

# Affordable Learning Georgia Textbook Transformation Grants

## Final Report

### Instructions:

A. Your final report submission must include four separate component files:

1. Completed report form. Please complete per inline instructions. The italicized text is provided for your assistance; please delete the italicized text before submitting your report.
2. Course Outline document with links to the materials as used per day, week, or unit, organized chronologically. [View Course Outline Example](#)
  - a. For each resource, give the title, author, Creative Commons licenses (if appropriate), and freely accessible URL to the material. Include all open-access links to all adopted, adapted, and newly created course materials.
3. Supporting data on the impact of your Textbook Transformation (survey, analyzed data collected, etc.)
4. A photograph of your team and/or your students for use in ALG website and materials.
  - a. Photograph must be 800x600 pixels at minimum (length x height).
  - b. Photograph must be taken together: individual team member photographs and website headshots not accepted.

B. Go to [http://affordablelearninggeorgia.org/site/final\\_report\\_submission](http://affordablelearninggeorgia.org/site/final_report_submission) to submit these four components of your final report. Follow the instructions on the webpage for uploading your documents. You will receive a confirmation email. Based on receipt of this report, ALG will process the final payment for your grant. ALG may follow up with additional questions or to request your participation in a publication, presentation, or other event.

**Date: 5/20/16**

**Grant Number: 116**

**Institution Name(s): College of Coastal Georgia**

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

1. Jose Lugo, Assistant Professor of Mathematics, [jlugo@ccga.edu](mailto:jlugo@ccga.edu)
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5. German Vargas, Assistant Vice President for Academic Student Engagement and Associate Professor of Mathematics, [gvargas@ccga.edu](mailto:gvargas@ccga.edu)
6. Victor Vega, Interim Dean, School of Arts and Sciences and Associate Professor of Mathematics, [vvega@ccga.edu](mailto:vvega@ccga.edu)

**Project Lead:**

German Vargas / Victor Vega

**Course Name(s) and Course Numbers:**

MATH 1111: College Algebra

MATH 1112: Trigonometry

MATH 1113: Precalculus

MATH 2112: Probability and Statistics

**Semester Project Began:**

Summer 2015

**Semester(s) of Implementation:**

Summer 2015, fall 2015, spring 2016

**Average Number of Students Per Course Section:**

	Number of Sections	Total Number of Students	Average Number of Students
<b>Summer 2015</b>			
MATH 2112	3	53	18
<b>Fall 2015</b>			
MATH 1111	12	465	39
MATH 1112	3	64	21
MATH 1113	2	52	26
MATH 2112	8	261	33
<b>Spring 2016</b>			
MATH 1111	10	285	29
MATH 1112	3	80	27
MATH 1113	1	20	20
MATH 2112	10	352	35
<b>Total</b>	52	1632	31

**Number of Course Sections Affected by Implementation:** See above

**Total Number of Students Affected by Implementation:** See above

## 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

The goal of this project was to promote access and affordability across our institution, which aligns well with our institutional mission and strategic goals which emphasize student success and service to the community. We are very excited about the impact this project has had and the student savings that it has generated, but we also understand that change will often create discomfort, and we knew that a radical and at-scale transformation like this one was not going to come without challenges. In general, one of the challenges from this project was associated to the bold approach of implementing all the changes at scale throughout all the sections, which in some cases resulted in difficulties like those caused by XYZ Homework because of its lack of robustness. Even though this approach was bold and risky, we felt compelled to replace our current textbooks and online homework platforms immediately and at scale; we could not continue expecting our student to pay \$200 to \$300 per course for a resource that we knew could be matched by an open educational resource. After our final semester of implementation, we are very pleased with the results and we are proud of the large amounts of savings generated, but we will still be vigilant to new opportunities to keep improving the deployment and implementation of OERs.

