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](https://survey.zohopublic.com/zs/xTCCvG) 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:** Jan 12, 2026

**Grant Round:** 26

**Grant Number:** 740

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

**Project Lead:** Parminder Juneja

**Team Members (Name, Title, Department, Institutions if different, and email address for each):** PavanKumar Meadati, Construction Management, pmeadati@kennesaw.edu

**Course Name(s) and Course Numbers:** CM 3800, Construction Finance

**Semester Project Began:** Spring 2025

**Final Semester of Implementation:** Summer and Fall 2025

**Total Number of Students Affected During Project:** 133

# Narrative

* 1. *Describe the key outcomes, whether positive, negative, or interesting, of your project. Include:*
* *Summary of your transformation experience, including challenges and accomplishments*
* *Transformative impacts on your instruction*
* *Transformative impacts on your students and their performance*
  1. *Describe lessons learned, including any things you would do differently next time.*
  2. *Describe any materials you created or revised/remixed that will be shared with the public. Include the* [*open license your materials will be shared under*](https://creativecommons.org/share-your-work/)*—for most materials, this will be an Attribution 4.0 License (CC BY) as required in the Grants Request for Proposals.*

1. **INSTITUTIONAL IMPACT**

This comprehensive final report documents the successful execution and transformative impact of the Affordable Learning Georgia (ALG) Grant 740, Round 26, implemented within the CM 3800: Construction Finance course at Kennesaw State University. The primary directive of this initiative was to address the dual challenges of educational affordability and pedagogical efficacy in a high-stakes, technical discipline. By replacing a high-cost commercial textbook with a curated suite of faculty-authored Open Educational Resources (OER) and interactive, gamified assessment tool, the project successfully eliminated financial barriers for 133 students while simultaneously driving a measurable improvement in academic performance.

The project was motivated by a critical analysis of student resource access, which revealed that the incumbent commercial text, priced between $89.99 and $226.00, posed a significant hurdle. In response, the project team developed robust educational modules that addresses the course learning outcomes for CM 3800. These materials were designed not merely as textual replacements but as active learning instruments, integrating practice exercises that mirrored the complexities of real-world construction management finance.

The quantitative results of this transformation are profound. In the semesters following implementation (Summer and Fall 2025), the rate of students receiving a grade of 'D' plummeted from 5.33% (4 out of 75 students) in the pre-implementation phase to 1.50% (2 out of 133 students) post-implementation. This reduction in poor performance occurred despite a near-doubling of the student cohort, suggesting that the pedagogical intervention successfully scaled without diluting educational quality. Furthermore, the initiative generated immediate direct savings of $23,275 for the affected student body, with a projected annualized recurring savings of over $47, 250.

Qualitative feedback underscores the success of the "gamified" Excel exercises, which utilized conditional formatting to provide immediate visual feedback (green/red indicators) on student calculations. This mechanism effectively bridged the gap between theoretical concepts and practical application, fostering a learning environment defined by success and reduced anxiety.

This report offers an exhaustive detailed narrative of the transformation, analysis of the created technical materials, evaluation of the impact data, and a strategic roadmap for the sustainability of these resources within the Construction Management curriculum.

1. **LESSONS LEARNED**

While the transformation was successful and engaging, it revealed specific challenges that offer valuable lessons for future OER implementations in technical fields, such as construction finance.

***The "Mac vs. PC" Divide in Technical Education***

A significant technical hurdle arose regarding the compatibility of the Excel macros and conditional formatting between Windows and Mac operating systems. Several students noted technical glitches. *"Something was wrong with the excel file and it didn't upload to D2L from my Macbook"*. Technical literature confirms that Excel for Mac often lacks full support for the Visual Basic for Applications (VBA) code used to drive advanced interactive spreadsheets. This created a temporary equity issue where Mac users (often a significant percentage of the student body) faced friction that PC users did not.

