OER Revisions and Ancillary Materials Creation Mini-Grant Application

Affordable Learning Georgia aims to support the sustainability of previous Textbook Transformation Grants implementations through revisions of created open educational resources or the creation of new ancillary materials for existing OER. Individuals or teams who would like to apply for an OER Revisions or Ancillary Materials Creation. Mini-grant participants do not need to be the original creators of the resource(s). While we welcome original authors to revise their original materials, the nature of open licenses allows for the revision and remixing of OER materials by anyone as long as the terms of the license are adhered to.

The final deliverable for this category is the revised or newly-created materials as proposed in the application, which will be hosted through GALILEO Open Learning Materials. All revised or newly-created materials will be made available to the public under a Creative Commons Attribution License (CC-BY), unless the original materials were under a more restrictive license such as the inclusion of SA (Share-Alike) or NC (Non-Commercial).

For the purposes of this grant, we define revision as the major improvement of a resource through updates for accuracy, accessibility, clarity, design, and formatting. We define ancillary materials as any materials created to substantially support the instruction of a course using an existing open educational resource(s).

Applicant Name *

Hyrum D. Carroll

Applicant Position *

Assistant Professor

Applicant Institution *

Columbus State University

Applicant Email Address *
Please use your institutional email address.

carroll_hyrum@columbusstate.edu

Other Team Members

Individuals can apply for mini-grants; a team is not required. If you do want to add team members to your grant, please provide the names and email addresses here.

Hillary Fleenor (fleenor_hillary@columbusstate.edu)

Type of Project *

◯ Revision of pre-existing OER

◉ Creation of ancillaries for pre-existing OER

◯ Other:

Final Semester of the Project *

This is the semester in which the materials created/revised will be completed.

◉ Fall 2019

◯ Spring 2020

Proposed Grant Funding Amount: *

This is the total (in a dollar amount) of funding you are requesting for the mini-grant. There is a maximum of $4800, with a maximum of $2000 per team member and $800 for project expenses.

$1600

Currently-Existing Resource(s) to be Revised / Ancillaries Created *

Please provide a title and web address (URL) to each of the currently-existing resources that you are either revising or creating new ancillary materials for below.

We will be creating a repository of automatically graded computer programming problems to accompany the on-line, free textbook: How to Think Like a Computer Scientist (https://runestone.academy/runestone/static/thinkcspy/index.html).

Project Description *

In at least one paragraph, describe your project's goals and deliverables.

We are currently leading our department in a transition from using an eTextbook with a code practice platform to using a free textbook for our Computer Science 1 (CS1) course. We have two driving reasons behind this change. First, our students have expressed frustration with using the practice platform. Second, to reduce the cost per student from $77 to $0. Unfortunately, the free textbook does not allow for students' code to be executed and automatically assessed. Our students need more practice with immediate feedback. Automatic assessment systems exist (e.g., AutoGradr, Autolab, CodeCheck, repl.it, stepik) that allow instructors to write practice problems with an answer key. We propose to use such a system by mentoring CS1 students to create a repository of code practice problems.

Code problem repositories exist as websites, but are not suitable for a CS1 class. The most popular repositories are structured by difficulty for interview preparation or are themselves part of an interview. Some repositories annotate problems only by area (e.g., operating systems or algorithms), but not by topic (e.g., iteration with a for-loop). Those that do annotate by topic (e.g., CodingBat.com and hackerrank.com) only cover a small subset of the required topics for CS1 and dictates the order of coverage (e.g., functions must come before loops). Furthermore, these systems do not allow an instructor to monitor students' progress.

As part of this project, we will teach students about writing good practice problems (allowing them to operate at the higher levels in Bloom's taxonomy). We will create a repository for these practice problems and oversee a paid student worker to enter the questions. Once the repository is created, we will allow our students to use it. Because the repository of code practice problems will be publicly available, other USG institutions could begin using them immediately.

In order to assess the practice problems and system used, we will develop and administer surveys to evaluate student perceptions. We will apply what we learned from our experiences to the other sections of CS1 (serving over 300 students per year) and several other CSU computer science courses. Furthermore, we will include our experiences in an article reviewing several automatic assessment systems.

Timeline and Personnel *

Provide a project timeline with milestones below, keeping in mind your selected Final Semester above. Provide a short description of the roles any additional team members will take on during the activities in your timeline.

Jan 2019 Determine code problem types/categories that are amendable to automatic assessment systems

Jan 2019 Develop example code problems

Jan 2019 Develop survey instruments and request IRB approval

Jan-May 2019 Code problems are created by CS1 students, entered into the repository by a student worker, and used for practice by students

May 2019 Administer surveys

May 2019 Review student-generated code problems and revise examples and instructions

Aug-Dec 2019 Code problems are created by CS1 students, entered into the repository by a student worker and used for practice by students

Dec 2019 Administer surveys

Dec 2019 Data analysis of surveys

Budget *

Please enter your project's budget below. Include personnel and projected expenses. The maximum amounts for the award are as follows: $4,800 maximum award, $2,000 maximum per team member, $800 maximum for overall project expenses. Unlike standard-scale and large-scale transformations, the maximum of $800 is not a required element of the budget, but rather meant primarily for the purchase of specific tools and software which would help with improving resources.

Carroll: $500 for approximately 18-19 hours of work

Fleenor: $600 for approximately 16-21 hours of work

Student Worker(s): $500 (50 hours @ $10/hour)

Travel / supplies: $0

Total: $1600

Creative Commons Terms *

☑ I understand that any new materials or revisions created with ALG funding will, by default, be made available to the public under a Creative Commons Attribution License (CC-BY), with exceptions for modifications of pre-existing resources with a more restrictive license.

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