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Application Summary

Competition Details

Competition Title:	Textbook Transformation Grants, Round Fifteen (Fall 2019 - Fall 2020)
Category:	University System of Georgia
Award Cycle:	Round 15
Submission Deadline:	09/16/2019 at 11:59 PM

Application Information

Submitted By:	Rebecca Rutherford
Application ID:	3591
Application Title:	489
Date Submitted:	09/17/2019 at 8:33 AM

Personal Details

Institution Name(s):	Kennesaw State University
Applicant First Name:	Rebecca
Applicant Last Name:	Rutherford
Applicant Email Address:	brutherf@kennesaw.edu
Applicant Phone Number:	470-578-7399
Primary Appointment Title:	Department Chair Information Technology
Submitter First Name:	Rebecca
Submitter Last Name:	Rutherford
Submitter Email Address:	brutherf@kennesaw.edu
Submitter Phone Number:	470-578-7399
Submitter Title:	Department Chair Information Technology

Application Details

Proposal Title

489

Requested Amount of Funding

30,000

Priority Category (if applicable)

Upper-Level Courses (3000+)

Final Semester:

Fall 2020

Course Title(s)

Professional Development & Entrepreneurship; Operations Systems Concepts & Administration; Advanced Web Security & Applications; Network Configuration & Administration; Virtual IT Systems

Course Number(s)

IT3003, IT3423, IT4403, IT4333, IT4673

Team Member 1 Name

Rebecca Rutherford

Team Member 1 Email

brutherf@kennesaw.edu

Team Member 2 Name

Susan VandeVen

Team Member 2 Email

svandev@kennesaw.edu

Team Member 3 Name

Zhigang Li

Team Member 3 Email

zli8@kennesaw.edu

Team Member 4 Name

Jack Zheng

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Additional Team Members (Name and email address for each)

Hossain Shahriar

hshahria@kennesaw.edu

Meng Han

mhan9@kennesaw.edu

Sponsor Name

Rebecca H Rutherford

Sponsor Title

Department Chair Information Technology

Sponsor Department

Information Technology

Average Number of Students per Course Section Affected by Project in One Academic Year

Average Number of Sections Affected by Project in One Academic Year

14

Total Number of Students Affected by Project in One Academic Year

490

Average Number of Students Affected per Summer Semester

90

Average Number of Students Affected per Fall Semester

200

Average Number of Students Affected per Spring Semester

200

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

<p><i>IT 3003 - Entrepreneurship, Bruce R. Barringer & R. Duane Ireland. Chegg Books, \$190.99</i></p> <p><i>IT 3423 – Modern Operating Systems, Andrew S. Tanenbaum & Herbert Bos, Chegg Books, \$219.99</i></p> <p>IT 4403 – Real-Time Web Application Development: With ASP.NET Core, SignalR, Docker, and Azure, Rami Vemula, Amazon, \$49.99</p> <p>IT4333 – Computer Networks, 6th edition, Tanenbaum & Feamster, Pearson Pub., \$219.99</p> <p>IT 4673 – Virtual Machines, James E. Smith & Ravi Nair, Morgan Kauffman Pub., \$86.95</p>

Original Total Cost per Student

397.92

Post-Project Cost per Student

0

Post-Project Savings per Student

397.92

Projected Total Annual Student Savings per Academic Year

\$294,980

Using OpenStax Textbook?

No

Project Goals

- Make the BSIT/BASIT programs more affordable by eliminating the textbooks used in five IT courses. By doing so, the BSIT/BASIT programs can better support the lowering of costs for students at KSU.
- Develop free, up-to-date and well-designed learning material for the five proposed BSIT/BASIT courses.
- Teach the proposed courses using the developed learning material and validate those material offers equal or better learning effectiveness that textbooks do.
- Develop a sustainability plan to ensure the no-cost learning material will be continuously maintained and used in future course offerings.

Statement of Transformation

The quality of the BSIT/BASIT curriculum has been a goal of the Information Technology program since inception. Given the dynamic and fast-changing nature of information technology, we need to constantly update our courses or create new courses to stay in the cutting edge of technology and competition. Unfortunately, the traditional textbook model doesn't fit for IT courses: they are not only expensive, but, also become outdated after being published. The instructors of courses have to constantly add new material to their courses in addition to what's covered in the textbook. The no-cost-learning-material model fits much better for the IT courses.

