Chapter 16
Open Sourcing the Pedagogy to Activate the Learning Process

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ABSTRACT

Information systems graduates increasingly need to understand the collaborative, technology-driven practices inspired by open source software development that are fundamentally changing today's workplace. To meet this challenge, instructors must bring open source principles and technologies to active learning experiences. In this paper, the authors describe how nineteen undergraduates in a web development and design course at a Midwest university worked collaboratively with leading open-source software provider, Red Hat, to revamp the Teaching Open Source website. Accommodating this semester-length project required making significant revisions to course structure, instructional strategy, and assessments. The authors also describe the challenges of integrating these practices into the classroom and conclude with project reflections, including cautions and suggestions for instructors considering similar initiatives to move away from the "instructor as expert" paradigm to "meritocracy rule" thereby enabling students to make decisions with impacts beyond the classroom.

INTRODUCTION

The information systems department offers an undergraduate web design and development class at least once a year. The course is a degree requirement for juniors or seniors majoring in Digital Marketing and an elective for Information Systems majors. Instruction focuses on client-side scripting such as HTML5, CSS3 and JavaScript, and web design theory.

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To practice what they are learning, students typically work in small groups on a semester-length project to develop websites for local small businesses or nonprofit organizations. However, at the outset of a fall semester, an opportunity presented itself for students to collaborate on a more substantial project: building a website for the only billion-dollar open source company, Red Hat (redhat.com).

This paper describes how an instructor and Red Hat consultant developed a course structure that enabled nineteen undergraduates to use open source software (OSS) development principles and technologies as they redesigned, developed, and implemented the Teaching Open Source website (teachingopensource.org) according to Red Hat's specifications and input. Students worked within an agile development environment much like they would in the real world (Turnu, et al., 2006) and were encouraged to make their own decisions to meet project expectations.

In the rest of Section 2, the authors describe the project's context and learning strategies. Section 3 contrasts it with previous attempts at collaboration. Section 4 explains the division of labor (into five student groups) and the means of motivating them. Section 5 describe new processes put in place to ensure the students succeeded at collaboration. Section 6 summarizes how technologies allowing virtual collaboration were applied. Section 7 reviews overall findings, including successes and shortcomings, and Section 8 offers suggestions for replicating the learning experience. Finally, Section 9 offers conclusions and future directions.

Open Source and Inner Source Approaches

To examine how the concepts and practices that the authors used diverged from established class projects and pedagogies, this subsection summarizes the industry strategies and practices that the class employed.

Open source typically refers to how source code is distributed and shared publicly via open source licensing (Koohang & Harman, 2005; Kamthan, 2007; OSI, 2019). Similarly, a new business practice--the "open source way"--applies to the work environment the same methodologies, best practices, processes, tools and culture that have transformed software development. The open source way empowers a workforce to collaborate freely as a community of people; new priorities include transparency, communal work, meritocratic rewards, and rapid prototyping (Red Hat, 2009).

These methods also may be used when the code will not be released to the public, or at least not to more than a select few (InnerSource Commons, 2019). The InnerSource approach describes communal, transparent, and iterative methods applied to in-house platform development (O'Reilly, 2000; Stol & Fitzgerald, 2015). Inner source provides the benefits of open source for circumstances in which company culture, technical reasons, legal uncertainties, or business secrets prevent disclosing the source code outside the company (Capraro & Riehle, 2016). Another instance is when a government has restricted the material from open source licenses.

We classify the project results as inner source because students worked with the authors in an online meeting space accessible only to themselves and project facilitators from Red Hat and the Professors Open Source Software Experience group (POSSE). The website was inner source because its code has not yet been released, but open source because it will be freely available after its completion and approval by Redhat and POSSE.