



OPEN EDUCATIONAL RESOURCES: OVERVIEW AND INTRODUCTION

**Report to the Open Education Resources Advisory Committee of the Joint
Commission on Technology and Science**

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INTRODUCTION

Improving the resources available to teachers and students is of high importance to the Commonwealth in its effort to enhance the quality of learning at educational institutions. As the amount of responsibility for subject matter steadily increases, the Commonwealth must develop the capability to update educational resources to adhere to the Standards of Learning (SOL) in a timely fashion. Expanding the ability of the Commonwealth to take advantage of new and evolving technologies offers the potential to both improve the quality of education and reduce expenditures on educational resources.

Open educational resources (OER) create opportunities to revolutionize and strengthen the capabilities of educational institutions. The creation of the Internet was fostered partly in response to educational institutions, which desired to promote scholastic ability through collaboration. Many public and private institutions are again realizing the opportunities that collaboration presents to society. By capitalizing on real-time communication, storage capabilities, and the ability to supplement traditional resources (e.g., textbooks, lesson plans, and handouts), educational institutions can lower costs and increase value to educators, students, and government.

A clear and widely accepted definition of open educational resources does not formally exist. Distributors and designers of OER have adapted the term to their goals. They may interpret OER to refer to either the readily available access to resources or the ability to use the resources at no or low cost. Those that concentrate on the availability of resources emphasizes that content should be both widely accessible and open for collaborative change. Those that find value in cost savings believe content must be free for educational and non-profit institutions. For the purpose of this summary, the term open educational resources refer to educational content that uses technology to enhance or replace traditional materials in a cost efficient and timely manner.

The OER movement utilizes new commercial and non-commercial entities that have developed out of the need to create more innovative and efficient ways to deliver information than the textbook. For example, free online journal archives (i.e., repositories) offer educators the ability to supplement traditional textbooks by assigning articles which provide recent research and additional issues not covered in the textbook.

Commercial entities offer multiple opportunities that can enhance the Commonwealth's ability to lower costs. For example, Print-On-Demand (POD) businesses are able to reduce the costs of books because books are not printed until requested, this results in the need for less storage and lower overhead. Print-On-Demand companies are growing in popularity and increasing in number. A few POD businesses offer the ability to create textbooks from modules chosen by individual educators or institutions. This capability to assemble modules or chapters allows educators to align the textbook directly to the curriculum. A number of POD businesses offer traditional textbooks which are printed when ordered.

ACQUISITION OF EDUCATIONAL RESOURCES IN THE COMMONWEALTH

The adoption policies of educational resources in K - 12 education and institutions of higher education are distinct. The ability to choose textbooks for grade school within the Commonwealth is guided significantly by the Code of Virginia and Department of Education regulations. Institutions of higher education have more discretion in their adoption of educational resources because the decision is essentially made by individual institutions. This section addresses resource acquisition procedures of both bodies and recent legislation that affects the selection of educational resources.

A. K - 12 Acquisition of Traditional Educational Resources

The Board of Education (the Board) is responsible for establishing educational objectives called the Standards of Learning (SOL).¹ These standards must include English, mathematics, science, and history and social science. The instructional program approved by the Board must ensure that the SOLs are consistent with a high-quality educational program.² One feature of such a program is proficiency in computers and related technologies.³

Local school boards must supply each child attending public schools the necessary textbooks and workbooks free of charge.⁴ The current budget allocates \$67,209,948 to the state's share of the cost of textbooks based on an estimated expenditure of \$100.28 per pupil.⁵ In 2008, the budget allocates \$67,589,092 to the state's share of textbook costs.⁶ Funds not spent by localities carry over to the locality the next year for the purpose of purchasing textbooks.

Approval of Textbooks

The Board is statutorily required to approve textbooks which meet the requirements of the Standards of Learning.⁷ The Board authorizes five to seven months for localities to examine and choose texts from a list chosen by the Board. Localities report their adoption of textbooks to the Board.

Local school boards are able to adopt textbooks that have not been approved by the Board if they meet the regulations promulgated by the Board.⁸ A local board may adopt unapproved textbooks by appointing an evaluation committee to review and evaluate unapproved textbooks, however prior to adoption of these books local boards must

¹ Va. Code § 22.1-253.13:1.

² Va. Code § 22.1-253.13:1(b).

³ *Id.*

⁴ Va. Code § 22.1-251.

⁵ HB1650 (2007) Item 135 (C)(5)(f)(1).

⁶ *Id.*

⁷ Va. Code § 22.1-238.

