

Affordable Learning Georgia Textbook Transformation Project for Quantitative Reasoning

At

Albany State University (Round 14, #454) Final Report

Date: June 22, 2020

Grant Number: 454

Institution Name(s): Albany State University

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

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Course Name(s) and Course Numbers: MATH 1001 Quantitative Reasoning

Project Lead: Zephyrinus Okonkwo, Professor of Mathematics and Dean, College of Arts and Sciences, Department of Mathematics and Computer Science

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Semester Project Began: Fall 2019

Semester(s) of Implementation: Spring 2020

Average Number of Students per Course Section: 25

Number of Course Sections Affected by Implementation: 35

Total Number of Students Affected by Implementation: (606 in fall 2019)

Total Number of Students Affected by Implementation: 422 (in spring 2020)

1. Narrative

A. Describe the key outcomes, whether positive, negative, or interesting, of your project.

The central goal of this project is to offer our students a high quality and affordable MATH 1001 Quantitative Reasoning course. Essentially, this project offers a no-cost textbook course for all our Quantitative Reasoning Students at Albany State University. Furthermore, it enhances ASU's goal to implement the Board of Regents of the University System of Georgia (BOR) initiative of reducing the cost of education on the students, as well as ensuring the offering of high-quality, low cost course. The data we will share in the sequel provides concrete evidence that all the goals of the project were met. In 2016, Albany State University and Darton State College were consolidated. These two institutions became one university on January 1, 2017. We received this grant in summer of 2019, and commence grant activities in fall 2019. Preliminary work on the project activities commenced in summer 2019. While some members of the team were using an Open Education book with permission of the author, others had initiated teaching MATH 1001 using a set of materials they put together.

Guided by the success we gained in earlier Affordable Learning Georgia textbook Transformation Grant in MATH 1111 College Algebra, our team of six faculty members submitted this grant in 2019. Here are the goals of this grant:

1. To eliminate the cost of textbook and other course related materials to students by providing no-cost course materials, software, and free online textbook.
2. To strengthen student engagement in learning of MATH 1001-Quantitative Reasoning, and to enhance student success and achievement in the course.
3. To motivate students' interest in the use of online based technology to solve real-life problems encountered in Quantitative Reasoning.
4. To increase enrollment of students in Quantitative Reasoning through the provision of no-cost textbook and learning materials.
5. To create a standardized online Quantitative Reasoning course by incorporating innovative pedagogy enriched learning resources, and assessments on a scalable instructional delivery platform.

In 2017, the Board of Regents of the University System of Georgia strengthened efforts in using the G2C project and the Momentum Year activities to enhance students' success. Students, especially freshmen were placed in focus areas. Most non-STEM majors were taking their foundation Math courses were advised to take MATH 1001 Quantitative Reasoning as their Area A2 Math course. For example, there were 187 students enrolled in Quantitative Reasoning in fall 2017, which significantly grew to 551 students enrolled in fall 2018. While only 65 students enrolled in Quantitative Reasoning in spring 2018, 334 students enrolled in the same course in spring 2019. Essentially, a total of 885 students enrolled in Quantitative Reasoning during the 2018-2019 academic year. Furthermore, 606 students took MATH 1001 in fall 2019, and 422 students took MATH 1001 in spring 2020, making the total number of students taking MATH 1001 Quantitative during 2019-2020 academic year 1026, that is, 141 more students took MATH

1001 than the previous academic year. It is essential to note that more than 50% of students taking Quantitative Reasoning took its co-requisite also.

Our team worked seamlessly within the group as well as outside the team. In most situations, the same faculty member taught MATH 1001 and its co-requisite, while in several instances the co-requisite was taught by a different instructor. Both faculty members collaborated by examining what students needed to be covered in class lectures as well as in the co-requisite sessions. The co-requisite class sessions essentially involved clarification of concept learned in class and enhanced problem-solving, exam reviews, and other forms of focused activities which could enhance student success the course. An analysis of faculty opinion survey we had last year indicated that faculty collaboration and communication enhanced student success in common courses as well as in programs. The development of MATH 1001 Quantitative Reasoning no-cost textbook course enhanced student understanding, engagement, achievement, and interest in the course.

The 2019-2020 academic year presented challenges exacerbated by COVID-19 pandemic. Due to lack of a standard textbook for MATH 1001 Quantitative Reasoning, members of our team commenced the use of the OER book we adopted immediately, making fall 2019 semester the we began to adopt the textbook. Hence the data we collected in fall 2019 is therefore very relevant in this report.

