

Open Content in K-12 Schools

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Abstract: The Internet contains a vast number of open educational resources also known as open content that can enhance learning. In order for content to be considered “open”, the original author must relinquish his control over the copyright of the material and instead publish the material under a license that allows it to be used and re-shaped for various purposes. One of the most valuable features of open content is the ability of users to create a customizable product as a result of adaptation and editing; it also allows users to add value through their contributions by improving and updating content regularly. This paper explores the potential as well as challenges to the use of open content in K-12 schools as well as implications for teaching, learning, and research.

The Internet contains a vast number of open educational resources also known as open content that can enhance learning. One definition states, “In its broadest sense, open content refers to material published under a license that allows any user to edit, adapt, remix, and distribute it” (Ramasmami, 2010, p.20). In order for content to be considered “open”, the original author must relinquish his control over the copyright of the material and instead publish the material under a license that allows it to be used and re-shaped for various purposes. The restrictions assigned by licenses vary depending upon the specific license chosen by the author, but the most widely accepted and utilized set of licenses has been established by the Creative Commons (Trotter, 2008). This original material may take the form of books, journal articles, podcasts, tests, videos, modules, software, and even “OpenCourseWare” (OCW) - complete course content comprised of texts, lectures, and other supplemental materials. Beyond accessibility, one of the most valuable features of open content is the ability of users to create a customizable product as a result of adaptation and editing; it also allows users to add value through their contributions by improving and updating content regularly. First, this paper describes the relevance of open content for teaching, learning, and research then discusses the applications and implications for teaching, learning, and research. The next section sets forth possibilities for engaging teaching and learning with open content and concludes with a section on challenges facing open content.

Relevance for Teaching, Learning, and Research

Open content allows for easy editing and distribution of others’ works. Through selecting resources and media that students can relate to, teachers are not restricted to one textbook as a resource for each student. Instead, content can be selected from many resources and organized in a way that best meets students’ needs. Students would also be able to use open content to create their own sets of resources to help them as well as their peers. By doing this, the students control the learning, and the teachers guide it. Some argue that the shift of class resources, “From print to new technologies has been accompanied by increased attention to situated learning and the implementation of constructivist principles in course design and delivery” (Sapire & Reed, 2011, p. 201). By the constructivist theory of learning, learners must, “develop their own novel ways of knowing,” and “acquire existing human knowledge” (Sapire & Reed, 2011, p. 202). There are many ways students could build their own knowledge using a variety of media options, such as modules and texts that are available as open content. By encouraging students to assemble their own set of materials, teachers foster a climate in which students take greater ownership of and responsibility for their learning. Not only does learning become more personalized and authentic to the learners, it increases intrinsic motivation as well.

When open content is utilized in a collaborative environment, ideas of connectivism can be applied to it. Connectivism is a new theory for learning that is a compilation of preexisting ideas that states, “Learning is a process that occurs within nebulous environments of shifting core elements - not entirely under the control of the learner” (Siemens, 2005). Once open content is created and published to the web, others are free to use, edit, and redistribute all creations. In this way, knowledge will constantly be reshaped and passed on to others. Both teachers and students also benefit from interpersonal and professional connections established among users as they work together to create a collective knowledge base from which they can extend their interests into other arenas.

Applications and Implications for Teaching and Learning

There are many ways that open content can be used to help teachers. “The movement toward open educational resources turns teachers into the shapers of curriculum, mixing and matching educational materials to create content that is tailor-made for the needs of their students” (Ramaswami, 2010, p. 20). Newly emerging “open-content textbooks” are allowing teachers to customize textbooks for their personal classes; this eliminates superfluous information found in a typical textbook and provides the teacher with the opportunity to capitalize on his or her own expertise. Students benefit more when teachers are thoroughly familiar with content, are interested in it, and have personal experience with it. When teachers use open content to create customized learning materials for their classes, they often make adaptations to this content that ultimately pay forward the value added by the teacher. Furthermore, these adaptations provide teachers with increased opportunities for differentiating instruction such as adding language translations, incorporating appropriate cultural examples, or adjusting the level of reading ability (Trotter, 2008). As the popularity and visibility of open content increases, K-12 teachers feel a sense of social responsibility to share their content and contribute to the collective knowledge base of the community (Johnson, et al., 2010). By doing this, teachers can help each other with ideas and content for curriculum. Teachers may also benefit from professional relationships that result from collaboration on open resources.

