

## Application Details

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### Manage Application: Textbook Transformation Grants Round Seven

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**Award Cycle:** Round 7

**Internal Submission Deadline:** Sunday, September 4, 2016

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**Application Title:** 272

**Application ID:** #001175

**Submitter First Name:** Jason

**Submitter Last Name:** Allard

**Submitter Title:** Associate Professor

**Submitter Email Address:** jmallard@valdosta.edu

**Submitter Phone Number:** 229-249-2745

**Submitter Campus Role:** Proposal Investigator (Primary or additional)

**Applicant First Name:** Jason

**Applicant Last Name:** Allard

**Co-Applicant Name(s):** Weimin Feng

**Applicant Email Address:** wfeng@valdosta.edu

**Applicant Phone Number:** 229-333-7030

**Primary Appointment Title:** Associate Professor

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

**Proposal Category:** Specific Top 100 Undergraduate Courses

**Submission Date:** Tuesday, September 6, 2016

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

Jason Allard; Department of Physics, Astronomy, and Geosciences; Valdosta State University; jmallard@valdosta.edu

Weimin Feng; Department of Physics, Astronomy, and Geosciences; Valdosta State University; wfeng@valdosta.edu

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

Dr. Edward Chatelain, Department Head and Associate Professor; Department of Physics, Astronomy, and Geosciences; Valdosta State University; echatela@valdosta.edu

**Final Semester of Instruction:** Fall 2017

**Proposal Title:** 272

**Course Names, Course Numbers and Semesters Offered:**

GEOG 1112K: Introduction to Weather and Climate

The course is offered every semester. Enrollment is ~125 in fall, ~75 in spring, and ~25 in summer.

**Average Number of Students per Course Section:** 25

**Number of Course Sections Affected by Implementation in Academic Year:** 9

**Total Number of Students Affected by Implementation in Academic Year:** 225

**List the original course materials for students (including title, whether optional or required, & cost for each item):** Lutgens, F.K. and E.J. Tarbuck, 2016: The Atmosphere: An Introduction to Meteorology, 13<sup>th</sup> Ed. Pearson Education. 462 p. The textbook used to be required, but is now listed as recommended. The instructor of the course felt that the cost of the textbook was too excessive to require its use. A new paperback copy of the textbook costs \$191.75.

**Requested Amount of Funding:** \$10,800

**Original per Student Cost:** \$191.75

**Post-Proposal Projected Student Cost:** \$0

**Projected Per Student Savings:** \$191.75

**Projected Total Annual Student Savings:** \$43,144

**Creation and Hosting Platforms (Use "n/a" if none):**

BlazeView D2L and VSU Digital Repository (VText)

## **Project Goals:**

1. To provide no-cost, high-quality, web-based educational material to replace the current textbook for students in the introductory weather and climate course (GEOG 1112K) on a department-wide basis at Valdosta State University (VSU). With an average 9 sections per year and 25 students per section, the projected annual savings would be \$43,144.
2. Develop and deliver targeted, online, open-source material (e.g., text, movies, animations, websites, interactives, or other educational resources) presented as modules (i.e., course specific materials divided into modules according to broad conceptual themes) that more closely align with the learning outcomes of VSU and the Department of Physics, Astronomy, and Geosciences.
3. Redesign the syllabus and PowerPoint lectures to match the new educational material presented in the OER modules.
4. Create a BlazeView course that provides the OER modules to the students and make the modules available via the VSU Digital Repository (VText) for use by other faculty.
5. By offering these new and free OER modules, increase student enrollment and increase the likelihood for student success within the course.
6. Develop assessment methods to measure the impact of these changes on student success, engagement, and experience in the course, as compared to the textbook currently in use.

## **Statement of Transformation:**

The barrier to the adoption of OER most often cited by faculty is the lack of resources for their subject area (~49% of faculty cite this reason) (Allen and Seaman, 2016). A due-diligence search for OER resources related to weather and climate courses demonstrated that there is indeed a lack of available material, such that it is likely that a much higher percentage of faculty would cite the lack of resources for weather and climate courses at a barrier to adoption than the previously cited ~49%. Rather than relying upon a single OER that would not prove suitable for an introductory weather and climate course, many different free resource materials will be identified and combined to create a comprehensive repository of material. The resources will be modular in nature, as opposed to the traditional structure of a textbook. As such, the modules, constructed by major concepts, could be used individually or in combination so as to mirror the more traditional structure of a textbook.