The following essential information placed here and will be of utmost importance in the subsequent discussions. Of the 606 students enrolled in fall 2019 in twenty-five sections, 482 students or 79.5% passed with C or better, while 124 students or 20.5% received D, F, W grades. In spring of 2020, of the 422 students who enrolled in MATH 1001 Quantitative Reasoning, 293 or 69.4% of the students passed the course with C or better, while 129 or 30.6% of the students received D, F, W grades. Our ALG MATH 1001 team taught five sections of the course taken by 124 students or 29.38% of the students who took the course in spring 2020. The aggregate team pass rate, that is, students earning C or better was 83.09%, while the failure rate or FDW rate was 16.94. Essentially, the project team pass rate exceeded the overall pass rate in MATH 1001 by 13.66%. This is statistically significant.

Although there was a drop-in student pass rate in spring 2020, the five-semester pass rates and two semester Simple Moving Averages of pass rates are displayed below:

Semester	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020
Pass Rate	57%	77.2%	71%	79.5%	69.4%
Two-Semester Simple Moving Averages (SMAs)		67.1%	74.1%	75.25%	74.45%

The major changes in Department and College leadership in fall 2018 enhanced our ability to refocus on student success, student progression, and degree attainment in the major. And at the core of this imitative was sustained efforts made to increase the number of courses offered using Open Education Resources (OER) and low-cost or no-cost textbook.

In the next section, we discuss why this transformation experience was very effective and how this course has been redesigned and enhanced to meet the goals and outcomes of the project.

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

The Affordable Learning Georgia Textbook Project in Quantitative Reasoning has enhanced student success and faculty collaboration. It has also enabled discussions and collaboration among team members and campus community on what faculty success should look like as we progress into the future. The team members and the chairperson of the department worked collaboratively to create a welcoming environment for students, and hence enhanced student success in the course. The no-cost textbook course, coupled with other student support activities like the Study Table, have had wider impact on student retention in the, course, other course and subsequently, in the major. Formative Qualitative and quantitative data was collected, and this data helped shape the pathway for the success of this project.

2. TRANSFORMATION EXPERIENCE

The experience we gained through the affordable Learning Georgia Textbook Transformation Project in College Algebra we received guided our implementation effort for this project. Essentially, our team made up of Dr. Zephyrinus C. Okonkwo, Dr. Anilkumar Devarapu, Dr. Vijay Kunwar, Dr. Laxmi Paudel, Professor Anthony Smith, and Professor Taylor Wars received the ALG grant for MATH 1111 College Algebra in fall 2017.

Darton State College and Albany State University were consolidated in 2016 and became the new Albany State University on January 1, 2017. The new university was ascribed to dual functions and one Mission: access function and degree granting function. Essentially, the New Albany State University has, as part of its core mission, an access mission. Two major University System of Georgia wide initiatives must be implemented by Albany State University (ASU). They were: Momentum Year, and G2C. The goals of these two mandates are in sync with the goals of the Affordable Learning Georgia Textbook Transformation Grant. Essentially, the goal of the Momentum Year was to utilize innovative and deliberate activities to enhance faculty and student engagement in learning, assessment, and advising. This was further supported by the placing of freshmen in the foundation courses, including in their first Math course (College Algebra or Quantitative Reasoning), English, and other foundation courses. Included in this effort was the infusion of innovative pedagogy in instruction and the provision of out-of-class intensive academic support such as the Study Table. Many College Algebra and Quantitative Reasoning Sections had to have appended Co-Requisites, two-hour courses which enabled increased instructor-student contact time and enhanced problem-solving sessions. A central challenge which affected these initiatives was the prohibitive cost of textbooks. Our student population could not afford the high cost of education, and in some cases, only about 15% of the students could purchase the textbook. The cost of textbooks impacted student success in many and varied ways, 1) the withdrawal rate from courses was high, 2) many students were unable to complete their assignments especially those which were given from the textbooks, 3) students with no textbook could not complete reading assignments given from the textbooks thereby leading to shallow understanding of course content and concepts, 4) high failure rate resulted from lack of textbooks and lack of completion of assignments. For example, the pass rate in MATH 1001 Quantitative Reasoning courses pass

rate, that is {A, B, C} passing rate was 57% in spring 2018 failing rate or {D, F, W, WF, I} rate was 43%.

This Affordable Learning Georgia Textbook Transformation Grant for MATH 1001-Quantitative Reasoning provided us the opportunity to become more collaborative, focused, and deliberate in our pedagogical practices and assessment of student learning outcomes of the course. Our project transformation could be summarized as follows.

