Affordable Learning Georgia Affordable Materials Grants  
Transformation Grants Final Report

*(or Textbook Transformation Grants, if R17 or earlier)*

To submit your Final Report, go to the [Final Report submission page](http://affordablelearninggeorgia.org/site/final_report_submission) on the ALG website.

The final report submission form allows up to five files:

* This completed narrative document (required)
* Syllabus or syllabi (required)

*If multiple files, compress into one .zip folder*

* Qualitative/Quantitative Measures data files (required)

*If multiple files, compress into one .zip folder*

* Photo of your team or a class of your students for future ALG promotions (optional)
* Invoice for the second half of the grant’s award amount (optional)

Follow the instructions on the webpage for uploading your documents. Based on receipt of this report, ALG will process the final payment for your grant. ALG will follow up in the future with post-project grantee surveys and may also request your participation in a publication, presentation, or other event.

# General Information

**Date: 12/22/2020**

**Grant Round:** 15

**Grant Number:** 484

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

**Project Lead:** Hossain Shahriar, Associate Professor of IT & BSIT/BASIT Co-ordinator

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

* Hossain Shahriar, Associate Professor of Information Technology, hshahria@kennesaw.edu
* Lei Li, Professor of Information Technology, lli13@kennesaw.edu
* Svetlana Peltsverger, Professor of Information Technology, speltsve@kennesaw.edu
* Chi Zhang, Associate Professor of Information Technology, czhang4@kennesaw.edu
* Seyedamin Pouriyeh, Assistant Professor of Information Technology, spouriye@kennesaw.edu
* Shirley Tian, Assistant Professor of Information Technology, xtian2@kennesaw.edu

**Course Name(s) and Course Numbers:**

* IT 6513: Electronic Health Record Systems
* IT 6523: Clinical Processes & Workflows: Analysis and Redesign
* IT 6533: Health Information Security and Privacy
* IT 6733: Database Administration
* IT 7999: Thesis

**Semester Project Began:** Fall 2019

**Final Semester of Implementation:** Fall 2020

**Total Number of Students Affected During Project:** 168

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Spring 2020** | | **Summer 2020** | | **Fall 2020** | |
| Sections | Enrollment | Sections | Enrollment | Sections | Enrollment |
| IT 6513 |  |  | 1 | 33 |  |  |
| IT 6523 | 1 | 26 |  |  |  |  |
| IT 6533 | 1 | 6 |  |  |  |  |
| IT 6733 | 1 | 39 | 1 | 25 | 1 | 33 |
| IT 7993 | 1 | 44 |  |  | 1 | 43 |
| Total | 4 | 115 | 2 | 58 | 2 | 76 |

# Narrative

* 1. *Describe the key outcomes, whether positive, negative, or interesting, of your project. Include:*
* *Summary of your transformation experience, including challenges and accomplishments*
* *Transformative impacts on your instruction*
* *Transformative impacts on your students and their performance*

Our transformation effort is a great success. We have developed and implemented no-cost-to-student learning material for the five proposed courses. Thirteen sections and total number of 168 students have been impacted. Students’ opinions on Learning material we created are overwhelmingly positive. The URLs of the learning material are listed in table one. 168 students have been impacted by our efforts. As shown in table two, students’ opinions on the learning materials we created are overwhelmingly positive. Our assessment data shows that, the no-cost learning materials we developed are as effective as the textbooks used previously in the corresponding courses.

**Table 1. URL of No-Cost Learning Material**

|  |  |  |
| --- | --- | --- |
| **Course** | **URL of No-Cost Learning Material** | **Developer** |
| IT 6513 | [http://ksuweb.kennesaw.edu/~hshahria/ALG-R15/IT6513/IT6513.html](http://ksuweb.kennesaw.edu/~hshahria/ALG-R15/IT6523/IT6523.html) | Dr. Chi Zhang |
| IT 6523 | <http://ksuweb.kennesaw.edu/~hshahria/ALG-R15/IT6523/IT6523.html> | Dr. Hossain Shahriar |
| IT 6533 | [http://ksuweb.kennesaw.edu/~hshahria/ALG-R15/IT6533/IT6533.html](http://ksuweb.kennesaw.edu/~hshahria/ALG-R15/IT6523/IT6523.html) | Dr. Seyedamin Pouriyeh, Dr. Shirley Tian |
| IT 6733 | <http://ksuweb.kennesaw.edu/~speltsve/alg/IT6733_alg.html> | Dr. Svetlana Peltsverger |
| IT 7999 | <http://facultyweb.kennesaw.edu/lli13/alg/7999/7999.php> | Dr. Lei Li |

