

Fall 2018

Statistics (ABAC)

April Abbott

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Authors

April Abbott, Gary Dicks, Jan Gregus, Buddhi Pantha, Melanie Partlow, Lori Pearman, Amanda Urquhart, and Eunkyung You

Grants Collection

Abraham Baldwin Agricultural College



UNIVERSITY SYSTEM
OF GEORGIA

April Abbott, Gary Dicks, Jan Gregus, Buddhi Pantha, Melanie Partlow,
Lori Pearman, Amanda Urquhart, and Eunkyung You

Statistics





Grants Collection

Affordable Learning Georgia Grants Collections are intended to provide faculty with the frameworks to quickly implement or revise the same materials as a Textbook Transformation Grants team, along with the aims and lessons learned from project teams during the implementation process.

Each collection contains the following materials:

- **Linked Syllabus**
 - The syllabus should provide the framework for both direct implementation of the grant team's selected and created materials and the adaptation/transformation of these materials.
- **Initial Proposal**
 - The initial proposal describes the grant project's aims in detail.
- **Final Report**
 - The final report describes the outcomes of the project and any lessons learned.



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Initial Proposal

Application Details

Manage Application: Textbook Transformation Grants: Round Ten

Award Cycle: Round 10

Internal Submission Deadline: Friday, September 29, 2017

Application Title: 344

Application ID: 001884

Submitter First Name: Sue

Submitter Last Name: Mastrario

Submitter Title: Associate Director

Submitter Email Address: smastrario@abac.edu

Submitter Phone Number: 229-391-4899

Submitter Campus Role: Sponsored Programs Office

Applicant First Name: April

Applicant Last Name: Abbott

Co-Applicant Name(s): --

Applicant Email Address: aabbott@abac.edu

Applicant Phone Number: 229-391-5161

Primary Appointment Title: Mathematics Lab Coordinantor

Institution Name(s): Abraham Baldwin Agricultural College

Submission Date: Monday, October 2, 2017

Proposal Title: 344

Proposal Category: No-Cost-to-Students Learning Materials

Are you using an OpenStax textbook?: Yes

Final Semester of Instruction: Fall 2018

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

All team members are from Abraham Baldwin Agricultural College's Math Department.
 April Abbott, Mathematics Lab Coordinator, aabbott@abac.edu
 Gary Dicks, Assistant Professor, gdicks@abac.edu
 Dr. Jan Gregus, Assistant Professor, jgregus@abac.edu
 Avi Kar, Assistant Professor, akar@abac.edu
 Dr. Buddhi Pantha, Assistant Professor, bpantha@abac.edu
 Melanie Partlow, Assistant Professor, mpartlow@abac.edu
 Lori Pearman, Assistant Professor, lpearman@abac.edu
 Amanda Urquhart, Assistant Professor, aurquhart@abac.edu
 Dr. Eunkyung You, Associate Professor, eyou@abac.edu

Sponsor, (Name, Title, Department, Institution):

Dr. Joe Falcone, Head, Science and Mathematics, Abraham Baldwin Agricultural College,
 jfalcone@abac.edu

Course Names, Course Numbers and Semesters Offered:

College Algebra, MATH 1111 (Spring, Summer, and Fall)

Trigonometry, MATH 1112 (Spring, Summer, and Fall)

Statistics, MATH 2000 (Spring, Summer, and Fall)

List the original course materials for students (including title, whether optional or required, & cost for each item):	College Algebra/Trigonometry textbook and MML software bundled: \$195.35 Title: Precalculus by Sullivan and Sullivan Statistics textbook and Connect software bundled: \$235.00 Title: Elementary Statistics
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Average Number of Students per Course Section:	30
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Number of Course Sections Affected by Implementation in Academic Year:	55
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Average Number of Course Sections Per Semester:

College Algebra

Avg. Fall – 28

Avg. Spring – 14

Avg. Summer - 3

Trigonometry

Avg. Fall – 4

Avg. Spring – 5

Avg. Summer – 1

Statistics

Avg. Fall – 5

Avg. Spring – 5

Avg. Summer - 1

Total Number of Students Affected by Implementation in Academic Year:	1650
Requested Amount of Funding:	\$26,636
Original per Student Cost:	\$195.35/\$235.00
Post-Proposal Projected Student Cost:	\$22.95
Projected Per Student Savings:	\$172.40/\$212.05
Projected Total Annual Student Savings:	\$300,000

Project Goals:

- To provide our students with significant without compromising the quality of instruction or our commitment to an internationalized general education curriculum.
- To maintain or improve our current D/W/F math rates.
- To maintain or improve our course outcome rates.
- To improve upon the materials and resources created by Ms. April Abbott and Dr. Eunkyung You when they completed a similar mini-grant in 2016 for College Algebra.
- To create a course schedule for Trigonometry and Statistics courses using the OpenStax books.
- To create WebAssign assignments for Trigonometry and Statistics courses. Dr. You and Ms. Abbott have already created WebAssign courses for College Algebra.

To create any supplemental materials for Trigonometry and Statistics.