	Goal	Status
1	To eliminate the cost of textbook and other course related materials to students by providing no-cost course materials, software, and free online textbook.	(i) MATH 1111 Quantitative Reasoning instructors have the Open Education Resource Book (OER) Quantitative Reasoning e-book placed on the course sections Georgia VIEW (D2L) platform. This e-book has been adopted as the standard textbook for the course. Students downloaded the pdf version of the book on their computer's smart phones, and other smart portable devices. Instructors assigned reading materials, and homework problems to students. Instructors also assigned problems to students in class during problem-solving sessions, whereby students could do individualized or collaborative work.
2	To strengthen student engagement in learning of MATH 1001-Quantitative Reasoning, and to enhance student success and achievement in the course.	(i) There was enhanced student engagement in-class and out-of-class. Students completed their assignments without giving any excuses for not completing assigned work. Students completed assigned work more frequently than in the past, thereby giving the students opportunities to be graded on more assigned assessments.
3	To motivate students' interest in the use of online based technology to solve real-life problems encountered in Quantitative Reasoning.	(i) Due to COVID -19 pandemic, all students completed all assignments given during the second half of the spring semester virtually. Classes were delivered synchronously using Cisco WebEx or ZOOM. Online Teaching and Learning availed instructors and faculty the opportunity to increase course engagement.
4	To increase enrollment of students in Quantitative Reasoning through the provision of no-cost textbook and learning materials.	(i) There was an increased discussions on the need to place students in Focus Areas, hence, an increased number of non-STEM students placed in Quantitative Reasoning. This led to reduction of students enrolled in enrollment numbers in College Algebra.
5	To create a standardized online Quantitative Reasoning course by incorporating innovative pedagogy enriched learning resources, and	(i) Dr. Vijay Kunwar and Dr. Arum Saha taught an online Quantitative Reasoning in the spring of 2020. Dr. Devarapu has a fully developed online version of the course that will be available to every Quantitative Reasoning instructor to "Copy Course" upon request.

assessments on a scalable instructional delivery platform.	Team members also contributed additional learning and assessment materials to enhance the online course.
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The amount saved by students in fall 2019 and spring 2020 by not purchasing the Quantitative Reasoning book was is \$106,206.

A Likert-Type Survey with measurement scales (with five columns, Strongly Agree=5, Agree=4, No Opinion=3, Disagree=2, and Strongly Disagree=1) was administered to students who were in the ALGT grant team members course sections. The survey was designed to capture a substantive amount of information which could be analyzed, and subsequently used to improve subsequent project implementation. Of the 124 students in these sections, 18 participated on survey questionnaire. The low completion rate was due to COVID -19 pandemic. The survey results (as will be discussed later in this report) showed that most students were satisfied with the outcome of this project.

Here is the Transformation Action Plan.

No.	Transformation Action Plan
1	Identification: The faculty Affordable Learning Georgia Textbook Transformation Project reviews a set of e-books and associated learning materials, maps contents of the books with course learning outcomes and objects, and selects the most appropriate book. Hence an Open Education Resources (OER) textbook is adopted.
2	Adoption: Select the topics in the adopted OER text and align them with the course syllabi, goals, learning outcomes, and specific objectives of the course.
3	Adaptation: Select class assignments and assessments for students to complete using Open Education Resources (OER) sites, the text, as well as instructor-constructed materials.
4	Syllabus: The syllabus is revised and redesigned to align with the no-cost resources for course lectures. Also, the Instructional Schedule with assessment due dates, quizzes and exams are appended in the syllabus. Syllabus would describe how the lectures would be presented using OER. Students would be required to have one printed copy of syllabus. The syllabus is uploaded on GeorgiaVIEW as well.
5	Course Redesign: Students would complete assignments using Open Education Resources (OER) site and the GeorgiaVIEW. Students would be required to print minimal hard copies of selected course information from Open Education Resources (OER) sites for which quizzes and exams would be based. Students will also upload their assignments, including any given writing assignments on Dropbox.

6	Instructor Design: GeorgiaVIEW would be the primary online Learning Management System for downloading content from selected Open Education Resources (OER) and other instructor developed resources.
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The project outcomes we stated for this project guided our activities. The project team communicated very effectively using emails, telephone calls, WebEx meetings, and texts. We also met in person to discuss project activities. The Chairperson of the department as well as the Dean of the College of Arts and Sciences (who was also the PI of the project) participated actively. Other full time and part-time mathematics instructors were made aware of the project activities. We also notified our faculty members via emails. Team members collected data regularly, and used formative assessment to guide project implementation. Hence, faculty engagement and focus were essential for the success of the project.

The team members created an instructional support guide which was uploaded on the GeorgiaVIEW platform and made it accessible to all students. The course syllabus, the recommended eBook and other learning materials were also placed on GeorgiaVIEW as well.

