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Application Summary

Competition Details

Competition Title:	Textbook Transformation Grants, Round Sixteen (Spring 2020 - Spring 2021)
Category:	University System of Georgia
Award Cycle:	Round 16
Submission Deadline:	01/13/2020 at 11:59 PM

Application Information

Submitted By:	Ulrike Ingram
Application ID:	3964
Application Title:	504
Date Submitted:	01/14/2020 at 8:13 AM

Personal Details

Institution Name(s):	Kennesaw State University and the University of North Georgia
Applicant First Name:	Ulrike
Applicant Last Name:	Ingram
Applicant Email Address:	uingram@kennesaw.edu
Applicant Phone Number:	678-824-2620
Primary Appointment Title:	Lecturer
Submitter First Name:	Ulrike
Submitter Last Name:	Ingram
Submitter Email Address:	uingram@kennesaw.edu
Submitter Phone Number:	678-824-2620
Submitter Title:	Lecturer

Application Details

Proposal Title

504

Requested Amount of Funding

\$30,000

Priority Category (if applicable)

Upper-Level Courses (3000+)

Final Semester:

Spring 2021

Course Title(s)

Introduction to GIS

Course Number(s)

GISC 2011 & GISC 2011L (UNG) GEOG 3315 (KSU)

Team Member 1 Name

Ulrike Ingram

Team Member 1 Email

uingram@kennesaw.edu

Team Member 2 Name

Mark Patterson

Team Member 2 Email

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Team Member 3 Name

Allison J. Bailey

Team Member 3 Email

allison.bailey@ung.edu

Team Member 4 Name

Amber R. Ignatius

Team Member 4 Email

amber.ignatius@ung.edu

Additional Team Members (Name and email address for each)

Katayoun Mobasher katayoun.mobasher@ung.edu

Sponsor Name

Dr. Teresa Raczek, Stephen Bartlett, Dr. Tammy Powell, Dr. Jeff Turk

Sponsor Title

Dr. Teresa Raczek, Interim Chair of the Department of Geography and Anthropology and Associate Professor of Anthropology, Department of Geography and Anthropology, Kennesaw State University Stephen Bartlett, Interim Director of Digital Education and Seni

Sponsor Department

Department of Geography and Anthropology, KSU, Office of Digital Education, KSU; Institute for Environmental & Spatial Analysis, University of North Georgia

Total Number of Student Section Enrollments Affected by Project in One Academic Year

358

Average Number of Student Section Enrollments Affected per Summer Semester

24

Average Number of Student Section Enrollments Affected per Fall Semester

164

Average Number of Student Section Enrollments Affected per Spring Semester

170

Original Required Commercial Materials (title, author, price, and bookstore or retailer URL showing price)

UNG: Law, Getting to Know ArcGIS Pro. 2nd Edition. \$85 <https://ung.verbacompare.com/comparison?id=165633>

KSU: Law, Getting to Know ArcGIS. 5th Edition. \$99. <http://bookstore.kennesaw.edu/CourseMaterials>

Original Total Cost per Student

UNG -- Bookstore new \$85 KSU -- Bookstore new \$99

Post-Project Cost per Student

\$0

Post-Project Savings per Student

\$84.99 (UNG) \$99 (KSU)

Projected Total Annual Student Savings per Academic Year

\$26,516.88 (UNG) \$4,554 (KSU) \$31,070.88 (TOTAL)

Using OpenStax Textbook?

No

Project Goals

Kennesaw State University and the University of North Georgia provide quality student-focused education to fast-growing, diverse, and dynamic populations. Both universities include significant representation of first-in-family college students, rural communities, and underserved populations. The cost of textbooks and lab materials is often prohibitively expensive, particularly in STEM courses. This is especially true for technology educational classes as the software changes every few years, so fewer used textbooks are available in the marketplace. Exorbitant textbook prices are an unnecessary barrier to student success, decreasing course enrollment, and reducing graduation rates. Fortunately, fast-developing technology has transformed information access and provided an opportunity for Universities to revolutionize the classroom. Many of the course materials to be developed with this proposal will utilize open access software for technical labs. To address these needs and best serve our students, we propose a multi-campus initiative to develop a no-cost curriculum for the Introduction to Geospatial Information Science (GIS) course. Our objectives include:

- Create a no-cost course based on weekly curated teaching modules with free lecture material, reading assignments, interactive web-based activities, and a GIS lab exercise with open access data.
- Provide a quality, flexible, and modular course design to allow for updates based on changing technologies or modification based on instructor preferences.
- Generate new ideas and refine educational techniques through collaboration between universities.

GIS can be applied to current topics relating to the environment, business, health, criminal justice, and many others. As a cross-disciplinary science based on cutting-edge technology, GIS provides a marketable skill for both majors and non-majors. This multidisciplinary quality of GIS has fostered broad applications of the technology, many of which are best demonstrated through interactive web-based tools and data visualizations. A no-cost course which utilizes online materials benefits students by providing up-to-date information and applications.

Statement of Transformation

Currently, KSU offers Geog 3315 an introduction to GIS course, which utilizes the "Getting to know ArcGIS Desktop" book. Students follow lab exercises through step by step instructions provided by the book as well as original lab and lecture materials developed by the faculty. The course requires a final GIS project chosen by the students based on their interests. The final project will showcase the extent of knowledge which was gained by the student throughout the course.

