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Application Summary

Competition Details

Competition Title:	Textbook Transformation Grants, Round Thirteen (Spring 2019-Spring 2020)
Category:	University System of Georgia
Award Cycle:	Round 13
Submission Deadline:	01/14/2019 at 11:59 PM

Application Information

Submitted By:	Samuel Cartwright
Application ID:	2881
Application Title:	423
Date Submitted:	01/15/2019 at 7:35 AM

Personal Details

Institution Name(s):	Fort Valley State University
Applicant First Name:	Samuel
Applicant Last Name:	Cartwright
Applicant Email Address:	cartwris@fvsu.edu
Applicant Phone Number:	4788256997
Primary Appointment Title:	Associate Professor of Mathematics
Submitter First Name:	Samuel
Submitter Last Name:	Cartwright
Submitter Email Address:	cartwris@fvsu.edu
Submitter Phone Number:	4788256997
Submitter Title:	Principal Investigator

Application Details

Proposal Title

423

Final Semester of Project

Fall 2019

Requested Amount of Funding

\$10,800

Type of Grant

No-or-Low-Cost-to-Students Learning Materials

Course Title(s)

Mathematics Modeling

Course Number(s)

MATH 1101

Team Member 1 Name

Samuel Cartwright

Team Member 1 Email

cartwris@fvsu.edu

Team Member 2 Name

Dawit Aberra

Team Member 2 Email

aberrad@fvsu.edu

Team Member 3 Name

Stevie Lawrence

Team Member 3 Email

lawrences@fvsu.edu

Team Member 4 Name

Bhavana Burell

Team Member 4 Email

burellb@fvsu.edu

Additional Team Members (Name and email address for each)

Sponsor Name

Dr. Dawit Aberra

Sponsor Title

Professor of Mathematics

Sponsor Department

Department of Mathematics and Computer Science

Original Required Commercial Materials (title, author, price)

Fundamentals of Algebraic Modeling, Sixth Edition. (2010). Timmons/ Johnson/ Smith; Brooks/Cole Publishing Company. (ISBN: 13:978-1-133-62777-7)

This book is not packaged with other materials. The cost of the book to students is \$158 before tax or \$169 with tax.

Average Number of Students per Course Section Affected by Project in One Academic Year

25

Average Number of Sections Affected by Project in One Academic Year

13

Total Number of Students Affected by Project in One Academic Year

325

Average Number of Students Affected per Summer Semester

23

Average Number of Students Affected per Fall Semester

200

Average Number of Students Affected per Spring Semester

102

Original Total Cost per Student

\$169

Post-Project Cost per Student

\$0

Post-Project Savings per Student

\$169

Projected Total Annual Student Savings per Academic Year

\$54,925

Using OpenStax Textbook?

Yes

Project Goals

The primary goal of this project is to provide and maintain high quality effective no-cost learning materials to students enrolled in math modeling in both electronic and printable format. The purpose is to explore whether the free resources will affect the performance and attitudes of these students in attaining their academic goals. Quantitative data will be compared between two groups-- the experimental group that will be provided with the free resources and the control group which had to purchase the materials. Qualitative data will be collected in the form of interviews to compare the results of both groups. We expect that the cost savings will have a positive impact on student progression and retention for a large student population at this institution. This project is anticipated to impact Fine Arts and Social Science majors at Fort Valley State University as part of the Gateway to Completion program.

Statement of Transformation

The transformation from high-cost materials to no-cost materials will take place over the course of several months leading to and continuing through Fall 2019. Replacing the initial materials for our students enrolled in math modeling will be a team effort. Our team will find and adapt free materials as well as create online materials to place on the departmental webpage and on Bright Space to ensure that students have access to these high-quality materials.

The **stakeholders** (math modeling students) come from a student population that is 88% reliant on financial aid with many not receiving a book-voucher to make the book purchase. Even with the book-voucher, students have complained in the past that it was not enough to pay for more than half their books cost. The **impact of this transformation on stakeholders** will be immediate.

At more affluent academic institutions, students are expected to obtain their course syllabus and start reading the first few chapters prior to the first day of class. By comparison, the students that cannot afford their books are discouraged and left behind before they even start the academic semester. At the same time for the instructors, this can create a sensitive issue in the teaching process which is now delayed and as a result puts a heavier burden on the latter part of the semester to complete the required substantive materials for their courses. The no-cost resources will allow instant access to materials that will have taken days or weeks well into the academic semester because of the lack of finances. This transformation in turn also allows students the foundation for their pathway to success.