Student engagement was excellent and seamless. Students used smartphones and Ipads, and some brought laptop to class. They had the eBook and learning materials downloaded on their devices. Students exemplified active engagement during class activities, including during in-class reading assignment and problem-solving sessions. During a typical problem-solving session, the instructor would refer students to problems in certain sections in the book, and every student was required to solve the listed set of problems. Instead of the teacher copying a word problem on the board, students would individually read the problems before participating in class discussion or problem solving sessions. The same could be said about learning materials. Homework exercises were also assigned from the e-book. No student had an excuse not to participate in class work as everyone had at least a smartphone and could retrieve every assigned problem. Many faculty members placed assessment exercises on GeorgiaVIEW. A combination of these activities had positive impact on student achievement and student success in the course as evidenced by the Quantitative Reasoning pass rate in fall 2019. Student achievement was excellent. The retention rate was very high with very few withdrawals. The project was very immensely successful, as evidenced by grade analysis of participant survey.

3. CHALLENGES AND OUTCOMES

Most students in our course sections had not taken courses without expending a significant of amount purchasing a textbook or access to course assessment platforms such as WebAssign. Hence, convincing students that they would take a qualify course without purchasing a textbook and additional course materials was a challenge. Students believed that it was impossible to take a no-cost textbook course without having the downside of lowering instructional and learning quality. The project team had to initially convince the students that indeed the OpenStax e-book and associated materials were of good quality and were adequate for the course. Some faculty

members had to go further by mapping the course description and objectives with the listed topics in the textbook. This further helped students to get convinced that minimum benchmark in terms of course material quality was attainable. There was internet access in all classrooms on campus, and all students were able to use their smartphones and computers to access GeorgiaVIEW during instruction and classroom activities.

The five project goals delineated above were accomplished. Successful transformation experience provided by the use of OER textbook and learning materials, as well as the materials constructed by the team has set a pathway for future implementation of Quantitative Reasoning delivery at low cost to the students. Our goal is to utilize this accomplishment to propagate the immense advantages of having a well-developed no-cost textbook course, the appended course materials, and other associated learning materials. Furthermore, we will share this course and the project outcomes with deans, chairs, and other faculty members teaching ***Quantitative Reasoning***

1. To eliminate the cost of textbook and other course related materials to students by providing no-cost course materials, software, and free online textbook.

MATH 1001 Quantitative Reasoning instructors have the Open Education Resource Book (OER) Quantitative Reasoning e-book placed on the course sections Georgia VIEW (D2L) platform. This ebook has been adopted as the standard textbook for the course. Students downloaded the pdf version of the book on their computers smart phones, and other smart portable devices. Instructors assigned reading materials, and homework problems to students. Instructors also assigned problems to students in class during problem-solving sessions, whereby students could do individualized or collaborative work. This has saved students more than \$106,206 over the past one year.

Goal 2. To strengthen student engagement in learning of MATH 1001-Quantitative Reasoning, and to enhance student success and achievement in the course.

There was enhanced student engagement in-class and out-of-class. Students did not and completed their assignments without giving any excuses for not completing assigned work. Students completed assigned work more frequently than in the past, thereby giving the students opportunities to be graded on more assigned assessments.

Goal 3. To motivate students' interest in the use of online based technology to solve real-life problems encountered in Quantitative Reasoning.

Due to COVID -19 pandemic, all students completed all assignments given during the second half of the spring 2020 semester virtually. Classes were delivered synchronously using Cisco WebEx or ZOOM. Online Teaching and Learning availed instructors and faculty to increase course engagement.

Goal 4. To increase enrollment of students in Quantitative Reasoning through the provision of no-cost textbook and learning materials.

There was an increased discussions on the need to place students in Focus Areas, hence, an increased number of non-STEM students placed in Quantitative Reasoning. This led to reduction of students enrolled in enrollment numbers in College Algebra.

Goal 5. To create a standardized online Quantitative Reasoning course by incorporating innovative pedagogy enriched learning resources, and assessments on a scalable instructional delivery platform.

Dr. Vijay Kunwar and Dr. Arum Saha taught an online Quantitative Reasoning in the spring of 2020. Dr. Devarapu has a fully developed online version of the course that will be available to every Quantitative Reasoning instructor to “Copy Course” upon request. Team members also contributed additional learning and assessment materials to enhance the online course.

4. TRANSFORMATIVE IMPACT ON OUR INSTITUTION AND STUDENTS

Many and varied positive transformation impacts on instruction and learning evolved due to this project. This project presented instructors the opportunity to re-examine their pedagogical, assessment, and student practices. Several faculty members used the opportunity of this project to transform and strengthen their teaching, learning, and assessment practices. The following are notable impacts.

