Creating Free, Interactive Resources to Support Student Success:
Pilot Programs and Preliminary Findings

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Abstract—The cost of higher education in the United States continues to climb. In addition to tuition prices, textbook prices have soared at alarming rates. In the US state of Georgia, the University System encourages and offers financial incentives to faculty to create their own course resources, including textbooks and ancillary materials. This program is called Affordable Learning Georgia, or ALG. Open Educational Resources, or OERs, have shown to support student success including retention, completion, satisfaction, and learning outcomes. At Kennesaw State University (KSU), faculty members have stepped up to create course materials, ancillary resources, and even student support materials. Early surveys have shown that students have been appreciative of the faculty efforts and have had positive responses to the various components faculty have created and provided. This innovation in the type of resources provided has boosted student satisfaction. In addition, the resource on academic integrity has reduced the amount of cheating through social media.

Keywords-Affordable Learning Georgia; OERs; student success; textbooks; United States.

I. INTRODUCTION

The cost of higher education in the United States continues to climb. One area driving up costs is the constant reduction in each, individual state's contribution to higher education. "Overall state funding for public two- and four-year colleges in the school year ending in 2018 was more than $7 billion below its 2008 level, after adjusting for inflation" [1]. Students are asked to take on more and more of the cost burden, and they are encouraged to take out student loans to fund their educations. The average student loan debt, per person, in the United States is $31,172 [2]. An additional catalyst in the soaring prices is textbook publishers. These publishers saw that they had a captive market and took advantage, jacking up prices and churning out new editions every year or two just so they could force students to purchase new editions instead of saving money buying used copies. Textbook costs have soared, rocketing up past four times the rate of inflation between 2006 and 2016 [3]. Also, books are no longer always physical and made of paper. Publishers now "bundle" digital textbooks with unique access requirements that must be purchased new each time. This practice puts a stop to selling back textbooks and purchasing used, and more affordable, versions [4].

II. AFFORDABLE LEARNING GEORGIA

Compared to other US states, the state of Georgia contributes more than most to public higher education [5]. At the same time, political leaders still want to assure taxpayers that the state government is keeping prices down and taxes low. To that end, the state ended many endeavors that were funding the purchase of hardware and software for students. This effort returned the financial burden for expensive educational technology and student support software and programs back onto students' pocketbooks.

The state of Georgia's University System, also known as the University System of Georgia, or USG, also set aside small amounts of money to incentivize and compensate faculty and staff to create learning materials for students to replace commercial and publisher materials. This initiative is called Affordable Learning Georgia, or ALG. What this initiative means in reality is if a student needs a license for a software vital to his or her career success, he or she will have to pay for it out of pocket because the school no longer can provide a license. However, more classes are being taught with free textbooks, so textbook expenses are no longer hindering students.

While some faculty balked at this direction, remarking that it is not their job to do extra work to reign in publisher greed, many faculty noted that they had already created such materials and would be happy to get a little one time incentive from the state and recognition to share them. Also, quite a few faculty felt it was the right thing to use their skills to help defray costs for students. As of Spring 2020, 26 Georgia universities had earned ALG grants, benefiting 417,000 students and saving them a total of $69.19 million [6].

III. THE MAGIC OF OPEN EDUCATIONAL RESOURCES

A. Overview

The author is a faculty member in the state of Georgia who has enjoyed working with digital tools to create online learning experiences that replace commercial and publisher products. In this paper, we will describe the products

created, the purpose of them, and the early student responses. This paper also includes links to the resources mentioned.

B. Impact in the Classroom

In 2015, the state of Georgia began pushing the use of Open Educational Resources or OERs. The USG established ALG to spread information about the benefits of OERs. Research shows students learn more, get better grades, save money, take more classes, graduate faster and are more satisfied with their experiences when their classes use OERs [7]. These results sound amazing, but they are a logical outcome. If a student starts the semester with the course materials, he or she will not get behind, and, therefore, will perform better. With the savings from not having to purchase the textbook or take on an extra job to pay for the textbook, students can take more classes and devote more time to those classes—thereby, graduating faster and with higher grades.