Statement of Transformation:

- During the rest of this fall semester and winter break, the math faculty will work to switch College Algebra, Trigonometry, and Statistics over to OpenStax and WebAssign. Course schedules, homework selections, and online homework selections will be created for each course. If any supplemental material is needed, worksheets will be printed and presented to the students free of cost.
- The stakeholders affected by this transformation are the math faculty and students of ABAC.
- The math faculty will have to work to make sure the change is as seamless as possible for the students. The students will benefit from having no/low cost courses. From a previous implementation of a mini-grant, there is expected to be no change to current course success rates.

A no/low cost College Algebra will impact students enrolling in Trigonometry and Statistics thereafter. They will already be familiar with the WebAssign software and how to access the free textbook on their phones. Our Calculus classes are also using WebAssign and the no/low cost students will be even more familiar with the program by that point.

Transformation Action Plan:

-

Once the grant has been approved, faculty will start reviewing the OpenStax book.

College Algebra, Trigonometry, and Statistics course and syllabus will be redesigned as needed for the transformation.

Given what the OpenStax books lack, new materials will be created to supplement instruction as needed.

Each team member is responsible for documenting all their time working on the grant. All faculty members are responsible for keeping College Algebra up to date. You, Dicks, and Urquhart are responsible for Trigonometry. Gregus and Pantha are responsible for Statistics. Any newly created materials will be placed on D2L and faculty websites for the students to access for free. These materials will also be attached to the final report for grant.

Quantitative & Qualitative Measures: -The data will be analyzed from every team member who teaches a no/low course and will be compared to that instructor's spring 2017/fall 2017 average. This data includes DWF rates and Learning Objective success. All ABAC MATH courses have their final assessed and each team member gives the same final. The learning outcomes are assessed from questions on the final. The faculty will survey the students to obtain qualitative and quantitative data. A Likert-type survey has already been created by Dr. You and Ms. Abbott which was used by students to rate their opinions on the OpenStax book and WebAssign. This survey may be modified to provide more information. Quotes will be taken from open-response questions on the survey. The math faculty are prepared to fill out similar reports to the final reports that Dr. You and Ms. Abbott filled out.

Timeline:

Timeline	Action
October 25, 2017: Notification Date	Start reviewing OpenStax books and creating course items such as schedule, homework selection, and WebAssign assignments
November 6, 2017: Kickoff Meeting	At least two faculty members will attend this meeting.
Nov-January	Complete review of textbooks and creation of course items.
January 8 th , 2018	Classes start and the no/low cost courses begin
January 22, 2018: Round Eleven Deadline for applications	Submit Application for Round 11
February 15, 2018: Notification Date	Prepare to attend the kickoff meeting
February 26, 2018: Kickoff Meeting	At least two faculty members will attend this meeting.
Third week of May	Compile findings and submit report to the grant

Budget:

Large-Scale Transformation: Textbook transformation projects within one or more courses or sections or department-wide adoptions with 500 or more students enrolled on average per academic year total.

\$30,000 maximum award

\$5,000 maximum per team member

\$800 for travel and expenses

Course	Professor- Spring 2018	Professor- Fall 2018	Amount
MATH 1111- College Algebra	Abbott	Abbott	\$2,000
	Pantha	Pantha	\$2,000
	Partlow	Partlow	\$2,000
	Pearman	Pearman	\$2,000
	You	You	\$2,000
		Gregus*	\$1,000
		Urquhart	\$1,000
MATH 1112- Trigonometry	Dicks	Dicks	\$2,000
	Urquhart	Urquhart	\$2,000
	You	You	\$2,000
MATH 2000- Statistics	Gregus	Gregus	\$2,000
	Pantha	Pantha	\$2,000
		Pearman*	\$1,000
-Tentative		Partlow	\$1,000
			\$24,000
Benefits (7.65% FICA)			\$1,836
Travel/ overall project expenses			\$800
		TOTAL REQUEST	\$26,636

The Abraham Baldwin Agricultural College (ABAC) Office of Research and Sponsored Programs will be responsible for the receipt and distribution of any award funds based upon the proposal budget. The funds will be used to cover the participant's time (salary/release

time/overload/replacement coverage), project expenses including related department needs, and travel expenses.

Sustainability Plan:

The faculty plan to continue offering no/low cost courses into fall of 2018. The faculty plan to continue offering the classes if there is no difference in our success rates. We will continue to improve WebAssign assignments every semester to better suit the needs of the students. We will review and implement new OpenStax editions. If needed, we will create and provide our students with supplemental material that we find lacking in the new editions.



ABRAHAM BALDWIN AGRICULTURAL COLLEGE

School of Arts and Science

ABAC 15, 2802 Moore Highway Tifton, Georgia 31793-2601

229-391-5100 • Fax 229-391-5101

www.abac.edu

September 29, 2017

Affordable Learning Georgia Textbook Transformation Grants
University System of Georgia
270 Washington Street, S.W.
Atlanta, GA 30334

Dear Review Committee;

It is my pleasure to write in support of Ms. April Abbott's application to participate in "Open Mathematics in Action: Expanding the Successful Use of OER in Mathematics Courses" grant opportunity.