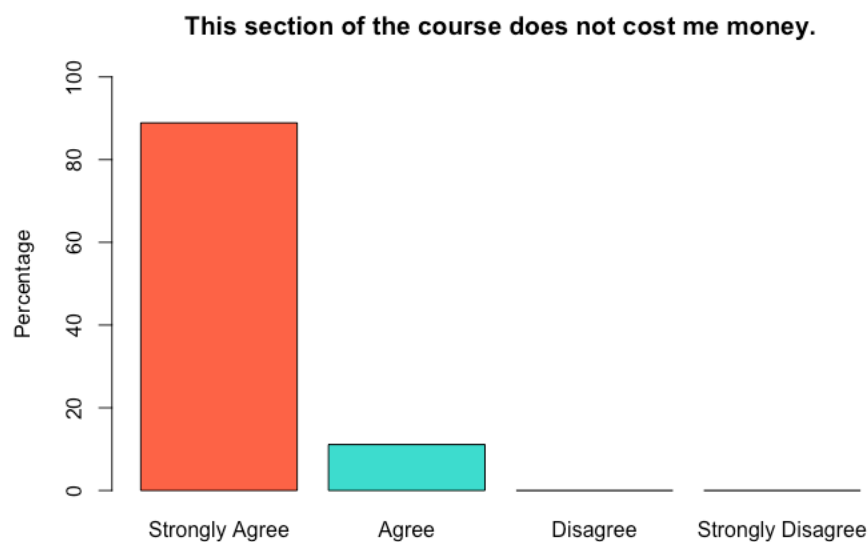
- (i) **Enhanced Student Engagement in Learning.** It is essential to note that due to the availability of the recommended free OpenStax textbook to students, all students were fully engaged in classroom activities, including problem-solving sessions and classroom discussion sessions. Instructors were able to give students individualized attention, as well as get the students to work in groups. Students were also allocated homework as well as online class activities. Students who missed quizzes and tests with valid excuses were given an opportunity to make them up online. This effort increased the number of students who completed their assessments and subsequently led to increased student achievement in Quantitative Reasoning from 57% in spring 2018 to 79.5% in fall 2019. Instructor believed that use of OpenSTAX free textbook ranked as one of the major attributes which help to ensure increase in student success in Quantitative Reasoning.
- (ii) **Faculty Collaboration, and Faculty Success, and Deliberate Engagement.** Most of the instructors teaching Quantitative Reasoning, particularly the project team members, shared instruction, assessment instruments, and additional course materials. Th project team members met in groups to discuss course coverage, assessment, assignments, best practices, and were able to share each other’s materials to enhance learning in their own classes. Communication among faculty members and other related collaborative activities contributed to greater student achievement in the course.

- (iii) **University, College, and Departmental New Leadership:** New leadership at the university and support for student-centeredness played an essential role in the success of the project. The Dean of the College of Arts and Sciences and the chairperson of the Department of Mathematics and Computer Sciences participated actively in the project, and taught some of the course sections themselves. In a related project, an analysis of faculty opinion survey showed that leadership ranked second in terms of the reasons why we saw higher student success in foundation math courses.
- (iv) **Student Retention, Persistence, and Graduation:** Quantitative Reasoning is first Math course of choice for non-STEM majors and hence a gatekeeper course. High {F,D,W,I} rate has a broader and deeper impact on student retention, progression, and degree attainment. It turns out that when students pass Quantitative Reasoning in their first year of College, they are more likely to persist and earn their college degrees from that college. Student Retention is very important for ASU. Hence, increased student pass rate in Quantitative Reasoning will have a positive impact on the student retention.

4B. Transformative impacts on your students and their performance

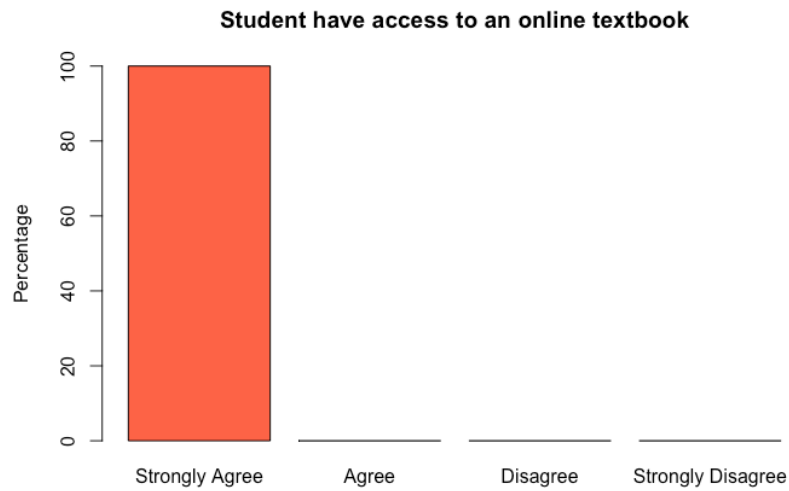
Due COVID-19 pandemic, only 18 student participants completed the associated survey.