Furthermore, open content - in specific, OCW - changes the teaching landscape for educators. OpenCourseWare removes the need for a human teacher; the virtual teacher is embedded within the learning materials (Smith & Casserly, 2006). The absence of a human teacher may prove to be problematic for some learners who need interaction, guidance, and frequent feedback. In this case, OCW should include built in scaffolding, support, and guidance for various types of learners.

Open content makes the world one click away where students can collaborate together in formal or informal settings. “Our students live in a world characterized by collaboration. They expect to be part of a larger community in the creation of knowledge, not just sharing, but actively contributing to the end result, whether it's the area of music, research or literature” (Consortium for School Networking, 2012, p.1). Open content affords students the ability to share collective knowledge with each other that is often scholarly, peer-reviewed, and research based. Sharing might occur with students from their own culture or students from other cultures that might have never met due to geographic or economic boundaries.

Through partnership with MIT, OpenStudy has created an online, interactive learning environment designed to provide a space where learners taking the same courses can “study together, work collaboratively, and answer each other’s questions” (Watters, 2011, p.1). This environment may be particularly useful in the case of advanced high school students who are taking Advanced Placement courses or even courses offered in partnership with local universities; participation can supplement their desire for learning beyond the scope of high school that will help to prepare them for college.

Beyond the realm of K-12 education, open content enables lifelong learning as people of all ages and places in life can access a wealth of information. Someone who at age 80 decides she wants to learn about marine biology can do so alongside an 18-year-old student who is beginning his college experience. While some learners may work towards a degree, others may participate in learning experiences simply for personal enrichment and enjoyment. Through the proliferation of open content that covers a huge array of topics, everyone can engage in learning that is suited to their needs and interests without the barriers of college applications, admissions, and tuition.

Applications and Implications for Research

Open content can help with research by having resources easily accessible for facilitators, learners, and institutions. Having access to open content promotes discovery of research data and makes consolidation of the results from different sources easier; by allowing the information to be edited and redistributed, researchers can more easily work with and manipulate the data to draw conclusions and make inferences about relationships. Since open content can be created online, the materials can be peer reviewed while they are being created thus providing feedback to the researcher more quickly and reducing the amount of time it will take to publish the completed work. The increased timeliness of such creation, review, and publication helps to ensure that the most current information is readily available to both teachers and students.

Open content allows students, teachers, and researchers to access materials or even participate in courses. Researchers can analyze open resources for instructional efficacy and identify characteristics of open content that

improve and enhance teaching and learning; the results of this research can subsequently be used to combine open resources possessing such desirable characteristics in order to produce highly effective, research-based, open educational resources. In this way, instructors looking for content will find resources that combine best practices from many different sources. This affords seamless integration of new research into a classroom environment, where student learning benefits.

For example, in the case of science textbooks in South Africa, a group of scientists decided to write an open textbook at no cost to the schools that would use it. Researchers were able to monitor progress on the text and why changes were made (James, Nodine, & Petrides, 2007). This level of analysis can be applied to any open content on a larger scale. Studies could investigate what types of materials teachers are including in their resources to meet individual student needs. If students remix open content for themselves, researchers could see how students pieced together materials to suit their own learning styles. Researchers can also track the creation and development of open content resources to analyze trends and emerging issues in the field.

Opportunities for Engaging Learning and Teaching

With more open courses offered each semester and more open content posted each day, the future appears bright for this movement in education. Post-secondary courses are now being offered to students all around the world as a result of open course initiatives. These courses support both teaching and learning by bringing two worlds together and helping students learn no matter where they live; open courses foster intercultural collaboration and encourage both teachers and learners to consider diverse perspectives and experiences as enrichment to their academic and personal lives. An opportunity to extend open content would be to connect it to traditional coursework in such a way that completion of an online course or module would translate into credits earned or progress toward a certificate (Smith & Casserly, 2006). For example, a learner who successfully completes an open course on introductory biology would have the option of applying that learning toward completion of a degree should the learner choose to enroll in a formal institution at a later date. This would afford learners the opportunity to explore various fields of study without cost before committing to one rather than paying tuition to explore courses of study the learner may or may not choose to pursue. In other words, it would provide a way for students who are uncertain of their career paths a way of discovering their interests without the added financial burden encountered by spending extra semesters at colleges and universities.

Colleges are already beginning to offer certificates for the completion of open courses. Since universities may be reluctant to offer credit for open courses, there may be an increase in the number of certificates offered. Open content may also be motivating to learners who are intimidated by formal learning environments or otherwise disenfranchised due to gender, disability, or cultural factors; by successfully completing an online, open course, learners may gain the confidence necessary to pursue post-secondary education that they may not otherwise have considered (Smith & Casserly, 2006). Students may also use open content as a resource for supplemental materials that will remediate, advance, or extend formal learning from the classroom into informal environments. For teachers, the ability to reach and engage students by customizing materials that suit their needs is invaluable. Students who are engaged exhibit greater motivation and ownership of learning.