The **transformative impact on the course, program, department, and institution** will be positive. The location and creation of materials will be selected based on course curriculum and easy student-access to resources. The program will allow students' access to course materials at the beginning of the semester. Through our team's experience, the department, as well as the institution, would benefit in the short term and long term. That is, more students will have free access to course materials from day-one and would make the course more affordable otherwise because of lack of funds. In the long term, the gained experience of putting together materials will inspire and enhance faculty's ability to extending their creativity in that regard to locating and developing free materials for other departmental courses. Through the departmental website and the help of marketing and communications, the students will be informed of the awareness and accessibility of these free resources.

Transformation Action Plan

Dr. Aberra, Dr. Cartwright, Dr. Lawrence, and Ms. Burell will be active in the development and implementation of both printed and online materials needed.

During spring 2019, Dr. Cartwright will lead the identification, review and selection process for the Math Modeling textbook. In spring 2019, Ms. Burell, will organize Bright Space training and create the online resources for Math Modeling in Bright Space. Math Modeling is part of the "Gateway to Completion Program" and its redesign will be done with collaboration with the FVSU's University College and Gateway to completion liaison (G2C). Dr. Lawrence and Dr. Aberra will work with the team in redesigning the syllabus-course materials to ensure that materials created during the alignment are accessible for student support services.

The team will create or find other resources such as videos, notes, and PowerPoints that are aligned with course content to be used as supplemental summarized reading materials for student use. Dr. Cartwright will create and gather quiz questions from the team for team review and selection. The final selection of videos, notes, PowerPoints, and quizzes will be uploaded into Bright Space.

During spring 2019, Dr. Cartwright will also get Institution Review Board for Human Subjects

Research (IRB) approval to conduct the research examining the effectiveness of this project in meeting its goal. Dr. Aberra, Dr. Cartwright, Dr. Lawrence, and Ms. Burell, will work as a team to write all reports for this project. Summer 2019, we will work as a team in constructing all resources to be used in Math Modeling course. That is, actively creating materials in Bright Space: materials and activities for global use will be linked to our departmental website.

Quantitative & Qualitative Measures

Quantitative measures such as students' grades, pre-test and post-tests will be compared to find whether the no-cost resources were effective in the performance of students' learning. Surveys will also be given to students at the beginning and at the end of each semester to analyze information of each student's response such as age, student classification, previous mathematical background, study habits, use of resources etc. Qualitative measures such as interviews and class discussions will also be analyzed. The following are a set of specific questions for the students:-

1. Did the no-cost resources on Bright space contribute to their understanding of the course materials in Math Modeling courses?
2. Was it easy to understand the online materials presented? Did it help with their understanding of this course?
3. Did they use any other supplemental materials other than the resources provided?
4. Did they use the Openstax textbook frequently?
5. Do they prefer the Openstax textbook compared to the traditional textbook?

The following are a set of specific questions for the faculty teaching the course:-

1. Did the pre-selected online assignments meet the needs of these courses?
2. Were they able to easily create homework assignments and lectures according to their needs as well as the needs of students?
3. How does the quality of the Openstax textbook compare to the traditional textbooks for these courses?

Timeline

February 2019 to March 2019

Open Math Modelling books will be reviewed and vetted for selection. Training for Bright space will be scheduled. Human Subjects Research form will be submitted for approval to examine the effectiveness of this project.

April 2019 to May 2019

Math modeling course syllabi will be redesigned and adapted to the free textbook selected during the Spring 2019 semester.

June 2019 to July 2019

Bright Space training and consulting will take place. After Bright Space training as a team, and with the help of consultants, the project team will post assignments for students and have all materials aligned and ready by the end of July.

August 2019 to December 2019

Math Modeling courses will be implemented using the materials that were constructed and any adjustments to these materials will take place if needed to ensure that all materials for the courses are ready by Fall Semester 2019.

Budget

Team Members

Each of the four team members, namely Dr. Samuel Cartwright and Ms. Bhavana Burell will be compensated as follows. Upon successful completion of the course construction in Summer 2019, a stipend of \$4,500 will be paid to Dr. Cartwright and Ms. Burell in accordance with the applicable university policies and procedures. On an ongoing basis, it is understood that the monitoring and the updating of the materials will be done throughout the duration of this grant period.

Traveling and Lodging for Training

Team members will set aside \$800 to be used for travel expenses to attend the grant kick-off meeting.

<i>Item</i>	<i>Unit Cost</i>	<i>Number</i>	<i>Total</i>
<i>Mathematics Department Faculty Salary</i>	<i>\$4,500</i>	<i>2</i>	<i>\$9,000</i>
<i>Travelling and Lodging for training and research dissemination.</i>	<i>\$500</i>	<i>2</i>	<i>\$1,000</i>
<i>Supplies and Materials</i>			<i>\$800</i>
<i>Total Cost</i>			<i>\$10,800</i>

Sustainability Plan

Math Modeling courses are offered each semester throughout the year. The departmental wide and campus-wide full adoption of these transformed courses will ensure that they are reviewed annually for improvement and sustainability for students and faculty. Furthermore, future funding will be sought to enhance and improve other Mathematics courses such as Statistics and Quantitative Reasoning in order to increase the use of no-cost-to-student resources to ensure stability and longevity.