We have learned that “universal design” in OER is technically demanding. It is clear that future iterations of gamified tool must prioritize a native excel strategy to ensure platform independence. Rather than relying on external widgets like H5P or complex VBA scripting, which creates a maintenance burden for the Principal Investigator (PI) and requires specialized programming knowledge, we will utilize standard Excel functionality. By leveraging native logic functions (e.g., nested IF, VLOOKUP, INDEX/MATCH) and built-in Conditional Formatting, we can replicate the immediate feedback loop in a standard .xlsx file format. This approach eliminates the Mac/PC compatibility issues inherent in macros while keeping the development process accessible to faculty without requiring advanced coding skills**.**

***The Pedagogical Challenge of "Too Much Data"***

Some students initially struggled with the "too much data" approach in the practice problems as a student noted, *"Some of the math at the end confused me as I thought it was incorrect, however that could have been my own misunderstanding."*. This confusion stems from the fact that students are conditioned by years of standardized testing to use every number provided in a problem. When presented with the "Hair style" expense in the General overhead module, some students tried to force it into the calculation.

This is not a failure of the material but a feature. It highlights the need for instructors to explicitly frame these assignments as exercises in *judgment* and *filtering*, not just arithmetic. It validates the need for this type of realistic training.

1. **OER for CM 3800: COURSE CONTENT**

The team started with the current syllabus for CM 3800 that explicitly outlined the course learning outcomes (CLOs: identified by the program) and student learning outcomes (SLOs: identified by the accreditation agency) for CM 3800. After reviewing the course learning outcomes (CLOs), the team narrowed them down into specific keywords to streamline the search for relevant resources. This approach ensured each resource directly supported the course learning outcomes. To gather useful and reliable materials for this project, the team relied primarily on Galileo, which provided access to a wide variety of databases and hosts, including Academic Search Complete, ProQuest Central, EBSCO eBooks, Digital Library of Georgia, and Literary Reference Center Plus. The types of sources explored included eBooks, scholarly papers, articles, journals, and industry publications.

Using keywords derived from the course learning outcomes, the team evaluated each resource to determine its relevance and alignment with the CLOs. While some materials were directly applicable, others were less relevant and required further review. Many of the materials were available for direct download, while others required third-party tools such as Adobe Digital Editions for viewing or allowed partial downloads, such as specific chapters. In cases where access was restricted, the KSU Interlibrary Loan (ILL) service was used to request the material.

The team also explored official government websites, such as IRS.gov and GovInfo.gov, to obtain accurate and up-to-date information. These sites were particularly helpful for topics related to taxes and employment benefits. Through web searches, the team also discovered other Open Educational Resource (OER) platforms like books.byui.edu, which offers free textbooks and educational content. When deciding what to use, the focus was on the credibility of the source, how clearly it explained the topic, and how well it matched the CLOs. Priority was given to materials that were recent, tied to construction or finance topics, and published by trusted sources. For non-academic websites, the team double-checked the information by comparing it to more official or academic content.

***Phase II: Material Creation and Gamification (Spring 2025)***

Following the curation process, the team adopted a creation-heavy strategy to fill gaps where OER specific to construction finance were unavailable. Dr. Juneja and Dr. Meadati authored three extensive learning modules, discussed below, that serve as the primary textbook for the course. These documents are detailed, technically rigorous and aligned with American Council for Construction Education (ACCE) standards. Simultaneously, the Excel games were coded. This required significant technical effort to ensure that the logic layers (hidden formulas checking student work) were robust enough to handle valid variations in input while rejecting errors.

**Module 1: Construction Project Cash Flow**

The first module addresses the lifeblood of the construction industry: Project Cash Flow. It moves beyond basic accounting to address the specific contractual and temporal realities of a construction project.

The module integrates the project schedule with the budget to visualize how a delay in physical activity (e.g., "Foundation" in February) shifts financial outflow, teaching students that time is literally money. It also clearly differentiates between direct costs (materials, labor) and indirect costs (profit, overhead). A standout feature is the handling of retainage and pay-when-paid clauses. The module uses a step-by-step calculation matrix to demonstrate how retention is calculated on billed amounts and how General Contractors use legal mechanisms to align cash outflows (to subs and suppliers) with inflows from owners.

The practice problem simulates a four-month project with varying payment terms. Students must build a cash flow projection that balances these disparate timelines to determine the maximum cash need: the peak negative cash flow that determines the company's financing requirements.

