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Starting from Scratch: Open source collaboration platforms as learning environments

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Abstract

This paper approaches open source software development through the lens of learning theory. The project management tools used to coordinate the distributed, democratic development process that characterizes the open source software movement—such as version control software and changelogs—are found to aid inexperienced programmers learning the practice of software development by providing worked examples and by facilitating novice observation of expert practice. An examination of the Scratch Online Community demonstrates how open sourcing and democratic development processes might be employed in a learning-oriented environment. The Scratch Online Community is a uniquely pedagogical open source collaboration platform, designed to engage school-aged children in programming, in which it has succeeded. As such, Scratch’s design provides a guide for assessing more typical production-oriented software collaboration platforms. Referencing Scratch and learning theory, a comparison of four such production-oriented software collaboration platforms—The Linux Kernel Archives, Mozilla Developer Network, SourceForge and GitHub—reveals that the new “social coding” platform model, exemplified in GitHub, is expanding learning opportunities for novices in open source development. In social coding platforms, social media-influenced functionality makes developer-level activity transparent across multiple projects. Not only does social coding’s developer-oriented approach to open source production support learning, but it provides a context within which developers can exploit the generative potential of open source software.