In fall 2015, we worked with a team of faculty and an instructional designer at KSU. The team received an ALG grant to create an open technical communication textbook, currently titled *Open Technical Communication* [8]. The textbook was piloted in a summer 2016 online course called WRIT 3140: Introduction to Technical Communication. WRIT is a prefix for a group of classes that emphasize writing. The number 3140 refers to the fact that the course is taught at a junior, or upper, level at the university. In this course, students are instructed in the basics of writing for the technical fields, including computer science and engineering. Students in the course were surveyed regarding their experiences with the open educational resource, which in this case was a free, open, online textbook called *Open Technical Communication*. Of the 21 students who responded to the survey regarding the textbook, 95% responded positively. To further evaluate the initial success of the endeavor, we compared the retention rate, average grade, and evaluation average with the same course taught the previous summer with a publisher textbook which cost around $140. Both courses were taught online. To put this data in clearer context, the retention rate with OER went down. However, the average grade went up. In this class, grades are calcluated as failing, or F (earning 0-58% of the points available in the course); D (earning 59-69% of the available points); C or average (earning 70-79% of the available points); B or good (earning 80-89% of the available points); A or excellent (earning 90-100% of the available points). The evaluation in this chart refers to the average score on the instructor's end of course evaluation. It is a measure of student satisfaction. In this case, one can see that the student satisfaction increased in the course with the open eduational resources. In the course using OERs, the retention rate was lower, and the grades and course evaluations were slightly higher. Also, "Sum" refers to the fact that the courses being compared were taught in the summer session of the university, which is 8 weeks instead of the usual 16 weeks in fall and spring. Table I shows the retention data.

TABLE I. RETENTION DATA FROM WRIT 3140 WITHOUT OERs AND PILOT SECTION WITH OERs

Table Showing Comparison of Online WRIT 3140 Course with OER vs. without OER		
	WRIT 3140 Sum 2015 (without OER)	WRIT 3140 Sum 2016 (with OER)
Retention Rate	40/42 (95%)	21/25 (84%)
Average Grade	74 C	78 C
Evaluation	3.56	3.75

IV. OPEN TECHNICAL COMMUNICATION: THE GATEWAY TEXT

The faculty team created *Open Technical Communication,* the free, online, technical communication textbook, by remixing a previously available, but not yet completed, free, online technical communication textbook created by Dr. David McMurrey. It is entitled *Online Technical Writing* [9]. Dr. McMurrey gave the KSU faculty team permission to use his work in the project. We completed or updated some of the existing chapters, authored original chapters, and added resources such as practice quizzes and supplementary videos. Thus, *Open Technical Communication,* a remix and derivative of *Online Technical Communication*, was born.

In addition to the webpages and examples created by Dr. McMurrey and the faculty team, the remix contains videos, interactive exercises, and assignment ideas to support the use of the text either by teachers and students or persons simply wishing to learn more about technical communication. This textbook continues to be in use at Kennesaw State University and has been adopted for use in a few institutions. It has had 7,946 downloads over the past four years, the majority of which are in the Eastern US. The textbook has been downloaded in 135 countries with the top three users being the United States (3813 downloads), India (644 downloads), and the Philippines (428 downloads). The most downloaded chapter is the one entitled "Ethics in Technical Communication" [10].

We also teach American literature and wanted to use freely available resources in our literature courses, as well. In 2015, the goal was a challenging one to achieve, as the state was encouraging faculty to create their own textbooks.

However, a professor cannot simply write 10 great American novels to use in American literature courses. But, by 2017, the needed resources were becoming available. It was possible to find a great deal of readings on the Internet. And in 2018, two OER literature textbooks were made available. These were *Becoming American: An Exploration of American Literature Precolonial and Post-Revolution [11]* and *Writing the Nation: A Concise Introduction to American Literature 1865 to Present [12]*. Both books are published and maintained by the University of North Georgia Press. With the publication of these works, it was possible for us to make one of our literature courses 100% OER, with the other requiring less than $5 in course material expenses.

A. Moving from Publisher Resources to OERs

There are many research-based, positive reasons to adopt OER. However, OERs are not a panacea. A critic of OERs might argue that OERs do not work for every course. Often, they require vetting, adaptation, and supplementation to work successfully in a course. As was described above regarding the open technical communication textbook, the free book available was not yet completed. The faculty at KSU who wished to use it had to take a semester, create a work schedule, and update and complete it themselves in order to provide the benefits to their students. Many of these reasons are given by faculty and publishers as reasons not to adopt OERs. To counter these arguments, one might consider that publisher textbooks, too, require vetting, adaptation, and often, supplementation. The difference is that once an OER is adopted and revised to suit an instructor, the instructor has control over the content.

