



*Empowering Colleges: Expanding the Geospatial Workforce*



**Adam Dastrup and Tom Mueller, GeoTech Center Senior Personnel, Award Recipients!**

**Award for OER Efforts in Geography**

The Open Education Consortium (OEC), a global network for open education, recently announced Adam Dastrup, geosciences coordinator for Salt Lake Community College, won OEC’s prestigious Open Geography award.

The Open Education Awards for Excellence, presented each year at the Open Education Global Conference, provide annual recognition

to outstanding contributions in the Open Education community. These awards recognize distinctive Open Educational Resources, Open Projects & Initiatives, as well as exemplary leaders in Open Education worldwide.

In 2014, Dastrup started the Open Geography Education initiative as a way to provide educators with OER textbooks to students.

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## GeoTech Center Information

This material is based on work supported by the National Science Foundation (DUE #1700496). Any opinions, findings, and conclusions expressed in this material are those of the author(s) and not necessarily those of the National Science Foundation.

The GeoTech Center is virtual, comprised of a Director, four Associate Directors, and eight Assistant Directors from institutions across the nation. The central office is located at Jefferson Community and Technical College (JCTC) in Louisville, KY.

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# Geospatial Technology Educator Certification Program (GSTEdC)

In the summer of 2018, Charlie Fitzpatrick, K-12 Manager of the Education Team at Esri, stated that a number of states were beginning to require teachers to provide “evidence” of their geospatial competence in order to teach geospatial technology to their students. Many educators, however do not hold a degree in geospatial technology. Providing “evidence” of competency can prove to be an impediment that would ultimately impact the geospatial technician pipeline.

Developing career pathways for students from grades 7-12 to 2-year colleges and into the workforce are objectives of the GeoTech Center. Removing new impediments for these educators to introduce students to geospatial technology is important for providing the needed numbers of well-qualified geospatial workers. The challenge is to find ways for middle and high school educators to document their experience and expertise.

Geospatial professionals have multiple options to document expertise through professional certification. The requirements of a GISP (GIS Professional), for example, are designed to judge the expertise of working professionals employed in geospatial industries. These same skills, however, do not match the skill or competency requirements needed by 7-12 and community college educators teaching geospatial technology to their students.

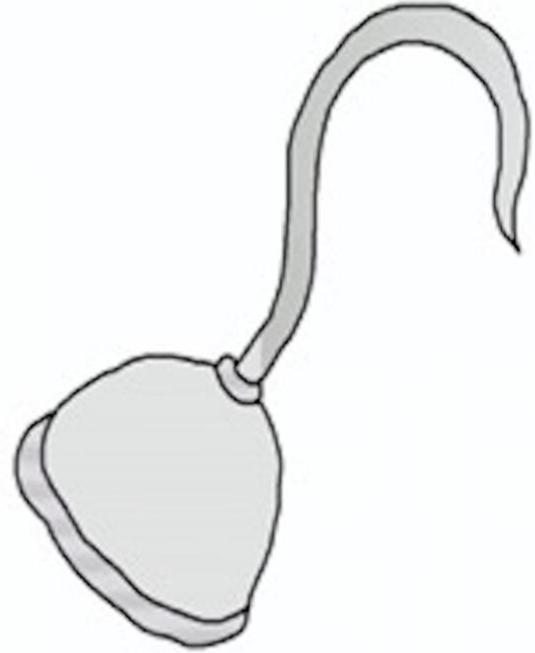
The GeoTech Center began to investigate the need for and the feasibility of a Geospatial

Technology Educator Certification program. As a result of the research, a draft certification pathway was created. The educator pathway includes an application, self-assessment of skills, collaboration with a mentor, the completion of a Massively Open Online Course (MOOC), the completion of six concept modules, and the creation of a lesson portfolio.

Teachers, empowered by a recognized certification, are more likely to be supported by their administrators and local industry. Other benefits of defining the skills and competencies needed by educators in a pathway to certification include: 1) a commonality of skills and competencies taught across programs; 2) teacher training in the current use of geospatial technologies; 3) administrators will have a yardstick on which to base qualifications to teach the subject; and 4) industry will know the skills and competencies the students have been exposed to.