Challenges of Open Content

Even though open content is constantly being added to the Internet, there is still room for more resources in all areas. Access is one roadblock to educators attempting to use open content. Examples outlined above provide resources, and authors may find benefits and drawbacks to the content hosted on each site. At this time, it is not possible to combine content across multiple databases such as integrating a resource from Connexions with content from the Open Courseware Consortium (Johnson, et al., 2010). In addition, users increasingly access content from their mobile devices rather than desktop or laptop computers; this means that content must be formatted in such a way that offers easy readability and navigation on devices with small screens such as smartphones, PDAs, iPod touches.

In the formal setting of a classroom, the openness of the content could actually be a drawback. Teachers may find a suitable activity and supporting resources, but students would also have access to the same resources with a simple Internet search. This issue commonly arises in problem-based classrooms where solutions must be kept from students. A possible solution involves creating two separate courses for students and teachers, where the teacher's course would include supplemental material and be protected from students' access. Another solution is to

not include solutions in open content with the idea that the content expert would be able to find the solution and share it with students (Gurell, Kuo & Walker, 2010).

Institutions of higher education face slightly different challenges such as rising costs and competition among providers. Today it is easy with modern technology at our fingertips for anyone to look up information. Administrators at all levels worry about the effectiveness of open content and competition coming from places that might not be as reliable. Another challenge to open content at the higher education level is the fact that creating, maintaining, and updating an open courseware website can be extremely expensive (Smith & Casserly, 2006). A website that supports this type of activity is a rather complex entity that requires constant supervision and improvement; it also requires that faculty receive frequent training in how to upload and publish their content to the site. Publication of content cannot be cumbersome or time consuming in order to avoid faculty dissatisfaction and withdrawal from the open initiative. This affects K-12 use of open content as well since educators and learners at this level often extract materials from higher education institutions' websites.

Alternate questions of sustainability beyond the hardware and software of websites are the questions of whether or not open content will persist in the face of resistance provided by institutions that seek to "hoard" knowledge and whether or not it is economically feasible to continue to produce and update material that is provided to the public at no cost (Smith & Casserly, 2006). While the U.S. Government, professional organizations, foundations, and some higher education institutions have supported various open content initiatives, there is not an endless supply of funds to uphold and extend these large-scale ventures. Financial support for the developers, promoters, and sustainers of open content must come from somewhere; while content may be provided free of charge, it is most often not created free of charge.

Finally, the very idea of open content is still controversial. "At the center of many discussions of open content are the challenges of sharing, repurposing, and reusing scholarly works" (Johnson, et al, 2010, p. 13). Specifically, questions arise asking how current regulations of intellectual property and copyright transfer to open content. While the majority of faculty members of higher education institutions believe that the content they create belongs solely to them, the majority of the institutions see this content as "works for hire" which ultimately becomes the property of the institution for which the material was created (Kranich, 2008). Both faculty and the institutions have vested interest in this property due to the resources, time, and value that it embodies, and strong arguments can be made on behalf of both the faculty and the institutions as to who rightfully owns the intellectual property rights to such content. Further ambiguity of this issue is perpetuated by the lack of case law established that specifically addresses the relationship between faculty and the intellectual property that they create through their teaching (Kranich, 2008). In this way, each case is unique and can be supported or disproved by various court rulings; hence, the ambiguity persists. In the field of education, the intellectual property rights that can be granted to the creator typically fall into the realm of copyright provisions.

Copyright provisions are a big challenge to interpret. Knowing what can be reused without the permission of the creators is a gray area amongst the knowledge of the general public, especially educators and students. "As the length of the copyright term is extended again and again, the result is to limit the ability of teachers and learners to access and utilise available materials, as well as to limit the pool of shared content available as the basis for new creative works" (Bissell, 2009, p. 99). Educators duplicate and share hundreds of resources a year, without paying attention to the fine print of the documents. "In education, as with most endeavours, people do not have the time or interest to become experts in copyright law. However, it is important that educators become sufficiently aware of copyright laws to understand the value of alternative licensing models that could help them achieve their vision and objectives" (Bissell, 2009, p. 99). For open content, the alternative licensing methods typically fall under the six types available through Creative Commons.

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