

Affordable Learning Georgia Affordable Materials Grants Transformation Grants Final Report

(or Textbook Transformation Grants, if R17 or earlier)

Once you have completed this template, to submit your Final Report, go to the [Final Report submission form](#).

The final report submission form allows you to submit the following:

- This completed narrative document (required)
- Syllabus or syllabi (required)
If multiple files, compress into one .zip folder
- Qualitative/Quantitative Measures data files (optional, as needed)
If multiple files, compress into one .zip folder
- Photo of your team or a class of your students for future ALG promotions (optional)
- Invoice for the second half of the grant's award amount (optional)

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

General Information

Date: 05/15/2026

Grant Round: R27

Grant Number: 767

Institution Name(s): University of North Georgia

Project Lead: Mohammad Mohebbi

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

- Mohammad Mohebbi – Assistant Professor, Department of Computer Science and Information Systems, University of North Georgia – mmohebbi@ung.edu
- Jianjun Yang – Professor, Department of Computer Science and Information Systems, University of North Georgia – jianjun.yang@ung.edu
- Phillip Williams – Assistant Professor, Department of Computer Science and Information Systems, University of North Georgia – phillip.williams@ung.edu
- Mingyuan Yan – Associate Professor, Department of Computer Science and Information Systems, University of North Georgia – mingyuan.yan@ung.edu

- Paul Murray – Senior Lecturer, Department of Computer Science and Information Systems, University of North Georgia – paul.murray@ung.edu
- Amirhossein Manzourolajdad – Assistant Professor, Department of Computer Science, SUNY Polytechnic Institute – manzoua@sunypoly.edu

Course Name(s) and Course Numbers: CSCI 1302 – Computer Science II

Semester Project Began: Summer 2025

Final Semester of Implementation: Summer 2026

Total Number of Students Affected During Project: 0 (full implementation begins in the next offering)

1. Narrative

A. Project Goals

The goal of this project was to replace the expensive commercial textbook used in Computer Science II (CSCI 1302) at the University of North Georgia (UNG) with high-quality, no-cost open educational resources (OER) specifically designed to meet the learning needs of our student population. We aimed to remove the financial burden for our students while enhancing the curriculum with practical learning tools. To do so, we designed and wrote customized materials in a form of a textbook with 12-chapters. These chapters include guided in-class hands-on activities, instructional step-by-step labs on setting up the Java Integrated Development Environment (IDE), and Java projects that simulate real-world scenarios to prepare our students for practical problem-solving skills after school and in their careers.

B. Statement of Transformation

Before awarding this grant, CSCI 1302 was taught using a commercial textbook ("Java Foundations: Introduction to Program Design and Data Structures, 5th edition, John Lewis ") that cost students \$165.32. We as co-PIs of this grant and also instructors who teaches CSCI 1302 regularly, we observed that the high cost of this book prevents students from purchasing the text early in the semester, or at all, which strictly impacted their engagement and academic performance. Additionally, the commercial textbook lacked essential practical resources suitable for our students needs, such as step-by-step IDE demonstrations and guided coding exercises for debugging.

Through this project, we successfully transformed the course by authoring a comprehensive, no-cost textbook titled "**Introduction to Program Design with Java: A Comprehensive Guide to Object-Oriented Development.**" This 12-chapter resource covers everything from basic Java syntax and Object-Oriented Principles (Classes, Inheritance, Polymorphism) to JavaFX GUI development, Exception Handling, Time Complexity, and Recursion. By providing these materials at no cost from day one, we immediately addressed the issue of equitable access. Additionally, the new step-by-step lab or project instructions ensure a consistent, engaging, and highly practical learning experience across all sections of CSCI 1302. This transformation not only has reduced the financial pressure on our students but also has significantly improved the overall quality and uniformity of instruction.

C. Transformation Action Plan

To achieve our goals, we worked collaboratively as a team to write chapters based on each member interests and expertise. The followings are tasks accomplished by each co-PI:

- As the Project Lead, I (Mohammad Mohebbi) managed the project administration, authored chapters on LinkedList/Stack and Recursion (Chapters 11 and 12), created step-by-step lab and project instructions. In addition, due to hardship for a team member, I took the responsibility of covering the chapter assigned to him, and authored Chapters 9 and 10 (Time Complexity, Collections) as well.
- Dr. Jianjun Yang authored Chapters 1 and 2 (Classes/Objects, Conditionals/Loops) and developed accompanying step-by-step lab and project instructions.
- Dr. Phillip Williams authored Chapters 3 and 4 (Writing Classes, JavaFX GUI) alongside related practical materials.
- Dr. Mingyuan Yan authored Chapters 5 and 6 (Arrays, Inheritance).
- Mr. Paul Murray authored Chapters 7 and 8 (Polymorphism, Exception Handling & Files).
- Student graphic designer who created the visual diagrams and figures for the textbook
- Dr. Amirhossein Manzourolajdad, an external reviewer, from SUNY Polytechnic Institute, who provided invaluable feedback to ensure the accuracy and pedagogical effectiveness of the content.