As matter of fact, the Department of Information Technology has been a big proponent of no-cost-learning material since round one of ALG. The faculty of IT department has transformed 30 IT courses at both undergraduate and graduate level with the support of ALG. Several of our ALG awards, e.g., round 2 award #119, round 8 award #302, round 10 award #334, round 11, award #365, and round 13 #429 are coordinated at the department level. Moreover, the responses for those renovated with no-cost-learning-material courses have been overwhelmingly positive from the students.

The positive responses from the students, our past successes, and the nature of the IT discipline allow us to aim to continue transforming more IT courses using no-cost learning material. This project aims to replace the textbooks used in the five proposed BSIT/BASIT courses with no-cost-to-students learning materials that offer equal or higher educational effectiveness. One of the proposed courses, IT 3003, is a new addition to BSIT/BASIT curriculum. We believe the proposed transformation of five courses is an economical and viable solution to address the challenges imposed by the traditional textbook model. There are several reasons why we believe that using no-cost learning materials works well with IT courses.

First, the learning materials for the proposed BSIT/BASIT courses are widely and readily available on the World Wide Web today and many of these resources are publicly accessible, free, or with an open license to use [1] [2]. These materials include open and free tutorials, books, videos, labs, software, and services.

Second, Web content can better reflect the latest trends and industrial development than the traditional textbooks as technology is changing rapidly, as is the content of Web resources. We are already using contents from the Web as supplemental materials to the course textbooks. For example, we have utilized open source resources to redevelop information security courses with the latest open source tools and systems (e.g., [3, 4]).

Third, the materials from the Web are generally more interactive. The interactive content will not only engage the students, but also improve their learning experience. As instructors, one of the key roles we play is to select, organize and deliver from the vast amount of information available from the web and open source resources to fit with the classroom learners background. In particular, developing hands-on labs and assignments with tools and methods so that students are well prepared for the job market and pursuing advanced courses. For example, there are books and manuals (e.g., [5, 6]) available on how to become a network administrator (IT4333), but they may not directly apply to classroom students for effective hands-on learning.

Fourth, developing and assembling a set of learning materials ourselves allow us to better align the course contents not only with the outcomes of each course but also with the outcomes of BSIT/BASIT programs. Using the materials compiled by the instructor actually better serve the students in the class.

Finally, our project team is well prepared for the proposed transformation. The disadvantages of using Web resources are that they are often disorganized, may contain inaccurate information, may be changed or deleted without notices. However, our team members are not only subject matter experts in the IT fields, but also are proficient educators who on average have more than 10 years of teaching experience. We will select, organize and integrate resources from the Web and transform the information into instructional sound learning materials for the proposed courses. We also created a sustainable plan to periodically review the developed no-cost-to-student learning materials. All courses in the department are reviewed every three years as part of the continuous improvement process. In addition, all of the team members have successfully completed many ALG grants, to name a few, round 2 award #119, round 8 award #302, round 10 award #334, round 11 award #365 and round 13 #429.

In summary, the faculty at IT department have transformed 12 BSIT/BASIT courses using no-cost-to-student learning material which are very well received by the students. Building on our previous success and lessons learned, we are

well positioned to continue transformation efforts and further increase the cost-saving benefits to the students in our program.

References

- [1]. Li, L., Peltsverger, S. B., Colyar, N. N., Rutherford, R., Zheng, G., Li, Z. (2016). Transformation At Scale: The Experience Of Developing No Cost Learning Material For Database-Related Courses. 19th Annual Conference of the Southern Association for Information Systems. aisel.aisnet.org/sais2016/9/
- [2]. Rutherford, R., Peltsverger, S. B., Li, L., Zheng, G., Rutherford, J. (2016). Transforming IT Education with No-Cost Learning Materials. SIGITE'16. ACM Special Interest Group for IT Education.
- [3] H. Shahriar, Ethical Hacking for Effective Defense (Modules, Labs, and Lectures), 2018, <https://oer.galileo.usg.edu/compsci-ancillary/9/>
- [4] Shahriar, H., Peltsverger, S. (2018). Open Education Resource for Information Security Courses, USG Teaching and Learning Conference. <https://sched.co/DvNV>
- [5] Clark, N. (2018). Linux: Installation, Configuration and Command Line Basics. Amazon.
- [6] Linuxtraining.be. (2018). NetSec BVVA, <http://linux-training.be/>

Transformation Action Plan

Built on our previous experience of developing no-cost-to student learning material, our team of investigators plans to carry out following activities to transform the five proposed MSIT courses.

