

Affordable Learning Georgia Textbook Transformation Grants

Final Report

Date: 6/4/2015 (Revised submission)

Grant Number: 36

Institution Name(s): South Georgia State College

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Course Name(s) and Course Numbers: Introductory Biology II; Biology 1020K

Semester Project Began: Fall 2014

Semester of Implementation: Spring 2015

Average Number of Students Per Course Section: 34

Number of Course Sections Affected by Implementation: 1

Total Number of Students Affected by Implementation: 34

1. List of Resources Used in the Textbook Transformation

Resources used:

1. *Concepts of Biology*, OpenStax College
(<https://openstaxcollege.org/textbooks/concepts-of-biology>) *Concepts of Biology* is licensed under a Creative Commons Attribution 3.0 Unported License.

Resources suggested to students for additional information only about topics covered in class:

1. www.tolweb.org - Tree of Life Web Project (ToL) © 1995-2004 Tree of Life Project. All rights reserved. ToL Policies (<http://www.tolweb.org/tree/home.pages/tolcopyright.html>) refers to Fair Use Guidelines for Educational Multimedia.

2. www.microbeworld.org - Microbe World © 2014 American Society for Microbiology. “Educational and nonprofit entities and individuals may use ASM Materials without written consent from ASM provided they provide proper attribution and the ASM Materials are not used for any commercial use or for financial gain” (<http://www.microbeworld.org/about/terms-of-use>).

3. www.microbiologyonline.org.uk - Microbiology Online © 2015 Society for General Microbiology.

4. www.plants.usda.gov - Natural Resources Conservation Service Plants Database “Most information presented on the USDA Web site is considered public domain information. Public domain information may be freely distributed or copied, but use of appropriate byline/photo/image credits is requested. Attribution may be cited as follows: ‘U. S. Department of Agriculture.’ Some materials on the USDA Web site are protected by copyright, trademark, or patent, and/or are provided for personal use only. Such materials are used by USDA with permission, and USDA has made every attempt to identify and clearly label them. You may need to obtain permission from the copyright, trademark, or patent holder to acquire, use, reproduce, or distribute these materials” (http://www.usda.gov/wps/portal/usda/usdahome?navid=POLICY_LINK).

5. www.eol.org - Encyclopedia of Life on Earth (eol) “In most cases, EOL content providers have made content available for re-use under one of the ... Creative Commons licenses...” (http://www.eol.org/info/copyright_and_linking).

6. www.eoearth.org - The Encyclopedia of Earth (eoearth) “Unless otherwise noted, all text is available under the terms of the Creative Commons Attribution-Share Alike license” (<http://www.eoearth.org/view/article/180551/>).

7. www.innerbody.com - InnerBody © 1999-2015 Howtomedica, Inc. All rights reserved.

8. www.cdc.gov - Centers for Disease Control, US Government. Most information is in public domain (<http://www.cdc.gov/vaccines/about/help/copyright.htm>).

9. www.nature.com - Nature Publishing Group. © 2015 Macmillan Publishers Limited. All Rights Reserved.

10. www.mbgnet.net - Missouri Botanical Garden. © 2005 Missouri Botanical Garden.

11. www.eowilsonfoundation.org - E. O. Wilson Biodiversity Foundation. © 2013 E. O. Wilson Biodiversity Foundation. “All photographs, texts, videos, and other artwork appearing

on this website are © 2013 by the respective artists or authors”
(<http://eowilsonfoundation.org/mission-statement/>).

Resources newly created:

1. Instructor’s Guide to *Concepts of Biology*, chapters 12-21. Contains outlines, study guides, web links, and teaching tips. The book is housed as a PDF document at Curriki.org (http://www.curriki.org/xwiki/bin/view/Coll_mollysmith/InstructorsGuidetoConceptsofBiology) and indexed through Merlot. It is also available as an iBook from the iBookstore.

2. Virtual Tour of the Okefenokee Swamp. Contains closed captioning for quiz purposes. The uncaptioned video is included in the iBooks version of the guide, and the captioned version (which is hyperlinked in the guide) resides at YouTube (<https://www.youtube.com/watch?v=gBeu5T7liHc&feature=youtu.be>) and is indexed through Merlot.