**Table 2. Students’ Opinion on No-Cost Learning Material**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Statement** | **IT 6513** | **IT 6523** | **IT 6533** | **IT 6733** | **Average** |
| In general, the learning modules were organized | 1.76 | 1.5 | 1.4 | 1.90 | 1.64 |
| The content, links and other leaning module materials were sufficient to help me learn. | 2.33 | 1.67 | 1.2 | 2.10 | 1.83 |
| I liked not having to buy a textbook and instead used the materials that were provided and free. | 1.81 | 1.75 | 1.0 | 1.30 | 1.47 |
| I prefer using selected open source/free learning materials rather than a paid textbook for this course. | 1.81 | 1.75 | 1.2 | 1.25 | 1.50 |
| Overall, compared to a potential paid textbook, open resource learning materials provided the necessary assistance to learn the material. | 2.0 | 1.25 | 1.0 | 1.60 | 1.46 |
| I would take another course that uses open/free learning materials. | 1.71 | 1.42 | 1.0 | 1.25 | 1.34 |
| I would have preferred having a textbook for the course | 3.24 | 2.75 | 4.4 | 3.70 | 3.52 |

Note: 1) the numbers in the table represent survey participants’ opinion on the statements: 5 - Strongly disagree, 4-Disagree,3-Niether agree nor disagree, 2- Agree, 1-Strongly agree

2) The teaching of no-cost learning material for IT 6523 and 6533 were done in Spring 2020, IT 6513 in Summer 2020, and IT 6733 in Summer 2020 and Fall 2020. There is no survey data for IT 7999.

From the instructors’ perspectives, collecting and organizing the learning materials ourselves not only enable us to better respond to the dynamic nature of the information technology field, but also give us the flexibility to customize the course content to better serve our students. On the other hand, the transformation activities require significant efforts and time commitment from the faculty to collect, organize, create, and maintain no-cost learning materials that offer equivalent or better learning experience as the textbooks. Our transformative efforts in replacing textbooks in the proposed courses will not happen without the strong support from the ALG grant.

With our sustainability plan, the no-cost learning material will be continually used and hundreds and thousands of students from Kennesaw State University will enjoy the cost savings and enhanced learning experience in the future. This ALG also made the MSIT program one step closer to a Z-degree (Zero textbook cost degree).

* 1. *Describe lessons learned, including any things you would do differently next time.*

Below are the lessons learned from the members of our project team.

Below are some of the lessons from each course covered in the grant.

**Table 3: Lessons learned**

|  |  |  |
| --- | --- | --- |
| **Course** | **What worked well** | **What could have done differently** |
| IT 6513 | A common challenge is the upgrading of virtual machine, and the implication it brings on host operating system version and memory requirements. VistA virtual machine got upgraded as the project underwent. | Having preconfigured VM with older software version so the open-source tool can work correctly. |
| IT 6523 | The open source tools despite free to use, could lead to unavailability at any moment. As an example, IT 6523 course requires learners to draw clinical processes and petrinet editor (pneditor-0.71.jar) was available in Fall 2019 in sourceforge website, but it is no longer available in Fall 2020. | One approach is to save a backup copy in learning management system. |
| IT 6533 | The slides and assignment were updated and the feedback was positive. | Ensuring that the URLs are not being outdated as course being delivered. |
| IT 6733 | Adding points to a lab grade for proactive posting questions about reading. It helped to find additional resources in timely manner. | Some vendor provided tutorials even the simple ones need to be adapted to the level of the students. |
| IT 7993 | There are a lot of free and well-developed research method resources to choose from. I believe that no-cost-to-student material is the right type of learning material for course like IT 7999. | None |

# Quotes

*Provide three quotes from students evaluating their experience with the no-cost learning materials.*

**Quotes from IT 6513:**

“I enjoy having a textbook to reference and to work from. It's nice to have one location to go to to find information. Although I do like having the lectures online and the other course materials in organized modules as well.”

