source course management systems. In his study, McGrath examines how user activity tracking challenges are being met with data mining techniques, in four very different open learning management systems: ATutor, LON-CAPA, Moodle and Sakai. He concludes that as open systems mature in the use of educational data mining, they potentially move closer to the long-sought goal of achieving more interactive, personalized, adaptive learning environments online on a broad scale.

## REFERENCES

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