- Transformative impacts on your instruction

This transformation has given us the opportunity to adapt to a new paradigm in instruction and we have had to compensate the areas in which the selected OERs are falling short. We have had to move far away from our comfort zone of Pearson products, with their robust online platform (MyMathLab), and their prebuilt course materials and ancillary resources. We had to create the ancillary resources, adapt and adjust to new homework platforms, and we are still having challenges with the way that the material is presented in the College Algebra component of the OpenStax Algebra and Trigonometry textbook. We are pleased however with the trigonometry component of the book, and we are pleased with the Introductory Statistics textbook.

- Transformative impacts on your students and their performance

The impact on student performance has been neutral, which was the optimistic and anticipated result from the transformation. However, the perceptions of the materials used in the course have had mixed reviews. From the feedback received by students (refer to the ALG Survey Results document) it is clear that the regular use of the eBook is not prevalent throughout the courses, and this can be attributed to discontent of the general delivery of the content in the eBook as perceived by both

faculty and students. However, this issue is not unique to OER or OpenStax, and faculty and student face similar challenges with traditional textbooks. Once again, we experienced more issues with the College Algebra content than the content for Trigonometry and for Statistics.

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

This has been an interesting collaborative process in our department, and we have learned to work hard through challenges and discomforts. As an example, we ventured to adopt a low cost online homework platform (XYZ Homework) and after trying to overcome some of its shortcomings, we had to reevaluate at the middle of the project, and we switched to WebAssign for all our courses using OpenStax (at the beginning of fall 2015 WebAssign was only available for Probability and Statistics and not for the College Algebra/Trigonometry/Precalculus). As a general lesson learned, if you are an early adopter you need to be willing to explore and adapt; the higher education environment is changing rapidly and we need to be agile to react to the availability of new resources specially if these promote access and affordability for our students.

## 2. Quotes

- Provide three quotes from students evaluating their experience with the no-cost learning materials.
  - *I think the online homework, online books (free and paid) are great for the education process. Any where there is an internet connection, the students have the ability to access all of their materials. There is a minor benefit in teaching all students how to navigate the internet and use resources in a new method. / / The biggest issue I have with the homework is a personal issue. I find my stats class to be difficult, at not fault to the teacher. The subject is one I struggle with. My issues with the homework comes from having the ability to answer the same question 5 times before the site permanently marks it wrong. In my algebra class last semester, I used the opportunity to try the question again as a coaching tool to figure out what I did wrong and solve the problem correctly. With the class I am struggling with, Stats, Im using the multiple chances to answer as a way to increase the likelihood of a good grade without taking the time to learn what I did wrong and how to solve correctly. Applying this to any subject and any student, it boils down to a person's willingness to push beyond discomfort to excel at learning the material. / / I still prefer the online homework system.*
  - *Other than having to meet with the Professor or SI, I found it difficult to find the "why" and "how" form the textbooks. This made learning the material more difficult. Improved examples in the textbook would likely generate better understanding of the material. While some problems displayed excellent data for solving a problem, it was not always the case for webassign related question increasing the difficulty of solving problems by myself.*
  - *The online textbook was confusing and was never used in the classroom, so the format was completely different from the professor's teaching style. The homework on*

*webassign was difficult and the textbook was no help in finding solutions to the problems. Webassign also would not show you the steps to finding a correct answer. You can open a practice question, but it only shows you if you're correct or not, then it displays the correct solution with no explanation of how it was reached. My experience with mymathlab online homework was much better. That site would help you learn the math, rather than just evaluating your current knowledge. Homework is useless if the student doesn't learn the concepts.*

### **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?**

Students enrolled during fall 2015 and spring 2016 were asked to provide feedback about their experience using OpenStax books. A total of 277 students completed the survey.

Highlights:

- 31% of the students use the books sometimes, most of the time, or always. The majority of those who did not use the book indicated that they did not need to do so.
- Students who used the book, were asked to provide feedback regarding specific characteristics of the book. Most students answered “Moderately Useful” or “Very Useful” for examples and accessibility (62% and 70% of students, respectively). However, most students answered only “somewhat useful” and “moderately useful” for the explanations (70%), layout (63%), amount of material per section (68%), and amount of material per chapter (71%).
- For students who have used online textbooks before, 75% reported that the quality of the OpenStax book was about the same as other free electronic books, while 16% indicated it was better.
- When comparing OpenStax books to math textbooks in general, 55% reported that the quality of the OpenStax book was about the same as other free electronic books, while 22% indicated it was better.
- Overall, students in the Precalculus courses were evenly split in their answer as to whether the resources were detrimental while 76% of the Statistics students did not believe they were. Separate from that issue, a majority of students did believe more instructors should consider adopting lower cost resources.