Currently, UNG offers GISC 2011 (lecture and lab), an introduction to GIS course, which utilizes the "Getting to know ArcGIS Pro" book (2nd edition). Students follow lab exercises through step by step instructions provided by the book as well as original lab and lecture materials developed by the faculty. The course requires a final GIS project chosen by the students based on their interests. The final project will showcase the extent of knowledge which was gained by the student throughout the course.

This grant will transform an introductory GIS course at Kennesaw State University (KSU) and at the University of North Georgia (UNG) by replacing the current resources with their associated costs with Open Educational Resources (OERs). These resources will include textbook resources and multimedia resources including articles, videos, and interactive items. Mobasher, Ignatius, Bailey, Patterson, and Ingram will develop a series of labs with hands-on GIS exercises using ArcGIS Pro, ArcGIS online, and open source geospatial software. This digital lab manual will replace the current labs that are provided by the textbook publisher.

The stakeholders who will be affected by the transformation are:

- The students taking the two undergraduate GIS courses. At KSU students pursuing the GIS major and the GIS certificate are required to take GIS 3315. There are a few other majors (geography, environmental science, and environmental engineering) which have this course as upper division choices. At UNG the Introduction to GISC course (GISC 2011) is an Area D Science, Technology, and Math elective which may be taken by students of any major. Making course materials more affordable or, in this case, free means that students will be more likely to obtain and use them. Material and resources created through this transformation are anticipated to be high quality and are designed according to research-based best practices, since three of the team members are Quality Matters (QM) teaching certified, one of which is a certified peer reviewer and one of which is a certified master reviewer. Another benefit of not using a printed textbook is that it is easier to keep digital resources more current rather than using outdated materials from printed books. By collaborating between institutions, the learning activities and assignments will align and create seamless articulation between programs and/or core curriculum standards.
- Faculty teaching the Intro to GIS course at KSU, UNG and other USG system institutions - Faculty will gain open access to high quality instructional materials and resources that they can integrate into their face-to-face and online courses. Instructors will be able to use and modify these materials and resources for their own instructional purposes. The material will be designed to meet QM standards, including accessibility, which will be beneficial for any faculty who wish to use any of the content in their online courses.

It is anticipated that the impact of this transformation will be tremendously beneficial for KSU and UNG students and faculty since both quality (through providing improved Quality Matters (QM) standard material) and access (through eliminating cost) issues will be addressed in this transformation. Additionally, improved access, in terms of ease of actually being able to use the course material is an anticipated outcome for this transformation. A 2016 study of the impact of OERs on students by Cooney showed that, "the majority of students were able to access the OER with more ease than traditional textbooks given the multiple electronic devices they accessed the OER from". Furthermore, the potential positive impact on course outcomes when using OERs has been demonstrated by Grewe and Preston Davis (2017). They experienced results that "show that there is a moderately positive relationship between taking an OER course and academic achievement". The overall impact of these benefits will be improved retention of students in these courses, and graduation of students from this institution, and other institutions where faculty use these OER resources.

Transformation Action Plan

Two members of the development team, one from each institution, will attend the required kick-off training/implementation in February of 2020.

We will use current syllabi for GISC 2011 (UNG) and GEOG 3315 (KSU) to determine the course goals and learning objectives that must be met with new, freely available course content.

The goal of this project is to achieve department-wide adoption of textbook-free curricula at both institutions. To that end, the three faculty members at UNG and the two faculty members at KSU who teach this course will all be working together to develop an engaging set of OER to be deployed in the course at both institutions. The total estimated impact of full implementation is \$31,070.88.

Content Development:

Mobasher, Ignatius, Bailey, Patterson, and Ingram will identify and split up module topics for development. For their assigned modules, each faculty member will write learning objectives and develop content that aligns to them. Modules will include, but are not limited to, readings, videos, discussion questions, activities, assignments, and assessments. Each module activity will be clearly linked to module and course goals and objectives.

These resources may include, but are not limited to:

- Use of other open access textbooks such as:

<https://2012books.lardbucket.org/books/geographic-information-system-basics/>

<https://sites.google.com/umn.edu/mst/home>

<https://www.skillscommons.org/handle/taaccct/5440>

- Development of other resources – module activities, audio and visual resources, including videos and podcasts.
- Development of a question bank for faculty who would like to use these resources.

The question bank will be made available to faculty members who teach at KSU and UNG, as well as verified faculty members at other universities.

- Development of self-assessment quizzes for students.
- Development of a digital lab manual with hands-on exercises teaching GIS tasks and skills.

This collaboration is important to ensuring that students taking introductory geospatial technology courses are receiving the same knowledge and foundations to be prepared for transfers between institutions or articulation into four-year programs of study. According to Georgia Performance Standards, students in grade 12 in Georgia should have basic knowledge of computer technology for academic use and mapping constructs. Having taught these introductory course for many years, the instructors at UNG and KSU have found that incoming students do not possess basic computer literacy skills to succeed in college. Since students have limited exposure prior to entering these introductory college courses, basic computer literacy is needed for students to be successful in the geospatial courses offered at UNG, KSU, and other institutions in the University System of Georgia. By developing OER resources, we can be sure to provide instructional materials in the first module to address these computer literacy deficiencies. In the current courses, students have been learning ArcGIS for Desktop and ArcPro to create maps and conduct data analysis. Both UNG and KSU have the software licenses for the necessary software programs. The new OER materials created by this project will utilize the latest version of the tools in the mapping software programs which is often behind the technological curve in published textbooks due to the printing schedule. Additionally, the OER materials designed by this project will expose students to open source software like QGIS and OpenStreetMap, as well as, web-based mapping software, ArcGIS online, included in our software licenses for students enrolled in these classes, to provide students with basic introductory knowledge of all available geospatial technology tools. This will best prepare students for the workplace should they choose to make GIS their career; different types of employers and industries require entry level positions to possess the knowledge that these OER materials will provide.