This opportunity would be a substantive benefit to our student body. Our students, many of whom are first generation college students, are often unprepared for class for lack of the ability to afford their textbooks. Through this grant the Department of Science and Mathematics will transform our College Algebra, Statistics, and Trigonometry classes into low-to-no-cost-to-student classes, which is expected to result in better student performance in these classes. The new course material will be accessed online through the D2L course shell that will direct students and instructors to pre-existing GALILEO materials, including full-text magazines, journals, encyclopedias, e-books, audio recordings, films, and other electronic resources. The faculty who are proposing this grant all have significant experience teaching the course that is targeted in the proposal. I believe the effort of this project to be sustainable over the long term, and am excited at the potential financial savings our students would experience.

The Abraham Baldwin Agricultural College (ABAC) Office of Research and Sponsored Programs will be responsible for the receipt and distribution of any award funds based upon the proposal budget. The funds will be used to cover the participant's time (salary/release time/overload/replacement coverage), project expenses including related department needs, and travel expenses.

Thank you for this opportunity to assist our students and others in obtaining an affordable quality learning opportunity through participation in the ALGTT grant program.

Sincerely;

Joseph M. Falcone Ph.D.

Department Head of Science and Mathematics
School of Arts and Science

Affordable Learning Georgia Textbook Transformation Grants

Round Nine

For Implementations beginning Summer Semester 2017

Running Through Spring Semester 2018

Proposal Form and Narrative

- *The proposal form and narrative .docx file is for offline drafting and review. Submitters must use the InfoReady Review online form for proposal submission.*
- **Note: The only way to submit the proposal is through the online form in Georgia Tech’s InfoReady Review at:**
<https://gatech.infoready4.com/#competitionDetail/1757803> _
- *If you are copying and pasting into InfoReady Review from this form, first convert the file to **plain text** and copy/paste from the plain text file.*
 - o *In Word, go to File > Save As... > and change the file format to “Plain Text (.txt).”*
 - o *Copy and paste from the .txt file.*
 - o *Be sure to save both copies in case you are asked to resubmit.*
- *Microsoft Word Document formatting pasted into InfoReady Review will render the reviewer copy unreadable. **If you paste Word-formatted tables into InfoReady Review, you may be asked to resubmit your application if time permits.***
- *Italicized text is provided for your assistance; please do not keep the italicized text in your submitted proposal. Proposals that do not follow the instructions may be returned.*

Submitter Name	Sue Mastrario
Submitter Title	Associate Director
Submitter Email	smastrario@abac.edu

Submitter Phone Number	(229)391-4899
Submitter Campus Role	Sponsored Programs Office
Applicant Name	April Abbott Team Lead
Applicant Email	aabbott@abac.edu
Applicant Phone Number	(229)391-5160
Primary Appointment Title	Mathematics Lab Coordinator
Institution Name(s)	Abraham Baldwin Agricultural College
Team Members	<p>All team members are from Abraham Baldwin Agricultural College's Math Department.</p> <p>April Abbott, Mathematics Lab Coordinator, aabbott@abac.edu</p> <p>Gary Dicks, Assistant Professor, gdicks@abac.edu</p> <p>Dr. Jan Gregus, Assistant Professor, jgregus@abac.edu</p> <p>Avi Kar, Assistant Professor, akar@abac.edu</p> <p>Dr. Buddhi Pantha, Assistant Professor, bpantha@abac.edu</p> <p>Melanie Partlow, Assistant Professor, mpartlow@abac.edu</p> <p>Lori Pearman, Assistant Professor, lpearman@abac.edu</p> <p>Amanda Urquhart, Assistant Professor, aurquhart@abac.edu</p> <p>Dr. Eunkyung You, Associate Professor, eyou@abac.edu</p>
Sponsor, Title, Department, Institution	Dr. Joe Falcone, Head, Science and Mathematics, Abraham Baldwin Agricultural College, jfalcone@abac.edu

Proposal Title	Textbook Transformation Grants: Rounds Ten and Eleven				
Course Names, Course Numbers and Semesters Offered	College Algebra, MATH 1111 (Spring, Summer, and Fall) Trigonometry, MATH 1112 (Spring, Summer, and Fall) Statistics, MATH 2000 (Spring, Summer, and Fall)				
Final Semester of Instruction	Fall 2017				
Average Number of Students Per Course Section	30	Number of Course Sections Affected by Implementation in Academic Year	55	Total Number of Students Affected by Implementation in Academic Year	1650
Average Number of Course Sections Per Semester	<u>College Algebra</u> Avg. Fall – 28 Avg. Spring – 14 Avg. Summer - 3 <u>Trigonometry</u> Avg. Fall – 4 Avg. Spring – 5 Avg. Summer – 1 <u>Statistics</u> Avg. Fall – 5 Avg. Spring – 5 Avg. Summer - 1				
Award Category (pick one)	<input checked="" type="checkbox"/> No-or-Low-Cost-to-Students Learning Materials <input type="checkbox"/> Specific Core Curriculum Courses				
Are you planning on using an OpenStax textbook?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				