⁸ *Id.*

evaluate the state adopted texts. The committee submits its recommendations to the Board in time for approval on July 1 of odd-numbered years and must assure that the books have been adopted in compliance with the regulations. The prices must be made available at the request of the Board.⁹

The Board places the responsibility of selecting, approving, and utilizing supplemental instructional materials (e.g., workbooks) on local school boards.¹⁰ The local board must develop procedures for selection of material that is consistent with goals and objectives of a district evaluation committee. Localities must request assistance by the Board if necessary.¹¹

Change of Textbooks

The Board, after approving a textbook, cannot change the book until it has been used for a period of at least six years.¹² An exception exists which allows for discontinuance of a book if it becomes obsolete or the change would result in a price discount. The Board may substitute a revised edition of the textbook if the publisher agrees. The Board can allow use of an unrevised edition of the textbook for at least three years.¹³

Contracts with Publishers

The Board negotiates and enters into contracts with publishers. The contract price for books may not exceed the lowest wholesale price for which the books are offered in the United States. Publishers are obligated to provide electronic copies of textbooks to allow for production of Braille versions.¹⁴

Local boards order books directly from publishers. School boards must pay publishers with the localities' school board funds.¹⁵ The Board is authorized to establish a central depository for textbooks.¹⁶ In the event of creation of the depository, the Board can require localities to place its orders directly to the Board.

B. K - 12 Open Education and Technology Resource Utilization

Virginia Department of Education Initiatives

The Virginia Department of Education (DOE) recognizes the increasing need for students to become proficient at using technology to further their educational goals. To meet this need, the DOE has engaged in many studies and projects to help localities become better

⁹ 8 Va. Admin. Code § 20-230-30.

¹⁰ 8 Va. Admin. Code § 20-170-10.

¹¹ *Id.*

¹² Va. Code § 22.1-239.

¹³ *Id.*

¹⁴ Va. Code § 22.1-241(e).

¹⁵ Va. Code § 22.1-247.

¹⁶ Va. Code § 22.1-249.

acclimated at utilizing technology. The following is a brief discussion of a few such programs.

The DOE and members of the DOE Technology Advisory Committee developed the *Educational Technology Plan for Virginia: 2003 - 2009* to ensure all students capitalize on technological advances made in the educational community.¹⁷ The plan seeks to foster use of technological tools to "motivate and engage students, enliven instruction, extend learning beyond the school, and assist by increasing students' achievement."¹⁸

The DOE Division of Technology established a website devoted to surveying localities' use of technology resources in the classroom titled the *Web-based Standards of Learning Technology Initiative: Evaluation of Instructional and Remedial Software/Web Sites*.¹⁹ The website contains reviews by educators of software and websites used to supplement traditional education materials.

The DOE also established the Virtual Virginia Advanced Placement School (VVAPS).²⁰ VVAPS offers Advanced Placement and foreign language courses to students within the Commonwealth and across the nation. The courses increase student participation by using pictures, videos, audio clips, and online discussions. Middle and high school students are allowed to participate in the program and enroll through their local school districts. In 2005-2006, the budget for the program consisted of \$2.24 million and enrolled 1900 students.²¹ During the 2005-2006 academic year, 12 full time teachers and 15 part-time teachers were employed instructing 20 advanced placement courses, 1 core academic course, and 10 non-core electives.²²

Educational Technology Grant Program

The goal of the Education Technology Grant Program is to improve the instructional, remedial, and testing capabilities of the Standards of Learning for localities. The funds are used by localities in each high school to reach a 5-1 student to computer ratio, create an internet-ready local area network, and achieve high speed access to the internet.²³ After these goals are achieved in the localities' high schools, localities must address these goals in middle schools and then elementary schools.²⁴ The Virginia Public School Authority administers the Educational Technology Grant Program involving \$58,702,000

¹⁷ VA. Dept. of Educ., *Executive Summary, Educational Technology Plan for Virginia: 2003-2009*, 3 (2003), available at <http://www.pen.k12.va.us/VDOE/Technology/planexsummary2003-09.pdf>. Full report available at, <http://www.doe.virginia.gov/VDOE/Technology/plan2003-09.pdf>.

¹⁸ *Id.* at 1.

¹⁹ <http://www.pen.k12.va.us/VDOE/Technology/softwarereview.html> (last visited June 5, 2007).

²⁰ <http://www.virtualvirginia.org/> (last visited June 5, 2007)

²¹ Southern Regional Education Board, *Report on State Virtual Schools* 87, 90 (2006), available at http://www.sreb.org/programs/EdTech/SVS/State_Virtual_School_Report_06.pdf.