Acknowledgment

Grant Acceptance

[Acknowledged] I understand and acknowledge that acceptance of Affordable Learning Georgia grant funding constitutes a commitment to comply with the required activities listed in the RFP and that my submitted proposal will serve as the statement of work that must be completed by my project team. I further understand and acknowledge that failure to complete the deliverables in the statement of work may result in termination of the agreement and funding.



January 14, 2019

Affordable Learning Georgia
Textbook Transformation Grant Review Committee

Dear Committee Members:

On behalf of the Department of Mathematics and Computer Science, I am pleased to support the proposal "No Cost Resource Materials for Mathematical Modeling"

The Department of Mathematics and Computer Science at Fort Valley State University offers programs of study leading to the Bachelor of Science degrees, with majors in Mathematics and Computer Science. Additionally, the department offers minor concentrations in these same areas, in Applied Statistics and in Nuclear Science and Engineering. In collaboration with the school of Education, the department also offers courses leading to graduate and undergraduate degrees in Education with concentration in Mathematics. The department also participates in several 3+2 dual degree programs, in conjunction with FVSU's Cooperative Development Energy Program (CDEP). Through CDEP dual degree program, students obtain a B.S. degree in Mathematics from FVSU and a second B.S. degree in Engineering, Geosciences or Health Physics, from Georgia Tech (GT), the University of Nevada Las Vegas (UNLV), Penn State University (PSU), the University of Texas-Austin (UT-Austin), the University of Texas Pan American (UTPA), and the University of Arkansas (UARK).

Our Mathematics program, which is ranked top in the nation for producing African-American math graduates by Diverse Magazine (2015, 2014 and 2011), is well prepared to adopt the transformed courses.

We have the technology and laboratories required to facilitate student support for the on-line and free textbook related resources. Dr. Cartwright and his team have all the qualifications and experience needed to meet the goals and objectives in the proposal. They taught the course for many years building experience and expertise in the pedagogy and technology required for transformation of this course. I am excited about the potential financial savings this project would offer our students.

Several sections of the Math Modeling (MATH 1101) course are offered each semester throughout the year (including summer). This course is also considered for redesign under the Gateway to Completion (G2C) cohort 2 program of USG and the Gardner Institute in which we are actively collaborating with this Textbook Transformation Grant. We are excited to write this proposal as part of our G2C project. The department will review and assess these transformed course annually and will seek funds as required to insure sustainability and improvement.

Sincerely,

Dawit Aberra, Ph. D.
Professor and Chair



January 14, 2019

Dr. Samuel Cartwright
Mathematics & Computer Science Department
Fort Valley State University
1005 State University Dr.
Fort Valley, Georgia, GA 31030

Dear Dr. Cartwright:

I am pleased to provide this letter of commitment in support of your proposal to Affordable Learning Georgia to support the textbook transformation for Math 1101. Your proposal aligns with the goals of Fort Valley State University's University College (UC), as this funding opportunity seeks to develop students with a special emphasis on assisting students with completing "gatekeeper" courses that are a part of the institution's general education curriculum.

As the UC provides the foundational skills for academic and student success, this initiative will complement many of the programs and services created in the UC, and provide an even greater opportunity to work with faculty, by providing an additional avenue to offer tutorials and supplemental instruction in this course.

As such, the UC fully support this proposal and looks forward to the potentially wonderful opportunities that it will bring to our campus. If there are any questions related to our support of this endeavor, please do not hesitate to contact me at the information provided below.

Sincerely,

Stevie L. Lawrence II, Ph.D.
Dean, University College



Textbook Transformation Grants, Round Thirteen (Spring 2019 –Spring 2020) Proposal Form and Narrative

Notes

- The proposal form and narrative .docx file is for offline drafting and review. Submitters must use the InfoReady Review online form for proposal submission.
- The only way to submit the official proposal is through the online form in Georgia Tech's InfoReady Review. The link to the online application is on the [Round 13 RFP Page](#).
- The italic text we provide is meant for clarifications and can be deleted.

Applicant, Team, and Sponsor Information

The **applicant** is the proposed Project Lead for the grant project. The **submitter** is the person submitting the application (which may be a Grants Officer or Administrator). The submitter will often be the applicant – if so, leave the submitter fields blank.