List the original course materials for students (including title, whether optional or required, & cost for each item)	WebAssign Software, \$22.95/student per course or lab, per term
Requested Amount of Funding	\$26,636
Original Per Student Cost	College Algebra/Trigonometry textbook and MML software bundled: \$195.35 Statistics textbook and Connect software bundled: \$235.00
Post-Proposal Projected Per Student Cost	\$22.95
Projected Per Student Savings	College Algebra/Trigonometry savings: \$172.40 Statistics Savings: \$212.05
Projected Total Annual Student Savings	Using the average number of College Algebra courses and Statistics courses, it can be estimated that the ABAC students would save almost \$300,000 in textbook and software costs.

NARRATIVE

1.1 PROJECT GOALS

- To provide our students with significant without compromising the quality of instruction or our commitment to an internationalized general education curriculum.
- To maintain or improve our current D/W/F math rates.
- To maintain or improve our course outcome rates.
- To improve upon the materials and resources created by Ms. April Abbott and Dr. Eunkyung You when they completed a similar mini-grant in 2016 for College Algebra.
- To create a course schedule for Trigonometry and Statistics courses using the OpenStax books.
- To create WebAssign assignments for Trigonometry and Statistics courses. Dr. You and Ms. Abbott have already created WebAssign courses for College Algebra.
- To create any supplemental materials for Trigonometry and Statistics.

1.2 STATEMENT OF TRANSFORMATION

- During the rest of this fall semester and winter break, the math faculty will work to switch College Algebra, Trigonometry, and Statistics over to OpenStax and WebAssign. Course schedules, homework selections, and online homework selections will be created for each course. If any supplemental material is needed, worksheets will be printed and presented to the students free of cost.
- The stakeholders affected by this transformation are the math faculty and students of ABAC.
- The math faculty will have to work to make sure the change is as seamless as possible for the students. The students will benefit from having no/low cost courses. From a previous implementation of a mini-grant, there is expected to be no change to current course success rates.
- A no/low cost College Algebra will impact students enrolling in Trigonometry and Statistics thereafter. They will already be familiar with the WebAssign software and how to access the free textbook on their phones. Our Calculus classes are also using WebAssign and the no/low cost students will be even more familiar with the program by that point.

1.3 TRANSFORMATION ACTION PLAN

- Once the grant has been approved, faculty will start reviewing the OpenStax book.
- College Algebra, Trigonometry, and Statistics course and syllabus will be redesigned as needed for the transformation.
- Given what the OpenStax books lack, new materials will be created to supplement instruction as needed.
- Each team member is responsible for documenting all their time working on the grant. All faculty members are responsible for keeping College Algebra up to date. You, Dicks, and Urquhart are responsible for Trigonometry. Gregus and Pantha are responsible for Statistics.
- Any newly created materials will be placed on D2L and faculty websites for the students to access for free. These materials will also be attached to the final report for grant.

1.4 QUANTITATIVE AND QUALITATIVE MEASURES

- The data will be analyzed from every team member who teaches a no/low course and will be compared to that instructor's spring 2017/fall 2017 average. This data includes DWF rates and Learning Objective success. All ABAC MATH courses have their final assessed and each team member gives the same final. The learning outcomes are assessed from questions on the final.
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- The math faculty are prepared to fill out similar reports to the final reports that Dr. You and Ms. Abbott filled out.

1.5 TIMELINE

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Third week of May	Compile findings and submit report to the grant

1.6 BUDGET

Large-Scale Transformation: Textbook transformation projects within one or more courses or sections or department-wide adoptions with 500 or more students enrolled on average per academic year total.

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\$5,000 maximum per team member

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Travel/ overall project expenses			\$800
		TOTAL REQUEST	\$26,636

The Abraham Baldwin Agricultural College (ABAC) Office of Research and Sponsored Programs will be responsible for the receipt and distribution of any award funds based upon the proposal budget. The funds will be used to cover the participant's time (salary/release time/overload/replacement coverage), project expenses including related department needs, and travel expenses.

1.7 SUSTAINABILITY PLAN

What is your plan for offering the course in the future, including maintenance and updating of course materials?

The faculty plan to continue offering no/low cost courses into fall of 2018. The faculty plan to continue offering the classes if there is no difference in our success rates. We will continue to improve WebAssign assignments every semester to better suit the needs of the students. We will review and implement new OpenStax editions. If needed, we will create and provide our students with supplemental material that we find lacking in the new editions.

1.8 REFERENCES & ATTACHMENTS

The letter of support is attached.

Syllabus

Abraham Baldwin Agricultural College
Syllabus for Math 2000 (Statistics) Section 0 (CRN 20244)
Fall 2018

Instructor: Dr. Buddhi Pantha

Email: bpantha@abac.edu

Office: Britt 219

Phone: 229-391-5272

Class Day/Hour/Place: TR, 8:00-9:15am at Conger 107.

