Sharing Teaching Innovations Within the MSOM Community

June 2025

Professor Alp Sungu, University of Pennsylvania

01 Incentivizing original thought in student writing

When students have easy access to advanced AI tools like ChatGPT, it becomes increasingly difficult to motivate them to write assignments in their own words. One practical approach recently tested in MBA classrooms is to assign an originality score to each essay, calculated as the cosine dissimilarity between the student's submission and a ChatGPT-generated response to the same prompt. The greater the dissimilarity, the higher the originality score. Students then receive bonus points for producing work that is more distinct from the AI's output.

This method creates a clear, quantifiable incentive for students to move beyond AI-generated templates and produce more unique work. Field tests suggest it leads to longer essays with deeper analysis and more creative argumentation. Importantly, it doesn't ban AI use outright, but rewards students for demonstrating their own voice and ideas.

A related extension to this approach asks students to compare their essay with ChatGPT's version and briefly reflect on the differences. This not only reinforces the originality incentive but also helps students become more aware of what AI typically produces and how their own thinking adds value.

Professor Thunyarat Amornpetchkul, Santa Clara University

02 Enhancing Student Engagement in Statistics and Data Analysis through Interactive Activities

In my Statistics and Data Analysis class, I incorporate hands-on and interactive activities to make abstract concepts more engaging and accessible. Below are three teaching innovations that have helped improve student participation and understanding.

1. **Discrete Probability Distributions – Hands-on Simulation**
   To reinforce the concepts of Binomial, Poisson, and Hypergeometric Distributions, students work in small groups with a bag of simple items: a coin, a die, and a small box containing 10 pom-poms of two colors (7 of one

color, 3 of another). Each group uses these items to design and simulate probability-based events. For example:

- Binomial Distribution:
    - For Binom.dist(2, 5, 0.5, 0), a student group may use a fair coin (equal probability of heads/tails) to simulate an event where "heads" is a success, tossing the coin 5 times, and recording cases where exactly 2 heads occur.
    - For Binom.dist(4, 10, 1/3, 1), a die can be used where rolling a 1 or 2 is considered a success. A student group can simulate this probability by rolling the die 10 times and determining the likelihood that a 1 or 2 appears at most 4 times.
- Hypergeometric Distribution:
    - For Hypgeom.dist(1, 5, 3, 10, 1), students can use the pom-poms, defining the color with 3 pom-poms as a success. To simulate this probability, they randomly draw 5 pom-poms from a box containing 10 in total and determine the likelihood that at most 1 of the drawn pom-poms is of the 'success' color.
- Poisson Distribution:
    - A student group can model student arrivals to a classroom, assuming an average arrival rate of 2 students per minute ($\lambda = 2$). They then calculate Poisson.dist(15, 20, 1), which represents the probability that at most 15 students arrive within a 10-minute span.
- By designing and running these simulations, students gain an intuitive understanding of discrete probability distributions beyond theoretical formulas.

2. **Class Survey for Conditional Probability**

To make conditional probability more relatable, I conduct a short class survey where students answer questions such as:

- Do you own a car?
- How often do you dine out per week? (≤1, 2–3, or >3 times)

I compile the responses into a contingency table and guide students through key probability questions, such as:

- If a randomly selected student owns a car, what is the probability they dine out more than 3 times per week?
- If a student does not own a car, what is the probability they dine out more than 3 times per week?
- If a student dines out at least twice per week, what is the probability they own a car?
- Are the events "Own a car" and "Dine out at least twice per week" independent?

This data collection and analysis exercise helps students connect probability concepts to real-world insights, making statistical analysis more

engaging. Students feel more invested in the learning process as they actively contribute to the dataset.

3. **Gamified Learning with Kahoot!**
   At the end of each topic, I reinforce key concepts through a Kahoot! game in competition mode – designed purely for fun and engagement, without affecting students' grades. Each quiz consists of 4–6 short questions, with a 30–60 second time limit per question. Examples include:
   - Recognizing definitions of descriptive statistical measures
   - Identifying the appropriate probability distribution for a given scenario
   - Solving simple probability problems

   The top three students receive small prizes (e.g., treats), fostering a stress-free, interactive learning experience that enhances engagement and reinforces key concepts.

These activities encourage active learning and engagement while reinforcing statistical concepts through hands-on exploration. They can be easily adapted by other instructors in the MSOM community to enhance student participation in courses involving probability and data analysis.

More information: If you're interested in learning more, please feel free to reach out to me at tamornpetchkul@scu.edu.

Professor Ryan Buell, Harvard Business School

03 Using the Classroom as a Laboratory for Learning

Operations management scholars are charged with identifying relevant questions, answering them rigorously, and telling the world what we learned. Yet, as the pace of change accelerates, the incentives in our field and the constraints of the peer-reviewed publication process have contributed to a widening gap between the topics we study and the insights that matter most to practicing managers. These dynamics have diminished the impact of scholars in our field and threaten the viability of our profession. Around the world, rates of taking the GMAT are down 58% since 2016, selectivity is falling in top programs, and industry placements for graduates are in decline, as prospective students and recruiters alike are questioning whether it's worth it to attend business school.