Q1.



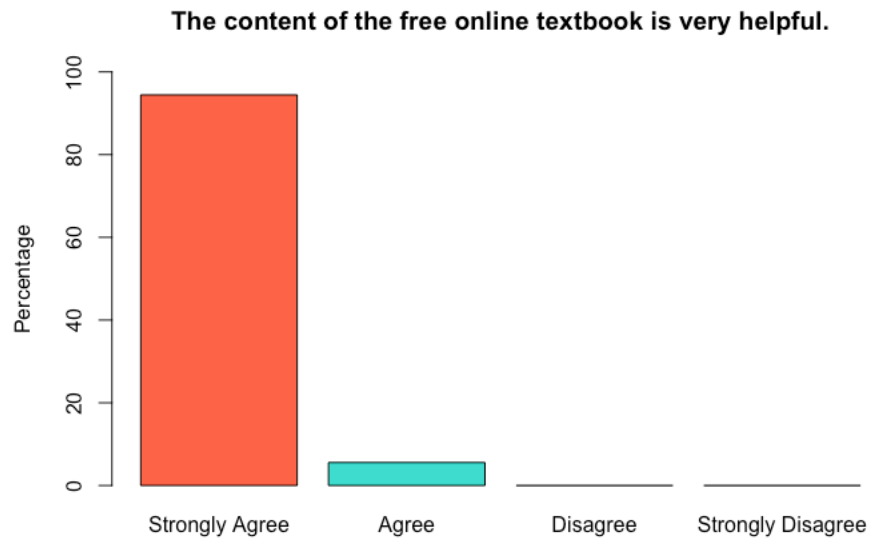
Of the 18 students who completed the survey, all or 100% of them strongly agree or agree with the statement that the course does not cost them money.

Q2



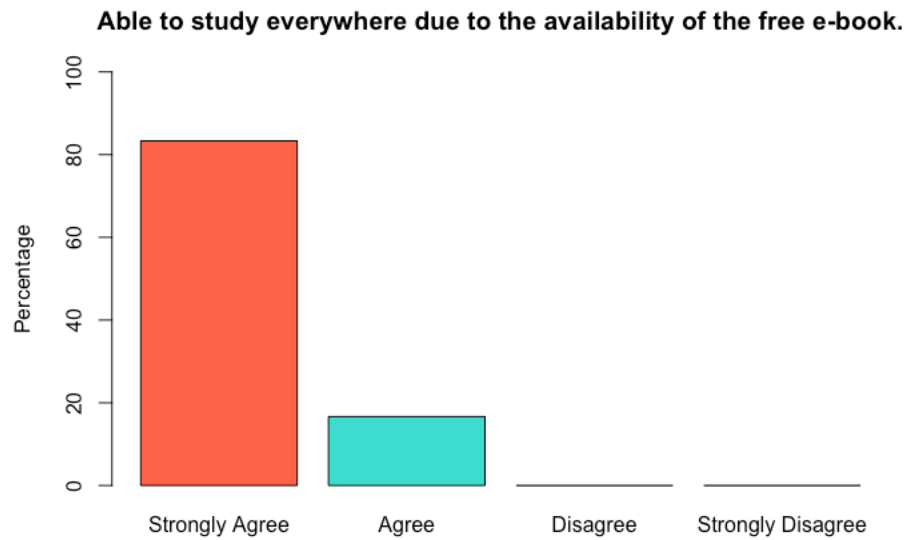
Of the 18 students who completed the survey, all or 100% of them strongly agree that they have access to online textbook.

Q3



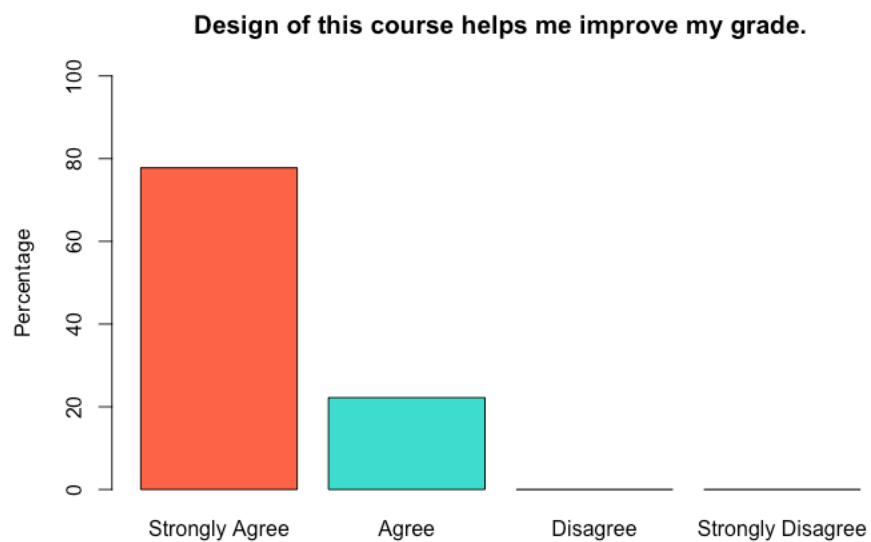
Of the 18 students who completed the survey, all or 100% of them strongly agree or agree with the statement that the online textbook is helpful.