B. Filling in the Gaps

While the American literature survey OER textbook provided these supplemental materials, such as author biographies, to a degree, we wanted additional support and more context for students. As a subject matter expert, we had the knowledge to share with students to support their learning. Using Articulate Storyline [13], we were able to create several support pieces for the OER American literature textbooks. Topics included Transcendentalism, the Enlightenment, and American Literature after World War II. These support pieces were entitled Read'n Quizzes because they presented very text-heavy slides to students, slide by slide. Periodically, there was a quiz question. Each student had to complete the Read'n Quiz in order to earn 10 points for the activity. The technology allowed the instructor to upload the Read'n Quiz into the Learning Management System (LMS), in this case Desire2Learn BrightSpace, or D2L [14], as a Shareable Content Object Reference Model, or SCORM module so that quiz grade is automatically transferred to the gradebook. SCORM modules are built to a standard that includes four traits: "First, sustainability. Teaching resources will not be invalid because of the update of technology. It can be used for a long time. Second, reusability. Teaching can basically be used without

modification. It can be reused in different platforms, and can be combined with other teaching contents according to their needs. Third, interoperability. Because teaching materials follow a unified standard, it can be presented on any standard platform, or can be modified by editing tools that conform to the standard. Fourth, availability. With the platform, learners can read the learning and teaching resources through the Internet without any time and space constraints, so as to achieve the purpose of distance learning" [15]. Through creating Read'n Quizzes in SCORM format, we were able to create learning objects that can be shared freely and widely. Also, we were able to motivate students to take in the connecting information, something that is normally very boring and students are prone to skip, so that they could gain more context and learn more.

In a fall 2019 survey regarding the student opinions of the OER materials, students were asked their impression of the Read'n Quizzes. On the survey, presented to the course after the midterm exam, students were posed this question:
To help support the OER materials, your professor created what she called Read'n Quizzes where you watched presentations that included questions and were counted for a grade. Would you recommend she continue using those materials? Of the nine out of 25 students who answered the question, 44% said they would recommend the instructor to continue using the Read'n Quizzes if they keep the cost of the materials down. Here is a breakdown of the survey results:

44%="Yes, if they keep the cost of materials down."
22%="Yes, I found them engaging."
22%-"No, I had a hard time accessing them."
11%="No, it wouldn't record my grade correctly."
0%="No, I found them boring."

Figure 1 shows the response breakdown to the question on the survey. As can be seen, 66% of students were willing to
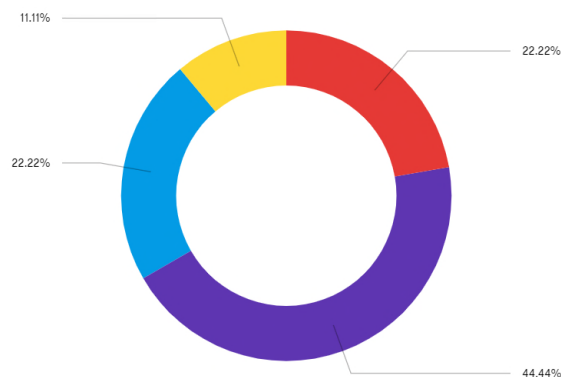

Figure 1. Graphic representation of student perceptions of Read'n Quiz activities.

tolerate the activities/actually liked them, while 33% had a hard time accessing the materials or could not get them to record their grades. The sample is small, but this pilot program shows that technical difficulties, not content, seem to be the deterrent to student approval. The materials are undergoing troubleshooting to improve the student experience.

V. EXPANDING THE STUDENT SUPPORT RESOURCES

In the face of budget cuts mentioned in the introduction, software and student support programs had to be dropped. One of those was a commercial product that posed a series of questions to students and used analytics to help them to assess their readiness for online courses. It also had additional helpful features that were not available on the "Is Online Right for You?" helpsheets many institutions have on their websites. Those features included reading comprehension assessments, typing instruction, learning style assessments, and other information that was meant to benefit students and also provide instructors with an overview of what strengths and challenges students might be bringing to each class. Without that online readiness tool, many faculty members felt that students were not getting the preparation they needed to be successful in an online course. After all, KSU did not provide online students with any special orientation to ensure they understood what may be asked of them as online students. As this online orientation resource was created, it became clear that there were several additional resources that could help support student success: documentation and social media expectations.

A. Are You Ready for an Online Course?

To replace the commercial online orientation resource that was no longer affordable to the institution, a team in the College of Humanities and Social Sciences (CHSS) worked together. Using software such as Articulate Storyline, PowerPoint [16], Camtasia [17], and ShutterStock [18], the team created "Are You Ready for an Online Course?" [19]. Figure 2 shows the opening screen of the "Are You Ready for an Online Course" interactive presentation created by KSU faculty and staff to replace costly materials and support student success. This interactive presentation addresses tech-
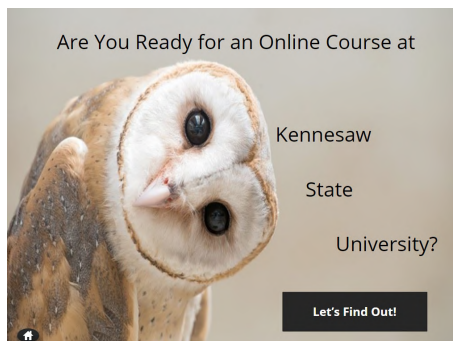

Figure 2.   Introductory image for the resource, "Are You Ready for an Online Course?"

