

Affordable Learning Georgia Textbook Transformation Grants

Final Report

Date: December 18, 2015

Grant Number: 76

Institution Name(s): Dalton State College

Team Members (Name, Title, Department, Institutions if different, and email address for each): Susan Burran, Assistant Professor of Biology (sburran@daltonstate.edu) and David DesRochers, Associate Professor of Biology (ddesrochers@daltonstate.edu), Department of Natural Sciences, School of Science, Technology, and Mathematics

Project Lead: Susan Burran

Course Name(s) and Course Numbers: Principles of Biology I (BIOL 1107) and Principles of Biology II (BIOL 1108)

Semester Project Began: Spring 2015

Semester(s) of Implementation: Fall 2015

Average Number of Students Per Course Section: 32

Number of Course Sections Affected by Implementation: BIOL 1107 = 16, BIOL 1108 = 4

Total Number of Students Affected by Implementation: 640

1. Narrative

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

- We successfully offered our introductory biology students low-cost lab activities that were authored by ourselves and colleagues in order to replace the more costly lab manual that we previously had used. Challenges included reaching agreement between faculty about the topics covered, the degree of depth and breadth for each topic and the level of challenge of each lab. Challenges also included communicating specific needs to the lab staff for each new lab activity. The first time that a new procedure is conducted can be difficult due to unforeseen events. Overall, the semester went well for both sets of courses. Now with some evidence of which labs work well and which ones do not run smoothly, we can begin to revise the problematic labs.
- With new material and labs, there was a lot of enthusiasm among our colleagues. There is no shortage of ideas for new lab activities. The experience was largely positive for the instructors of these courses, because we have compassion for our students and are sympathetic to the financial strain buying multiple textbooks can be.
- Students were informed of the project; they knew it was the pilot semester for the new lab manual. Many students were able to give reflective feedback about whether or not the labs had an effect on their grasp of core concepts of each course. This information (mostly collected as comments within the student satisfaction surveys) will be invaluable moving forward.

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

- It is difficult to embark on a project that involves collaboration. During the semester, everyone is very busy, making it hard to accomplish project objectives. During semester breaks, fewer instructors are on-campus, which makes it difficult to communicate. Because cooperation and collaboration are highly valued, in the future, changes would be made to the method additional faculty are able to participate in projects undertaken. For example, deadlines will be more clearly stated, reliance on open-ended questions on surveys will be reduced, and individuals who express interest in participation will be given more guidelines.

2. Quotes

- "I like that the lab packets for each lab are mine. For [BIOL] 1107 I had to buy a used lab manual and a lot of the pages were already written in and it was confusing and annoying."
- "I love this lab manual approach! You save money and it's so much easier to keep up with."
- "It's inexpensive and easy to access."
- "The activities were so helpful for my understanding of the class."
- "I liked printing off the labs because I feel like it made me more organized."

3. Quantitative and Qualitative Measures

3a. Overall Measurements

Student Opinion of Materials

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

Total number of students affected in this project: 640

- Positive: 67.4 % of 68 number of respondents
- Neutral: 22.1 % of 68 number of respondents
- Negative: 23.1 % of 68 number of respondents

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? Positive.

- ❖ Weave data is not currently available for the semester of implementation (Fall 2015), however there are slight improvements in grades for Fall 2015 compared to previous semesters.

Choose One:

- X 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? Positive.

Drop/Fail/Withdraw Rate: 14.84 % of students, out of a total 640 students affected, dropped/failed/withdrew from the course in the final semester of implementation.

Choose One:

- X Positive: This is a lower percentage of students with D/F/W than previous semester(s)
- 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. Narrative

- Student Grades

Grades for 1107 and 1108 from Spring 2014, Fall 2014, and Spring 2015 were compared to grades for those courses from Fall 2015. The percentage of students who received acceptable grades (grade A, B, or C) was higher for 1107 during the Fall 2015 semester (81%) than for any of the other semesters included in the analysis. There are, of course, far too many variables to determine exactly why this is the case. These courses are taught on multiple campuses by varied instructors at many different times of day. One of the possibilities is that students are able to access course materials without financial burden, as all the course materials are now open educational resources. This may help students maintain higher grades. For 1108, the percentage of students with acceptable grades has not changed since adoption of the open-access lab manual (84%).

- Student Learning Outcomes

WEAVE data and data from pre/post tests for 1107 and 1108 are not currently available for the Fall 2015 semester; these data and corresponding analysis will be provided once they are available. We intend to analyze these data to determine what impact the new open-educational resources has on students' ability to succeed in the learning outcomes outlined for each course.

- DFW rates and comparison

DFW rates for Spring 2014, Fall 2014, and Spring 2015 were compared to DFW rates for Fall 2015. For the Fall 2015 semester, the DFW rate dropped to 14.8%, from a previous rate of 21.3%. Again, there are many variables contributing to students receiving lower grades or withdrawing from a course, but it is possible that simply using free materials contributes towards students' comprehension of materials, confidence in their abilities, and likelihood to score better on assessments and remain enrolled in the course.

- Student satisfaction surveys

Student surveys were conducted at the end of the semester for 1107. Based on student responses, most students (over 90%) felt that positively or were neutral about the open-access lab materials. For 1108, students were given surveys twice during the semester: at mid-term and at the end of the semester. Both surveys indicated that students felt positively or neutrally about the open-access lab materials (89% and 87%, respectively).

Students related that the strong points of the labs themselves were the hands-on activities and group work. Students' least favorite lab activities were those that had very lengthy instruction and/or did not include group work. The majority of positive comments were about the low-cost and ease-of-access to the lab materials. Negative comments were largely due to errors in lab set-up, which is not surprising considering this is the first semester these protocols have been implemented.

- Instructor satisfaction surveys

Faculty who regularly are instructors for 1107 and 1108 were surveyed during the Spring 2015 about which labs they felt were most problematic and what suggestions they could offer on replacement labs. Whenever possible, the team implemented new protocols and changes according to faculty recommendations. During Fall 2015, instructors of these courses were surveyed to measure their satisfaction with the new lab materials. The response rate was much lower than hoped (3 instructors out of 9 polled) but useful feedback was given. The majority of instructors were concerned with the clarity of student instructions and the lack of hands-on activities in certain labs, as well as the shortage of rigorous questions to assess student understanding in multiple labs. Below are a few comments collected from faculty:

Overall, the labs have gone very well. Several labs need more hands-on activities to keep students focused and to maximize their time.

These labs are very good, and I like how we can revise them as we see fit!

I really enjoyed writing the labs!

4. Sustainability Plan

- The Natural Sciences Department has adopted the lab materials that we implemented this semester for our Principles of Biology sequences. The project team will continue to work with faculty who teach each course to gather additional feedback about the success of each lab activity, and the team will work to revise the labs as needed.
- Due to the modular nature of the labs, revision of individual activities will be straightforward. Any needed updating of the material will be done on an annual basis after faculty group meetings and discussions about the efficacy of the lab activities. Maintenance of the LibGuide will be in collaboration with our campus library staff, and the development team will retain editing capabilities of the LibGuide.

5. Future Plans

- We agree that seeking high-quality, affordable learning material is essential for a student body that lives from a low socio-economic region. We wish to continue exploration of open-access and no/low-cost-to-students course materials for other courses, as the reduction of cost of course materials appears to be impactful to student experience and grades.

6. Description of Photograph

- (left-right) Dr. David DesRochers, lab manual author and editor; Prof. Susan Burran, team lead and lab manual author and editor.