- Research on existing resources including ALG website for publicly available learning material that could be re-used or adapted.
- Research and identify no-cost readings for each of the learning modules in each course. The reading list includes both required readings and optional readings. All of these readings will be publicly accessible, free to use, or openly licensed.
- Research and identify no-cost materials that can be shared across the courses.
- Develop study guides and lecture notes for students' use to review course content and key learning points.
- Adopt or develop all assignments, exercises, and lab materials that are no cost to students to replace the ones in the textbooks.
- Develop test banks to replace the ones in the textbooks if necessary.
- Update the syllabus to include major resources and no-cost materials.
- Re-develop the proposed courses in our learning management system, D2L Brightspace.
- The developed course material will be organized based on the template provided by ALG and will be made available to the public for adoption. The responsibilities of each investigator are listed as follows.
- Dr. Rebecca Rutherford, project Lead, subject matter expert, developer and instructor of record for IT 3003: Professional Development & Entrepreneurship.
- Prof. Susan VandeVen, subject matter expert, developer and instructor of record for IT 3423: Operating Systems concepts & Administration
- Dr. Zhigang Li & Dr. Jack Zheng, subject matter experts, developers and instructors of record for IT 4403: Advanced Web & Mobile Applications.
- Dr. Hossain Shahriar, subject matter expert, developer and instructor of record for IT 4333: Network Configuration & Administration.
- Dr. Meng Han, subject matter expert, developer and instructor of record for IT 4673: Virtual IT Systems.

Quantitative & Qualitative Measures

We plan to assess the effectiveness of our transformation efforts in the following ways.

1. Student performance data comparison. The course pass rate, average GPA, and Drop/Withdraw/Fail rate are used as a measurement of students' performance. We will only use aggregated data in the analysis and final report. So, no IRB approval is needed. The performance data will be collected after the no-cost learning material is implemented for a proposed course, which is referred as the current performance data. For each of the measurement, we plan to conduct two levels of analysis.
 - Compare the current performance data to a preset goal. For example, 80 % is the aimed passing rate as the courses involved are graduate courses. A letter grade of B or better will be considered as a passing grade.
 - Compare the current performance data to those from past offerings where the textbooks were used. The student performance data from the sections last taught using the textbooks will be used as the baseline.
1. Student survey on developed no-cost learning material. We will develop an anonymous web-based survey to collect students' feedback on the no-cost learning material. The survey will need the approval from the IRB board of Kennesaw State University before it can be distributed to the students. The proposed survey will be totally anonymous and voluntary and introduce minimum risk to the participants. As a result, the survey will qualify for the expedited review based on our previous experience. All proposed courses will use the same survey, and the survey will be distributed at the end of implementation semester for a proposed course. The proposed survey consists of a mixture of quantitative and qualitative measures including:
 - Student perception and attitude toward no-cost materials.
 - Quantitative ratings of the no cost materials used in this course.
 - Qualitative measures such as open-ended questions for comments and suggestions.
1. Official student course evaluation from the university. The student course evaluation can also provide some insights on the effectiveness of no-cost learning material used in the proposed BSIT courses.

Timeline

The major milestones of this proposal are listed as follows.

1. 11/01/2019. Complete gathering of baseline data.
2. 12/01/2019. Complete the development of the web-based student survey and submit it for IRB approval.
3. 01/07/2020. a). Student survey is approved by IRB. b). Complete course level materials redesign (mainly course syllabus) for IT3003, IT3423, IT4403, IT4333 and IT4673. c). Complete the project progress report.
4. 5/15/2020. a). Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT3003, IT3423, IT4403, IT4333 and IT4673. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT3003, IT3423, IT4403, IT4333 and IT4673.
5. 07/15/2020. Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT3003, IT3423, IT4403, IT4333 and IT4673.
6. 07/30/2020. a). Complete course offering for IT3003, and IT3423, complete survey collection. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT 3003 and IT 3423. c). Complete project progress report.
7. 12/01/2020. a). Complete the course offering for , IT4403, IT4333 and IT4673 b). Complete the survey data collection for , IT4403, IT4333 and IT4673.
8. 12/15/2020. Compile and submit final project report.

Budget

The budget information for this project is listed as follows.

