

Open Educational Resources: Past, present, and future

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This special issue celebrates the past and contemplates the future of open educational resources (OER).

The amount of digital learning material has grown astronomically over the past years. The landscape of entities competing to offer "open" education has similarly grown, and with it the variety of meanings associated with the term "open." MIT OpenCourseWare (OCW), launched more than 15 years ago, was one of the first major institutional commitments to open education. The "open" in OpenCourseWare refers to materials that are freely available at any time for re-use and incorporation into other programs, for the most part under the Creative Commons license. More recently, Massive Open Online Courses (MOOCs) have been offered through both for-profit and non-profit organizations. But the "open" in MOOC typically means something quite different---open in terms of access as a learner, but not in terms of re-use of the educational materials themselves.

The use of OERs is part of a more general transformation of the modes of engagement with educational material. The use of educational resources is becoming more modular---from modularization of curricula within existing institutions, to the proliferation of modular learning resources such as Khan Academy, to the creation of entire institutions built around modular competency-based degree programs. As a consequence, efforts are emerging to maintain and distribute digital resources to ensure they remain accessible and widely available to diverse communities of teachers and learners.

This issue contains six articles that together provide a glimpse into the history and current state of two open education platforms, into the more general opportunities afforded by OER, and into the current state of adoption and barriers to adoption of OER.

The first two articles discuss the history and current state of MIT's OpenCourseWare. "MIT OpenCourseWare: How It Began" by Shigeru Miyagawa delves into the original motivations that led MIT to openly share its teaching materials, and discusses the impact of OCW both within MIT and beyond. In "MIT OpenCourseWare: Advancing Its Leadership in Open Education," Cecilia d'Oliviera and Jeff Lazarus follow on with more recent aspects of the historical development of MIT OpenCourseWare, and a clear description of the current state of this central example of an OER.

In the third article, "edX: Open Education in the 21st Century," Nina Huntemann chronicles the history of edX. This paper provides background on the long history of open education and organizations dedicated to this cause. Huntemann describes the multiple dimensions of edX, including the technological tools, course portal and organization, describing how these came to be and what role they play in accomplishing the mission of open online education. These dimensions form the core of what becomes a "particle accelerator for learning," a central entity through which multiple partners can participate, research, learn and share.

In the fourth article, "Engineering the Science of Learning: Developing a Continuous Research Infrastructure for MOOCs to Catalyze Learning Research," Justin Reich argues that current generation of Massive Open Online Courses (MOOCs) are not constructed to generate insights about what makes these courses succeed or fail for particular learners. While we have used data to describe course

participants and the way in which they engage with courses, we have yet to develop theories and practices that work to make these courses better. Reich suggests a “continuous research infrastructure” to support the construction of these theories and practices. This infrastructure necessitates technological, programmatic, pedagogical and personnel shifts within the MOOC world. This paper details how to make that shift.

The fifth article, "Crosslinks: Improving course connectivity using online open educational resources," by Haynes Miller, Karen Willcox and Luwen Huang, describes an approach to curating OER materials and making them more accessible to learners. The article describes the Crosslinks web-based application, which collects links of OER materials organized by topics and also represents the pre- and post-requisite relationships among topics. Crosslinks represents an example of an application that provides a content-tagging framework to OER creators and a contextual search to learners.

In the final article, "Open Educational Resources: Nearing a Tipping Point?," Rebecca Griffiths and Nancy Maron remind us that one motivation for the development of OERs has been the high cost of textbooks, and proceed to evaluate how deeply OERs have penetrated the educational landscape, what the barriers are to adoption of such resources, and what the future may bring. They conclude that progress in reducing the mean costs of educational material has been slower than early advocates had hoped, but adoption of OERs may be reaching a tipping point. Further research on the effectiveness of teaching practices incorporating OERs might help to spur their adoption.

We hope that this issue plays a role in that historic movement, as well, and that it provides material for informed discussion about the future of the relationship between education and technology.