2. Narrative

This ALG grant enabled the transformation of Biology 1020K, Introductory Biology II for non-STEM Majors, with the use of the OpenStax College text *Concepts of Biology*. The OpenStax text had already been used in the first course of the sequence for one section taught in Fall 2014. This Spring, the Biology 1020K course included students from the Fall from two sections that had used a traditional text (at a cost of approximately \$170) and the one section that had used the OpenStax text. In researching OER texts for use last Fall (and I explored many), I chose this one because it was as good as, if not better than, many of the traditional and expensive texts I have used during my twenty-five years of teaching for the USG. However, as with all of the texts I examined, it lacked the ancillary materials that do minimize the work required of an instructor when adopting a new textbook. OpenStax does provide an interactive iBooks version of *Concepts of Biology* and accompanying PowerPoint™ slides (with nothing more than pictures from the text). Since most instructors do depend on ancillary materials to ease their transition from one text to another, we thought that developing such materials for free use by others would be very much in the spirit of this grant. To this end, we have produced an Instructor’s Guide to accompany a portion of *Concepts of Biology*. The guide includes detailed instructor outlines, student outlines to facilitate note-taking, and study guides for each chapter covered in Biology II (Chapters 12-21). Also included are appendices with useful websites and teaching tips/suggested student projects for various chapters. We have also included a typical semester calendar that would be useful for any adopter of the text. Since this course covers biodiversity, we created a virtual tour of the Okefenokee Swamp. We are quite pleased with what has been produced and hope it will lead to the adoption of this text by other members in the Biology Department. Currently, the objection some of my fellow faculty members have regarding the adoption of this textbook is the lack of ancillary material. We hope that what has been created will encourage them to take another look at this excellent free text that certainly helps our

students' pocketbooks and is an excellent resource in keeping with the System's Affordable Learning Georgia Initiative.

In developing the Instructor's Guide, I certainly had to think 'outside of the box' quite often. As I was teaching the material, I was constantly thinking about things that would have made my life in the classroom with a new text a lot easier. I was also trying to find quality web resources to support each chapter. Sometimes, it was after I had already covered a topic, and while doing research on the next topic, that I thought of a different way to approach the previous material. Those "aha!" moments became the impetus of some of the teaching tips found in the appendices of the Guide. All of this has transformed the way in which I will teach this material in the future to keep it fresh for both the students and myself.

Surveys of students were done at the beginning and near the end of the semester. We were interested in such things as their use and opinions of the text and instructor-created material. Results were very positive on both accounts. As a note of interest, seventeen respondents to the survey indicated that they had bought the traditional text for the prerequisite course, but sixteen of them chose to use the OER for this semester (see Survey 2, questions 1 and 2). We also compared DFW rates, average GPA, and SLO data between the Spring 2015 Biology II class (34 students) taught with the OER (henceforth referred to as OER Biology) and the same course taught in Spring 2014 (24 students) taught with the traditional textbook (henceforth referred to as Trad Biology). The DFW rates were comparable between the two classes, as was the percentage of students meeting the course SLOs. There was one withdrawal in Trad Biology, but there were none in OER Biology. As requested, all of the pertinent data is included in a separate data file.

One challenge of the project has been the time involved. We began working (on our own time) after the kick-off meeting in October. Even though, as stated in the December status report, we had most of the materials created at that point, there was still a lot of work involved in 'putting it all together' (thank you, Sara!). Since I was finding useful resources (and students found some on their own and shared) as I was teaching the class, the project has been a work in progress this whole semester. (It is my understanding that the round two recipients – notified in February – will implement their work this Fall; that means they will have had much more time to create and refine their materials than has been afforded the round one recipients.) Another challenge has been the bureaucracy involved in getting paid for our work.