Q4



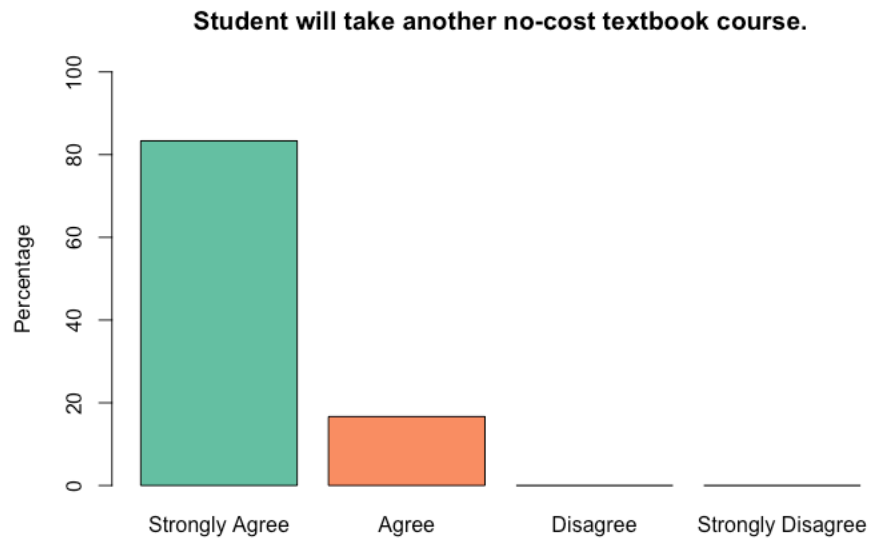
Of the 18 students who completed the survey, all or 100% of them strongly agree or agree with the statement that they are able to study everywhere due to the availability free e-book.

Q5



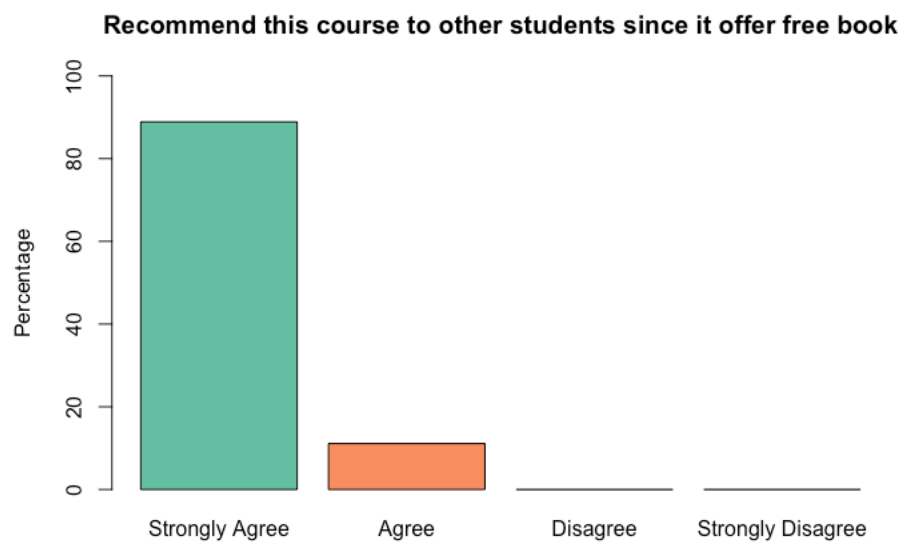
Of the 18 students who completed the survey, all or 100% of them strongly agree or agree with the statement that the design of the course helps them improve their grades.

Q6



Of the 18 students who completed the survey, all or 100% of them strongly agree or agree with the statement that the design of the course helps them improve their grades.

Q7



Of the 18 students who completed the survey, all or 100% of them strongly agree or agree that they will recommend the course to other students since the textbook is free.