1. Individual Expense

- Dr. Rebecca Rutherford, project Lead, developer and instructor of record for IT 3003, \$5000 for professional development.
- Prof. Susan VandeVen, developer and instructor of record for IT 3423, \$5000 for summer salary.
- Dr. Zhigang Li, developer and instructor of record for IT 4403, \$2500 for professional development.
- Dr. Jack Zheng developer and instructor of record for IT 4403, \$2500 for professional development.
- Dr. Hossain Shahriar, developer and instructor of record for IT 4333, \$5000 for professional development.
- Dr. Meng Han, developer and instructor of record for IT 4673 , \$2500 for professional development
- Dr. Zhigang Li, developer and instructor of record for IT 4673, \$2500 for professional development.
- Subtotal: \$25,000.

1. Travel Expense: \$2500. \$800 is reserved for two team members attend the Kickoff Meeting at Middle Georgia State University in Macon, GA. \$1700 is budgeted for attending another conference.

2. Equipment (computers and tablets): \$2500

3. Total Budget requested: \$30,000

Sustainability Plan

The IT department at Kennesaw State University implements a course architect system for all courses. A faculty who is assigned to a course as the course architect, is responsible for the content of the course and teaches the course regularly. All of our investigators are a course architect for the proposed courses. Our team member will develop the no-cost-to-student learning material for the proposed courses and teach the courses for the first time using the new material. As a course architect, our team member will also make sure a course is continuously taught using developed no-cost learning material in the future semesters even the course might have a different instructor.


Moreover, the developed course content is not only available at the learning management system but also archived at the department server. It is also our department policy that there are at least two faculty who regularly teach a course. This further ensures the developed learning material will be continuously used and updated even there is a personnel turnover.

The IT department also has well-established course continual improvement plan. Each course is assessed each semester after being taught, and a course will be formally evaluated and updated every three years or earlier if the need arises. A course architect is in charge of those assessment efforts. Thus, we are committed to continuously update the no-cost learning material in the proposed courses based on research, assessment results, and feedback from students and alumni. As shown in the support letter, our transformation efforts have strong support from our Department Chair and the Dean of our colleges which further ensure the sustainability of our transformation efforts.

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.


KENNESAW
STATE UNIVERSITY
College of Computing and
Software Engineering
Information Technology

September 16, 2019

ALG Grant Committee University System of GA
Dear Colleagues:

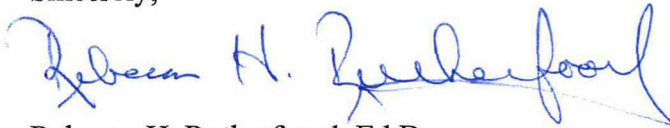
This letter is in support of the Proposal "A Continuation of Large-Scale Transformation for the BSIT/BASIT Programs at KSU" submitted from Kennesaw State University, Information Technology department faculty. As Department Chair for Information Technology, I clearly see the need for bringing down costs for our students. The ALG grants assist faculty to prepare no-cost courses that allow students to take courses without the monetary burden of expensive textbooks.

Several faculty in the Information Technology Department at Kennesaw State University have successfully carried out an ALG rounds #1, #2, #5, #8, #10, #11, #12, #13 and #14. The savings already realized from the previous ALG grant encouraged our faculty to develop this new ALG grant proposal to help our students save even more money.

I strongly support this proposal. This is a very sustainable proposal as we have a large Information Technology degree program. Many of our master's students take courses online as well as in-class. Creating the no-cost format for the five MSIT courses will allow students for many years to realize savings from not buying textbooks for these courses.

This is a very solid proposal. All faculty participating in the previous ALG grants completed their courses and offered them successfully. I believe that this new ALG proposal will have the same student satisfaction and success that the previous ALG grants did. This new proposal will have an even larger monetary impact on our students than the previous grants. Thank you for your consideration of this proposal.

Sincerely,



Rebecca H. Rutherford, Ed.D.

Interim Assistant Dean of the College of Computing & Software Engineering,
Department Chair for Information Technology, Professor of Information Technology
brutherf@kennesaw.edu



Textbook Transformation Grants, Round Fifteen (Fall 2019 – Fall 2020) Proposal Form and Narrative

A Continuation of Large-Scale Transformation for the BSIT/BASIT Programs at KSU

Notes

- The proposal form and narrative .docx file is for offline drafting and review. Submitters must use the InfoReady Review online form for proposal submission.
- The only way to submit the official proposal is through the online form in Georgia Tech’s InfoReady Review. The link to the online application will on the [Round 15 RFP Page](#) in July 2019.
- The italic text provided below is meant for clarifications and can be deleted.