The GeoTech Center received a National Science Foundation supplemental grant to conduct a pilot project to vet the concept, content, and format of a Geospatial Technology Educator Certification Program. The pilot will consist of 20 participants, and will begin on Monday, January 6. Participants successfully completing the pathway will receive \$750. Participants will be asked to attend a forum in late May/early June to provide feedback on the experience and process.

Please see the welcome letter attached to this newsletter for further information.



## Webhooks

Did you know that webhooks are available in Survey123? You may be asking yourself, what the heck is a webhook and why do I need them? Webhooks are method used to allow multiple applications to interact with each other. For example, in Survey123, uses might include notifying the survey designer when someone submitted a response. The application of webhooks vary from posting messages to social media, automatically writing records to a spreadsheet, or updating enterprise databases, to name a few. Webhooks are used in many applications such as MailChimp and automatically posting information to Facebook and Twitter.

Webhooks are set up from the SETTINGS tab in the web version Survey123. To get started you need a webhook provider such as Integromat, Microsoft Flow, Zapier, or tray.io. The Geotech Center tested two of

these webhook providers: Integromat and Microsoft Flow and both functioned as would be expected. For our example emails were sent to team member every time a survey was completed, transparent to the user.

Step-by-step instructions for Integromat and Microsoft Flow can be found here:

<https://doc.arcgis.com/en/survey123/browser/create-surveys/webhooks.htm>.

Integromat is free and if your organization has Office 365, you may have access to Microsoft Flow. For additional information about webhooks see:

<https://zapier.com/blog/what-are-webhooks/>.

## Continued from Page 1....Awards to GeoTech Center Personnel

“The philosophy of the initiative is to provide open resources, products and services to anybody interested in learning about the earth, its places and the relationships between people and their environments,” Dastrup says.

Currently, the OER textbooks are being used at two- and four-year institutions across the United States, and in over ten countries. Since the initiative began, students at SLCC have saved over \$5 million in textbook costs. To view the textbooks at Open Geography Education, go to [www.opengeography.org](http://www.opengeography.org).

“A student’s learning experience within a course, including the textbook, should be included with student tuition and fees” says Dastrup. “That way, students are prepared on the first day of class and not waiting or worrying how they are going to pay for their textbooks.”

The OER textbooks are mobile friendly and multi-modal, with embedded videos to enhance the learning experience. The textbooks are continuously updated with current events that bring life to the subject matter. “Most students are not only grateful they do not have to pay for a textbook, but have stated they enjoy

reading the material because the mobility allows them to study and watch the embedded videos on their smartphones,” Dastrup says. “The textbooks literally meet students where they are at.”

The Open Education Consortium (OEC) is a non-profit, global, members-based network of open education institutions and organizations. OEC represents its members and provides advocacy and leadership around advancement of open education globally.

#### 2019 HREC Educator Award

Dr. Thomas Mueller, a professor of [geography](#) at Cal U, has been honored for developing a high school curriculum to help children study a tragic event in Ukrainian history.

The 2019 Holodomor Research and Education Consortium, a project of the Canadian Institute of Ukrainian Studies at the University of Alberta, awarded Mueller the 2019 HREC Educator Award for his work.

His winning lesson plan, “Holodomor — Three Issues to Examine (High School Edition),” uses currently mapped research data to help

students better understand the Ukrainian genocide.

The Holodomor, as it is called, took place in the territory of Ukraine in 1932-1934. The Holodomor is included in curricula on human rights, genocide, history and social justice in many parts of Canada, and is one of five genocides recognized by the Canadian government.

Mueller’s areas of expertise are [geographic information systems \(GIS\)](#), geography education and world regional geography.

The HREC Educator Award for Holodomor Lesson Plan Development is awarded annually. It is intended to foster the development of innovative, creative and interactive lessons for grades K-12 that develop critical thinking skills while addressing the genocide, and to recognize the outstanding educators who create them.

For the Holodomor project, students will use data from Harvard’s Ukraine Research Institute to create maps illustrating the population losses during the Holodomor. That information can then be compared to facts about collectivization, environmental issues or losses by nationalities.

