Affordable Learning Georgia Textbook Transformation Grants

Final Report

To submit your Final Report, go to the [Final Report submission page](http://affordablelearninggeorgia.org/site/final_report_submission) on the ALG website: http://affordablelearninggeorgia.org/site/final\_report\_submission

The final report submission form allows up to five files:

* This completed narrative document (required)
* Syllabus or syllabi (required)

*If multiple files, compress into one .zip folder*

* Qualitative/Quantitative Measures data files (required)

*If multiple files, compress into one .zip folder*

* Photo of your team or a class of your students for future ALG promotions (optional)
* Invoice for the second half of the grant’s award amount (optional)

Follow the instructions on the webpage for uploading your documents. Based on receipt of this report, ALG will process the final payment for your grant. ALG will follow up in the future with post-project grantee surveys and may also request your participation in a publication, presentation, or other event.

# General Information

**Date:**

**Grant Round:** 15

**Grant Number:** 473

**Institution Name(s):** Georgia Gwinnett College

**Project Lead:** Shoshana Katzman

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

|  | Name | Title | Email Address |
| --- | --- | --- | --- |
| Team Member 1 | Shoshana Katzman | Assistant Professor of Biology | skatzman@ggc.edu |
| Team Member 2 | Jennifer Hurst-Kennedy | Associate Professor of Biology | jhurstkennedy@ggc.edu |
| Team Member 3 | Alessandra L. Barrera | Associate Professor of Biology | abarrera@ggc.edu |
| Team Member 4 | Jennell Talley | Associate Professor of Biology | jtalley@ggc.edu |
| Team Member 5 | Rebecca Higgins | Assistant Professor of Biology | rhiggins@ggc.edu |

**Course Name(s) and Course Numbers:** BIOL 3400K Cell Biology

**Semester Project Began:** Fall 2019

**Final Semester of Implementation:** Fall 2020

**Total Number of Students Affected During Project:**

# Narrative

* 1. *Describe the key outcomes, whether positive, negative, or interesting, of your project. Include:*
* *Summary of your transformation experience, including challenges and accomplishments*

The team members included in this ALG grant worked quickly to develop a timeline for developing and implementing course materials. During the fall 2019 and early spring 2020 semester, each member was responsible for generating OER for a portion of the textbook, intending to have all edits done for piloting in summer 2020. Additionally, all IRB materials were generated and approved for spring 2020 implementation. Surveys were administered in the spring 2020 semester to students in all sections of BIOL 3400K using a traditional textbook and then to all sections of BIOL 3400K that had access to the OER in summer and fall 2020. Generating and editing the OER materials was challenging, but feasible with five team members.

A significant challenge was the effect of COVID-19 school closures and conversion to online teaching in the spring and online and/or hybrid teaching in the summer and fall 2020 semesters. We believe this had a significant impact on student learning and success that was independent of the OER implementation in the classroom. The effect of students being forced into online learning or hybrid environments, along with other personal challenges associated with the pandemic, may not have been the best for individual student success. This is likely why the grade distributions and DFW rates deviate from expectations after the implementation of the OER.

* *Transformative impacts on your instruction*

This transformation provided two significant positive impacts on faculty members teaching cell biology and the biology discipline. First, this collaboration allowed faculty to generate a lecture curriculum that directly aligns with the student learning outcomes generated for this course. Second, by providing a no-cost textbook that is integrated with the course learning outcomes, we expected to increase retention and success in upper-division coursework for a significant number of students in the School of Science and Technology at GGC.

* *Transformative impacts on your students and their performance*

Student attitudes and responses towards the textbook were positive. During informal conversations with faculty and in survey response, they expressed that they appreciated that the textbook was specific to the course content covered and highly appreciated the cost savings. Since the costs associated with required courses can be substantial, providing our students with free, open-access course materials are crucial to easing their financial burden. Through this project, the institution will see the impact on savings on the second largest group of students on campus – those who major or minor in Biology.

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

The team members quickly developed a specific implementation timeline after the ALG grant was awarded. We did anticipate generation of course materials would be time consuming, but we did not anticipate = the significant amount of time that it would take for team members to edit all textbook chapters. Next time, we would leave more time for editing prior to piloting the textbook within the classroom.

Additionally, we used several figures from existing OER sources (such as Libretexts) but learned that copying and pasting the figures often resulted in low resolution that hindered readability in the text and usefulness in PowerPoint slides.. It may have been easier to generate more of our own figures for consistency and resolution purposes.

# Quotes

*Provide three quotes from students evaluating their experience with the no-cost learning materials.*

Quote #1: “Yes, having free access to a textbook affected my learning in a positive way. Sometimes traditional textbooks go into further detail of the topic and can be difficult to understand. The free BIOL3400K textbook was easy to read and displayed great examples and broke down cell processes just a little easier than the traditional huge college textbook.”

Quote #2: “Having a free access to a free textbook help me a lot in my learning and success in BIOL3400K. Textbook can be very expensive and I sometimes have to consider whether I need to buy the textbook for the course. Having this textbook access for free offers me another way to study for my exam and also I can pre-read the knowledge before the lecture.”

Quote #3: “Having access to a free textbook helped to be able to work/study for the course anywhere. It also took the financial strain of buying/renting/borrowing the book off of me! I also enjoyed the fact that the file for the book was relatively small so I could download it on my phone.”

# Quantitative and Qualitative Measures

## 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?**

Our Likert scale had four choices (strongly agree, agree, disagree and strongly disagree); we grouped them into positive responses (strongly agree and agree) and negative (disagree and strongly disagree). Several survey questions were asked, and they are summarized in the table in 3b, but I have put the responses to the question “Having a free (no-cost) BIOL3400K textbook increased my ability to succeed in this course” in this section.