Implementation:

Mobasher, Ignatius, Bailey, Patterson, and Ingram will use the modules and materials developed in this project to teach their respective GISC 2011 (UNG) and GEOG 3315 (KSU) courses without textbooks and using only materials made freely available to students as a pilot in Fall 2020, make any needed improvements, and then fully launch the developed materials for use with OER in Spring of 2021.

Publication:

Ingram will place all modules and materials in accessible formats and make them freely available online via SoftChalk with a CC-BY license. Ingram will work with KSU staff members in the College of Humanities and Social Sciences to upload the project files to the KSU server. It can then be linked on both institutions' websites.

Evaluation:

In order to receive student feedback on the course materials developed, we will survey all students in Spring, Summer, and Fall 2020 courses (pre- and post- implementation), and ask them to evaluate the respective learning materials on the basis of:

- Cost effectiveness
- Ease of use
- Educational value
- Skill development
- Clarity
- Currency

Ingram and Bailey will compile a final report for ALG, which presents the results from this survey, along with data related to rates of student success and participation.

Information Sharing:

The development team will be available to share our experiences of developing freely accessible and affordable learning materials with ALG and the KSU and UNG departments.

Revisions and Updates:

We will continue to update and improve our course materials as we continue to teach the GISC 2011 and GEOG 3315 courses. As we do so, we continue to update the modules and materials published online. This is especially important for courses involving technology as adapting to technological advances in the software is crucial to long-term academic success.

Quantitative & Qualitative Measures

The transformation process can be evaluated according to several metrics:

- Student textbook/material use rates – the textbooks used in Introduction to GIS at UNG and KSU range from \$85 to \$99; we suspect that some students would attempt to get by without purchasing the books. We will survey students and determine how many students used the free, online materials versus the number who would have purchased the traditional textbooks.
- Student success and retention rates – Given the research data that supports the role of OER improving student retention and success, we suspect that we will see an increase in student success and retention in the course with OER. The faculty will keep a record of average grades and drop/fail/withdrawal rates in their courses before implementing the new resources for baselines to compare to data from the fall 2020 offerings that will use the OER.
- Student satisfaction – the team will seek IRB approval at both institutions to survey students regarding elements of student satisfaction with the current textbooks and the OER (in their respective semesters), with regards to ease of use, accessibility, and helpfulness with regard to achieving learning objectives. The survey will also seek qualitative student feedback and suggestions for improvement.

Timeline

- January 2020: Notification of award
- February 2020: 2 members attend Macon kick-off (1 from each institution)
- March 2020: Ingram in consultation with the other instructors will start developing textbook satisfaction surveys for students. Instructors will identify topics and organizational structure for OER-based materials. Instructors will develop a series of course competency questions for the final exam in the course. Instructors will start evaluating OER for appropriateness and usefulness.
- April 2020: Ingram will submit surveys to IRB at KSU and coordinate with UNG. Instructors will identify gaps in OER content available and meet to discuss plan for filling those gaps. Instructors will review and discuss course competency questions for the final exam in the course.
- May 2020: Instructors will implement course competency questions on the final exam of pre-implementation courses. Instructors will survey their Spring 2020 students (with commercial textbook) for comparison. Instructors will collect student success data (DFW/grades/course competency results) from their spring courses for comparison and send to Ingram and Bailey. Instructors will begin developing necessary content to fill gaps in existing resources. Ingram will begin developing website to host materials openly online.
- June 2020: Instructors will conduct peer review of materials gathered and created among the group. After peer review, instructors will begin adapting courses for identified and developed OER.
- July 2020: Instructors will finalize OER-based courses and create and submit syllabus template and submit final materials to Ingram. Ingram will post materials to website and make openly available.
- August 2020: Instructors will deliver a pilot of the OER-based courses for fall semester.
- November 2020: Instructors will survey OER courses. Ingram and Bailey will begin analyzing survey data in preparation for final report.
- December 2020: Instructors will implement course competency questions on the final exam of post-implementation courses. Instructors will collect student success data (DFW/grades/course competency results) from fall semester and submit to Ingram and Bailey for final report.
- Spring 2021 (January - May): Instructors will teach the Introduction to GIS course making any modifications that were deemed necessary in the fall semester.
- Instructors will work together and submit final report.

Budget

- \$5,000: Summer salary or professional development for Ingram*
- \$5,000: Summer salary or professional development for Patterson*
- \$5,000: Summer salary for Bailey*
- \$5,000: Summer salary for Ignatius*
- \$5,000: Summer salary for Mobasher*
- \$4,200: Miscellaneous expenses including institutional fringe, project supplies, technology, and professional development as needed
- \$800: Travel for two members to attend Macon kickoff meeting

Total: \$30,000

*KSU and UNG only allow 9-month faculty to complete these projects for either summer salary or professional development. As summer salary is restricted to 33.3% of the instructor's 9-month salary and in the interest of abiding by KSU/UNG policy, if necessary, the amount designated for each faculty member will be split between summer salary and professional development.