## 10 Tips for Passing the FAA's Part 107 Knowledge Exam

By Wing Cheung and Sean Figg

Whether you are an instructor or a consultant, drones or small unmanned aircraft systems (sUAS) have something to offer everyone. But before you use your sUAS for any commercial or business purposes, you must first register your aircraft, which must be less than 55 pounds, and pass the Federal Aviation Administration's (FAA) Part 107 Knowledge Exam.

### What is Part 107?

Part 107, also known as the Small Unmanned Aircraft Rule, came into effect August 29, 2016, and governs the operation of small unmanned aircraft used for commercial purposes. The Knowledge Exam consists of roughly 60 multiple choice questions. Although the [test preparation materials](#) and our test registration clerk informed us that there would be 60 questions, we had about 65 questions on our exams. Each question has three answer choices and one correct answer. According to the FAA, 15-25 percent of the questions cover regulations, 15-25 percent cover airspace and requirements, 11-16 percent cover weather, 7-11 percent cover loading and performance, and 35-45 percent cover operations.

### 10 Tips for Passing the Knowledge Test:

- Note that not all tests are the same. A colleague and I took our Knowledge Exam at the same time, at the same location, sitting next to each other. When we compared notes after the exam, it was apparent that we had very different questions, so study the sample questions online, but do not use them as an absolute.
- Make use of the free resources and practices tests online. These tests definitely helped build our confidence and gave us a sense of what to expect. However, as we have already mentioned, do not think of the sample questions as an absolute. In our opinion, the actual test questions were more difficult, as they tend to have trickier answer choices than the online sample questions.
- Know your symbols and figures. Several questions on the exam will refer to symbols and figures in the [Airman Knowledge Testing Supplement Book](#). You will be tested on the symbols for different types of airports, airspace classes, the ceilings and floors of different airspace classes and more.
- Know what materials will be provided to you during the test (e.g., [the Airman Knowledge Testing Supplement Book](#)) to help reduce the amount of materials you need to memorize. The supplement book not only contains the figures that you will need to answer some of the test questions, but also includes the legend to help you in answering questions about sectional aeronautical charts and airport communication protocol.
- Do not overthink the easier questions. We made some simple mistakes on our exams that we truly kicked ourselves about later. We were so entangled and absorbed by a few of the trickier questions that it caused us to overthink some of the subsequent simpler questions. Do not overthink the easy ones. Instead, it will be wise to skip over some of the harder or trickier questions and revisit them later. We also highly recommend reviewing your test and answer choices after you are done with the exam.
- Do not freak out over unexpected questions. Each of us completed at least 300 sample exam questions online before taking the exam, looked over the FAA study guide, and completed an online prep course, but we were still surprised by a good 10-15 percent of the questions that were on the exam. Keep in mind that you need only 70 percent in order to pass the exam. Also remember that a lot of the training materials online were created before the FAA even implemented the exam in August, so there are bound to be surprises.
- Worry about the weather. According to the FAA's [Remote Pilot-Small Unmanned Aircraft Systems Airman Certification Standards](#), 11-16 percent of the test is on weather. A good number of the questions on our tests had to do with sUAS operations in different weather conditions. If the answers to the weather-related sample questions online are not clear, be sure to read up on their justifications and understand the reasoning in the FAA study guide or other online resources.
- Study early, understand the materials, and do not simply plan on memorizing the correct answers for the sample questions online. Even if you get the identical questions on exam day, you will get very different answer choices that will require you to apply your knowledge to pick the right answer!
- Be sure that your name is exactly as it appears on your driver's license when you sign up for the exam. This includes your middle name. If the names do not match when entered into the Integrated Airman Certification and Rating Application (IACRA) system, it may cause long delays in the issuance of your remote pilot certificate.
- After receiving a passing exam score, you must register as a remote pilot using the IACRA website. You may begin your application at any time, but it will take 48 to 72 hours, excluding weekends, before your exam number can be found and associated with your account.