Introduction to Weather and Climate is a large enrollment course at Valdosta State University (VSU), fulfilling an Area D.1 or D.2.b Core Curriculum Area D – Natural Science, Math, and Technology – requirement. The primary stakeholders are the approximately 225 students who take this course each year. About 94% of students agree that the cost of textbooks, reaching \$1200 on average during the 2013-2014 academic year, affect their ability to afford college

(Textbook Survey Report 2012; College Board 2013). Many VSU students come from economic backgrounds that can make the purchase of expensive textbooks difficult. Moreover, it is not uncommon for students to await financial aid disbursement weeks into the semester before being able to purchase textbooks. As such, the students can begin the semester at a disadvantage. An OER for GEOG 1112K would reduce the financial burden of students enrolled in the course, and also allow access to course material upon the first day of the course, thereby allowing students to use their funds for other school-related expenses. In addition, the modules will be available in PDF format so that it can be downloaded to mobile devices or computer, and used offline, which allows the students to review the materials at any time and place.

A secondary stakeholder would be faculty that teach introductory weather and climate courses. Because the material will be freely available, other faculty at other institutions could access the materials. Moreover, the module nature of the resources created would allow other faculty to select modules that are most suitable for their courses, rather than be forced to adopt an entire text that may include information irrelevant to their courses.

Overall, the creation of the OER for an introductory weather and climate course has the immediate financial benefits to students (at \$191.75 per textbook, the transformation would collectively save students \$43,144 annually), and creates a resource that is more accessible to students. It also creates a resource that is available to faculty at other institutions. The availability of the course material at the beginning of the semester would likely aid in student success in the course by creating educational material to all students in the most timely available manner, thereby aiding in the success of the students in the course. The modular nature of the education resources will also allow for the continued expansion and update of information in a timelier manner than the updates of new textbook editions (which typically carry higher price tags). The new OER will be adopted by all faculty in the department that teach GEOG 1112K, providing consistency across multiple sections of the course here at VSU. A well-designed and free educational resource should also aid in drawing more students into the course, potentially increasing the number of majors in the department that discover an interest in the discipline by taking the course.

### **Transformation Action Plan:**

The process will involve identifying online, open access resources that cover the major themes of the course. Given that there is no single online resource currently available for an introductory weather and climate course, this will involve a comprehensive search of available online resources that can be combined into the aforementioned learning modules. As such, the themes of each module will be used to guide the adoption of resources. To ensure students' engagement with the modules, the material collected will include material incorporating a variety of active learning strategies. The identification and collection of resources to create the modules will not consist of just text or image-based material, but rather include relevant movies, animations, websites, interactives, or other educational resources to aid in student

learning.

As is true with the adoption of any new textbook, or equivalent educational material, the syllabus and PowerPoint lectures will need to be revised to align with the content and delivery format. Because the modules created will align with major themes for an introductory weather and climate course, changes to the syllabus are anticipated to be minimal. The instructional material, such as PowerPoint lectures, will have to be significantly modified to include the new content and learning material incorporated into the modules.

The investigators on this proposal will work together on all project goals, sharing the duties of developing the educational modules. Both investigators will be modifying the syllabus, lecture notes, quizzes, and exams so that the course content aligns with the educational modules. While both investigators will share in the responsibilities, one investigator will take the lead in certain aspects of the development. Dr. Allard will provide the lead guidance on the selection of the themes for the educational modules and for authoring any new material that may not be available as a free resource online. Dr. Allard will also provide the lead guidance in modifying the syllabus, lecture notes, quizzes, and exams. Dr. Feng will provide the lead guidance in editing, formatting, and publishing the educational modules. Dr. Feng will also ensure compliance with copyright and accessibility requirements.

All students will have access to the educational modules through Blackboard D2L, and public access will be available through the VSU Institutional Repository (Vtext). This ensures that students will have access to the course material anywhere there is access to the internet. The educational material will be adopted across the department to ensure uniformity in the instruction of the course. All content will be open access and licensed CC-BY (Creative Commons – by attribution). Neither investigator has experience with posting material to OpenStax or LibGuide, but it is hoped that eLearning or Resource Instructors at the Odum Library will be able to assist in providing access to the learning modules through those resources. Funding to hire somebody should be available for this purpose through the home department.