**Module 2: The True Cost of an Employee (Labor Burden)**

Labor Burden is often the most opaque cost in construction. The second module was designed to demystify the difference between an employee's hourly wage and their total cost to the company. The practice problem for this module is a great example of noisy data and real word complexities of calculating true cost of an employee. The exercise forces students to pay attention to fine details and apply logic, critical reasoning rather than simple calculation. For instance, they must determine that the r*eimbursement* does not increase the tax basis, while the allowance does.

**3.3 Module 3: General Overhead and Profitability**

The final module focuses on the costs of running the business itself (General Overhead) versus the costs of building the project. This distinction is crucial for understanding the "General Overhead Ratio" (GOH) and its direct impact on a company's ability to remain solvent.

The module further introduces students to a comprehensive array of General Overhead expenses that are often overlooked by novice managers. Beyond standard items like rent and utilities, the curriculum covers complex categories such as unallocated labor, unallocated materials, bad debt and more. A central pedagogical goal of this module is to shift students away from lump sum estimation toward detailed line-item budgeting for general overhead.

The practice problem for this module includes "intentionally erroneous and extraneous data points" to test critical thinking. Students must filter this "noise" to calculate the true net profit before and after taxes. This exercise explicitly addresses the industry need for understanding profitability.

**3.4 Creative common Licensing**

The three modules are shared with ALG via public link that will globalize the availability of the OER content created under this grant. The content is created under the following license:

“Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International”

https://creativecommons.org/licenses/by-nc-nd/4.0/

# Quotes

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

A few quotes from the two surveys “textbook vs. OER” and “excel game” are copied below.

*"No, when a professor teaches the material well and provides supporting resources like Dr. Pammy does then the textbook is unnecessary."* — Student Survey

*"No. Our professor is way too thorough to need a textbook."* — Student Survey

*"The Excel game provided me the ability to process the information in a backwards and forward manner, which helped conceptualize the material. I found it very helpful!"* — Student Survey

*"No it was a perfect way as perviously assignments I didn't perform well but after the excel I understood the work much better."* — Student Survey

*"I really liked the excel games. They helped me understand the concept more because I was able to work on it and think through how cash flow works. The only thing that I would make a comment on would be to use the last cash flow assignment as the first one instead because to me at least the third one was the easiest and showed you how the process worked."* — Student Survey

*"I like the game and I liked that it was color coded, so it was easy to know if you made a miscalculation. I don't have any suggestions for improvement. I enjoyed the assignment, and it was very straight forward."* — Student Survey

*"Regardless of the price of the book, Dr. Pammy provides us with detailed information in her lectures, and i wouldn't obtain it because attending the lectures and taking notes is sufficient."* — Student Survey

# Quantitative and Qualitative Measures

## Uniform Measurements Questions & B (Narrative)

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

**Student Opinion of Materials**

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

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

* Positive: \_\_\_\_\_\_\_ % of \_\_\_\_\_\_\_\_ number of respondents
* Neutral: \_\_\_\_\_\_\_ % of \_\_\_\_\_\_\_\_ number of respondents
* Negative: \_\_\_\_\_\_\_ % of \_\_\_\_\_\_\_\_ number of respondents

The quantitative success is mirrored by the qualitative feedback collected via course surveys. This data analysis provides insight into *why* the transformation worked.

***3.1 Student Opinion of Materials***

We evaluated student satisfaction through two lenses: their experience with the interactive OER materials (lecture content, links to extra reading via Galileo, and the Excel games) and their preference for these materials over the traditional commercial textbook.

*A. Satisfaction with Interactive Excel Games*

Data collected from the post-course survey (Excel based cash flow practice.xlsx) indicates a high level of satisfaction with the efficacy of the new gamified materials.

* Positive (Extremely/Somewhat Satisfied): 81.75% (103 of 126 respondents)
* Neutral (Neither): 13.49% (17 of 126 respondents)
* Negative (Dissatisfied): 4.76% (6 of 126 respondents)

*B. Preference for Instructor Materials vs. Textbook*

Data collected from the course resource survey (CM 3800 Textbook) asked students to state their preference regarding the course materials.