Institution(s)	Fort Valley State University
Applicant Name	Dr. Samuel Cartwright
Applicant Email	cartwris@fvsu.edu
Applicant Phone #	(478) 825-6997
Applicant Position/Title	Associate Professor
Submitter Name	Dr. Samuel Cartwright
Submitter Email	cartwris@fvsu.edu
Submitter Phone #	(478) 825-6997
Submitter Position	<i>Principal Investigator</i>

Please provide the first/last names and email addresses of all team members within the proposed project. Include the applicant (Project Lead) in this list. Do not include prefixes or suffixes such as Ms., Dr., Ph.D., etc.

	Name	Email Address
Team Member 1	Stevie Lawrence	lawrences@fvsu.edu
Team Member 2	Bhavana Burell	burellb@fvsu.edu
Team Member 3	Dawit, Aberra	aberrad@fvsu.edu
Team Member 4		
Team Member 5		
Team Member 6		
Team Member 7		
Team Member 8		

If you have any more team members to add, please enter their names and email addresses in the text box below.

N/A

Please provide the sponsor's name, title, department, and institution. The sponsor is the provider of your Letter of Support.

Dr. Dawit Aberra
Professor
Department of Mathematics and Computer Science
Fort Valley State University

Project Information and Impact Data

Title of Grant Project	<i>No Cost resource materials for Math Modeling</i>
Type of Grant	<i>Gateways to Completion</i>
Requested Amount of Funding	\$10,800.00
Course Names and Course Numbers	Math 1101 - Math Modeling
Final Semester of Project	<i>Fall 2019</i>
Average Number of Students Per Course Section Affected by Project	25
Average Number of Sections Affected by Project in One Academic Year	13
Total Number of Students Affected by Project in One Academic Year	325
Average Number of Students Affected per Summer Semester	23
Average Number of Students Affected per Fall Semester	200
Average Number of Students Affected per Spring Semester	102
Title/Author of Original Required Materials	<u>Fundamentals of Algebraic Modeling</u> , Sixth Edition. (2010). Timmons/ Johnson/ Smith; Brooks/Cole Publishing Company. (ISBN: 13:978-1-133-62777-7) This book is not packaged with other materials. The cost of the book to students is \$158 before tax or \$169 with tax.
Original Total Cost Per Student	<i>The original cost per student is \$169.</i>
Post-Project Cost Per Student	<i>No Cost</i>
Post-Project Savings Per Student	\$169
Projected Total Annual Student	\$54,925

Savings Per Academic Year	
Using OpenStax Textbook?	Yes.

Narrative Section

1. Project Goals

The primary goal of this project is to provide and maintain high quality effective no-cost learning materials to students enrolled in math modelling in both electronic and printable format. The purpose is to explore whether the free resources will affect the performance and attitudes of these students in attaining their academic goals. Quantitative data will be compared between two groups-- the experimental group that will be provided with the free resources and the control group which had to purchase the materials. Qualitative data will be collected in the form of interviews to compare the results of both groups. We expect that the cost savings will have a positive impact on student progression and retention for a large student population at this institution. This project is anticipated to impact Fine Arts and Social Science majors at Fort Valley State University as part of the Gateway to Completion program.

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August 2019 to December 2019

Math modelling courses will be implemented using the materials that were constructed and any adjustments to these materials will take place if needed to ensure that all materials for the courses are ready by Fall Semester 2019.

6. Budget

7. Team Members

8. Each of the four team members, namely Dr. Samuel Cartwright and Ms. Bhavana Burell will be compensated as follows. Upon successful completion of the course construction in Summer 2019, a stipend of \$4,500 will be paid to Dr. Cartwright and Ms. Burell in accordance with the applicable university policies and procedures. On an ongoing basis it is understood that the monitoring and the updating of the materials will be done throughout the duration of this grant period.

9. Traveling and Lodging for Training

10. Team members will set aside \$800 to be used for travel expenses to attend the grant kick-off meeting.

11.

<i>Item</i>	<i>Unit Cost</i>	<i>Number</i>	<i>Total</i>
<i>Mathematics Department Faculty Salary</i>	<i>\$4,500</i>	<i>2</i>	<i>\$9,000</i>
<i>Travelling and Lodging for training and research dissemination.</i>	<i>\$500</i>	<i>2</i>	<i>\$1,000</i>
<i>Supplies and Materials</i>			<i>\$800</i>
<i>Total Cost</i>			<i>\$10,800</i>

7. Sustainability Plan

Math Modelling courses are offered each semester throughout the year. The departmental wide and campus wide full adoption of these transformed courses will ensure that they are reviewed annually for improvement and sustainability for students and faculty. Furthermore, future funding will be sought to enhance and improve other Mathematics courses such as Statistics and Quantitative Reasoning in order to increase the use of no-cost-to-student resources to ensure the stability and longevity.

Note: Letter of Support