Office Hours: **MW**– 10:00-11:00am, **TR**– 9:15am-12:30pm at Britt 219; **T**– 9:30-10:30 at AAC or by appointment.

Textbook: *Introductory Statistics, Openstaxtm*. A free pdf copy will be posted in D2L. It can also be downloaded online. Students are expected to purchase web-assign Student Access Code online. The course code for this class is **abac 7369 3416**. The webassign also includes an online copy of the book. You can create an webassign account and get a free access that will expire in two weeks.

Calculator: A graphing calculator is required for this course. The Math Department highly recommends and provides support for the TI-83 and TI-84 series models. If you are buying a new calculator, I recommend to buy TI-84 Plus CE. Use of cell phones as calculators is forbidden in this course. During the exams and the final, you are not allowed to share calculator with your classmates.

General Description and Pre-requisite: This course is an introduction to basic descriptive and inferential statistics. It covers measure of central tendency, variability and position, statistical graphs and diagrams, confidence intervals, hypothesis testing, application involving binomial, normal, t, chi-square and F-distributions, and correlation and regression analysis. The emphasis is on application rather than on mathematical theory both calculator and computer techniques will be stressed. 3 credit hours.

Students enrolled in this class must have a C or better in Math 1111 (College Algebra) or Math 1001 (Quantative Reasoning).

- Chapter 1: Sections 1.1–1.3;
- Chapter 2: Sections 2.1–2.7;
- Chapter 3: Sections 3.1–3.5;
- Chapter 4: Sections 5.1;
- Chapter 5: Sections 6.1–6.4;
- Chapter 6: Sections 6.1–6.2;
- Chapter 7: Sections 7.1,7.3;
- Chapter 8: Sections 8.1–8.4;
- Chapter 9: Sections 9.1–9.5;
- Chapter 11: Sections 11.6;
- Chapter 12: Sections 12.2–12.5.

Teaching, Attendance and Exam Policies

- Attendance will be taken at each class. If you are going to miss a day, please let me know BEFORE the class starts. A record of your attendance will be kept and sent to the Registrar office with your final grade.
- The LECTURE NOTES for each chapter will be posted in D2L. It is your responsibility to print the lecture notes and bring into the class. We will go over the problems in the lecture notes.
- The online homework on Connect Math constitutes a significant portion of the grade. The due date for the online homework will be posted in the connectmath course website. It is your responsibility to check the due dates and complete the the homework. If a student has a technical difficulty while working an assignment, he or she should email the instructor immediately.
- There will be one or two short written quizzes/HW every week. Each quiz consists of problems similar to those covered in the previous class.
- NO MAKE-UP EXAMS/QUIZZES will be given except some emergencies! You must provide official documents (doctor's excuse, authorization from vice president, etc) that show the reason you have missed the exam.
- The Academic Achievement Center (AAC) provides FREE tutoring. Location: first floor of the Carlton Center. Phone: 229-391-4785. The hours of operation are posted at <http://www.abac.edu/academics/academicsupport/tutoring>.
- HW/Quizzes, Midterms and Final Grade Distributions:
 - Written quizzes and homework : 10%
 - Webassign homework : 10%
 - Tests: 60% (Test 1, Test 2, Test 3, and Test 4:- each 15%)
 - Final Exam: 20%
- Test dates and the detailed course calender will be posted in D2L course website. The **final (comprehensive) exam** will be on **December 6 at 8:00-10:00am**.
- Grading Scale :

Grade	A	B	C	D	F
Range(%)	90-100	80-89	70-79	60-69	Below 60

- Important Dates:

Class begin	August 15
Last day to add, change grading option or drop without "W" grade	August 22
Labor day (Holiday)	September 3
Last day to drop with "W" grade	October 8
Fall break	October 15-16
Thanksgiving Holiday	November 21-23
Last day of class	December 5
Final exams	December 6-11

- Keep your written Quizzes and Tests: It is your responsibility to keep all your graded Quizzes and Midterms! It is very important to have them in case there is any problem with your grade. You can check all your scores at D2L e-learning course website.

Other Policies

- If you have learning disabilities, please see me for the arrangements of special needs within the first week of the class.
- Please be considerate of the instructor and those around you. Come to class on time and stay the entire period. If a student arrives after the attendance has been taken, he or she will be marked tardy for the class period. Note that two tardies count as one absence.
- TURN OFF CELL PHONES and all other electronic communication devices during class. Do not talk to classmates at inappropriate times. Refrain from reading newspapers or working on other coursework during class. No hats or other head gear is allowed on exam day.

Expectations

1. Students are expected to:

- arrive for class with proper tools (textbook, notebook, pencil, calculator)
- keep personal phone out of sight and on silent during class time (speak to your instructor before class should you experience an emergency)
- refrain from cursing during class
- be in class on time
- treat faculty in a kind and courteous manner
- present assignments on the assigned date
- be attentive and actively participate in class
- wear no hats or other head gear on exam day

2. Faculty are expected to:

- begin class on time
- be prepared for class (textbook, markers, calculator, handouts)
- treat students in a kind and courteous manner
- provide students with a schedule of events

Repercussions: Students will be asked to leave class and will be marked absent for the day if:

- they arrive in class without the proper tools
- they are found sleeping, cursing, or engaging in disruptive behavior
- they are texting or receiving phone calls during class (except for emergencies)
- they leave the room to answer a phone call (except for emergencies).