Applicant, Team, and Sponsor Information

*The **applicant** is the proposed Project Lead for the grant project. The **submitter** is the person submitting the application (which may be a Grants Officer or Administrator). The submitter will often be the applicant – if so, leave the submitter fields blank.*

Institution(s)	Kennesaw State University
Applicant Name	Rebecca Rutherford
Applicant Email	brutherf@kennesaw.edu
Applicant Phone #	470-578-7399
Applicant Position/Title	Department Chair Information Technology
Submitter Name	Rebecca Rutherford
Submitter Email	brutherf@kennesaw.edu
Submitter Phone #	470-578-7399
Submitter Position	Department Chair Information Technology

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	Rebecca Rutherford	brutherf@kennesaw.edu
Team Member 2	Susan VandeVen	svandev@kennesaw.edu
Team Member 3	Zhigang Li & Jack Zheng	zli8@kennesaw.edu ; gzheng@kennesaw.edu
Team Member 4	Hossain Shahriar	hshahria@kennesaw.edu
Team Member 5	Meng Han	mhan9@kennesaw.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. Rebecca Rutherford, Department Chair and Professor of Information Technology, Department of Information Technology, Kennesaw State University
--

Project Information and Impact Data

Priority Category / Categories	<i>Large Scale Transformation - Department wide transformation</i>
Requested Amount of Funding	\$30,000
Course Names and Course Numbers	IT 3003: Professional Development & Entrepreneurship IT 3423: Operating systems Concepts & Administration IT 4403: Advanced Web & Mobile Applications IT 4333: Network Configuration & Administration IT 4673: Virtual IT Systems
Final Semester of Project	<i>Fall 2020</i>
Average Number of Students Per Course Section Affected by Project	35
Average Number of Sections Affected by Project in One Academic Year	14
Total Number of Students Affected by Project in One Academic Year	490
Average Number of Students Affected per Summer Semester	90
Average Number of Students Affected per Fall Semester	200
Average Number of Students Affected per Spring Semester	200
Original Required Commercial Materials	<i>IT 3003 - Entrepreneurship, Bruce R. Barringer & R. Duane Ireland. Clegg Books, \$190.99 IT 3423 – Modern Operating Systems, Andrew S. Tanenbaum & Herbert Bos, Clegg Books, \$219.99 IT 4403 – Real-Time Web Application Development: With ASP.NET Core, SignalR, Docker, and Azure, Rami Vemula, Amazon, \$49.99 IT4333 – Computer Networks, 6th edition, Tanenbaum & Feamster, Pearson Pub., \$219.99</i>

	IT 4673 – Virtual Machines, James E. Smith & Ravi Nair, Morgan Kauffman Pub., \$86.95
Total Price of Original Required Materials Per Student	\$397.92
Post-Project Cost Per Student	\$0
Post-Project Savings Per Student	\$397.92
Projected Total Annual Student Savings Per Academic Year	\$194,980
Using OpenStax Textbook?	No

Narrative Section

1. Project Goals

Goals for a Textbook Transformation Grant project go beyond just cost savings. Include goals for student savings, student success, materials creation, and pedagogical transformation here.

The Bachelor of Science and Bachelor of Applied Science programs in Information Technology are very strong programs with a combined enrollment of over 800 students. In addition, many of our Information Technology courses are being used in the completely online Cyber Security major program that is a collaborative emajor with the Information Security & Assurance program, and the Criminal Justice program. The high-quality of the curriculum, the flexibility of the offerings and affordability are the main enablers for the success of the BSIT/BASIT programs.

Much thanks to the supports of Affordable Learning Georgia in previous grants, we have transformed 11 out of 17 required courses and 8 of our 25 elective courses in the BSIT/BASIT curriculum with no-cost-to-student learning material and the responses from the students are overwhelmingly positive. In this project, we propose to continue our department-wide effort to replace the textbooks used in five more BSIT/BASIT courses with no-cost-to-students learning materials. We believe the impact of the proposed project will be significant given the scale of the BSIT/BASIT programs.

In summary, the objectives of the proposed project are listed as follows.

- Make the BSIT/BASIT programs more affordable by eliminating the textbooks used in five IT courses. By doing so, the BSIT/BASIT programs can better support the lowering of costs for students at KSU.
- Develop free, up-to-date and well-designed learning material for the five proposed BSIT/BASIT courses.
- Teach the proposed courses using the developed learning material and validate those material offers equal or better learning effectiveness that textbooks do.
- Develop a sustainability plan to ensure the no-cost learning material will be continuously maintained and used in future course offerings.