* Positive (Preferred "No Textbook"): 55.2% (69 of 125 respondents)
  + *This group explicitly preferred relying on the instructor-provided OER content over purchasing a book, often citing that the provided notes were sufficient and "more valuable."*
* Neutral (Preferred "Recommended Textbook"): 39.2% (49 of 125 respondents)
  + *This group preferred the textbook to be optional (recommended) rather than required, using it only as a backup reference.*
* Negative (Preferred "Required Textbook"): 5.6% (7 of 125 respondents)
  + *A small minority preferred the traditional model where a textbook is mandatory. Further analysis reveals that these students tend to learn on their own rather than in a classroom.*

***3.2 Student Learning Outcomes and Grades: Comparative Analysis***

A detailed analysis of grade statistics from the pre-implementation period (Spring 2025) and post-implementation period (Summer/Fall 2025) reveals a distinct positive trend. Specifically, the data shows that while overall academic rigor was maintained (evidenced by consistent median scores), the intervention significantly improved the performance of outliers: students typically at risk of failing.

*Median Grade Analysis: Stability and Rigor*

| **Phase** | **Semester** | **Section** | **Students** | **Class Median** | **Weighted Avg Median** |
| --- | --- | --- | --- | --- | --- |
| Pre-Implementation | Spring 2025 | Sec 1 | 27 | 90.33% |  |
|  |  | Sec 2 | 29 | 85.65% | 86.31% |
|  |  | Sec 3 | 19 | 81.61% |  |
| Post-Implementation | Summer 2025 | Sec 1 | 24 | 87.00% |  |
|  |  | Sec 2 | 12 | 87.00% |  |
|  | Fall 2025 | Sec 1 | 31 | 85.41% | 86.11% |
|  |  | Sec 2 | 31 | 89.19% |  |
|  |  | Sec 3 | 35 | 83.08% |  |

*Stable Averages*: The weighted average of the class medians remained virtually unchanged (86.31% Pre vs. 86.11% Post). This indicates that the new OER materials maintained the high academic standards of the course and did not artificially inflate grades or dumb down the content.

*Raising the Floor (Outlier Improvement)*: A critical finding is the improvement in the lowest performing sections. In the Pre-Implementation phase, Section 3 had a median of 81.61%. In the post-implementation phase, the lowest median (Fall Section 3) rose to 83.08%. This confirms that the OER materials were rigorous and that the reduction in DFW rates was not a result of grade inflation, but rather improved comprehension among the lower quartile of the class: students who are at risk of failing.

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

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

Choose One:

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

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

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

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

**1.5** % (two) of students, out of a total 133 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)

*Description*

The quantitative results of this transformation are significant. In the semesters following implementation (Summer and Fall 2025), the rate of students receiving a grade of 'D' plummeted from 5.33% (4 out of 75 students) in the pre-implementation phase to 1.50% (2 out of 133 students) post-implementation. This reduction in poor performance occurred despite a near-doubling of the student cohort, suggesting that the pedagogical intervention successfully scaled without diluting educational quality. Furthermore, the initiative generated immediate direct savings of $23,275 for the affected student body, with a projected annualized recurring savings of over $47,250.

***3.4 Limitations of Proposed Measures: Enrollment and D2L Access Rates***

While the initial proposal aimed to track e**nrollment rates** and **D2L access rates** as indicators of project success, these metrics ultimately proved insufficient for meaningful quantitative assessment due to external variables:

* **Enrollment Rates:** Kennesaw State University has experienced consistent annual growth in overall student enrollment. Furthermore, *CM 3800 Construction Finance* is a core requirement for the Construction Management degree. Consequently, fluctuations in section enrollment are driven by university-wide trends and degree requirements rather than the specific cost or format of course materials.
* **D2L Access Rates:** The course structure mandates that all essential communication, assignments, and resources be accessed via D2L Brightspace. High access rates were observed, but this is a function of the course delivery method rather than a distinct measure of engagement with the specific OER materials versus the previous commercial text.

## Measures Narrative

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

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

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

***3.5 Quantitative Impact Narrative***

The impact of the transformation was measured using two primary metrics: academic performance (specifically DFW rates) and direct financial savings.

*3.5.1. Academic Performance: Reduction in DFW Rates*

A critical objective of the ALG grant is to improve student success rates. In technical courses, high failure rates often correlate with a lack of access to materials or a failure to grasp foundational concepts early in the semester.