Academic Standards of Conduct: *All members of the ABAC community have an obligation to promote an atmosphere in which teaching and learning can take place in an orderly and efficient manner. To maintain this learning environment, individuals must refrain from behavior that disrupts the teaching process. In order to assure the rights of all students to benefit from time spent*

in class, faculty members have the right and responsibility to excuse from a class session any individual whose behavior disrupts the teaching and learning process. Serious or continued infractions may result in referral of the student for disciplinary action by the student judiciary or appropriate administrative officer. A student will be given a grade of 0 for any in-class assignment (i.e. exam or quiz) if he or she is found with a cell phone during the assignment. No cell phone may be used as a calculator for any in-class graded assignment. Using the programming capacities of the TI graphing calculators to store notes or formulas is a severe form of academic dishonesty. Students caught using such programs will be considered in violation of ABAC's Academic Dishonesty Policy.

Tobacco and Smoke-free Campus Policy

In accordance with the Georgia Smoke Free Air Act of 2005, Title 31 Chapter 12A, this policy reinforces the USG commitment to provide a safe and amicable workplace for all employees. The goal of the policy is to preserve and improve the health, comfort and environment of students, employees and any persons occupying our campuses. The use of all forms of tobacco products on property owned, leased, rented, in the possession of, or in any way used by the USG or its affiliates is expressly prohibited. Tobacco Products is defined as cigarettes, cigars, pipes, all forms of smokeless tobacco, clove cigarettes and any other smoking devices that use tobacco such as hookahs or simulate the use of tobacco such as electronic cigarettes.

Final Report

Affordable Learning Georgia Textbook Transformation Grants

Final Report

General Information

Date: 12/18/2018

Grant Round: 10

Grant Number: 344

Institution Name(s): Abraham Baldwin Agricultural College

Project Lead: April Abbott

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

April Abbott, Mathematics Lab Coordinator, Mathematics, aabbott@abac.edu

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Dr. Eunkyung You, Associate Professor, Mathematics, eyou@abac.edu

Course Name(s) and Course Numbers: College Algebra (MATH 1111), Trigonometry (MATH 1112), and Statistics (MATH 2000)

Semester Project Began: Spring 2018

Final Semester of Implementation: Fall 2018

Total Number of Students Affected During Project: 1380

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

I really didn't notice many differences with teaching grant courses for ABAC M1111 as compared to the original book we used. It will just as well as the original mini-grant Dr. You and I did in 2016. Students seem to model what their teachers' attitudes are. Individuals like myself and Dr. You are truly for low/no-cost resources and our students embraced our ideas. Other instructors aren't as sold. They don't like the Openstax book as well as the old textbooks we used, especially in Statistics, and their students seemed to adopt that attitude in their survey results.

This was certainly a challenge when dealing with the faculty. One of my team members dropped out of using the grant in College Algebra at the last minute. It caused me, the project lead, a major headache at the time. However, this turned out to be a good thing because the extra money was used to purchase used calculators to be donated to the library for student use.

I think the best accomplishment of the class was how so much more relaxed the students were. They didn't have to wait until the end of add/drop to enroll in their WebAssign like the MML students do. They had instant access to their ebook and could start on their homework the first day. They just didn't stress over homework like courses using MML did. There was even a problem with Pearson and our Non-STEM pathway students didn't have access to physical books until October. Pearson had simply ran out of them and had to keep extending some of my student's free trial codes.

Transformative impacts on your instruction

Overall, I don't believe the grant had any impact on my instruction or my colleagues. As good teachers, we know the material. We provide the same instruction and do the same problems that the students need to see to pass their exams.

Transformative impacts on your students and their performance

The students were able to receive significant savings while maintaining the same academic rigor as other math courses. They seem to really enjoy the books were free and commented that they wished other classes had free books.

Their performance, as you can find below, is comparable to both pre-grant and against faculty members still using the old textbook during the grant. I think this shows wonderful promise and the department agreed. We will continue to use Openstax for College Algebra and Trigonometry.

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

I think the grant went fantastically. I am currently working on a grant proposal to switch our Non-STEM pathway to also low/no-cost resources. I think we can truly save our students money while providing them with the same education.

2. Quotes

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

“While I appreciate the lower cost of WebAssign, I would have willingly paid more for a service that actually provides helpful examples”

“Yes because it’s not always accessible for students that have very little extra money. So I was able to do the work without paying hundreds of dollars for a textbook.”

“It absolutely affected my grade. Higher costs simply means more pressure. It is extremely obvious that less stress means better performance.”

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?

Total number of students affected in this project: 1129

- Positive: 44 % of 325 number of respondents
- Neutral: 25 % of 325 number of respondents
- Negative: 31 % of 325 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:

- 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:

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

33.2% of students, out of a total 1129 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. Measures Narrative

DWF Rates

For Spring/Fall 2018, 1129 students took classes implementing the grant's low/no-cost resources. There were 375 students that dropped, failed, or withdrew. That percentage is 33.2%.