2019 Enrollment Data

Course Name	Spring 19	Summer 19	Fall 2019	Sections offered	Total enrollment
IT 3003	0	0	55	2 (new course)	55
IT 3423	98	39	104	7	241
IT 4403	35	22	36	3	93
IT 4333	38	0	36	2	74
IT 4673	28	0	34	3	62

2020 Enrollment Data Prediction

Course Name	Course offering frequency	Sections to be offered	Avg. enrollment per section	Total enrollment	Textbook cost	Total Saving
IT 3003	Each semester	6	40	240	\$190.99	\$45,837
IT 3423	Each semester	8	40	320	\$219.99	\$70,397
IT 4403	2 times every year	4	25	100	\$49.99	\$4,999
IT 4333	2 times every year	4	35	140	\$219.99	\$30,799
IT 4673	2 times per year	2	30	60	\$86.95	\$5,217
Total		24	34 (avg.)	860	\$767.91	\$157,249

The Strategic Plan for the Information Technology Department is to have our complete BSIT and BASIT programs completely no-cost or low-cost for all courses.

2. Statement of Transformation

Textbook Transformation Grants are awarded to teams focused on creating impactful changes. This section allows teams to describe why the project should be awarded. Include the following:

- *A description of the current state of the course, department, and/or institution if relevant.*
- *An overall description of the project and how it will impact the course, department, and institution as described previously. Include references to scholarly literature to support the claims of your impact if possible.*

The quality of the BSIT/BASIT curriculum has been a goal of the Information Technology program since inception. Given the dynamic and fast-changing nature of information technology, we need to constantly update our courses or create new courses to stay in the cutting edge of technology and competition. Unfortunately, the traditional textbook model doesn't fit for IT courses: they are not only expensive, but, also become outdated after being published. The instructors of courses have to constantly add new material to their courses in addition to what's covered in the textbook. The no-cost-learning-material model fits much better for the IT courses. As matter of fact, the Department of Information Technology has been a big proponent of no-cost-learning material since round one of ALG. The faculty of IT department has transformed 30 IT courses at both undergraduate and graduate level with the support of ALG. Several of our ALG awards, e.g., round 2 award #119, round 8 award #302, round 10 award #334, round 11,

award #365, and round 13 #429 are coordinated at the department level. Moreover, the responses for those renovated with no-cost-learning-material courses have been overwhelmingly positive from the students.

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years as part of the continuous improvement process. In addition, all of the team members have successfully completed many ALG grants, to name a few, round 2 award #119, round 8 award #302, round 10 award #334, round 11 award #365 and round 13 #429.

In summary, the faculty at IT department have transformed 12 BSIT/BASIT courses using no-cost-to-student learning material which are very well received by the students. Building on our previous success and lessons learned, we are well positioned to continue transformation efforts and further increase the cost-saving benefits to the students in our program.

References

- [1]. Li, L., Peltsverger, S. B., Colyar, N. N., Rutherford, R., Zheng, G., Li, Z. (2016). *Transformation At Scale: The Experience Of Developing No Cost Learning Material For Database-Related Courses*. 19th Annual Conference of the Southern Association for Information Systems. aisel.aisnet.org/sais2016/9/
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- [4] Shahriar, H., Peltsverger, S. (2018). Open Education Resource for Information Security Courses, USG Teaching and Learning Conference. <https://sched.co/DvNV>
- [5] Clark, N. (2018). *Linux: Installation, Configuration and Command Line Basics*. Amazon.
- [6] [Linuxtraining.be](http://linuxtraining.be/). (2018). NetSec BVVA, <http://linux-training.be/>

3. Transformation Action Plan

Textbook Transformation Grant projects can be work-intensive and require project management in order to be successful. This section allows teams to describe how the team will fulfill the goals of the project. Include the following:

- *The activities expected from each team member and their role(s): subject matter experts, instructional designer, librarian, instructor of record, et al.*
 - o *The identification, review, selection, and adoption/adaptation/creation of the new course materials.*
 - o *A fully prepared application should include a preliminary evaluation of currently existing OER or no/low-cost materials for adoption or modification, or a preliminary plan to create new materials.*
- *Any redesign work necessary for the transformation.*
 - o *This includes instructional design, curriculum alignment, accessibility, etc.*
- *The plan for providing open access to the new materials.*
 - o *GALILEO Open Learning Materials will host any newly created materials. Please indicate if you are using other platforms in addition to the repository.*

Built on our previous experience of developing no-cost-to student learning material, our team of investigators plans to carry out following activities to transform the five proposed MSIT courses.