5. LESSONS LEARNED, CHALLENGES, AND STUDENT QUOTES

The team members learned several lessons from the project. First, the project management rested on the team members who also taught courses and collected data. The team followed the timeline as delineated in the project. The project team documented project activities and noted the ideas which helped to enhance project outcomes. The team designed the data collection instruments including the participant survey. The survey was administered in fall 2019, and additional surveys were administered online in spring 2020. The online survey had very low response rate and was deemed invalid. During fall 2019 and spring 2020 semesters, student performance, and faculty engagement and collaboration were monitored. Formative assessment was done using project data, such as midterm grades. Faculty input was solicited throughout the semester. There was an effective communication on the importance of Quantitative Reasoning in real life.

Quantitative and Qualitative Measures

5a. Overall Measurements

Student Opinion of Materials

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

Total number of students affected in this project: 422

- Positive: 100% % of 18 number of respondents
- Neutral: 0.00 % of 18 number of respondents
- Negative: 0 % of 18 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 were described in details in Section 3.

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

Instructor	SEC	A	B	C	D	F	W	I	Total Enrolled	Number Passing	Number Failing (Including W and I)
T1	X1	1	4	11	0	4	0	0	20	16	4
T2	X2	8	6	3	1	2	1	0	21	17	4
T3	X3	1	5	19	1	2	0	0	28	25	3
T4	X4	19	4	6	1	2	1	0	33	29	4
T5	X5	1	8	7	2	4	0	0	22	16	6
Total		30	27	46	5	14	2	0	124	103	21

C Passing Rate: 83.06%

DFWI Failing Rate: 16.94%

Grade	A	B	C	D	F	W	I
Percent	24.19%	21.77%	37.10%	4.03%	11.29%	1.61%	0%

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

Drop/Fail/Withdraw Rate:

_____16.93% of students, or 21 out of a total _124_____ 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)

- *Drop, fail, withdraw (DFWI) delta rates*

The DFW rate was 16.93%.

- *Course retention and completion rates*

The course retention rate was 98.39%.

- *Average GPA*

Pre—transformation DFW=43%.

Post-transformation DFW= 16.93%.

For grade distribution, please see the distribution above.

- *Student success in learning objectives*

All the course learning outcomes were met. The assessment instruments, including homework, tests, class work and technology-based exercises were aligned with the specific objectives. The overall student achievement was excellent. Students showed immense satisfaction with the course.

- *Surveys, interviews, and other qualitative measures*

Please see Section 4 above.

- *Indicate any co-factors that might have influenced the outcomes for better or worse.*

New and supportive leadership contributed positively to increased student success.

- *When submitting your final report, as noted above, you will also need to provide the separate file of supporting data on the impact of your Textbook Transformation (surveys, analyzed data collected, etc.)*

Survey Questionnaire 9 statement, “I will recommend to other students since it offer free online textbook and other learning materials.” 18 students responded to this survey question. 18 or 100% agreed or strongly agreed with this statement. 0% disagreed or strongly disagreed with this statement. The mean survey score was 5.00.

Please see appendix A

6. 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.*

The Department of Mathematics and Computer Science has institutionalized the no-cost MATH 1001 College Algebra course. The success of this course is impressive since it was a no-cost textbook course. In order to have a wider dissemination, we are planning to make a

presentation at the 2021 Joint Mathematics Meetings. Materials developed through this grant will be available in GeorgiaVIEW and other instructors will be given permission to “copy” course when such requests are made. Furthermore, we plan to continue to develop new course materials to enrich this course. Already, the textbook we adopted has been adopted by the department for this course.

Most of the course materials associated with this project are placed on GeorgiaVIEW. All the course materials can be downloaded. The project team will continue to monitor progress in this course. We will complete the development *instruction and learning materials guide*. This booklet, which contains about 300 Quantitative Reasoning, will be placed on GeorgiaVIEW in fall 2020.

7. FUTURE 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.

This project provided us an opportunity to have access to the free Open Education Resource (OER) Textbook for Quantitative Reasoning published by Lippman in 2013. Through this project, we have developed a version of the course which is placed on the GeorgiaVIEW platform. This course can therefore be taught by offering it face-to-face in-class, online, or in hybrid format. In addition, we have developed additional learning materials, including a significant number of solved problems, which students and other instructors will find very useful. We will continue to develop and enrich the course by developing additional learning materials.

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

We plan to write and present scholarly papers resulting from this project at several scholarly conferences and meetings. Some of the meetings include:

- (i) The Joint Mathematics Meetings in Baltimore, Maryland, January 2021
- (ii) Teaching and Learning Conference
- (iii) G2C Conference
- (iv) Albany State University Seminars.

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.

Many of our colleagues teaching MATH 1001 Quantitative Reasoning find the OER (Math in Society by David Lippman, 2013 Edition) e-book we adopted and the learning materials we developed very useful for their courses. Hence, they are using these materials.