**Quantitative & Qualitative Measures:** After the implementation of the project, quantitative and qualitative measures will be used to determine the impact of this transformation on student success. A number of quantitative measures will be utilized. First, we will compare course grades and DFW rates pre- (traditional textbook) and post-transformation (educational modules) between sections taught by the same professor to determine if the new material aids student success in the course. Particular attention will be paid to the attrition rate with the new material. Second, we will assess before and after performance on exams (aligned with learning objectives). This will be done by identifying highly similar exam questions that tested the same concepts to compare student success using the commercial textbook versus the educational modules. GEOG 1112K is undergoing a core curriculum assessment in fall 2016, so the questions selected for this assessment can be incorporated into the assessment of the textbook transformation to link student success from the textbook transformation to core curriculum assessment (including university and departmental learning objectives), increasing the usefulness of the transformation assessment. Third, statistics on online usage of the educational module will be collected from BlazeView D2L, and compared to student performance on class quizzes and exams. Qualitative measures will also be used. First, student experience and satisfaction will be evaluated through the use of Student Opinion of Instruction (SOIs), controlled for variation among instructors. Second, a survey will be used that contains probing questions will be created to solicit students' perspectives on the use of the alternative educational resource and the modular nature of the educational material. Questions will focus on the difference type of educational resources available (e.g., text, graphics, animations, pictures) and their effectiveness. These survey results will not be shared with the instructor of record until after the course grades are submitted. Responses to this survey will be used to improve the educational material in future

semesters.

**Timeline:**

October 2016: Principle investigators meet to review goals, identify online resources, and establish module-specific content and objectives, as related to learning objectives.

November – December 2016: Review and collection of online content to be used in the creating of educational modules.

January – February 2017: Begin the process of designing modules in BlazeView D2L, and identify educational material required for the modules that are not available online as free access material.

March 2017: Develop and include content into D2L that were not available online as free access material.

April – June 2017: Finalize the content of educational modules.

June 2017: Finalize the design of educational modules in D2L and Vtext.

June 2017 – July 2017: Adapt and finalize course material, including the course syllabus, PowerPoint lectures, quizzes and exams, and other educational resources for use with the educational modules.

August 2017: Pre-semester meeting to confirm the completion of transformation for the fall semester.

Fall 2017: Implement new course materials.

December 2017: Complete assessment of transformation and submit required ALG report.

Spring 2018: Co-investigators modify course material based on student feedback.

**Budget:**

Dr. Jason Allard - \$5000 for overload and/or release time.

Dr. Weimin Feng - \$5000 for overload and/or release time.

Travel for two team members to the ALG kickoff meeting (\$800)

**Sustainability Plan:**

The overall goal of this project is to create a compilation of modules, which cover the themes required to teach an introductory weather and climate course. All material will be made

available to every instructor prior to the beginning of the semester through BlazeView D2L. The modules will also be made available to faculty at other USG institutions through the VSU Institutional Repository (Vtext).

GEOG 1112K is offered every fall, spring, and summer semester. Following the development of the modules, they will be available for all future offerings of the course. The course material will be adopted throughout the department, ensuring consistency of course content. Dr. Allard will update the modules and improve the master design as any feedback is provided on improving the course from colleagues or students.

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September 1, 2016

Dear Affordable Learning Georgia,

I am pleased to write this letter in enthusiastic support of the Affordable Learning Georgia Textbook Transformation Grant proposal submitted by Dr. Jason Allard (Associate Professor of Geography) and Dr. Weimin Feng (Associate Professor of Geography) in the Department of Physics, Astronomy, and Geosciences at Valdosta State University. I am encouraged that during this time of dwindling enrollments and soaring textbook costs in the State of Georgia that this proposal will enable many more students to enroll and be successful in GEOG 1112K Weather and Climate Area D Core Lab Science course. The cost of the Tarbuck and Lutgens 13th edition of *The Atmosphere: An Introduction to Meteorology* text used in multiple GEOG 1112K Weather and Climate lab sections at Valdosta State University is presently \$191.75, which is prohibitively expensive for only a single semester course.

The first three weeks in this course are critical in determining student success because of the new terminology and ideas that are introduced and added upon. Many students at this stage have yet to purchase their textbook and thus are likely to be putting themselves at serious risk of failure, or resolved to play catch-up for the entire semester in that class. Not only does this new project eliminate the costs of textbooks, which for non-science majors can be overwhelming, but also will provide each student with instant access to all course materials from the first day of class. Most of the course drops and withdrawals in the first few weeks of class would be prevented, and the rigor of these more complex concepts can be embraced by all students equally and immediately. Therefore, the continuing challenges of retention for the university and graduation in a timely fashion for the student are resolved. Furthermore, the flexibility and efficiency of the disseminated material assures its currency far beyond that of an easily dated published text.