D. Key Outcomes and Challenges

Our overall transformation experience was highly rewarding, although we had challenges. Our primary accomplishment was coordinating a team of six faculty members to successfully author, review, and publish a comprehensive, 12-chapter textbook, *Introduction to Program Design with Java*, alongside supplementary IDE lab instructions and guided projects. During this work we faced two challenges; one, one of our initial team members, requested to resign due to hardships in his life, and I as the lead stepped in to fill the gap and took the responsibility of his assigned tasks. The second challenge was ensuring a cohesive pedagogical voice and consistent formatting across chapters written by different authors.

E. Transformative impacts on instruction and our students

The availability of our own materials has fundamentally shifted how we are preparing to teach CSCI 1302. Previously, we had to adapt our lectures to fit the structure of a costly commercial textbook, often skipping chapters or explaining why our coding standards differed from the text. Now, as we prepare for our initial rollout in Summer 2026, we have established seamless alignment between the reading materials, lecture slides, and hands-on projects. This alignment standardizes the curriculum across all sections of the course, ensuring that every student will receive the same high-quality, practical instruction regardless of who is teaching.

Because we will officially implement the new textbook in our classrooms starting in Summer 2026, we are currently projecting student impacts based on our pedagogical redesign. The most immediate and guaranteed impact on our students will be the elimination of the \$165.32 cost

barrier, ensuring that 100% of the class has access to the required materials on the first day of the semester. We anticipate this will level the playing field and significantly reduce early-semester anxiety.

In addition, the step-by-step lab and project instructions, including debugging contents bridge the gap between theoretical Object-Oriented concepts and actual implementation. We also expect students to perform better on complex assignments involving JavaFX GUI development and Data Structures, which we project will directly contribute to future Drop, Fail, Withdraw (DFW) rates and an increase in overall course retention.

F. Lessons Learned

The most critical lesson our team learned was the immense time and effort required for the logistical aspects of textbook publishing, specifically formatting, creating accessible diagrams, and standardizing code snippets. While we allocated ample time for authoring the content, the editing and unification phases took longer than anticipated.

If we were to undertake a similar project in the future, we would implement a strict, standardized style guide and template for all authors *before* the drafting phase begins, rather than standardizing the chapters retroactively.

G. Shared Materials

Through this grant, our team created a comprehensive textbook for Computer Science II that was formatted and compiled as a single PDF file.

- **The Textbook:** *Introduction to Program Design with Java: A Comprehensive Guide to Object-Oriented Development* (A full 12-chapter digital textbook covering Java syntax, OOP principles, JavaFX, Exception Handling, Recursion, and basic Data Structures).
- **Public link:** https://faculty.ung.edu/mmohebbi/1302/CSCI1302_textbook_v1.pdf

In compliance with the Affordable Learning Georgia Grants Request for Proposals, the textbook is shared with the public under a **Creative Commons Attribution 4.0 International (CC BY 4.0)** license. This allows other educators and institutions to freely use, adapt, and distribute our textbook and resources, provided proper attribution is given to the original authors at the University of North Georgia.

H. Quotes

Since we start using our developed textbook from Summer 2026, we asked students who took CSCI 1302 in past to evaluate our textbook and provide us feedback, below are quotes from our students:

- *"Books are a valuable resource and sometimes as a student we are paying \$200-\$300 just to rent a book because buying it isn't an option which I feel is a disservice. I*

feel having a free textbook would not only benefit students pockets but also provide them with a resource they can refer back to throughout others classes as I believe that the information is valuable and relatable to others classes throughout the CS and Cyber Program as coding in Java is one of the fundamental programming languages used. For CSCI 1302 I used zybooks which was great but restrictive with a limit on how long you had access to the book .”

- *“I believe that a free textbook will be helpful because it will reduce the stress on students about spending money, and the textbook looks easy to read so students will be more engaged into learning.”*
- *“I think its a great way to help students financially and educational.”*
- *“This is huge. Thank you all for putting in the effort for this. I can only imagine the school could help you guys get a publisher or editor or something to make it easier to interface and make it that more accessible. Thank you again”*
- *“If this is for csci 1302? If it is, it would be perfect to have a version of csci1301”*

2. Quantitative and Qualitative Measures

A. Uniform Measurements Questions

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: 0 (we start using the textbook from Summer 2026, but we asked students previously taken CSCI 1302 to evaluate our textbook and the following stat comes from them)

- Positive: 90 % of 10 number of respondents
- Neutral: 10 % of 10 number of respondents
- Negative: 0 % of 10 number of respondents

The followings are our survey questions and students responses:

1. After reviewing the textbook, what is your overall opinion of the materials?



2. How helpful would this textbook have been when you took CSCI 1302?



3. How beneficial is having a free textbook for this course compared to a traditional paid textbook?



Student Learning Outcomes and Grades

We will start using the textbook from Summer 2026, therefore we do not have the stat for this section, if needed, we can submit a revision after the end of summer 2026 to include comparative impact on student performance in terms of learning outcomes and grades in the semester(s) of implementation over previous semesters.