- Research on existing resources including ALG website for publicly available learning material that could be re-used or adapted.
- Research and identify no-cost readings for each of the learning modules in each course. The reading list includes both required readings and optional readings. All of these readings will be publicly accessible, free to use, or openly licensed.
- Research and identify no-cost materials that can be shared across the courses.
- Develop study guides and lecture notes for students' use to review course content and key learning points.
- Adopt or develop all assignments, exercises, and lab materials that are no cost to students to replace the ones in the textbooks.
- Develop test banks to replace the ones in the textbooks if necessary.
- Update the syllabus to include major resources and no-cost materials.
- Re-develop the proposed courses in our learning management system, D2L Brightspace.
- The developed course material will be organized based on the template provided by ALG and will be made available to the public for adoption

The responsibilities of each investigator are listed as follows.

- Dr. Rebecca Rutherford, project Lead, subject matter expert, developer and instructor of record for IT 3003: Professional Development & Entrepreneurship.
- Prof. Susan VandeVen, subject matter expert, developer and instructor of record for IT 3423: Operating Systems concepts & Administration
- Dr. Zhigang Li & Dr. Jack Zheng, subject matter experts, developers and instructors of record for IT 4403: Advanced Web & Mobile Applications.
- Dr. Hossain Shahriar, subject matter expert, developer and instructor of record for IT 4333: Network Configuration & Administration.
- Dr. Meng Han, subject matter expert, developer and instructor of record for IT 4673: Virtual IT Systems.

4. Quantitative and Qualitative Measures

All Textbook Transformation Grant projects must measure student satisfaction, student performance, and course-level retention (drop/fail/withdraw rates), but teams and institutions will do this in varied ways. Outstanding applications will include measures beyond the minimum to gain meaningful insights into the impact of the project. Include the following:

- *Each quantitative or qualitative measure to be used, along with a description of the methods and/or tools used to gather and analyze data.*
- *If the team needs IRB (Institutional Review Board) approval, please indicate this here. Each institution's IRB functions differently and teams will need to know how their institution's IRB evaluates and approves of institutional research.*

We plan to assess the effectiveness of our transformation efforts in the following ways.

1. *Student performance data comparison.* The course pass rate, average GPA, and Drop/Withdraw/Fail rate are used as a measurement of students' performance. We will only use aggregated data in the analysis and final report. So, no IRB approval is needed.

The performance data will be collected after the no-cost learning material is implemented for a proposed course, which is referred as the current performance data. For each of the measurement, we plan to conduct two levels of analysis.

- Compare the current performance data to a preset goal. For example, 80 % is the aimed passing rate as the courses involved are graduate courses. A letter grade of B or better will be considered as a passing grade.
 - Compare the current performance data to those from past offerings where the textbooks were used. The student performance data from the sections last taught using the textbooks will be used as the baseline.
2. *Student survey on developed no-cost learning material.* We will develop an anonymous web-based survey to collect students' feedback on the no-cost learning material. The survey will need the approval from the IRB board of Kennesaw State University before it can be distributed to the students. The proposed survey will be totally anonymous and voluntary and introduce minimum risk to the participants. As a result, the survey will qualify for the expedited review based on our previous experience. All proposed courses will use the same survey, and the survey will be distributed at the end of implementation semester for a proposed course. The proposed survey consists of a mixture of quantitative and qualitative measures including:
- Student perception and attitude toward no-cost materials.
 - Quantitative ratings of the no cost materials used in this course.
 - Qualitative measures such as open-ended questions for comments and suggestions.
3. *Official student course evaluation from the university.* The student course evaluation can also provide some insights on the effectiveness of no-cost learning material used in the proposed BSIT courses.

5. Timeline

This section allows teams to describe how the project will progress from its inception to the final report (submitted at the end of the final semester of the project). Please provide a list of major milestones for the project here, aligning it with the Transformation Action Plan and your selected Final Semester of the project. Do not put this in the form of a table, as it will create issues within InfoReady Review for the official application – a bullet-point list is acceptable.