I am pleased with the clarity and simplicity of the project design, and am most certain that its results will yield recommendations for essential change in how core-lab science course materials are accessed by students in the USG.

Long-term sustainability of this project at Valdosta State University is particularly essential, as student enrollment (approximately 225 students each year) and retention in this multiple section course provides a crucial gateway for majors into our own Environmental Geosciences program. The transformation of this multi-section course in the department, taught by Dr. Jason Allard and Dr. Mark Groszos, will serve as a model to other departments within the College of Arts and Sciences at Valdosta State University. I see this study as vital link to success for both students and departments in the USG.

Your consideration on this matter is greatly appreciated. Thank you.

Sincerely,



Edward E Chatelain, Head  
Physics, Astronomy, and Geosciences

**Affordable Learning Georgia Textbook Transformation Grants**

**Rounds Six, Seven, and Eight**

**For Implementations beginning Fall Semester 2016**

**Running Through Fall Semester 2017**

**Proposal Form and Narrative**

<b>Submitter Name</b>	Jason Allard
<b>Submitter Title</b>	Associate Professor
<b>Submitter Email</b>	jmallard@valdosta.edu
<b>Submitter Phone Number</b>	229-249-2745
<b>Submitter Campus Role</b>	Primary Proposal Investigator
<b>Applicant Name</b>	Jason Allard
<b>Applicant Email</b>	jmallard@valdosta.edu
<b>Applicant Phone Number</b>	229-588-0106
<b>Primary Appointment Title</b>	Associate Professor
<b>Institution Name(s)</b>	Valdosta State University

<b>Team Members</b>	Jason Allard; Department of Physics, Astronomy, and Geosciences; Valdosta State University; jmallard@valdosta.edu  Weimin Feng; Department of Physics, Astronomy, and Geosciences; Valdosta State University; wfeng@valdosta.edu				
<b>Sponsor, Title, Department, Institution</b>	Dr. Edward Chatelain, Department Head and Associate Professor; Department of Physics, Astronomy, and Geosciences; Valdosta State University; echatela@valdosta.edu				
<b>Proposal Title</b>	Educational Modules for GEOG 1112K: Introduction to Weather and Climate				
<b>Course Names, Course Numbers and Semesters Offered</b>	GEOG 1112K: Introduction to Weather and Climate  The course is offered every semester. Enrollment is ~125 in fall, ~75 in spring, and ~25 in summer.				
<b>Final Semester of Instruction</b>	Fall 2017				
<b>Average Number of Students Per Course Section</b>	~25	<b>Number of Course Sections Affected by Implementation in Academic Year</b>	5 in fall, 3 in spring; 1 in summer	<b>Total Number of Students Affected by Implementation in Academic Year</b>	~225 students (see above)
<b>Award Category (pick one)</b>	<input type="checkbox"/> No-or-Low-Cost-to-Students Learning Materials <input type="checkbox"/> OpenStax Textbooks <input type="checkbox"/> Interactive Course-Authoring Tools and Software <input checked="" type="checkbox"/> Specific Top 100 Undergraduate Courses				
<b>List the original course materials for students (including title, whether</b>	Lutgens, F.K. and E.J. Tarbuck, 2016: The Atmosphere: An Introduction to Meteorology, 13 <sup>th</sup> Ed. Pearson Education. 462 p.  The textbook used to be required, but is now listed as recommended. The instructor of the course felt that the cost of the textbook was too excessive to require its use.				

<b>optional or required, &amp; cost for each item)</b>	A new paperback copy of the textbook costs \$191.75.
<b>Requested Amount of Funding</b>	\$10,800
<b>Original Per Student Cost</b>	\$191.75 for the new paperback textbook.
<b>Post-Proposal Projected Per Student Cost</b>	\$0 for the online textbook (online: see narrative for details).
<b>Projected Per Student Savings</b>	\$191.75
<b>Projected Total Annual Student Savings</b>	With 225 students not having to purchase a \$191.75 new paperback textbook, the total annual student savings would be \$43,144.
<b>Creation and Hosting Platforms Used</b>	BlazeView D2L and VSU Digital Repository (VText)

## NARRATIVE

## **1.1 PROJECT GOALS**

1. To provide no-cost, high-quality, web-based educational material to replace the current textbook for students in the introductory weather and climate course (GEOG 1112K) on a department-wide basis at Valdosta State University (VSU). With an average 9 sections per year and 25 students per section, the projected annual savings would be \$43,144.
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5. By offering these new and free OER modules, increase student enrollment and increase the likelihood for student success within the course.
6. Develop assessment methods to measure the impact of these changes on student success, engagement, and experience in the course, as compared to the textbook currently in use.