There were a few teachers who did not use the grant for College Algebra and Statistics. These instructors had 324 students and out of those, 102 dropped, failed, or withdraw. This DWF percentage is 31.5%.

Though the non-grant courses have a better success rate, it is important to know that over half of those students (167) were in Statistics classes which overall have a lower DWF rate of 30% or below. College Algebra and Trigonometry frequently have a DWF rate of 40% to 50%.

Another cofactor is that all learning support courses were grant courses. The non-grant teachers had no learning support courses affecting their grades.

Comparing the grant versus the previous year for the spring semester, it is clear the success rate had increased and the DWF rate had decreased by 6 to 10% across College Algebra, Trigonometry, and Statistics. This is very promising.

So overall, with the DWF rate being comparable and in some cases, better, we're pleased with the grant results.

Attached in supporting data zip file will be an Excel Document for a comparison of Spring 2018 using the Grant Versus the previous year (2017) without the grant. It is titled "Grant Comparison 201805."

Also attached is 'Grades for Final Report' which is the grade analysis for Spring/Fall 2018.

Student success in learning objectives

All ABAC MATH courses have their final assessed. MATH 1111 is assessed on 6 outcomes taken from the learning objections. The six outcomes are listed below. After the outcomes is a table on how the grant classes scored on the assessment as compared with the overall MATH 1111 average from Spring 2017 (pre-grant), Spring 2018 (during-grant), and Spring 2018 (Non grant full time faculty). Fall 2018 is currently unavailable as all the finals have not been analyzed.

- **Outcome 1:** Students shall demonstrate the ability to evaluate functions, compute with and solve application problems, and be able to use the basic field properties to simplify expressions and solve problems.
- **Outcome 2:** Students shall graph and operate with basic functions including $+$, $-$, $*$, $/$, composition translations, reflections over the axes and over the line $y = x$, and graphing transformations, and shall demonstrate the ability to use the field properties of identities, inverses, and commutativity for these operations.
- **Outcome 3:** Students shall demonstrate the ability to use the remainder theorem, factor theorem, and the Fundamental Theorem of Algebra to solve polynomial and rational equations and inequalities.
- **Outcome 4:** Students shall determine coordinates and interpret uses for the following functional notations: zeros, relative maximums, relative minimums, points of inflection, and intervals of increasing or decreasing values.
- **Outcome 5:** Students shall analyze rational functions and model equations.
- **Outcome 6:** Students shall use exponential and logarithmic functions, solve exponential and logarithmic equations, and solve application problems using exponential and logarithmic functions.

MATH 1111 Learning Objective Comparison			
	Pre-Grant Spring 2017	Grant Spring 2018	Non-Grant Spring 2018
Outcome 1	70% correct	71% correct	79% correct
Outcome 2	60% correct	73% correct	68% correct
Outcome 3	65% correct	70% correct	63% correct
Outcome 4	68% correct	77% correct	74% correct
Outcome 5	51% correct	63% correct	57% correct
Outcome 6	62% correct	69% correct	64% correct

Overall, the grant students (third column) seem to get the same amount or more questions correct on the final as compared to the pre-grant classes. The grant students as compared to non-grant students did about the same in the Spring 2018 comparison.

MATH 1112 is assessed on 8 outcomes taken from the learning objections. The six outcomes are listed below. After the outcomes is a table on how the grant classes scored on the assessment as compared with the overall MATH 1111 average from Spring 2017 (pre-grant) and Spring 2018 (during-grant). Fall 2018 is currently unavailable as all the finals have not been analyzed.

- **Outcome 1:** Students shall demonstrate the ability to use both degree and radian measures to analyze basic trigonometric functions and their inverses, including right triangle and circular functions.
- **Outcome 2:** Students shall demonstrate the ability to use both operations and transformations of functions to analyze sinusoidal curves.
- **Outcome 3:** Students shall demonstrate the ability to graph and use trigonometry models to study real data and appropriate application problems, to include the ability to write clear, logical, and concise solutions to problems that can be solved with trigonometric or circular functions.
- **Outcome 4:** Students shall demonstrate the ability to analyze and prove trigonometric identities.
- **Outcome 5:** Students shall demonstrate the ability to appropriately model and solve exercises by using the Law of Sines, the Law of Cosines, and Area of Triangle Theorems.
- **Outcome 6:** Students shall demonstrate the ability to re-coordinate the coordinate plane into polar coordinates, and demonstrate the ability to graph some familiar curves when those relations are written in polar coordinates.
- **Outcome 7:** Students shall demonstrate the ability to write complex numbers in polar form and use this form to do arithmetic with complex numbers.
- **Outcome 8:** Students shall demonstrate the ability to use appropriate notation to write vectors and to use vector space properties to perform arithmetic with vectors and scalars to include dot products and finding the angle measure between vectors, as well as to appropriately use the arithmetic to solve force and work exercises.