Sustainability Plan

The overall goal of this project is to create a compilation of materials that cover the content of Introduction to GIS at KSU and UNG. All materials will be made available to every instructor in the departments (if they choose to adopt them) prior to the beginning of the Spring 2021 semester through D2L. The materials will also be made available to faculty at other USG institutions through a website built by Uli Ingram and hosted on the KSU server. Following the development of the resources, the materials will be available for all future offerings of the course. We will encourage the other instructors who teach these courses in our departments to adopt these materials, which will ensure consistency of course content. In an effort to maintain and continuously improve this course and its materials, we will meet (in-person or virtual) at the end of each semester to assess if changes should be made for the next semester. Any such changes will be based upon student feedback and our own evaluations of what is working (or not working) in the course. Adjustments in course content and material will be made to reflect changes in the field, as appropriate. All materials are open, and there are no recurring expenses. There are no additional costs that will need to be paid in the future. The transformation will be sustained solely by updating the materials.

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.

December 2, 2019

Dear ALG Grant Committee:

I am writing to support the proposal to create no cost to students learning materials for Kennesaw State University's GEOG 3315 and the University of North Georgia's GISC 2011 & 2011L (Introduction to GIS), which will result in department-wide adoptions at both universities with an estimated annual impact of \$31,000 saved among approximately 358 students each year.

This course is an excellent candidate for transformation with a no-cost textbook option. By replacing the current textbook with no-cost-to-students resources, the proposal team will save students in their Introduction to GIS courses approximately \$99 each, for a total possible savings of an estimated \$31,000 annually. Curated by the instructors, the planned OER materials for this course would not only be an update to the current available textbook but would be able to keep pace with developments in the field at a more responsive rate.

This proposal team understands that an important part of facilitating wider adoption of these text materials is creating robust and valuable support materials and quizzes in the learning management system to go along with the textbook, easily replicable assignments with grading rubrics, and presentations that bridge the gap between course goals and the textbook readings. The team is made up of experienced online teachers with a great amount of experience in instructional technology. Therefore, they have the skills to create high quality support materials for this textbook transformation project.

Please don't hesitate to reach out if I can provide more information or be of further service in any way. I can be reached at sbartlet@kennesaw.edu.

Sincerely,



Stephen Bartlett

Associate Director of the College of Humanities and Social Sciences Office of Digital Education

Senior Lecturer of History

December 2, 2019

Dear Members of the Proposal Review Committee:

I am writing to support the proposal to create no cost to students learning materials for Kennesaw State University's GEOG 3315 and the University of North Georgia's GISC 2011 & 2011L (Introduction to GIS).

This cross-campus collaboration will result in department-wide adoptions at both universities with an estimated annual impact of \$31,000 saved among approximately 358 students each year.

I have worked with the members of the proposal team from KSU for many years. They are dedicated professionals with a passion for their fields and for student success. If given the chance, they will create high quality, no cost teaching materials that will support student success and be available worldwide.

The team is made up of experienced online teachers with a great amount of experience in instructional technology. Therefore, they have the skills to create high quality course materials for important courses in today's economy.

Please don't hesitate to reach out if I can provide more information or be of further service in any way. I can be reached at tpowel25@kennesaw.edu.

Sincerely,

A handwritten signature in cursive script that reads "Tamara Powell".

Dr. Tamara Powell

Director of the College of Humanities and Social Sciences Office of Digital Education

Professor of English



December 2, 2019

Dear Review Committee:

I write with full support for the joint Kennesaw State University/University of North Georgia application for a Textbook Transformation Grant to develop new no-cost curriculum materials for Introduction to Geospatial Information Science (GIS). GIS provides a critical skill set that is used across a wide span of businesses, non-profits, and government departments. Students who study GIS as undergraduates obtain critical STEM skills that launch meaningful and lucrative careers in a growing field. Because of this, investment in GIS courses is an investment in the future of Georgia.

The currently available materials are expensive and do not fully address the needs of USG GIS students. The proposed materials will include lecture materials, reading assignments, interactive web based activities, and exercises that draw on open access data. In short, the team here proposes to create a robust, challenging, and flexible curriculum that is geared to student success. The proposed materials meet the expectations of both KSU's Quality Enhancement Plan, "It's about engagement" and the USG's "Momentum Approach" by heightening academic engagement of undergraduates. When students in the Introductory class have excellent learning materials, they are set up to do well in that class and all following classes as well, since each GIS class builds on skills learned in the first critical introductory course.

The team that is proposing this project includes two professors from the department of Geography and Anthropology at Kennesaw State University. They are highly qualified to implement the proposed plan in the timeline described. The proposal includes a robust sustainability plan that includes distribution to other GIS faculty, regular assessment and continuous improvement of the modules and materials, and annual updating based on changes in the field of GIS. These efforts will be part of the regular workload of the faculty, so no further investment is required beyond the initial budget. In our Department, the faculty who teach Introduction to Geospatial Information Science are committed to using the proposed materials and improving them over time to create the best possible Intro course.

If you have further questions about this proposal, do not hesitate to contact me at traczek@kennesaw.edu

Sincerely,

A handwritten signature in black ink that reads "Teresa P. Raczek".

