

Affordable Learning Georgia Textbook Transformation Grants

Final Report

General Information

Date: December 17, 2019

Grant Round: Spring 2018 Pilots

Grant Number: 374.e.

Institution Name(s): University of Georgia

Project Lead: DeLoris Wenzel Hesse

Team Members (Name, Title, Department, Institutions if different, and email address for each):

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Course Name(s) and Course Numbers:

- Anatomy and Physiology Laboratory I, CBIO2200L
- Anatomy and Physiology Laboratory II, CBIO2210L
- Gross Human Anatomy Laboratory, CBIO3010L

Semester Project Began: Summer 2018

Final Semester of Implementation: Fall 2019

Total Number of Students Affected During Project:

	CBIO2200L	CBIO2210L	CBIO3010L	Total by semester
Summer 2018	74	60	21	155
Fall 2018	522	278	87	887
Spring 2019	437	438	112	987
Summer 2019	61	69	16	146
Fall 2019	514	262	128	904
Total by course	1608	1107	364	3079

Although students registered in courses from Summer 2018-Summer 2019 did benefit from this project and were provided with some OER materials, the 904 students registered in Fall 2019 were the only group who had exclusive access to our OER materials and did not purchase a textbook. All data from this project are in reference to these 904 students.

1. Narrative

A. Describe the key outcomes, whether positive, negative, or interesting, of your project.

Include:

- *Summary of your transformation experience, including challenges and accomplishments*

This ALG project expanded the scope of a previous project by our group in two key ways. First, using the same approach as the previous project we focused on using available open educational resources (Anatomy and Physiology by OpenStax) to create lab materials specific to our course. This project focused on remixing the OpenStax materials to tailor them to our course and then directly presenting the materials to our students via the online learning platform, Lt (as opposed to linking to OpenStax). Second, as a part of this project we introduced a new major learning objective for the course focused on the collection, analysis, and presentation of human physiological data.

We are particularly happy with how well the integration of the new course materials went. We had planned on rolling out the course materials during the summer of 2019 to allow the transition to occur with a much smaller group of teaching assistants and enrolled students. Our timeline was, unfortunately, delayed until the fall of 2019 due to our major challenge (a member of the writing team leaving the project abruptly). Given the much larger enrollments during the fall semester this could have been problematic; however, based on feedback from both teaching assistants and enrolled students, the implementation of the materials created via this project went well and the change is viewed positively.

A common debate for large Anatomy and Physiology lab courses asks whether students should learn materials by directly using instrumentation versus using visual and/or electronic resources. This project allowed us to explore those options in more depth and we feel that we have found a compromise that allows the benefits of both approaches without the drawbacks. Thanks to open educational resources our students now can use virtual equipment to easily explore various topics with the same functionality of a traditional wet lab without the logistical issues of setting up and maintaining the equipment.

- *Transformative impacts on your instruction*

This writing project provided our group with the unusual opportunity to take an incredibly deep and focused look at the course materials. We repeatedly found ourselves asking, “But, why?” as we evaluated the learning outcomes, content, and lab activities. We removed some content and lab activities that had been used for years because this project forced us to take a step back and take a hard look at whether those materials were helping our students accomplish our learning outcomes.

- *Transformative impacts on your students and their performance*

A major outcome of this project that had a strong impact on our students was the elimination of the common student question of, “What do I need to know?” Moving to our own, custom-created course materials meant that our students only interacted with course materials that the instructional staff felt like they needed to know to accomplish the course learning objectives. Our students are used to courses where instructors take a published set of materials and then choose a sub-set of those materials. Only having the materials they needed to accomplish the course learning objectives eliminated the normal confusion and need to clarification.

Moving from a paper-based lab manual to the use of a browser-based, online learning platform allows our students to interact with the course materials in the way they are most familiar and comfortable, via an electronic device like a computer or phone. This approach also allowed us to develop new types of lab activities that allowed levels of student interaction not previously possible including having our students take photos, videos, and digitally manipulate course materials.

B. Describe lessons learned, including any things you would do differently next time.

Our project experienced many of the common issues that projects of this scope suffer, mostly revolving around time management. One of the most difficult aspects of this project was trying to find the time to focus on the project while juggling normal teaching duties. If possible, getting a course release during the project would be extremely helpful.

Additionally, establishing a timeline from the beginning that included iterative rounds of internal and/or external review (something we did on a compressed timeline) would have been helpful to both set a schedule for completion and maintain steady progress towards the targeted deadline.

2. Quotes

- **Provide three quotes from students evaluating their experience with the no-cost learning materials.**
 1. "The electronic lab manual was useful in learning the basic information regarding the structures and where they are relative to the body. Also, the matching practice and questions regarding the individual structures were beneficial to really ingrain the terms into my head. I felt that the electronic manual was easy to read through and came with multiple pictures that made it easier to convey the content. Overall, It was the perfect tool for me to begin learning the bodies structures and functions."
 2. "Since it was my first anatomy lab, I didn't know what the traditional lab manual would be like, but I loved it. The lab manuals in my other classes aren't as effective, and I know the electronic manual really helped me succeed in this course."