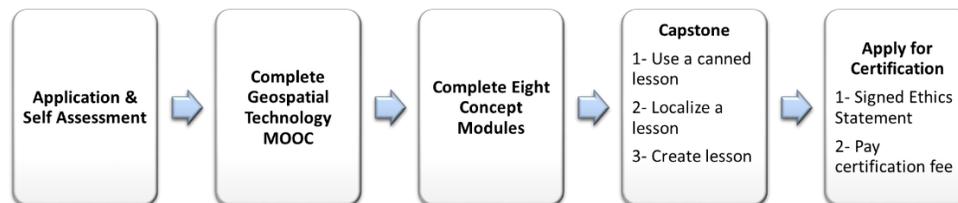
This article is reprinted with permission from Directions Magazine. To read the article in its entirety, please visit: <http://www.directionsmag.com/entry/10-tips-for-passing-the-faa-part-107-knowledge-exam/478020>

Dear Colleague:

Thursday, October 31, 2019

The **National Geospatial Technology Center of Excellence (GeoTech Center)** received a NSF supplemental grant to conduct a pilot project to vet the concept, content, and format of a **Geospatial Technology Educator Certification (GSTeDC)** program. The pilot will consist of twenty participants and will begin **Monday January 6**. Participants successfully completing the pathway will receive a \$750 stipend. As part of your participation in the pilot study, you will be asked to attend a forum in late May/early June to provide feedback on your experience in the pilot study.

Participants will need to complete the proposed pathway shown below:



We are currently seeking individuals who would be interested in participating in this pilot program and provide feedback after completing each component in the pathway. Details about each component are listed below and include the estimated completion time.

#### **Application and Self-Assessment: 2-3 hours**

Complete an application that provides contact and institution information, educational background and teaching experience, a resume, a motivational statement on why you would like to participate and receive geospatial technology educator certification, and how you have used geospatial technology in your classroom.

After completing the application (<https://arcg.is/qy8CL>), you will be asked to do a self-assessment of your geospatial technology skills. The self-assessment will rank you on 190 geospatial competencies. This will allow you to see your strengths and weaknesses and will help guide you as you complete the pathway to geospatial technology educator certification. Your individual assessment will be for your use and not be shared with other individuals. Outcomes of assessments may be compiled to identify needed resource for some competencies.

#### **Geospatial Technology Massively Open Online Course (MOOC): 50 hours, 8 weeks**

You will complete a MOOC that consists of four units. Each unit is expected to take two weeks of time. Each unit consists of lectures, readings, discussions, and assignments. Badges will be awarded on successful completion of each unit.

Unit 1: Introduction to Mapping, Geospatial Science, and Data

Unit 2: Sources of Spatial Data, GPS, and Spatial Analysis



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Unit 3: Remote Sensing, Image Analysis, and Unmanned Aircraft Systems (Drones)

Unit 4: Cartography, Visualization, GIS & Society

**Concept Modules: Eight @ 30 minutes each = 4 hours**

You will complete eight concept modules. A concept module is a 15-20 minute video summary of a key concept or competency in geospatial technology. There is a short quiz at the end of each concept module. It is suggested that you select concept modules in your areas of weakness (as determined by your self-assessment). Badges will be awarded for successfully passing each quiz.

**Capstone: 40 hours**

- Use a pre-existing exercise or lesson in your classroom
- Select a pre-existing lesson and localize/contextualize it to your local area, region, or state
- Create a new exercise or lesson to use in your classroom

**Application for Certification: 1 hour**

- Read and sign the ethics statement
- Pay certification fee (certification fee will be waived for the participants in the pilot project)

After successful completion of the pathway, you will be awarded your **GSTEdC** and will be the first group to receive this certification! Additionally, you will be provided a \$750 stipend for completion of the certification pathway!

Twenty educators will be selected to participate in this pilot. If you are interested in participating in this pilot, please fill out the application (<https://arcg.is/qy8CL>) by **November 29, 2019**. We will let you know if you are selected as soon as possible after applications have been received. Thank you for considering this request to participate in the pilot study for Geospatial Technology Educator Certification! If you have any questions, please contact Nicole Ernst, [nlernst@hacc.edu](mailto:nlernst@hacc.edu).

Sincerely,

Vincent A. DiNoto, Jr.  
Director,  
National Geospatial Technology Center of Excellence  
Professor of Physics, Astronomy and GIS