“Youtube videos rock!”

“I think the open source material was great because I got to be hands on, but I would have liked to learn a little more regarding just the basics of EHRs. I am considered a beginner when it comes to EHR, and was looking for more fundamentals and maybe looking at the more popular ones that are used in the field. (Epic, Cerner, etc) While these are not open source, it would've still been great to learn more about their features a bit more.”

**Quotes from IT 6523:**

“A handout of the open source examples would have been a great alternative from using a text book. Your class was one of the best in the program and not utilizing a text book” did not hinder my learning.”

“I liked all the links used in This course.”

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**Quotes from IT 6533:**

“ Good course with open source”

“This course is very helpful to learn about Health security and HIPAA regulation. The professor was very helpful and provided his guidance to study the course work and related topics.”

**Quotes from IT 6733:**

“Links should be regularly checked as sometimes they no longer work and need updates.”

“no complain”

“No additional feedback.”

“Thank you!”

“Please continue the no-cost learning material. I feel it offers a more rounded and relevant way to stay abreast of technology related course material.”

“The materials were great. it will be nice to have more open sources.”

# Quantitative and Qualitative Measures

## Uniform Measurements Questions

*The following are uniform questions asked to all grant teams. Please answer these to the best of your knowledge.*

**Student Opinion of Materials**

**Was the overall student opinion about the materials used in the course positive, neutral, or negative?**

There are total 59 students completed the survey on the no-cost learning material.

The overall student opinion about the materials used in the courses is overwhelmingly positive.

Total number of students affected in this project: \_168\_\_\_\_\_\_

* Positive: \_\_90\_\_\_\_\_ % of \_\_\_\_\_\_\_\_ number of respondents
* Neutral: \_\_10\_\_\_\_ % of \_\_\_\_\_\_\_\_ number of respondents
* Negative: \_\_\_0\_\_\_ % of \_\_\_\_\_\_\_\_ number of respondents

**Student Learning Outcomes and Grades**

**Was the overall comparative impact on student performance in terms of learning outcomes and grades in the semester(s) of implementation over previous semesters positive, neutral, or negative?**

*Student outcomes should be described in detail in Section 3b.*

The overall comparative impact on student performance in term of learning outcomes and grades are positive. In 3 out of 5 courses, sections using no-cost material have higher average GPA than the sections using traditional textbook. In one course, the average GPA for using no-cost learning is slightly lower. But the students in this section have very high average GPA (3.8).

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Student average GPA** | |
| **Course** | **Enrollment** | **Semester with new no-cost material** | **Semester prior to new no-cost materials** |
| IT 6513 | 33 | 4.0 (33 students sp20) | 4.0 (31 students sp20) |
| IT 6523 | 26 | 4.0 (26 students sp20) | 3.9 (35 students sp18) |
| IT 6533 | 6 | 4.0 (6 students sp20) | 4.0 (7 students sp20) |
| IT 6733 | 22 | 3.6 (22 students su20) | 3.9 (37 students sp20) |
| IT 7993 | 6 | 4.0 (2students sp20,su20,fa20) | 4.0 (2students fa19) |

Choose One:

* \_X\_\_ Positive: Higher performance outcomes measured over previous semester(s)
* \_\_\_ Neutral: Same performance outcomes over previous semester(s)
* \_\_\_ Negative: Lower performance outcomes over previous semester(s)

**Student Drop/Fail/Withdraw (DFW) Rates**

**Was the overall comparative impact on Drop/Fail/Withdraw (DFW) rates in the semester(s) of implementation over previous semesters positive, neutral, or negative?**

*Depending on what you and your institution can measure, this may also be known as a drop/failure rate or a withdraw/failure rate.*

\_3.2% of students, out of a total \_\_93\_ students affected, dropped/failed/withdrew from the course in the final semester of implementation.