-nology, communication, time management, goals and motivation, and other skills. It is KSU specific, but certainly any user might find helpful, research-based information there. Two versions are created. One is available on the open web for anyone to link to. A second, zip file is also available for anyone who might like to integrate it into an LMS using SCORM.

B. Documentation Resources

One of the goals for the student support resources was to find topics that were usable across a wide variety of courses in CHSS. A resource that had been requested for a while was a tutorial or other learning experience that helped students better understand documentation in research-based work, including how to avoid plagiarism.

CHSS courses mainly require Modern Language Association (MLA) and American Psychological Association (APA) documentation styles. Therefore, two documentation activities were created, one for MLA and one for APA. The activity starts with the Goblin Threat game created by Mary Broussard for Lycoming College [20]. Then it moves to the basics of MLA or APA, depending upon the presentation selected by the instructor. Like the online course readiness tool, it also includes a quiz question that can register in the LMS gradebook, should the instructor choose. The APA resource [21] and the MLA resource [22] are freely available.

Of course, this resource cannot replace the instructor's assignment guidelines or answer every documentation question, but it does help remind students that there are specific rules regarding plagiarism and documentation, and that they should heed those rules as they research and complete assignments.

C. Social Media Guidelines Regarding Academic Honesty

Finally, a new problem facing faculty and students at KSU has been misuse of social media, particularly GroupMe, a text-based chat platform that KSU students have adopted as their online community. For every course, a student automatically sets up a GroupMe and invites the entire class using the LMS classlist.

This GroupMe serves as a wonderful resource and support for students, particularly in online courses [23]. They go there to clarify assignments, ask about due dates, discuss issues in the class, and really engage in social learning and community building. However, it is also a place where students have the opportunity to engage in academic dishonesty. Many students didn't realize that the consequences for cheating on GroupMe were the same as cheating in the classroom. Students at the University of Texas at Austin, Ohio State University, and Louisiana State University have learned the hard way that social media can make cheating look too easy: "In 2017, Ohio State found 83 students in violation of 'unauthorized collaboration' via GroupMe" [24].

To help students to make good decisions regarding use of social media, we created an interactive presentation called "Academic Honesty and Social Media [25]. Figure 3 shows

the opening screen of the "Academic Honesty and Social Media" interactive presentation designed to help students make informed decisions about social media use in courses.

Figure 3.   Introductory image for the resource, "Academic Honesty and Social Media"

This presentation covers three scenarios that students may find themselves in on the GroupMe. The first describes a student posting unsolicited answers to assignments. The second details a student asking for answers on assignments. The third example features a good-hearted student posting "help" on the GroupMe that veers too close to academic dishonesty. As with "Are You Ready for an Online Course?" and the documentation resources, the "Academic Honesty and Social Media" resource also comes in a zipped file SCORM version that can be uploaded to an LMS where the quiz response can be registered in the grade book.

D.   Early Feedback

The three resources discussed in this section were only implemented in fall 2019, and there has been no survey of either students or faculty to gauge whether or not they are helpful. However, early feedback from students in our midterm course surveys showed that the "Academic Honesty and Social Media" presentation has had mixed results. On the one hand, it has made students more aware of the penalties for academic dishonesty on social media, but on the other hand, it has stifled community building in the GroupMe because of anxiety surrounding innocent mistakes. That is an unintended and unfortunate consequence that hopefully future iterations of the resource can try to reverse.

VI.   CONCLUSIONS AND FUTURE WORK

In this work, we set out to examine the early impact of faculty innovations in the field of open educational resources. Specifically, what, if any impact, have these new efforts had on student success, particularly retention and satisfaction. With these forays into open educational resources and student success resources, it is too early to have more than individual student responses and pilot

survey results. However, initial results show that students at Kennesaw State University are benefitting from adoption of OERs in the same way that students are showing benefits nationally. Also, while we will continue to update and improve the student success resources, we do feel that they are at least a helpful start. The faculty will continue to create open educational resources, including auxiliary materials and materials to support student success generally. We will continue to research the impact as the reach of these efforts becomes broader.

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