Affordable Learning Georgia Textbook Transformation Grants

Final Report

# General Information

**Date: May 11, 2021**

**Grant Round: 16**

**Grant Number: 516**

**Institution Name(s): Columbus State University**

**Project Lead: William Brian Muse**

**Team Members (Name, Title, Department, Institutions if different, and email address for each): Brian Muse, Professor, Department of Mathematics,** [**muse\_william@columbusstate.edu**](mailto:muse_william@columbusstate.edu)**, Carlos Almada, Professor, Department of Mathematics,** [**almada\_carlos@columbusstate.edu**](mailto:almada_carlos@columbusstate.edu)**, Madhusudan Bhandary, Professor, Department of Mathematics, bhandary\_madhusudan@columbusstate.edu, and Kristin Lilly, Assistant Professor, Department of Mathematics,** [**seamonlilly\_kristin@columbusstate.edu**](mailto:seamonlilly_kristin@columbusstate.edu)

**Course Name(s) and Course Numbers: Elementary Statistics STAT 1401**

**Semester Project Began: Spring 2020**

**Final Semester of Implementation: Spring 2021**

**Total Number of Students Affected During Project: 658**

# Narrative

During Fall 2020 and Spring 2021 all sections of STAT 1401 Elementary Statistics at Columbus State University affecting at total of 658 students were taught using low/no cost textbook materials. The main key outcome is student savings. 296 students used a free textbook each saving between $44.99 for a premium ebook and $179.99 for a premium paperbound textbook yielding a savings of $13,317 to $53,277. 362 students used WebAssign with the OpenStax book for $37.95 instead of a $79.99 premium online homework system yielding a savings of $15,218. Total textbook savings was between $28,535 and $68,495.

Another key outcome was reducing technology costs for calculations. The premium online homework system includes an application for calculations (StatCrunch) and WebAssign with the OpenStax book does not. So, to avoid additional technology costs for this group of students we used free RStudio and free online statistics calculators (list is attached). 94 TI-83 graphing calculators were purchased for the purpose of offering students using the free textbook a $10/semester calculator rental option at a savings of about $87 per student compared to the Amazon calculator purchase price. So far, savings from rental calculators has been less than we had hoped. We didn’t receive them until late fall and only managed to rent 7 of them in the spring for a savings of $609. Beginning summer, we will do a better job of informing students early about this rental option.

The free textbooks we used include: Introductory Statistics, at <https://saylordotorg.github.io/text_introductory-statistics/index.html> and OpenStax Introductory Statistics, at <https://openstax.org/details/books/introductory-statistics>

Of course, it is challenging to change our ways. We each had taught STAT 1401 many times before and felt that our courses were well oiled machines that shouldn’t be changed. However, we understood the importance of making education more affordable and so agreed to the effort of making different materials work. Overall, the new materials were received well and student performance improved.

# Quotes

“The fact that the teacher was flexible and gave us a free textbook. This took off a huge stress”

“It was cheaper and more convenient to have it on my computer to use while doing homework!

“WebAssign has been my favorite online tool used so far since the pandemic started.”

# Quantitative and Qualitative Measures

## Uniform Measurements Questions

**Student Opinion of Materials**

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

Total number of students affected in this project: **658**

* Positive: **77.0%** of **74** number of respondents
* Neutral: **20.3%** of **74** number of respondents
* Negative: **2.7%** of **74** 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?**

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?**

**Drop/Fail/Withdraw Rate:**

**17.70%** of students, out of a total **356** 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)

## Measures Narrative

Grade distributions and survey results are provided (See uploaded DATA). Summaries for two semesters with OER materials for Fall 2020 and Spring 2021 were compared with summaries for three semesters Before OER materials for Fall 2019 through Summer 2020. The drop, fail withdraw rates slightly decreased by 0.8% from 19.5% to 18.7% after OER materials were introduced. The average GPA increased 0.21 points from 2.52 to 2.73. Student success in learning objectives improved based on the following increases in productive grades: percent of A letter grades increased 8% from 31% to 39%, percent of ABC grades increased 4% from 72% to 76%.

The following are summaries and a sample of additional quotes from the survey questions that illustrate the favorable student response to our grant efforts:

1. Please rank your overall opinion of the textbook materials.

77.0% positive

20.3% neutral

2.7% negative

1. What did you like or dislike about the textbook used for this course?

It was a great resource

It was easy to access and had a lot of examples.

I liked how the examples were provided to help walkthrough difficult problems

The textbook for this course was very explanatory.

It went along with the assignments well and it made the information clear to understand

I liked how the textbook was very helpful and interactive

It was free and online

I liked how it was easily available for online work.

I liked that it was online so I could just search the book for what I needed.

There are some problems that you can practice

I liked the ease of the online book

It was simple to get to and search.

I like how accessible it was and how it explained the information really well.

I liked that it was affordable

1. Was WebAssign used in this course? If so, what did you like or dislike about it?

Yes I love it

Yes. I liked how easy it made it to reference the book for specific problems

Yes, I liked I could go back and refer to past assignments & take notes while doing homework

Yes. I love webassign. I love how it calculates grades and how it is very easy to use and easy to understand. It is very easily accessible and usable.

Yes it was used in this course. I enjoyed the practice questions because they helped a lot

Yes it was. I like that it can send you where you need to go in the book to reference the problem.

yes, I loved how everything was easy to find.

Yes. It is superior to a textbook in EVERY way. Stop making people buy useless textbooks.

yes & i really like using webassign & the opportunity it gives you i would love to use this again

Yes. Wonderful

Yes, I really enjoyed using Web assign and it was really easy to use.

1. Which technology did you use for calculations? TI-83, R-Studio, free online calculator, etc.?

49% used a TI calculator

20% used a free online calculator

8% used R-Studio

20% used both a TI and a free online calculator

3% used both R-Studio and a free online calculator

1. Which aspect(s) of the course contributed the most (or the least) to your educational experience?

I loved it all

The book examples and textbook access.

I love the interactive questions

The online textbook was the most helpful part.

Everything about the whole set up was excellent for the students perspective

The online calculator and tutorials

The step by step text books.

The multiple ways to solve equations and multiple resources

The textbook contributed the most to my education.

The textbook has contributed the most for me in the course.

I liked how the text book and assignments allowed me to complete the assignments at my own pace

# Sustainability Plan

The department plans to continue using low/no cost textbooks for teaching STAT 1401. We also plan to continue to offer low cost rental of TI-83 calculators.

# Future Affordable Materials Plans

Members of our grant team along with our department in general have a substantial history of utilizing OER’s in a variety of courses at Columbus State University. We plan to continue to look for ways to make education more affordable for our students.

# Future Scholarship Plans

Dr. Muse presented his experiences with this grant on February 11 as part of a short virtual info session about ALG grants that was co-sponsored by the OER Campus Champions and the Center for Online Learning. Also, the College of Letters and Sciences is featuring the Math Department in an article for being a meritorious program in part for being a campus leader in receiving this and other ALG grants.