## 1.2 STATEMENT OF TRANSFORMATION

The barrier to the adoption of OER most often cited by faculty is the lack of resources for their subject area (~49% of faculty cite this reason) (Allen and Seaman, 2016). A due-diligence search for OER resources related to weather and climate courses demonstrated that there is indeed a lack of available material, such that it is likely that a much higher percentage of faculty would cite the lack of resources for weather and climate courses at a barrier to adoption than the previously cited ~49%. Rather than relying upon a single OER that would not prove suitable for an introductory weather and climate course, many different free resource materials will be identified and combined to create a comprehensive repository of material. The resources will be modular in nature, as opposed to the traditional structure of a textbook. As such, the modules, constructed by major concepts, could be used individually or in combination so as to mirror the more traditional structure of a textbook.

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for the continued expansion and update of information in a timelier manner than the updates of new textbook editions (which typically carry higher price tags). The new OER will be adopted by all faculty in the department that teach GEOG 1112K, providing consistency across multiple sections of the course here at VSU. A well-designed and free educational resource should also aid in drawing more students into the course, potentially increasing the number of majors in the department that discover an interest in the discipline by taking the course.

### **1.3 TRANSFORMATION ACTION PLAN**

The process will involve identifying online, open access resources that cover the major themes of the course. Given that there is no single online resource currently available for an introductory weather and climate course, this will involve a comprehensive search of available online resources that can be combined into the aforementioned learning modules. As such, the themes of each module will be used to guide the adoption of resources. To ensure students' engagement with the modules, the material collected will include material incorporating a variety of active learning strategies. The identification and collection of resources to create the modules will not consist of just text or image-based material, but rather include relevant movies, animations, websites, interactives, or other educational resources to aid in student learning.

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## 1.4 QUANTITATIVE AND QUALITATIVE MEASURES

After the implementation of the project, quantitative and qualitative measures will be used to determine the impact of this transformation on student success.

A number of quantitative measures will be utilized. First, we will compare course grades and DFW rates pre- (traditional textbook) and post-transformation (educational modules) between sections taught by the same professor to determine if the new material aids student success in the course. Particular attention will be paid to the attrition rate with the new material. Second, we will assess before and after performance on exams (aligned with learning objectives). This will be done by identifying highly similar exam questions that tested the same concepts to compare student success using the commercial textbook versus the educational modules. GEOG 1112K is undergoing a core curriculum assessment in fall 2016, so the questions selected for this assessment can be incorporated into the assessment of the textbook transformation to link student success from the textbook transformation to core curriculum assessment (including university and departmental learning objectives), increasing the usefulness of the transformation assessment. Third, statistics on online usage of the educational module will be collected from BlazeView D2L, and compared to student performance on class quizzes and exams.

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## **1.5 TIMELINE**

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## **1.6 BUDGET**

Dr. Jason Allard - \$5000 for overload and/or release time.

Dr. Weimin Feng - \$5000 for overload and/or release time.

Travel for two team members to the ALG kickoff meeting (\$800).

## **1.7 SUSTAINABILITY PLAN**

The overall goal of this project is to create a compilation of modules, which cover the themes required to teach an introductory weather and climate course. All material will be made available to every instructor prior to the beginning of the semester through BlazeView D2L. The modules will also be made available to faculty at other USG institutions through the VSU Institutional Repository (Vtext).

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## 1.8 REFERENCES & ATTACHMENTS

Allen, I. E. A. and J. Seaman 2016, Opening the Textbook: Educational Resources in U.S. Higher Education, 2015-2016. Available at:

<http://www.onlinelearningsurvey.com/reports/openingthetextbook2016.pdf>

College Board 2013, accessed September 3, 2016 at <https://trends.collegeboard.org/>

Textbook Survey Report, 2012. Available at <http://www.studentsunited.org/>

See attached letter of support from sponsoring Department Head, Dr. Edward Chatelain.