As for lessons learned and things I would do differently, I would complete (have ready for publication) each chapter as it was covered in class. We have been extremely busy this semester presenting at various statewide, regional, and international conferences some of the results of using the OpenStax text last Fall. Consequently, there was a considerable amount of work during the last month involving formatting and getting everything ready for publication. We have also done the work on our own time (which was the only time we had to work on it!).

3. Quotes

Anonymous quotes from student surveys (provided exactly as written):

“It was amazing not having to buy a textbook for this class, and I never had to worry about leaving my textbook laying around. I always had access to a phone, computer or tablet. It certainly made studying easier.”

“This textbook was easy to read, had great interactive examples, and made it a fun course to take.”

“The main focus of the chapters were there, it was not any wasted space and words. Everything was in order and the shorter chapters allowed me to retain more knowledge.”

4. Quantitative and Qualitative Measures

In our proposal, we stated that the quantitative measures used would include comparative attendance tracking and assessment of student learning outcomes (SLOs), and that qualitative measures used would include student surveys and course evaluations. After the proposal submission, we determined that comparisons of DFW rates and average GPA could be useful as quantitative measures as well. We compared Biology 1020K in Spring 2015 using the OER (henceforth referred to as OER Biology) with Biology 1020K in Spring 2014 using the traditional text (henceforth referred to as Trad Biology); OER Biology enrolled 34 students, and Trad Biology enrolled 24 students.

Attendance in OER Biology was compared with attendance in Trad Biology; data revealed that fewer students missed class in the OER Biology (see Table 3). Comparison of SLOs assessment revealed, for the most part, no statistically significant difference between the two groups (see Table 1). Analysis of DFW rates showed a 9% DFW rate in the OER Biology, compared to a 4% DFW rate in the Trad Biology (see Table 2). Average GPA for OER Biology was 3.06, while average GPA for Trad Biology was 3.39 (see Table 2).

Students in the OER Biology class were surveyed near the beginning and near the end of the semester. The first survey (see Survey 1) centered on their usage of the text and revealed that most students accessed the text using either a laptop computer or a tablet device, most had a very favorable first impression of the text, very few purchased a printed copy, most accessed their text from home an average of once or twice per week for one to two hours each time, and an overwhelming majority found the instructor-provided materials to be useful. In addition, an overwhelming majority would like to see other courses offered using OER. The second survey (see Survey 2) primarily measured students' use of the OER and revealed that most used the PDF and iBooks formats, a significant majority believed that the OER helped them to succeed in the course, an overwhelming majority found the instructor-provided materials to be helpful, and most would increase the number of credit hours in which they

enrolled if more courses used OER. Course evaluation data was unavailable; the institution moved to Web-based evaluations for the first time this semester, and we were unable to view responses because too few students responded (this was the case for the majority of courses campus-wide, not just for Biology 1020K).

5. Sustainability Plan

The material is maintained in Curriki and YouTube. I will be responsible for keeping the content current and accurate. Another faculty member, Mr. Bernard Majdi, will be teaching Biology 1020K using *Concepts of Biology* this Fall. I look forward to any feedback from him about how things might be improved or revised.

I will continue to campaign for the use of OER in all Biology courses at this institution, in the hopes that my colleagues will see the light.

6. Future Plans

After using the OpenStax textbook for the Introductory Biology sequence, I intend to look for OER for the Microbiology course that I teach. Nicole Finkbeiner has communicated that an OpenStax text for Microbiology is in the works. I intend to apply for a Round 4 ALG grant to complete the Instructor's Guide for *Concepts of Biology* (chapters 1-11) and possibly a Round 5 grant to produce a Laboratory Manual for the Biology 1010K introductory course so that that course becomes completely cost-free for students.

We intend to submit proposals to a number of professional conferences, including the Scholarship of Teaching and Learning Conference in Savannah, GA; the USG Teaching and Learning Conference in Athens; and the International Conference on College Teaching and Learning in Jacksonville, FL, pending institutional support. We are considering publication submissions to professional peer-reviewed SoTL journals. We have already presented at sister institutions about the use of OER and are eager to continue that endeavor.

7. Description of Photograph

(left-right) Sara Selby, project specialist; Dr. Molly Smith, team lead and Professor of Biology