²² *Id.* at 88, 91.

²³ *Id.* at (C)(5)(14)(7)(a).

²⁴ *Id.*

in fiscal year 2007 and \$59,014,000 in 2008.²⁵ Localities are required to match at least 20% of the allotted grant amount.²⁶

C. Public Institutions of Higher Education: Recent Legislation Affecting Textbook Adoption Policies

Institutions of higher education do not have a uniform textbook adoption policy in the Commonwealth. Each institution creates its own policy of adoption. In 2005, the Virginia General Assembly recognized the need to address textbook costs at institutions of higher education and passed House Joint Resolution 668 (Oder).

HJ 668 directed the State Council of Higher Education for Virginia (SCHEV) to study the costs of textbooks at state institutions in the Commonwealth. The study resolution resulted in SCHEV publishing *A Report on Textbook Purchasing Practices and Costs in the Commonwealth* in 2006.²⁷ The report found that textbook prices in Virginia are increasing in price and that 40% of survey respondents could not afford textbooks for one or more semesters.²⁸ The SCHEV report suggested that use of digital textbooks could save students up to 50% compared to the print edition of the text.²⁹ The use of custom publishing could also alleviate student concerns that the textbooks purchased for classes would not be used in their entirety, with the professors merely assigning a few chapters.³⁰

The report surveyed approximately 12,650 students.³¹ The average Virginia college student spent between \$300 and \$400 for textbooks and supplementary materials per semester.³² Another 24% of students reported spending over \$500 in the fall of 2005 on class materials.³³ The United States Government Accountability Office released its own report titled *College Textbooks, Enhanced Offerings Appear to Drive Recent Price Increases* in 2005.³⁴ The study stated average textbook prices have risen at twice the rate of inflation over the past two decades.³⁵

Legislation passed by the 2005 session of the Virginia General Assembly, HB 1726 (Oder), requires educational institutions to publicize texts chosen for classes on the institutions website and prohibits employees of Virginia institutions from receiving money by requiring students to purchase specific textbooks for any particular classes.

²⁵ HB 1650 (2007) Item 135 (C)(5)(14)(g.1)

²⁶ *Id.* at (C)(5)(14)(g.5).

²⁷ State Council of Higher Education, *A Report on Textbook Purchasing Practices and Costs in the Commonwealth*, H.D. Doc. No. 27 (2006), available at <http://www.schev.edu/Reportstats/2006TextbookStudy.pdf>.

²⁸ *Id.* at 4.

²⁹ *Id.* at 4-5.

³⁰ *Id.*

³¹ *Id.* at 6.

³² *Id.* at 7.

³³ *Id.*

³⁴ United States Government Accountability Office, *College Textbooks: Enhanced Offerings Appear to Drive Recent Price Increases*, GAO-05-806 (July 2005).

³⁵ *Id.* at 8.

In 2006, the General Assembly passed HB 1478 (Oder), which requires the governing boards of public institutions of higher education to implement policies that encourage efforts to minimize the cost of textbooks for students while maintaining the quality of education.³⁶ The guidelines ensure Virginia institutions of higher education textbook adoption policies:

1. Are made with sufficient lead time to ensure maximum availability of used textbooks;
2. Foster use of all items ordered, particularly each individual item sold as part of a bundled package, and is affirmatively confirmed by the faculty member before the adoption is finalized;
3. Ensure faculty acknowledge the bookstores retail price of textbooks selected for use in each course;
4. Ensure faculty are encouraged to limit their use of new edition textbooks when previous editions do not significantly differ in a substantive way; and
5. Include provisions for the availability of textbooks to students unable to afford the cost.

BENEFITS AND DRAWBACKS OF TRADITIONAL EDUCATION MATERIALS AT INSTITUTIONS OF HIGHER EDUCATION

A. Benefits

Traditional textbooks offer educators the ability to grow familiar with material, thereby capitalizing on knowledge of subject matter that students have difficulty interpreting. When a textbook is revised, the structure of the text remains largely the same. Therefore, the instructor may maintain their syllabus and lesson plans. Students at institutions of higher education may recover a portion of the textbook cost from the ability to sell back used texts to bookstores. However, the amount students receive for their used textbooks are often grossly disproportionate to the students' original investment.