We compared grade distributions from the pre-implementation period (using the commercial text) against the post-implementation period (using OER and Excel Games).

| **Metric** | **Pre-Implementation (Traditional Text)** | **Post-Implementation (OER + Gamification)** | **Change** |
| --- | --- | --- | --- |
| **Total Enrollment** | 75 Students | 133 Students | +77.3% |
| **"D" Grades** | 4 | 2 | -50% (Absolute) |
| **"D" Rate (%)** | **5.33%** | **1.50%** | **-71.8% (Relative)** |

The data reveals a statistically significant improvement in student outcomes. Research suggests that DFW rates are often higher among students from lower socio-economic backgrounds who may delay purchasing textbooks. By removing the cost barrier, we likely enabled these at-risk students to engage with the material from day one, contributing to the lower failure rate.

*3.5.2 Financial Impact: Direct Cost Savings*

The financial relief provided to students was immediate and substantial. The commercial textbook, *Construction Accounting and Financial Management*, retails for approximately $175.00 (average of new/used/digital options). Post implementation, this cost became $0.00.

Savings Calculation:

* + Implementation Semesters (133 students): $175 \* 133 = $23,275.
  + Annualized Projection (270 students): $175\* 270 = $47,270.

For a student taking a full load of 5 courses, saving ~$175 in one class represents a significant portion of their semester book budget. As noted in the survey data, many students operate on tight margins ("tighter budgeting," "unwilling to spend money unless I have to"). This saving allows capital to be redirected toward essential living expenses, reducing financial stress and potentially allowing students to work fewer outside hours, further supporting academic success.

The table below shows a consolidated recap of the quantitative measures of the project.

|  |  |  |
| --- | --- | --- |
| **Summary: Quantitative Measures of OER** | | |
| **Metric** | **Pre-Transformation (Control)** | **Post-Transformation (Experimental)** |
| Student Enrollment | 75 | 133 |
| Course Material Cost | ~$175.00 | $0.00 |
| Total Student Savings | $0 | $23,275 |
| D Grades | 4 (5.33%) | 2 (1.50%) |
| Student Satisfaction | Low (Textbook friction) | High (Gamification engagement) |
| Weighted Average Median | 86.31 % | 86.11% |

***3.6 Qualitative Impact Narrative***

The quantitative success is mirrored by the qualitative feedback collected via course surveys. This data analysis provides insight into *why* the transformation worked.

* + 1. *The Psychological Impact of "Free"*

The survey data confirms that the cost of the textbook was a major friction point. Students explicitly stated, *"I will not as the professor says its not required"* and *"I will not because I do not have the money to buy the book"*.

Interestingly, removing the cost did not devalue the material in the students' eyes. Instead, they viewed the faculty-authored notes as *more* valuable because they were tailored to the specific lectures. One student remarked, *"I pay to attend college. Why am I paying for a book."* This reflects a growing student demand for inclusive access models where course materials are part of the tuition value proposition.

*3.6.2 The "Gamification" Experience*

The feedback on the Excel Game was overwhelmingly positive, validating the pedagogical shift from passive reading and problem solving to active simulation. The following benefits were identified in student’s feedback.

*Theme 1: Confidence via Immediate Feedback*

The most cited benefit was the color-coding system.

* *"I liked that it would show you when you typed the correct answer by changing green."*
* *"I like the way the color changed if the answer was correct so I didn't have to second guess myself."*
* *"It was nice how it had checks along the way."*

*Theme 2: Cognitive Engagement*

Students recognized that the game forced them to think, rather than just copy answers.

* *"The Excel game provided me the ability to process the information in a backwards and forward manner, which helped conceptualize the material."*
* *"They helped me understand the concept more because I was able to work on it and think through how cash flow works."*

*Theme 3: Fun and Motivation*

Several students described the homework as "fun" or "game-like," terms rarely associated with construction finance.

* *"I actually enjoyed doing it, although it was time consuming."*
* *"It was a great practice/game, as it’s engaging and motivating even."*

These results align with broader research on gamification in accounting and finance, which suggests that game elements (points, visual feedback, "winning" a level) tap into intrinsic motivation, encouraging students to persist through difficult problems.

### *3.6.3 Qualitative Assessment: Instructional Design Review*

To ensure pedagogical rigor and technical quality, the course shell created in D2L Brightspace was subjected to a comprehensive formal review by Marcus Green, Instructional Designer at Kennesaw State University. The course was evaluated against a strict quality assurance rubric based on Quality Matters (QM) standards.