Total number of students affected in this project: 174 survey responses

* Positive: \_\_\_\_89\_\_\_ % of \_\_\_174\_\_\_\_\_ number of respondents
* Negative: \_\_\_\_11\_\_\_ % of \_\_\_\_174\_\_\_\_ 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?**

*Student outcomes should be described in detail in Section 3b.*

Choose One:

* \_\_\_ Positive: Higher performance outcomes measured over previous semester(s)
* \_\_\_ Neutral: Same performance outcomes over previous semester(s)
* \_\_x\_ 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.*

\_\_\_25\_\_\_\_% of students, out of a total \_\_\_\_118\_\_\_ students affected, dropped/failed/withdrew from the course in the final semester of implementation.

Choose One:

* \_\_\_ 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)
* \_x\_\_ Negative: This is a higher percentage of students with D/F/W than previous semester(s)

## 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.*

*[When submitting your final report, as noted above, you will also need to provide the separate file (or .zip with multiple files) of supporting data on the impact of your Textbook Transformation, such as surveys, analyzed data collected, etc.]*

* *Include measures such as:*
  + *Drop, fail, withdraw (DFW) delta rates*
  + *Course retention and completion rates*
  + *Average GPA*
  + *Pre-and post-transformation DFW comparison*
  + *Student success in learning objectives*
  + *Surveys, interviews, and other qualitative measures*
* *Indicate any co-factors that might have influenced the outcomes.*

Student attitudes upon implementation of OER in BIOL 3400K. Surveys were administered during spring, summer, and fall 2020 to assess student attitudes towards OER vs the traditional textbook. Student responses were based on a Likert scale including the options a) strongly agree, b) agree, c) disagree, and d) strongly disagree. We received 174 responses in total that were analyzed using a 2x2 table of those students who have access to the OER vs the traditional and positive (strongly agree or agree) vs negative responses (disagree or strongly disagree) to determine statistical significance. Below is a table (Table 1) summarizing the questions and responses, as well as the conclusions and the data (% positive and negative responses), is included in an attached PowerPoint file.

|  |  |  |
| --- | --- | --- |
| **Survey Question** | **P-value** | **Conclusion** |
| I am satisfied with current method of access to course textbook | P<0.001 | Students with access to OER were more satisfied with the method of access to their textbook than those with a traditional textbook |
| I am satisfied with the current textbook costs associated with the course | P<0.001 | Students with access to OER were more satisfied the cost of their textbook than those with a traditional textbook |
| I am more likely to rely on the internet to answer questions related to class content | P<0.001 | Students with access to OER were less likely to rely on the internet to answer questions than those with a traditional textbook |
| Having a free (no-cost) BIOL3400K textbook increased my ability to succeed in this course. |  | 89% of students with access to OER responded positively to this question |
| The textbook aligned with the learning outcomes for the course. | P<0.05 | Students with access to OER responded that the textbook aligned with the learning outcomes for the course as compared to those with a traditional textbook. |
| The textbook helps me to understand the content taught in the course. | P<0.01 | Students with access to OER felt that the textbook helped them understand course content to a greater extent than those with access to a traditional textbook. |
| The textbook was easy to read. | P<0.05 | Students with access to OER felt that the textbook was easy to read to a greater extent than those with access to a traditional textbook. |
| I used the textbook to help me to study for the course. | P<0.001 | Students with access to OER used the textbook to study for the course to a greater extent than those with access to a traditional textbook. |

**Table 1. OER student survey responses.** The first column represents the survey question asked, the middle column represents the statistical difference between the spring 2020 semester (before implementation) and summer and fall 2020 semesters (after implementation). The third column is the overall finding upon comparison of the before and after implementation.

Below is a breakdown of grade distributions for students using traditional textbooks during the spring 2020 semester (n=118) and the BIOL 3400K OER during the summer and fall 2020 semesters (n=162) (Fig 1). The DFW rate increased upon adoption of OER. This was not completely unexpected given the significant change in teaching modality, the switch to online teaching at the end of the spring 2020 semester, and online and/or hybrid sections during the summer and fall of 2020 due to the COVID-19 pandemic. The faculty involved in teaching these sections feel strongly that DFW rates and student success in BIOL 3400K were adversely affected due to various influences such as the teaching modality, financial, work, and mental stressors due to the pandemic and are not representative of the likely positive impact of the OER.

# **Figure 1. Grade distribution before (blue) and after (orange) implementation of the OER.**

# 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.*

All sections of BIOL 3400K at GGC will be using the OER for future semesters. The team has discussed this project with and received the endorsement of the Biology faculty who teach Cell Biology as well as the Cell Biology course coordinators who organize the course and adopt the textbook. This endorsement will ensure that the project is sustained and the newly transformed textbook will be institutionalized after funding is over. After implementing the OER, the team members will meet each semester to discuss the textbook and decide if any updates need to be made to existing materials.

# Future Affordable Materials Plans

*Describe any impacts or influences this project has had on your thinking about or selection of learning materials in this and other courses that you will teach in the future.*

Exposure to this process has provided the knowledge on where and how to access OER materials, allowing us to look at these repositories first when selecting textbooks and learning materials for future courses.

Implementation of the OER in BIOL 3400K showed the team members how transformation can be achieved. We have shared this with colleagues and hope to encourage the implementation of OER in other courses within the Biology discipline at GGC.

# Future Scholarship Plans

*Describe any planned or actual papers, presentations, publications, or other professional activities that you expect to produce that reflect your work on this project.*

*The data acquired from student surveys will be presented:*

1. Georgia Gwinnett College CREATE symposium, Fall 2020
2. Association of Southeastern Biologists Annual Conference, Spring 2021

Additionally, the team members intend to submit the work and statistical findings for a peer-reviewed publication in the future.