Teresa P. Raczek
Interim Chair and Associate Professor
Geography and Anthropology

COLLEGE OF HUMANITIES AND SOCIAL SCIENCE
Department of Geography and Anthropology

Social Science Building • Room 4042 • MD 2203 • 402 Bartow Ave NW • Kennesaw, Ga. 30144
Phone: 470-578-2373 • Fax: 470-578-9147 • www.kennesaw.edu



November 10, 2019

To Whom It May Concern,

I am writing to express my support for the textbook grant proposal submitted by University of North Georgia in coordination with Kennesaw State University. The collaborative multi-University project will provide an opportunity for additional students to gain exposure to advanced technology, applied mathematics, and cutting-edge science. The proposed Affordable Learning Georgia Textbook Transformation Grant (ALGTTG) will help lower cost by thousands of dollars each semester and benefit dozens of students.

The proposed grant will generate no-cost content for the Introduction to Geographic Information Science (GIS) course. The GIS course offers an exceptional opportunity for students to gain exposure to science and technology in our data-driven world. GIS is an integrative discipline incorporating numerous modern approaches to understand our physical environment, society, and economy within a spatial context. While the importance of STEAM is broadly recognized, access to many of the standard introductory science courses is often difficult due to high lab fees and expensive textbooks and laboratory manuals. A no-cost GIS course would offer a rare opportunity for students to gain exposure and expertise in a variety of technologies including spatial software, spatial statistics, GPS, remote sensing, and unmanned aerial vehicles (drones).

The faculty involved in this project are an experienced team of researchers and are dedicated to exemplary teaching. I can verify the high credentials of the three faculty members from University of North Georgia. The faculty have planned regular meetings twice a month to ensure successful completion of the grant proposal. In addition, they have each selected defined roles to address various modules in the curriculum and will work to review, edit, and integrate all material to create an optimal resource for students. The faculty intend to generate lab materials, class assignments, lecture materials, and reading assignments. We are also excited by the opportunity for faculty to work across departments and believe the inclusion of multiple Universities will allow for new ideas, fresh perspectives, and potential collaborations in the future.

Lastly, the materials generated for this grant will also be transferable to additional courses. The faculty have planned to generate modular, flexible material. The materials will be also be created in a way that allows for easy conversion into an online course. If this grant proposal is awarded, students at both universities will gain a rare and important opportunity to engage with exciting modern science and I am very hopeful that this grant application will be awarded.

Sincerely,

Jeff Turk, Ph.D.

Textbook Transformation Grants, Round Sixteen
(Spring 2020 –Spring 2021)
Proposal Form and Narrative

Applicant, Team, and Sponsor Information

Institution(s)	Kennesaw State University and the University of North Georgia
Applicant Name	Uli Ingram
Applicant Email	uingram@kennesaw.edu
Applicant Phone #	678-824-2620
Applicant Position/Title	Lecturer
Submitter Name	
Submitter Email	
Submitter Phone #	
Submitter Position	

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	Ulrike Ingram	uingram@kennesaw.edu
Team Member 2	Mark Patterson	mpatters@kennesaw.edu
Team Member 3	Allison J. Bailey	allison.bailey@ung.edu
Team Member 4	Amber R. Ignatius	amber.ignatius@ung.edu
Team Member 5	Katayoun Mobasher	katayoun.mobasher@ung.edu
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.

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

Dr. Teresa Raczek, Interim Chair of the Department of Geography and Anthropology and Associate Professor of Anthropology, Department of Geography and Anthropology, Kennesaw State University

Stephen Bartlett, Interim Director of Digital Education and Senior Lecturer of History, College of Humanities and Social Sciences Office of Digital Education and Department of History and Philosophy, Kennesaw State University

Dr. Tammy Powell, Returning Director of Digital Education and Professor of English, College of Humanities and Social Sciences Office of Digital Education and Department of English, Kennesaw State University

Dr. Jeff Turk, Director, Institute for Environmental & Spatial Analysis, University of North Georgia

Project Information and Impact Data

Priority Category / Categories	<p><i>Priority categories: “Specific Core Curriculum Courses,” “Scaling Up OER,” “Gateways to Completion,” and/or “Upper-Level Campus Collaborations.” See the RFP document for details.</i></p> <p><i>Otherwise, put “None.”</i></p> <p>Scaling Up OER and Upper-Level Campus Collaborations</p>
Requested Amount of Funding	\$30,000

Course Names and Course Numbers	Introduction to GIS: GISC 2011 & GISC 2011L (UNG) GEOG 3315 (KSU)
Final Semester of Project	Spring 2021
Average Number of Students Per Course Section Affected by Project	<i>All numbers on this page are a total for all courses affected by the project – if you have multiple courses, please provide the appropriate sum total or average in each box instead of a per-course breakdown.</i> 24
Average Number of Sections Affected by Project in One Academic Year	Department Wide Adoptions 15
Total Number of Students Affected by Project in One Academic Year	358
Average Number of Students Affected per Summer Semester	<i>Please put one number for each semester. If there is a range, give an average of that range, and explain the range itself in the narrative section.</i> 24
Average Number of Students Affected per Fall Semester	164
Average Number of Students Affected per Spring Semester	170
Original Required Commercial Materials	<i>Include the title, author, price, and a URL showing the price from either the campus bookstore or the publisher. If students do not typically purchase the materials from either the bookstore or directly from the publisher, include a URL for the most common method with a clarification.</i> UNG: Law, Getting to Know ArcGIS Pro. 2nd