Choose One:

* \_X\_\_ Positive: This is a lower percentage of students with D/F/W than previous semester(s)
* \_\_\_ Neutral: This is the same percentage of students with D/F/W than previous semester(s)
* \_\_\_ Negative: This is a higher percentage of students with D/F/W than previous semester(s)

## Measures Narrative

*In this section, summarize the supporting impact data that you are submitting, including all quantitative and qualitative measures of impact on student success and experience. Include all measures as described in your proposal, along with any measures developed after the proposal submission.*

*[When submitting your final report, as noted above, you will also need to provide the separate file (or .zip with multiple files) of supporting data on the impact of your Textbook Transformation, such as surveys, analyzed data collected, etc.]*

* *Include measures such as:*
  + *Drop, fail, withdraw (DFW) delta rates*
  + *Course retention and completion rates*
  + *Average GPA*
  + *Pre-and post-transformation DFW comparison*
  + *Student success in learning objectives*
  + *Surveys, interviews, and other qualitative measures*
* *Indicate any co-factors that might have influenced the outcomes.*

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Drop/Fail/Withdraw Rate Comparison** | |
| **Course** | **Enrollment** | **Semester with new no-cost materials** | **Semester prior to new no-cost materials** |
| IT 6513 | 33 | 0% | 0% |
| IT 6523 | 26 | 0% | 0% |
| IT 6533 | 6 | 0% | 0% |
| IT 6733 | 22 | 12% | 5% |
| IT 7999 | 6 | 0% | 0% |

Based on the assessment data we collected, the learning material we created offer the same level of the learning effectiveness as the textbook. Students’ performance outcomes and DFW in generally stay the same pre-implementation and post-implementation.

# Sustainability Plan

*Describe how your project team or department will offer the materials in the course(s) in the future, including the maintenance and updating of course materials.*

Each course is assigned to a designated course architect, who is responsible for updating course contents based on research, publications and feedback from students and alumni. Course architect becomes the Instructor of record. He/she also teaches the course at least once a year to make sure all resources are valid and make necessary changes. This ensures that all no-cost materials and resources are continually being updated after the project period.

# Future Affordable Materials Plans

*Describe any impacts or influences this project has had on your thinking about or selection of learning materials in this and other courses that you will teach in the future.*

Information technology is a dynamic field where existing technologies frequently get updated and new technologies constantly come to the forefront. Due to this, the no-cost learning material model naturally fits better for IT curriculum than the traditional textbook models. The faculty in the IT department already completed several individual ALG project and two transform-at-scale grants. The positive feedback from the students and our own development and implementation process inspire more faculty in the IT to get involved with developing no cost learning material for their courses.

# Future Scholarship Plans

*Describe any planned or actual papers, presentations, publications, or other professional activities that you expect to produce that reflect your work on this project.*

1. Riad, A. B. M. K., Islam, M. S., Shahriar, H., Zhang, C., Valero, M. A., Sneha, S., Ahamed, S. (2020). Plugin-based Tool for Teaching Secure Mobile Application Development (pp. 10). Proc. of EDSIG Conference. http://edsigcon.org/
2. Zhang, C., Shahriar, H. M. (2020). *The Adaptation, Issues, and Future of Wearable Technology in Healthcare* (pp. 4). ACM: ACM SIGITE.

# Description of Photograph (optional)

*This is where a team can list the names of the people shown in this separately uploaded photograph, along with their roles, if applicable.*

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Dr. Hossain Shahriar, Team Lead and Instructor of Record | Dr. Lei Li, Instructor of Record | Dr. Chi Zhang, Instructor of Record |
|  |  |  |
| Dr. Svetlana Peltsverger, Instructor of Record | Dr. Seyedamin Pouriyeh, Instructor of Record | Dr. Shirley Tian, Instructor of Record |