B. Drawbacks

Revision Cycle of Textbooks Result in a Smaller Market for Used Textbooks

The revision of traditional textbooks results in serious financial impacts on college students. Publishers have stated 10-20 years ago the standard revision cycle was four to five years.³⁷ College textbooks are presently revised every three to four years. Publishers state many reasons for increased revisions, such as content change in a subject, changing teaching methods, updates of current events, and changes in industry standards.³⁸ These revisions limit the demand for used textbooks which result in

³⁶ Va. Code § 23-4.3:1.

³⁷ *Id.* at 18.

³⁸ *Id.* at 19.

students' inability to resell their used books and require new students to purchase more expensive revised editions.

Bundling Textbooks with Supplementary Resources

The policy of bundling textbooks with supplementary materials increases the price of textbooks. Many publishers include bundled course materials with new textbooks and professors are frequently unaware of the inclusion of such supplements. Publishers believe the additional materials save students money because it costs students more to purchase the materials separately. Unfortunately, bundled materials are generally not returnable to retailers once opened.

Pricing Practices of Retailers in Establishing Prices of Used Textbooks

Pricing practices are a current problem with the cost of traditional textbooks. Publishers establish the retail price of new textbooks which are sold to bookstores. College bookstores establish their own pricing structure to determine the prices of new and used textbooks. As reported to the GAO by the National Association of College Stores in 2005, the average markup of new textbooks received by retailers and sold to students was 23%.³⁹

Generally, used textbooks have a higher markup than new textbooks. Retailers buy used books from wholesalers for 50% of the original retail price. Students are then charged 75% of the original retail price of what the book was sold for new. Retailers attain a 33% markup by such pricing policies.⁴⁰

	Net Price	Retail Price	Price Increase	Markup (price increase ÷ retail price)
New textbook	\$100	\$129	\$29	23%
Used textbook	\$66	\$97	\$32	33%

Source: GAO Analysis⁴¹

BENEFITS AND OBSTACLES OF OPEN EDUCATIONAL RESOURCES

A. Benefits

The use of Open educational resources may greatly benefit educational institutions, because they allow course materials to be updated quickly and affordably. The ability to supplement existing texts with minimum investment can allow for reallocation of resources. From the standpoint of educational institutions, OER can provide a framework for long-term reusability, greater cost-effectiveness, and promotes strengthening the

³⁹ *Id.* at 13.

⁴⁰ *Id.*

⁴¹ *Id.*

technology skills of students. Institutions also benefit by enriching their pool of resources.⁴²

Open educational resources from the viewpoint of teachers and students can offer a broader range of subject matter, greater engagement of students with the subject matter, and the ability to foster collaborative learning environments. These benefits result in improved grades and greater interactivity with students and the subject matter.⁴³

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4. Share Alike - Gives permission to distribute derivative works only under a license that governs the original work.⁴⁴

B. Obstacles

The acceptance of OER is growing rapidly, but there are many obstacles to widespread acceptance. OER produces concerns related to intellectual property rights, costs, and quality assurance. They require active participation by educators in evaluating supplemental materials for relevance and quality. A regulatory board to monitor the quality of available resources does not exist. The ability to amend existing materials, absent the capability to approve such additions, leaves some OERs vulnerable to departure from appropriate curriculum.

Intellectual Property Concerns

Intellectual property protections inhibit some authors from allowing their research and articles to be produced freely by educational institutions. The reluctance rests on the

⁴² Open eLearning Content Observatory Services, *Open Educational Practices and Resources; OLCOS Roadmap 2012*, 20-21 (2007), available at http://www.olcos.org/cms/upload/docs/olcos_roadmap.pdf.

⁴³ *Id.* at 21.

⁴⁴ Tai Wooi Tong, *Free/Open Source Software Education 23* (2004), available at <http://www.iosn.net/education/foss-education-primer/fossPrimer-Education.pdf>. *I.E.*, <http://creativecommons.org/about/licenses/meet-the-licenses> (last visited June 5, 2007).

inability of an author to know whether the work will be used for commercial gain and the ambiguous nature of copyright law.

Copyrights protect “original works of authorship” by the author. Until 1976, authors had the responsibility of affixing a copyright notice to their works. The 1976 Copyright Act gives authors the exclusive right to reproduce their works, prepare derivative works, and distribute copies of their works.