Student Drop/Fail/Withdraw (DFW) Rates

The same as section 'Student Learning Outcomes and Grades'.

B. Measures Narrative

We included the survey data on students' feedback on our textbook as an MS spreadsheet (xlsx file) to this report.

Current Implementation Status and Quantitative Data Plan

Because the official rollout of our newly authored OER materials (Introduction to Program Design with Java) is scheduled for the Summer 2026 semester, post-transformation quantitative metrics, such as Drop, Fail, Withdraw (DFW) delta rates, course retention, and average GPA, are not available. We will conduct a comparative

analysis against historical data from previous semesters taught using the commercial textbook, with the expectation that our no-cost materials will positively impact student success and retention rates.

Qualitative Measures: Pre-Implementation Student Survey

To gather the feedback from the students about our newly developed textbook, we conducted a preliminary review survey with students who took the CSCI 1302. The survey gathered feedback on the material's readability, helpfulness, and perceived financial benefit. We received 9 responses, which yielded overwhelmingly positive feedback:

Overall Opinion: 9 out of 10 students (90%) rated their overall opinion of the materials as "Positive," with the remaining student rating it as "Neutral."

Perceived Helpfulness: When asked how helpful this textbook would have been when they took CSCI 1302, 100% of respondents agreed it would be helpful (7 students rated it "Very Helpful" and 3 rated it "Helpful").

Financial and Educational Benefit: When comparing the free textbook to a traditional paid textbook, 9 out of 10 students (90%) rated it as "Very Beneficial" or "Beneficial."

Student Feedback Highlights

The qualitative comments provided by the students underscored two major themes: significant financial relief and the value of having a permanent, accessible resource. Notable quotes from the survey include:

"I believe that a free textbook will be helpful because it will reduce the stress on students about spending money, and the textbook looks easy to read so students will be more engaged into learning."

"Books are a valuable resource and sometimes as a student we are paying \$200-\$300 just to rent a book because buying it isn't an option, which I feel is a disservice. I feel having a free textbook would not only benefit students' pockets but also provide them with a resource they can refer back to throughout other classes... For CSCI 1302 I used zyBooks which was great but restrictive with a limit on how long you had access to the book."

"This is huge. Thank you all for putting in the effort for this... I think it's a great way to help students financially and educationally."

"A free textbook would make it a lot easier for all college students since there are already so many other things that we need to pay for before the semester even starts. I really like the idea of a free textbook, and I think this should be implemented in every single class offered at the university!"

Co-Factors Influencing Outcomes

As we move into the Summer 2026 implementation, one co-factor that may influence our future quantitative outcomes is the accelerated pace of the summer term. While the condensed schedule typically presents its own set of challenges for students, we anticipate that having immediate, free access to the textbook and IDE instructional contents on day one will soften some of this typical summer-term friction.

3. Sustainability Plan

Our team has developed the project no-cost course materials with intend for long-term sustainability, to keep the contents relevant and stay effective for future offerings of Computer Science II (CSCI 1302). After the initial development phase, no additional costs will be required for keeping the materials current. However, to ensure the materials remain up-to-date and aligned with industry standards and student needs, we commit to the following sustainability plan:

1. Continued Use and Update of No-Cost Materials:

- Computer Science II (CSCI 1302) is a **required course** for Computer Science majors at the University of North Georgia. Team members regularly teach this course at least once a year. We commit to use the no-cost materials in their sections after the project ends.
- The learning materials will be updated **twice each academic year** (January and August) by the team members.
- Updates will be based on feedback from faculty and students, ongoing research, and new publications.
- If we needed a significant overhaul of the textbook in future, we will apply for another ALG grant to expand this work.

4. Future Affordable Materials Plans

We plan to use the success of this project as a model for expanding no-cost and OER materials to other courses within the department and across the institution. In particular, we aim to utilize the experience gained during this project to develop no-cost materials for **Computer Science I (CSCI 1301) per request of students in the survey comments**. We also plan to apply for future grants to support the development and implementation of OER in additional courses.

5. Future Scholarship Plans

We are planning to publish our authored textbook, **Introduction to Program Design with Java: A Comprehensive Guide to Object-Oriented Development**, as a formal, standalone book. We believe that disseminating the textbook itself will be our most impactful scholarly contribution from this project.