	<p>Edition. \$85 https://ung.verbacompare.com/comparison?id=165633 KSU: Law, Getting to Know ArcGIS. 5th Edition. \$99. http://bookstore.kennesaw.edu/CourseMaterials</p>
Original Total Cost Per Student	<p>UNG -- Bookstore new \$85 KSU -- Bookstore new \$99</p>
Post-Project Cost Per Student	<p><i>This is for any post-project materials students will be required to purchase, such as the cost of a low-cost homework platform.</i></p> <p>\$0</p>
Post-Project Savings Per Student	<p><i>This is typically the original cost minus the post-project cost.</i></p> <p>\$84.99 (UNG) \$99 (KSU)</p>
Projected Total Annual Student Savings Per Academic Year	<p><i>This is the total number of students per academic year multiplied by the post-project per student savings estimate.</i></p> <p>\$26,516.88 (UNG) \$4,554 (KSU) \$31,070.88 (TOTAL)</p>
Using OpenStax Textbook?	No

Narrative Section

1. Project Goals

Kennesaw State University and the University of North Georgia provide quality student-focused education to fast-growing, diverse, and dynamic populations. Both universities include significant representation of first-in-family college students, rural communities, and underserved populations. The cost of textbooks and lab materials is often prohibitively expensive, particularly in STEM courses. This is especially true for technology educational classes as the software changes every few years, so fewer used textbooks are available in the marketplace. Exorbitant textbook prices are an unnecessary barrier to student success, decreasing course enrollment, and reducing graduation rates. Fortunately, fast-developing technology has transformed information access and provided an opportunity for Universities to revolutionize the classroom. Many of the course materials to be developed with this proposal will utilize open access software for technical labs. To address these needs and best serve our students, we propose a multi-campus initiative to develop a no-cost curriculum for the Introduction to Geospatial Information Science (GIS) course. Our objectives include:

1. Create a no-cost course based on weekly curated teaching modules with free lecture material, reading assignments, interactive web-based activities, and a GIS lab exercise with open access data.
2. Provide a quality, flexible, and modular course design to allow for updates based on changing technologies or modification based on instructor preferences.
3. Generate new ideas and refine educational techniques through collaboration between universities.

GIS can be applied to current topics relating to the environment, business, health, criminal justice, and many others. As a cross-disciplinary science based on cutting-edge technology, GIS provides a marketable skill for both majors and non-majors. This multidisciplinary quality of GIS has fostered broad applications of the technology, many of which are best demonstrated through interactive web-based tools and data visualizations. A no-cost course which utilizes online materials benefits students by providing up-to-date information and applications.

2. Statement of Transformation

Currently, KSU offers Geog 3315 an introduction to GIS course, which utilizes the “Getting to know ArcGIS Desktop” book. Students follow lab exercises through step by step instructions provided by the book as well as original lab and lecture materials developed by the faculty. The course requires a final GIS project chosen by the students based on their interests. The final project will showcase the extent of knowledge which was gained by the student throughout the course.

Currently, UNG offers GISC 2011 (lecture and lab), an introduction to GIS course, which utilizes the “Getting to know ArcGIS Pro” book (2nd edition). Students follow lab exercises through step by step instructions provided by the book as well as original lab and lecture materials developed by the faculty.

The course requires a final GIS project chosen by the students based on their interests. The final project will showcase the extent of knowledge which was gained by the student throughout the course.

This grant will transform an introductory GIS course at Kennesaw State University (KSU) and at the University of North Georgia (UNG) by replacing the current resources with their associated costs with Open Educational Resources (OERs). These resources will include textbook resources and multimedia resources including articles, videos, and interactive items. Mobasher, Ignatius, Bailey, Patterson, and Ingram will develop a series of labs with hands-on GIS exercises using ArcGIS Pro, ArcGIS online, and open source geospatial software. This digital lab manual will replace the current labs that are provided by the textbook publisher.

The stakeholders who will be affected by the transformation are: The students taking the two undergraduate GIS courses. At KSU students pursuing the GIS major and the GIS certificate are required to take GIS 3315. There are a few other majors (geography, environmental science, and environmental engineering) which have this course as upper division choices. At UNG the Introduction to GIS course (GIS 2011) is an Area D Science, Technology, and Math elective which may be taken by students of any major. Making course materials more affordable or, in this case, free means that students will be more likely to obtain and use them. Material and resources created through this transformation are anticipated to be high quality and are designed according to research-based best practices, since three of the team members are Quality Matters (QM) teaching certified, one of which is a certified peer reviewer and one of which is a certified master reviewer. Another benefit of not using a printed textbook is that it is easier to keep digital resources more current rather than using outdated materials from printed books.