Copyright protection does not act as an absolute bar to duplication of materials for educational use. There are specific exemptions to liability for copyright infringement such as “fair use.” Fair use allows educators and institutions to reproduce copies of copyrighted materials for purposes such as criticism, comment, teaching (including multiple copies for classroom use), scholarship, and research. These uses are not considered an infringement of copyright protection. To determine whether the use made of a work is a fair use the factors to be considered are whether the use is of a commercial nature or is for nonprofit educational purposes, nature of the work, portion used in relation to the whole work, and the uses effect on the potential market of the work.⁴⁵

The Digital Millennium Copyright Act of 1988 (DMCA) furthered copyright protections into the digital age and hampers widespread piracy of digital works.⁴⁶ The DMCA applies to CDs and DVDs the same way as physical copies of works. It prevents copying and distribution of copyrighted materials electronically.

Costs

It is expensive for organizations to maintain online repositories for educational materials. Maintaining OER requires both information technology and academic support to maintain quality assurance. The costs associated with these services may make widespread free use of such services impractical to sustain. Many open educational resource organizations are funded by foundations and have yet to prove long-term economic sustainability.

Quality Assurance of Content

Open educational resources must be inspected for content to assure accurate information. There is no regulatory body that inspects information content to ensure that OER content is truthful. It has been suggested that regulatory groups comprised of scholars or organizations concerned with the subject matter could monitor their subject matter and approve resources that meet the standards and professional expectations of their members.

⁴⁵ *Id.*

⁴⁶ 17 U.S.C. § 101 (2005).

APPENDIX: RESOURCES DESCRIBING OER USE IN K-12 AND INSTITUTIONS OF HIGHER EDUCATION

State Council of Education for Virginia, *A Report on Textbook Purchasing Practices and Costs in the Commonwealth*, House Document 27 (2006), available at [http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/HD272006/\\$file/HD27.pdf](http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/HD272006/$file/HD27.pdf).

United States Government Accountability Office, *College Textbooks; Enhanced Offerings Appear to Drive Recent Price Increases*, GAO-05-806 (July 2005), available at <http://www.gao.gov/new.items/d05806.pdf>.

This study investigates the rising prices of textbooks at institutions of higher education in the United States. The report discusses what has been the change in textbook prices, what has contributed to the change in prices, and why textbooks may be less expensive outside the United States.

Open eLearning Content Observatory Services, *Open Educational Practices and Resources OLCOS Roadmap 2012* (January 2007), available at <http://www.gao.gov/new.items/d05806.pdf>.

This whitepaper focuses on creation, sharing, and re-use of OER in Europe. The report was developed to provide a roadmap to decision makers with reference to orientation and recommendations to make informed decisions about OER.

Daniel E. Atkins et. al., *A Review of the Open Educational Resources (OER) Movement, Achievements, Challenges, and New Opportunities* (February 2007), available at http://hewlett.org/NR/rdonlyres/5D2E3386-3974-4314-8F67-5C2F22EC4F9B/0/AReviewoftheOpenEducationalResourcesOERMovement_BlogLink.pdf.

This whitepaper explains the success and status of various OER projects funded by the foundation, e.g. MIT OCW, Connexions Project, Creative Commons and Internet Archives and the OpenCourseWare Consortium. The report addresses enablers and major remaining challenges for the adoption of OER.

The Southern Regional Education Board (SREB), *Report on State Virtual Schools* (August 2006), available at http://www.sreb.org/programs/edtech/SVS/State_Virtual_School_Report_06.pdf.

This report gives detailed information on the use of virtual schools by the 16 SREB member states.

SREB, *Technical Guidelines for Digital Learning Content; Development, Evaluation, Selection, Acquisition and Use* (July 2005), available at http://www.sreb.org/programs/EdTech/SCORE/05T05-Digital_Learn_Content-WEB.pdf.

This paper provides technical guidelines to users of digital learning content. The guidelines are meant to ensure accessibility, portability, usability, and reusability of OER. This document also provides a Guide for Review to assess conformance with the provided guidelines.

John Watson & Jennifer Ryan, *Keeping Pace with K - 12 Online Learning: A Review of State Level Policy and Practice* (October 2006), available at <http://www.nacol.org/docs/Keeping%20Pace%20with%20K-12%20Online%20Learning%202006.pdf>.

This paper contains a summary of what on-line educational resources are being used for virtual schools in all 50 states. It gives a brief summary of the policies involved in implementing and sustaining virtual schools.

Jan Hylen OECD Centre for Educational Research and Innovation, *Mapping Users and Producers of Open Educational Resources*, (2006)
http://www.unesco.org/iiep/virtualuniversity/media/forum/iiep_oecd_oer_forum_note1.pdf.

This brief summary of an internet discussion forum organized by the United Nations Educational, Scientific and Cultural Organization describes the initial findings of a study to map the scale and scope of OER. The summary gives an analysis of current OER initiatives and OER attributes.