



Project Proposal

Title

Open Mathematics in Action:

Expanding the Successful Use of OER in USG Mathematics Courses

Project Summary

Mathematics faculty from USG institutions will implement a set of low-cost and open educational resources and affordable materials in one or more of the math courses College Algebra (MATH 1111), Trigonometry (MATH 1112), Precalculus (MATH 1113), and Probability and Statistics (MATH 2112), supported by previous Textbook Transformation Grants project participants and co-leaders Dr. German Vargas and Dr. Victor Vega along with Affordable Learning Georgia staff. Participants will begin their process with an in-person workshop event in July of 2016 on use of this set of materials that they will adopt for use in fall 2016 and Spring 2017.

Timeframe: July 1, 2016 – June 30, 2017

Number of Participants Sought: Up to ten

Budget: \$2400 per participant (includes \$400 for travel to required workshop), \$4400 per Project Lead (includes \$400 for travel to required workshop). Total: \$32,800

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Introduction

In Fall Semester 2014, Dr. German Vargas, Department Chair and Associate Professor of Mathematics and Dr. Victor Vega, Associate Professor of Mathematics at the College of Coastal Georgia (CCGA), along with four other CCGA mathematics faculty, proposed a

project to transform all CCGA College Algebra (MATH 1111), Trigonometry (MATH 1112), Precalculus (MATH 1113), and Probability and Statistics (MATH 2112) courses with an implementation of OER and an affordable mathematics homework solution in place of the standard commercial textbooks.

The project was awarded an Affordable Learning Georgia Textbook Transformation Grant in Spring Semester 2015, with all materials to be implemented in Spring Semester 2016. The project has been very successful, and Dr. Vargas has emerged as an advocate and leader in OER implementation across the USG. Dr. Vargas and Dr. Vega have also taken the lead on exploration of options for open and low-cost online mathematics homework solutions. ALG has been receiving feedback from mathematics faculty that online homework solutions for math are essential to student engagement, performance monitoring, and success. Many have expressed concerns about the availability and quality of completely open mathematics homework solutions. Dr. Vargas and Dr. Vega have been working to address this through the adoption of low-cost online homework systems such as WebAssign and XYZ Homework. They have also explored additional options and are ready to share the lessons learned. This information will provide a platform to assist other institutions initiate a robust implementation.

In addition to this, Dr. Vargas, Dr. Vega and the faculty at CCGA have been involved in the development of Power Point lecture notes for such classes to accompany the OpenStax textbooks in order to facilitate the delivery of the courses and the presentation of the material for the faculty and students. This represents another avenue of savings to the students through complete, affordable and robust packages for College Algebra, Trigonometry, Precalculus and Statistics.

Through *Open Mathematics in Action*, Affordable Learning Georgia aims to expand on the transformational success of the College of Coastal Georgia's Mathematics Department by providing up to ten USG mathematics faculty with the support, resources, and training needed to implement these OER in their course sections.

Project Goals

- Lower the cost and increase the delivery options for required course materials in College Algebra (MATH 1111), Trigonometry (MATH 1112), Precalculus (MATH 1113), and Probability and Statistics (MATH 2112) courses, and therefore:
- Increase student satisfaction within these courses,
- Increase student retention and success within these courses, and
- Gain insight into the effectiveness of Open and Low-Cost Mathematics and online homework systems.

Course Materials Used

- [OpenStax College Algebra and Trigonometry](#)
- [OpenStax College Precalculus](#)
- [OpenStax College Introductory Statistics](#)
- [WebAssign Homework System](#)
- [XYZ Homework System](#)
- [PowerPoint Lecture Notes](#)

Staff Support

College of Coastal Georgia

Dr. German Vargas and Dr. Victor Vega Co-Project Leads

- Recruit faculty participants.
- Provide facilitation and instruction for the in-person workshop.
- Hold monthly meetings with participants to gather feedback and address issues.
- Serve as point of contact for all mathematics implementation questions from participants.

Dr. Victor Vega

- Contact Faculty participants
- Schedule workshop and web meetings with participants
- Provide guidance and support to all participants on the adoption and adaptation of course materials.
- Provide facilitation and instruction for the in-person workshop.
- Hold monthly meetings with participants to gather feedback and address issues.
- Develop and support a unified framework for evaluation of student outcomes and perceptions, with particular attention to the efficacy of the adopted mathematics homework solution.
- Serve as point of contact for all mathematics implementation questions from participants.

Affordable Learning Georgia

Lauren Fancher, Director; Jeff Gallant, Program Manager

- Provide funding to institutions of participating faculty, Dr. Vargas, and Dr. Vega, intended for release time, overload, salary, or replacement.
- Provide funding for overall project expenses, including travel for team members to attend the in-person workshop.
- Provide opportunities for online professional development and collaboration.
- Host an in-person workshop for awardees
- Lauren Fancher: Point of contact for funding questions.
- Jeff Gallant: Point of contact for Dr. Vargas and Dr. Vega, attend monthly meetings, coordinate Mathematics in Action workshop.

Rice University's OpenStax College

- Provide online support for the use of OpenStax College Textbooks.
- Point of contact for all technical questions related to OpenStax College Textbooks.