1. Faculty teaching the Intro to GIS course at KSU, UNG and other USG system institutions - Faculty will gain open access to high quality instructional materials and resources that they can integrate into their face-to-face and online courses. Instructors will be able to use and modify these materials and resources for their own instructional purposes. The material will be designed to meet QM standards, including accessibility, which will be beneficial for any faculty who wish to use any of the content in their online courses.
2. Students who take these courses at KSU and UNG - Many of the geography majors, GIS majors, and GIS certificate students take this course. GEOG 3315 is a required course for GIS majors, and an upper level major options course for geography majors, as well as for environmental science and environmental engineering students. At UNG, many students take this course since it provides general education credit. By collaborating between institutions, the learning activities and assignments will align and create seamless articulation between programs and/or core curriculum standards.
3. It is anticipated that the impact of this transformation will be tremendously beneficial for KSU and UNG students and faculty since both quality (through providing improved Quality Matters (QM) standard material) and access (through eliminating cost) issues will be addressed in this transformation. Additionally, improved access, in terms of ease of actually being able to use the

course material is an anticipated outcome for this transformation. A 2016 study of the impact of OERs on students by Cooney showed that, "the majority of students were able to access the OER with more ease than traditional textbooks given the multiple electronic devices they accessed the OER from". Furthermore, the potential positive impact on course outcomes when using OERs has been demonstrated by Grewe and Preston Davis (2017). They experienced results that "show that there is a moderately positive relationship between taking an OER course and academic achievement". The overall impact of these benefits will be improved retention of students in these courses, and graduation of students from this institution, and other institutions where faculty use these OER resources.

3. Transformation Action Plan

Two members of the development team, one from each institution, will attend the required kick-off training/implementation in February of 2020.

We will use current syllabi for GISC 2011 (UNG) and GEOG 3315 (KSU) to determine the course goals and learning objectives that must be met with new, freely available course content.

The goal of this project is to achieve department-wide adoption of textbook-free curricula at both institutions. To that end, the three faculty members at UNG and the two faculty members at KSU who teach this course will all be working together to develop an engaging set of OER to be deployed in the course at both institutions. The total estimated impact of full implementation is \$31,070.88.

Content Development:

Mobasher, Ignatius, Bailey, Patterson, and Ingram will identify and split up module topics for development. For their assigned modules, each faculty member will write learning objectives and develop content that aligns to them. Modules will include, but are not limited to, readings, videos, discussion questions, activities, assignments, and assessments. Each module activity will be clearly linked to module and course goals and objectives.

These resources may include, but are not limited to:

1. Use of other open access textbooks such as:
<https://2012books.lardbucket.org/books/geographic-information-system-basics/>
<https://sites.google.com/umn.edu/mst/home>
<https://www.skillscommons.org/handle/taaccct/5440>
2. Development of other resources – module activities, audio and visual resources, including videos and podcasts.
3. Development of a question bank for faculty who would like to use these resources.

The question bank will be made available to faculty members who teach at KSU and UNG, as well as verified faculty members at other universities.

4. Development of self-assessment quizzes for students.
5. Development of a digital lab manual with hands-on exercises teaching GIS tasks and skills.

This collaboration is important to ensuring that students taking introductory geospatial technology courses are receiving the same knowledge and foundations to be prepared for transfers between institutions or articulation into four-year programs of study. According to Georgia Performance Standards, students in grade 12 in Georgia should have basic knowledge of computer technology for academic use and mapping constructs. Having taught these introductory course for many years, the instructors at UNG and KSU have found that incoming students do not possess basic computer literacy skills to succeed in college. Since students have limited exposure prior to entering these introductory college courses, basic computer literacy is needed for students to be successful in the geospatial courses offered at UNG, KSU, and other institutions in the University System of Georgia. By developing OER resources, we can be sure to provide instructional materials in the first module to address these computer literacy deficits. In the current courses, students have been learning ArcGIS for Desktop and ArcPro to create maps and conduct data analysis. Both UNG and KSU have the software licenses for the necessary software programs. The new OER materials created by this project will utilize the latest version of the tools in the mapping software programs which is often behind the technological curve in published textbooks due to the printing schedule. Additionally, the OER materials designed by this project will expose students to open source software like QGIS and OpenStreetMap, as well as, web-based mapping software, ArcGIS online, included in our software licenses for students enrolled in these classes, to provide students with basic introductory knowledge of all available geospatial technology tools. This will best prepare students for the workplace should they choose to make GIS their career; different types of employers and industries require entry level positions to possess the knowledge that these OER materials will provide.

Implementation:

Mobasher, Ignatius, Bailey, Patterson, and Ingram will use the modules and materials developed in this project to teach their respective GISC 2011 (UNG) and GEOG 3315 (KSU) courses without textbooks and using only materials made freely available to students as a pilot in Fall 2020, make any needed improvements, and then fully launch the developed materials for use with OER in Spring of 2021.

Publication:

Ingram will place all modules and materials in accessible formats and make them freely available online via SoftChalk with a CC-BY license. Ingram will work with KSU staff members in the College of Humanities and Social Sciences to upload the project files to the KSU server. It can then be linked on both institutions' websites.

Evaluation:

In order to receive student feedback on the course materials developed, we will survey all students in Spring, Summer, and Fall 2020 courses (pre- and post- implementation), and ask them to evaluate the respective learning materials on the basis of:

- Cost effectiveness
- Ease of use
- Educational value
- Skill development
- Clarity
- Currency

Ingram and Bailey will compile a final report for ALG, which presents the results from this survey, along with data related to rates of student success and participation.

Information Sharing:

The development team will be available to share our experiences of developing freely accessible and affordable learning materials with ALG and the KSU and UNG departments.

Revisions and Updates:

We will continue to update and improve our course materials as we continue to teach the GISC 2011 and GEOG 3315 courses. As we do so, we continue to update the modules and materials published online. This is especially important for courses involving technology as adapting to technological advances in the software is crucial to long-term academic success.