The major milestones of this proposal are listed as follows.

1. 11/01/2019. Complete gathering of baseline data.
2. 12/01/2019. Complete the development of the web-based student survey and submit it for IRB approval.
3. 01/07/2020. a). Student survey is approved by IRB. b). Complete course level materials redesign (mainly course syllabus) for IT3003, IT3423, IT4403, IT4333 and IT4673. c). Complete the project progress report.

4. 5/15/2020. a). Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT3003, IT3423, IT4403, IT4333 and IT4673. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT3003, IT3423, IT4403, IT4333 and IT4673.
5. 07/15/2020. Complete the module level development including reading, lecture notes, video, exams, labs, and assignments for IT3003, IT3423, IT4403, IT4333 and IT4673.
6. 07/30/2020. a). Complete course offering for IT3003, and IT3423, complete survey collection. b). Update the D2L Brightspace course sites are updated using the developed no-cost learning material for IT 3003 and IT 3423. c). Complete project progress report.
7. 12/01/2020. a). Complete the course offering for , IT4403, IT4333 and IT4673 b). Complete the survey data collection for , IT4403, IT4333 and IT4673.
8. 12/15/2020. Compile and submit final project report.

6. Budget

Include overall personnel & projected expenses. Be sure to include the \$800 in travel funding, which is required for all Textbook Transformation Grants. Do not put this in the form of a table, as it will create issues within InfoReady Review for the official application – a bullet-point list is acceptable. Please keep all funding guidelines from the corresponding RFP in mind.

The budget information for this project is listed as follows.

1. Individual Expense

- Dr. Rebecca Rutherford, project Lead, developer and instructor of record for IT 3003, \$5000 for professional development.
 - Prof. Susan VandeVen, developer and instructor of record for IT 3423, \$5000 for summer salary.
 - Dr. Zhigang Li, developer and instructor of record for IT 4403, \$2500 for professional development.
 - Dr. Jack Zheng developer and instructor of record for IT 4403, \$2500 for professional development.
 - Dr. Hossain Shahriar, developer and instructor of record for IT 4333, \$5000 for professional development.
 - Dr. Meng Han, developer and instructor of record for IT 4673 , \$2500 for professional development
 - Dr. Zhigang Li, developer and instructor of record for IT 4673, \$2500 for professional development.
 - Subtotal: \$25,000.
2. Travel Expense: \$2500. \$800 is reserved for two team members attend the Kickoff Meeting at Middle Georgia State University in Macon, GA. \$1700 is budgeted for attending another conference.
 3. Equipment (computers and tablets): \$2500
 4. Total Budget requested: \$30,000

7. Sustainability Plan

Textbook Transformation Grants should have a lasting impact on the course for years to come. In order for this to happen, a Sustainability Plan needs to be in place after the end of the project. Please include here your plans for offering the course in the future, including:

- *The maintenance and updating of course materials*
- *Any possible expansion of the project to more course sections in the future*
- *Future plans for sharing this work with others through presentations, articles, or other scholarly activities*

The IT department at Kennesaw State University implements a course architect system for all courses. A faculty who is assigned to a course as the course architect, is responsible for the content of the course and teaches the course regularly. All of our investigators are a course architect for the proposed courses. Our team member will develop the no-cost-to-student learning material for the proposed courses and teach the courses for the first time using the new material. As a course architect, our team member will also make sure a course is continuously taught using developed no-cost learning material in the future semesters even the course might have a different instructor.

Moreover, the developed course content is not only available at the learning management system but also archived at the department server. It is also our department policy that there are at least two faculty who regularly teach a course. This further ensures the developed learning material will be continuously used and updated even there is a personnel turnover.

The IT department also has well-established course continual improvement plan. Each course is assessed each semester after being taught, and a course will be formally evaluated and updated every three years or earlier if the need arises. A course architect is in charge of those assessment efforts. Thus, we are committed to continuously update the no-cost learning material in the proposed courses based on research, assessment results, and feedback from students and alumni. As shown in the support letter, our transformation efforts have strong support from our Department Chair and the Dean of our colleges which further ensure the sustainability of our transformation efforts.

Note: Letter of Support

A letter of support must be provided from the sponsoring area (unit, office, department, school, library, campus office of the Vice President for Academic Affairs, etc.) that will be responsible for receipt and distribution of funding. Letters must reference sustainability. In the case of multi-institutional affiliations, all participants' institutions/departments must provide a letter of support.