Plan of Action

- Dr. Vargas and Dr. Vega will recruit up to ten participants, including representatives from across the USG, ensuring that at least one participant is available for each course. Participants cannot have already received an ALG grant.
- Each participant will provide to ALG a letter of commitment to and support for their participation in the project from their department head. Participants are responsible for clearing their participation in this grant project as required by institutional policy.
- Funds do not go directly to the participants but to their institution. Each participant will receive an SLA for signature by their institutional signatory for the total amount of funding to be distributed to the institution. Each participant is responsible for communicating with their department, grants office, and business office about their SLA.
- Participants will work independently with the facilitation and support of Dr. Vargas, Dr. Vega and the ALG staff.
- In early June, all participants will meet in an initial online meeting with Dr. Vargas, Dr. Vega and ALG staff.
- All participants will attend an online monthly check-in meeting with Dr. Vargas and Dr. Vega.
- All participants will attend an in-person workshop on the materials to be adopted, including mathematics online homework solutions.
- All participants will fully adopt these resources in Fall Semester 2016 and Spring Semester 2017.
- All participants will report the status of their implementation at the end of the Summer semester by August 21, 2016 and the Fall semester by December 23, 2016, using a simple form provided by ALG.
- Following Spring Semester 2017 / by May 26, 2017, all participants will provide a final report, using a template provided by ALG, which includes a narrative about the process and lessons learned, and student outcomes and perceptions per guidelines provided by Dr. Vargas, Dr. Vega and Jeff Gallant.
- Following the completion of the project, all participants will complete an ALG post-project survey about their project results in order to compile consistent data across all efforts.

Funding

Affordable Learning Georgia will fund up to ten (10) participants a maximum of \$2,400 for release time/overload/salary/replacement per faculty participant. This includes up to \$400 for travel to in-person required workshops (see Required Events).

Affordable Learning Georgia will fund Dr. Vargas and Dr. Vega \$4,000 each as Project Leads plus up to \$400 for travel to in-person workshop training of the participants.

Funds Distribution

	Stipend	Travel	Cost per participant	Total
10 Participants	\$2,000	\$400	\$2,400	\$24,000
Dr. Vargas	\$4,000	\$400	\$4,400	\$4,400
Dr. Vega	\$4,000	\$400	\$4,400	\$4,400
			Total Cost	\$32,800

Funding is not a direct stipend to participants, but rather an allocation to the institution to cover the participant's time (salary/release time/overload/replacement coverage), project expenses including related department needs, and travel expenses.

Participants must coordinate as necessary with their grants and/or business departments to determine how to handle the distribution, including amounts, release time/overload/salary/replacement as well as semester(s). This provides the maximum flexibility to the institution and the participant in terms of compensation vs. replacement of teaching load. Funding to participants will be released to the sponsoring institutional office in two parts: 50% on return of the USG-drafted Service Level Agreement (SLA), and 50% on submission of the final report.

Required Activities

Expected activities include training in the chosen project resources, open licensing as necessary, any OER adoption/adaptation work required, and course redesign as necessary for the transformation.

Other required activities:

- Institutional sign-off on Service Level Agreement(s) provided by the University System Office.
- Institutional invoice to USG along with the signed SLA in order for funds to be disbursed.
- Attendance at monthly online status meetings

- Attendance at a required in-person workshop.
- Adoption of the defined set of course materials for use in one or more courses in Fall 2016 and Spring 2017.
- Completion of Summer 2016 and Fall 2016 status reports for every semester of implementation work.
- Completion of a final report to be submitted on May 26, 2017, including data on perceptions and outcomes.
- Participation in an ALG post-project survey about their project results in order to compile consistent data across all efforts.
- Participation as needed in communications related to Affordable Learning Georgia, including presentations and panels at related conferences and events.

Timeline

- **Late May / Early June 2016** – Deadline for identification and recruitment of Participants by Dr. Vargas and Dr. Vega
- **Mid-June, 2016** – Online Kick-Off Meeting
- **June-July 2016** – Preparation by Participants
- **July 7, 2016** – Open Mathematics in Action Workshop in Macon, GA
- **August 2016** – Start using materials with the fall semester start
- **August 21, 2016** – First status report (summer) deadline
- **December 23, 2016** – Fall semester status report deadline
- **January 2017** – Continue use of materials in the spring semester
- **May 26, 2017** – Final report deadline
- **June 2017**– Post-project survey

July 7, 2016, 9:00am-4:00pm: Open Mathematics in Action Workshop

This day-long event in Macon, GA will bring together *Open Mathematics in Action* participants in a day of team-oriented learning, with a focus on the set of materials to be adopted and options for accompanying low-cost homework systems.

Open Access to Materials

Faculty-authored ancillary materials created within the *Mathematics in Action* project will be made available in the GALILEO Open Learning Materials repository under a Creative Commons Attribution (CC BY) open license after Final Reports are submitted. Sharing of testing materials is not required but is encouraged; access to be secured by password for authorized faculty only.

Sustainability and Future Plans

After the final semester of the project, Spring 2017, *Open Mathematics in Action* faculty will be responsible for updating their created materials as necessary for their courses. Affordable Learning Georgia will provide assistance with loading revised materials into the GALILEO Open Learning Materials repository.

Participants will be required to complete a survey about their project results in order to compile consistent data across all efforts.

Participants will be encouraged to share successes with their colleagues, departments, and campuses, and participants will be encouraged to share their experiences and results in scholarly activities such as presentations and scholarly journal articles. Participants may be asked by Affordable Learning Georgia to take part in panels during state conferences.