4. Quantitative and Qualitative Measures

The transformation process can be evaluated according to several metrics:

- Student textbook/material use rates – the textbooks used in Introduction to GIS at UNG and KSU range from \$85 to \$99; we suspect that some students would attempt to get by without purchasing the books. We will survey students and determine how many students used the free, online materials versus the number who would have purchased the traditional textbooks.
- Student success and retention rates – Given the research data that supports the role of OER improving student retention and success, we suspect that we will see an increase in student success and retention in the course with OER. The faculty will keep a record of average grades and drop/fail/withdrawal rates in their courses before implementing the new resources for baselines to compare to data from the fall 2020 offerings that will use the OER.

- Student satisfaction – the team will seek IRB approval at both institutions to survey students regarding elements of student satisfaction with the current textbooks and the OER (in their respective semesters), with regards to ease of use, accessibility, and helpfulness with regard to achieving learning objectives. The survey will also seek qualitative student feedback and suggestions for improvement.

5. Timeline

- January 2020: Notification of award
- February 2020: 2 members attend Macon kick-off (1 from each institution)
- March 2020:
 - Ingram in consultation with the other instructors will start developing textbook satisfaction surveys for students
 - Instructors will identify topics and organizational structure for OER-based materials.
 - Instructors will develop a series of course competency questions for the final exam in the course.
 - Instructors will start evaluating OER for appropriateness and usefulness.
- April 2020:
 - Ingram will submit surveys to IRB at KSU and coordinate with UNG.
 - Instructors will identify gaps in OER content available and meet to discuss plan for filling those gaps.
 - Instructors will review and discuss course competency questions for the final exam in the course.
- May 2020:
 - Instructors will implement course competency questions on the final exam of pre-implementation courses.
 - Instructors will survey their Spring 2020 students (with commercial textbook) for comparison.
 - Instructors will collect student success data (DFW/grades/course competency results) from their spring courses for comparison and send to Ingram and Bailey.
 - Instructors will begin developing necessary content to fill gaps in existing resources.
 - Ingram will begin developing website to host materials openly online.
- June 2020:
 - Instructors will conduct peer review of materials gathered and created among the group.
 - After peer review, instructors will begin adapting courses for identified and developed OER.
- July 2020:
 - Instructors will finalize OER-based courses and create and submit syllabus template and submit final materials to Ingram.
 - Ingram will post materials to website and make openly available.
- August 2020: Instructors will deliver a pilot of the OER-based courses for fall semester.
- November 2020:

- Instructors will survey OER courses.
- Ingram and Bailey will begin analyzing survey data in preparation for final report.
- December 2020:
 - Instructors will implement course competency questions on the final exam of post-implementation courses.
 - Instructors will collect student success data (DFW/grades/course competency results) from fall semester and submit to Ingram and Bailey for final report.
 - Instructors will work together and submit final report.
- Spring 2021 (January - May): Instructors will teach the Introduction to GIS course making any modifications that were deemed necessary in the fall semester.
- Instructors will work together and submit final report.

6. Budget

- \$5,000: Summer salary or professional development for Ingram*
- \$5,000: Summer salary or professional development for Patterson*
- \$5,000: Summer salary for Bailey*
- \$5,000: Summer salary for Ignatius*
- \$5,000: Summer salary for Mobasher*
- \$4,200: Miscellaneous expenses including institutional fringe, project supplies, technology, and professional development as needed
- \$800: Travel for two members to attend Macon kickoff meeting

Total: \$30,000

*KSU and UNG only allow 9-month faculty to complete these projects for either summer salary or professional development. As summer salary is restricted to 33.3% of the instructor's 9-month salary and in the interest of abiding by KSU/UNG policy, if necessary, the amount designated for each faculty member will be split between summer salary and professional development.

7. Sustainability Plan

The overall goal of this project is to create a compilation of materials that cover the content of Introduction to GIS at KSU and UNG. All materials will be made available to every instructor in the departments (if they choose to adopt them) prior to the beginning of the Spring 2021 semester through D2L. The materials will also be made available to faculty at other USG institutions through a website built by Uli Ingram and hosted on the KSU server. Following the development of the resources, the materials will be available for all future offerings of the course. We will encourage the other instructors who teach these courses in our departments to adopt these materials, which will ensure consistency of course

content. In an effort to maintain and continuously improve this course and its materials, we will meet (in-person or virtual) at the end of each semester to assess if changes should be made for the next semester. Any such changes will be based upon student feedback and our own evaluations of what is working (or not working) in the course. Adjustments in course content and material will be made to reflect changes in the field, as appropriate. All materials are open, and there are no recurring expenses. There are no additional costs that will need to be paid in the future. The transformation will be sustained solely by updating the materials.

Note: Letter of Support

Letter of Support for Kennesaw State University: Dr. Teresa Raczek, Interim Department Chair, Department of Geography and Anthropology

Letter of Support for Kennesaw State University: Stephen Bartlett, Interim Director of Digital Education, College of Humanities and Social Sciences Office of Digital Education

Letter of Support for Kennesaw State University: Dr. Tammy Powell, Returning Director of Digital Education, College of Humanities and Social Sciences Office of Digital Education

Letter of Support for University of North Georgia: Dr. Jeff Turk, Director, Institute for Environmental & Spatial Analysis