MATH 1112 Learning Outcome Comparison		
	Pre-Grant Spring 2017	During-Grant Spring 2018
Outcome 1	76.7% correct	81.3% correct
Outcome 2	65.5% correct	68.8% correct
Outcome 3	67.0% correct	71.0% correct
Outcome 4	57.4% correct	71.0% correct
Outcome 5	82.1% correct	82.6% correct
Outcome 6	59.6% correct	53.6% correct
Outcome 7	66.8% correct	67.3% correct
Outcome 8	69.3% correct	65.2% correct

Overall the grant students (third column) answered about the same amount of questions right on the final as compared to the previous year.

MATH 2000 is assessed on 6 outcomes taken from the learning objections. The six outcomes are listed below. After the outcomes is a table on how the grant classes scored on the assessment as compared with the overall MATH 1111 average from Spring 2017 (pre-grant), Spring 2018 (during-grant), and Spring 2018 (non-grant full time faculty). Fall 2018 is currently unavailable as all the finals have not been analyzed.

- **Outcome 1:** Students shall, given a data set, calculate and use appropriate measures of central tendency, variation, and position to describe the data.
- **Outcome 2:** Students shall, given a data set, construct frequency distributions and statistical graphs to display the data. These graphs include the stem-and-leaf plot, box plot, dot plot, Pareto chart, histogram, circle graph, frequency polygon, time-series graph, and ogive. Students are also to classify distributions as symmetric, positively or negatively skewed.
- **Outcome 3:** Students shall determine the number of outcomes for a probability experiment using a variety of methods; find the probability of an event using classical and empirical methods; find the probability of compound events, including conditional probabilities; understand permutations and combinations; and solve problems involving the binomial and standard normal distribution.
- **Outcome 4:** Students shall, given a data set or summary statistics, find the confidence intervals for the mean, proportion and standard deviation. Students will also determine minimum sample sizes.
- **Outcome 5:** Students shall, given a data set or summary statistics, conduct a hypothesis test involving mean(s), proportion(s), and standard deviation(s) using the traditional method, p-value method, or confidence intervals. These applications involve the binomial, normal, t, chi-square, and F distributions.
- **Outcome 6:** Students shall, given a data set, find the correlation coefficient using a calculator/appropriate software and conduct a hypothesis test involving the significance of the correlation; find the least squares regression equation; and use the least squares regression equation to make predictions

	Pre-Grant Spring 2017	Grant Spring 2018	Non-Grant Spring 2018
Outcome 1	95.5% correct	88.9% Correct	95.9% Correct
Outcome 2	91.4% correct	90.0% Correct	91.7% Correct
Outcome 3	77.6% correct	72.0% Correct	84.4% Correct
Outcome 4	81.4% correct	65.8% Correct	79.2% Correct
Outcome 5	77.1% correct	71.0% Correct	79.2% Correct
Outcome 6	75.0% correct	70.7% Correct	89.7% Correct

Overall, the grant students (third column) seem to get less questions correct on the final as compared to the pre-grant classes. The grant students as compared to non-grant students did worse than the non-grant students. This is an interesting result when you compare that the DWF rate was higher in the grant courses.

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 will continue to use the low/no-cost resources in College Algebra and Trigonometry with the exception of Bainbridge campus which will switch over in a semester or two. This means the Openstax Algebra and Trig book as well as WebAssign. There is some talk of switching to WebWorks since it will be free with the exception of server cost.

It was decided that Statistics would return to the original book since many of the professors relied on its information. The Openstax Statistics book was found not to be up to par. Perhaps if the Openstax Statistics books get a major upgrade, this could be revisited.

With leftover budget money we purchased 110 used calculators that were donated to the library so that students could check them out on a weekly basis. This provides students access to a required element of the math classes for free. We plan on doing whatever we can to maintain the calculators. All future, unclaimed lost and found calculators at the school will be donated to the library.

5. Future 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.*

We truly believe the low/no cost resources help our students. With the Non-STEM pathway growing, our school will be submitting a grant to change over all of our Quantitative Reasoning courses on both Tifton and Bainbridge campuses in Round 13. Perhaps even changing over the Calculus sequence if a suitable free book becomes available.

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

As of now, there are no planned papers, presentations, publications, or other professional activities expected to be produced from the reflection of this project. I'm not sure our institution would grant late IRB approval to allow us to do such research.

6. Description of Photograph

- *On the Final Report Submission page, you will be submitting a photo. In this document, list the names of the people shown in this separately uploaded photograph, along with their roles.*

A photo was forgotten to be taken. There will be a school meeting on January 3rd. I will collect all members of the team, take a picture, and forward you the image.

Or if you really need a picture and don't mind a very small team member, I can offer the following. This picture was taking of a College Algebra Exam giving at night by Ms. Abbott and Ms. Partlow. They offer night exams in two hours blocks so that their students can take all the time they need to finish the exam instead of in a 50 minute period. Three classes were in attendance. If you look at the bent over figure in the very back behind a student in a white baseball cap, you can see Ms. Partlow discussing something with a student.