3. "Generally, I liked the electronic lab manual mainly because of the interactive activities embedded in each module. In regards to the text, I used both that which was found in the manual and also that in the printed manual. Overall, the electronic version made the lab more interactive and engaging, which definitely helped me to be more involved in learning in and out of the classroom."

3. Quantitative and Qualitative Measures

3a. Uniform Measurements Questions

The following are uniform questions asked to all grant teams. Please answer these to the best of your knowledge.

Student Opinion of Materials

Was the overall student opinion about the materials used in the course positive, neutral, or negative?

CUMULATIVE Total number of students affected in this project: 904 (see total number explanation, above)

- Positive: 38.15 % of 713
- Neutral: 39.83 % of 713
- Negative: 22.02 % of 713

CBIO2200L ONLY

- Positive: 33.13 % of 486
- Neutral: 49.79 % of 486
- Negative: 17.08 % of 486

CBIO2210L ONLY

- Positive: 12.82 % of 713
- Neutral: 30.77 % of 713
- Negative: 56.41 % of 713

CBIO3010L

- Positive: 30.00 % of 713
- Neutral: 58.18% of 713
- Negative: 11.82% of 713

Student Learning Outcomes and Grades

Was the overall comparative impact on student performance in terms of learning outcomes and grades in the semester(s) of implementation over previous semesters positive, neutral, or negative?

Choose One:

- Positive: Higher performance outcomes measured over previous semester(s)
- Neutral: Same performance outcomes over previous semester(s)
- Negative: Lower performance outcomes over previous semester(s)

Student Drop/Fail/Withdraw (DFW) Rates

Was the overall comparative impact on Drop/Fail/Withdraw (DFW) rates in the semester(s) of implementation over previous semesters positive, neutral, or negative?

Drop/Fail/Withdraw Rate:

Depending on what you and your institution can measure, this may also be known as a drop/failure rate or a withdraw/failure rate.

9.649 % of students, out of a total 912 students affected, dropped/failed/withdrew from the course in the final semester of implementation of our laboratory manuals

Choose One:

- Positive: This is a lower percentage of students with D/F/W than previous semester(s) (average over 5 years=11.23%)
- Neutral: This is the same percentage of students with D/F/W than previous semester(s)
- Negative: This is a higher percentage of students with D/F/W than previous semester(s)

3b. Measures Narrative

In this section, summarize the supporting impact data that you are submitting, including all quantitative and qualitative measures of impact on student success and experience. Include all measures as described in your proposal, along with any measures developed after the proposal submission.

This project supported the creation of an open-source lab manual for exclusive use with the labs for Anatomy and Physiology I and II and Gross Anatomy, a total of three laboratory courses. The regular A&P courses have been required to purchase a \$162.00 lab manual

and this laboratory manual is used for both semesters of the A&P sequence. Beginning Fall 2019, all students registered in CBIO2200L and CBIO2210L receive a free laboratory manual, thus saving a total of \$162 per student and an estimated \$83,268 savings over two semesters. The Gross Anatomy Laboratory course required the purchase of a \$120 laboratory manual; this project has saved each student that sum, for a total of savings of approximately \$24,000 per academic year.

Grade and withdrawal/failure data are challenging to compile given the format of our laboratories, the number of instructors teaching these labs, and the data that are centrally reported.

The lab is a co-requisite with the Anatomy and Physiology lecture (CBIO 2200 and CBIO 2210) as well as the Gross Anatomy lecture (CBIO 3010), and students may not withdraw from the lab independent from the lecture. Additionally, students who withdraw from the lecture are automatically withdrawn from the lab. Thus, we can provide withdrawal data from the lecture courses, but not for the labs independently. Those data from Fall 2019 showed a significant decrease in DFW rates with 9.649 % students dropped/failed/withdrew from the course versus the historic DFW rate of 11.23%. It should be noted that in addition to providing an OER text to these students, the curriculum underwent significant modification and it is likely that both changes were instrumental in the reduced DFW rate.

Grade data also offers a challenge. Students receive a grade for the lab performance, however, it is not an official course grade, but rather a component of their overall grade that is officially reported to UGA. In addition, labs are taught by a total of 26 different graduate and undergraduate teaching assistants, thus introducing great variability in grades. To offset this variability, we standardize grades when there are any “outliers”. We were not aware of any major differences between the Fall 2019 laboratory grades and historical grades, and have concluded that students performed at similar levels with the open lab manual as with the traditionally published one in the past.

4. Sustainability Plan

- *Describe how your project team or department will offer the materials in the course(s) in the future, including the maintenance and updating of course materials.*

The Department of Cellular Biology will use these laboratory texts into the future. Anatomy and Physiology I, Anatomy and Physiology II, and Gross Human Anatomy are taught every semester, including summer, and will be for the foreseeable future. The newly created lab texts will be hosted on Galileo and available to distribution to other interested institutions. We will update the lab manual yearly (during the Summer), or more frequently, as needed.

5. Future Plans

Future plans include expanding the lab manuals to include more experiments, as well as adding self-test activities. In addition, we are seeking approval for a new physiology course; the laboratory portion of that course will use an edited version of the CBIO2210L manual.

6. Description of Photograph

A photograph will be appended to this report January 2020.