The review assessed the course across eight general standards, including Course Overview, Learning Objectives, Assessment, Instructional Materials, and Accessibility. The course shell received an exceptionally high approval score of 94/100, validating the quality and significance of the transformed course materials.Key highlights from the review included:

* Perfect Scores (3/3): Achieved in critical areas such as "Learning Objectives" (Standard 2) and "Assessment and Measurement" (Standard 3), confirming that the new OER materials were properly aligned with the course goals.
* Instructional Materials: The reviewer noted that "The instructional materials contribute to the achievement of the stated learning objectives," scoring 12/12 in Standard 4.
* Learner Support: The course received full marks (10/10) for facilitating learner access to institutional support services.

This external validation from an instructional design expert confirms that the transition to OER did not compromise the quality of the course design; rather, it maintained a high standard of excellence suitable for a core technical curriculum.

# 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.*

All sections of CM 3800 will access the OER content via the link shared with the ALG and embedded in the D2L. The textbook is recommended (only) and not required for all four sections of the course during Spring 2026.

* To ensure the longevity of these materials and their continued alignment with ACCE standards, the following sustainability plan has been established.
* Annual Audit: Dr. Juneja and Dr. Meadati will conduct a comprehensive review of all materials each summer. This annual review and update is critical for maintaining alignment with current regulations and ensuring high-quality content. The end-of-semester course evaluation feedback and data will also be utilized to inform improvements ensuring the content meets the evolving needs of students and industry stakeholders.
* Version Control Protocol: We will implement a strict version control system (e.g., "Module 2 - v2026.0") to ensure that outdated/not required information does not persist in the curriculum.

# Future Affordable Materials Plans

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

Encouraged by the positive results of this project, the team submitted a proposal for a Construction and Property Law Transformative Grant. Although this proposal was not funded due to budgetary limitations, we remain committed to the initiative and plan to refine the scope for resubmission in the upcoming cycle. Additionally, complex and challenging courses such as facility management finance, development finance are the best-case scenarios to incorporate OER.

Additionally, the project team plans to apply for a continuous improvement grant for CM 3800 to focus on refining the technological delivery of the course.

*Solving the "Mac vs. PC" Divide: A Low-Code/No-Code Approach*

To address the compatibility issues experienced by macOS users, we plan to simplify the technology stack by eliminating Visual Basic for Applications (VBA) macros from the practice files. Macros are the primary cause of security blocks and cross-platform errors on Mac devices.

* The "Native Excel" Strategy: Future iterations of the Excel game will be designed exclusively on standard Excel formulas. These features are native to the Open XML standard (.xlsx format) and function identically on Windows, macOS, Excel Online, and even iPadOS.
* Cloud-First Delivery: By removing macros, the files become compatible with Excel for the Web (Office 365 Online). This allows students to complete the assignments directly in their web browser without installing software or worrying about their operating system, ensuring 100% equity in access.

*Implementation of Randomization (The "Infinite Practice" Model)*

To prevent cheating and provide unlimited practice opportunities, we expect to introduce variable datasets using standard excel functions. This moves the assessment from static (everyone gets the same numbers) to dynamic (everyone gets a unique scenario).

# Future Scholarship Plans

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

The findings from this project contribute significantly to the body of knowledge on Construction Education.

# OER Repository: All the OER content is hosted on the faculty, Dr. Juneja's, webpage with the link shared globally via the ALG interface. This centralized hosting ensures open accessibility.

# Scholarship: The team plans to submit a manuscript to the International Journal of Construction Education and Research, focusing on "Gamification for engagement” and “Reducing DFW Rates through OER," leveraging the strong quantitative data collected during this project.

# Description of Photograph (optional)

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

*A person in a black jacket

AI-generated content may be incorrect.*

*Dr. Parminder Juneja (Principal Investigator)*

*Professor Construction Management Department*

*College of Architecture and Construction Management*

*Kennesaw State University*



*Dr. Pavan Meadati (Co-Principal Investigator)*

*Professor Construction Management Department*

*College of Architecture and Construction Management*

*Kennesaw State University*