*Complete survey results attached as separate document*

Total number of students affected in this project: 1632

- Positive: 44 % of 277 number of respondents
- Neutral: 26 % of 277 number of respondents
- Negative: 30 % of 277 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:

- 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?**

MATH 1111: DFW rates increased from previous falls, but remain the same for the spring term.

MATH 1112: DFW rates slightly increase from previous falls, and decreased for the spring term.

MATH 1113: DFW rates decreased from previous falls, as well as previous springs.

MATH 2112: DFW rates obtained in the terms following the implementation were similar to those prior to implementation

**The overall comparative impact on DFW rates in the semesters of implementation over previous semesters is neutral.**

	Prior to Implementation		After Implementation	Prior to Implementation		After Implementation
	Fall 2013	Fall 2014	Fall 2015	Spring 2014	Spring 2015	Spring 2015
<b>MATH 1111</b>	33%	34%	44%	43%	40%	42%
<b>MATH 1112</b>	30%	39%	41%	38%	43%	34%
<b>MATH 1113</b>	35%	29%	25%	59%	63%	40%
<b>MATH 2112</b>	38%	30%	38%	32%	36%	33%

**Drop/Fail/Withdraw Rate:**

36% of students, out of a total 737 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)
- Negative: This is a higher percentage of students with D/F/W than previous semester(s)

**3b. Narrative**

As indicated above, the impact of the transformation has been in access and affordability but has been neutral in academic achievement and performance. The DWF rates in the courses has been compared fall-to-fall, and spring-to-spring to reduce possible confounding variables, and the general results do not indicate any positive or negative impact of the transformation. Qualitatively however, the feedback received from the students is indicative of dissatisfaction with the ebook and the online homework platforms. Even though most of the students (67%) wish their instructors in other classes would also adopt free/low cost textbooks and software, many of them expressed concerns of the quality of both the ebook and the online homework platform. For a thorough analysis of the survey results please refer to the ALG Survey results document.

**4. Sustainability Plan**

Thanks to the support from Affordable Learning Georgia, we have already developed all the ancillary materials necessary for instruction in the four courses. We have also compiled a list of additional resources that link each of the sections covered in these 4 courses with the textbook and videos from websites like Khan Academy and The Annenberg Foundation's Learner.org. (See [www.coga.edu/mathlinks](http://www.coga.edu/mathlinks))

We will keep exploring emerging technologies and online homework platforms, but for now we will keep using WebAssign, which is proving to have the robustness necessary to support an at-scale implementation.

**5. Future Plans**

Our positive experience with the ALG transformation grant is permeating to other areas in our institution, and we are actively promoting the adoption of OERs in other disciplines like Psychology, Sociology, Chemistry, Biology. The Economics faculty have

already adopted OERs, and we are hoping to have enough options within the different areas of the core curriculum to allow a student to complete areas A through E (Area F still presents more challenges) while taking courses with low/zero cost of materials.

As additional OER materials are being released every day, we will make sure to include at least one open textbook in the evaluation and selection of new materials for every Mathematics course in our department.

## **6. Description of Photograph**

Even though our ALG transformation team consisted of 6 members, all the faculty in the department of mathematics were actively involved in instruction, evaluation and assessment of all the open educational resources. All the faculty in the photograph taught one of the 4 courses impacted by the transformation and continue to provide valuable feedback as we move forward. Pictured (from left to right): Dr. Syvillia Averett, Mr. James Holt, Dr. Laura Lynch, Mr. Treg Thompson, Ms. Sheila Ledford, Dr. Renren Zhao, Dr. Jose Lugo, Dr. German Vargas, Dr. Victor Vega, and Dr. Courtenay Miller.