As scholars who are also teachers, we have a relatively untapped resource at our disposal – the classroom – that can help us reverse these trends. Traditionally, our tendency has been to use the classroom to disseminate knowledge, but I believe a more productive use of the classroom, for both teachers and learners, is to use it as a laboratory for the exchange of knowledge.

As business schools, aspiring and practicing managers come to our campuses to acquire new skills that they can take back out into the world, but they also bring with them experiences, judgements, and perspectives that can be used to simultaneously enhance our teaching effectiveness while accelerating our research progress, if we structure our sessions with them properly. As scholars and teachers we bring a great deal to these interactions, but we can also leverage these interactions to learn how our ideas apply in practice, where there might be boundary

conditions for the effects we've observed in our research, and what related questions are of paramount relevance in a rapidly changing world. Moreover, we can leverage the "supercomputer" of minds in the classroom to rapidly identify hypotheses we can test and even to identify willing partners for field research. If done correctly, we can create the conditions where every student who comes to our schools teaches in our schools, and along the way, we can enhance the impact of our teaching and research.

More information: The core framework underlying this presentation is Robert Kaplan's Innovation Action Research Cycle (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=124388), but adapted with additional insights and data.

Professor Anita Carson, Boston University

04 Reimagining the undergraduate business major and OM's role in it

I spearheaded an effort at Boston University to re-engineer the undergraduate business major. Part of this involved benchmarking which courses were required and when (academic year and semester) these required courses were taken at 15 different schools that have UG business majors. I also benchmarked the types of signature experiences offered by the undergraduate programs. A major component was getting faculty on board with a major change in our curriculum (the first in 30 years). I would love to share these benchmarking results to spark an open discussion based on these benchmarking results to discuss the state of the undergraduate operations management/ supply chain management major with other OM educators throughout the world.

More information: We were written up in Poets and Quants for the effort. https://poetsandquantsforundergrads.com/news/inside-the-redesign-of-boston-universitys-undergraduate-business-program/

Alyssa Columbus, PhD student in the Department of Biostatistics at John Hopkins University

05 Interactive Statistical Thinking for Operations Management

In teaching statistical and data science concepts within Operations Management, I've developed an interactive, inquiry-driven approach that engages students by linking theory directly to practice. Recognizing students' common struggle with abstract statistical reasoning, I carefully structured my teaching around authentic operational scenarios to enable students to actively explore the tangible implications of analytical decisions.

One key innovation was the introduction of interactive live coding sessions using R and Python, specifically designed around realistic datasets drawn from operations contexts such as inventory management, supply chain logistics, and demand forecasting. By collaboratively building models in real-time, students observed firsthand how analytic choices - like variable selection, handling of missing data, or model assumptions - materially affected operational insights and strategic recommendations.

To reinforce and deepen this engagement, I created customized simulations and case studies reflecting genuine operational challenges. These included predictive modeling exercises for supply chain disruption scenarios, queueing analyses for service optimization, and inventory forecasting exercises enhanced by real-time interactive visualizations. Students not only learned statistical methodologies but also how to apply critical analytic thinking to operational decisions.

Additionally, to elevate personalized student learning, I incorporated AI-driven assessment tools that provided immediate, customized feedback on students' analytical processes and interpretations. These tools enabled more nuanced guidance than traditional assessments and fostered a richer, iterative learning experience where students could continuously refine their analytic skills.

The outcomes of these innovations have been exceptionally positive, consistently earning excellent ratings from over 90 students. Students particularly valued the direct connection to operational realities, the immediate applicability of skills learned, and the supportive yet challenging learning environment.

Other educators within the MSOM community can readily adopt these interactive live coding sessions, operational case studies, and AI-enhanced feedback tools. By embedding statistical thinking directly into operational contexts through hands-on engagement and personalized feedback, educators can significantly enhance student comprehension, analytical capabilities, and appreciation for the practical value of statistical insights in Operations Management.

Professor Anna Saez de Tejada Cuenca, IESE Business School

06

CASE: Jeanologia: Scaling Sustainable Jeans

Jeanologia, a Spanish technology pioneer, has spent three decades radically reimagining the denim finishing process. By developing eco-friendly solutions—from laser marking and ozone washing to nanobubble and water-recycling systems—the firm has helped global brands and vendors produce jeans with far less water, fewer chemicals, and reduced labor risks. Already adopted for roughly one in every four jeans worldwide, Jeanologia's innovations have saved millions of liters of water and slashed hazardous waste.

Yet CEO Enrique Silla's latest venture, the "Urban Factory" concept, has not caught on as hoped. This model fuses all of Jeanologia's advanced tools into a semi-automated facility that promises almost zero waste, dramatically shorter lead times, and on-demand production. In theory, brands can reduce both inventory risks and environmental harm by finishing jeans close to the point of sale. Despite its evident efficiency and sustainability advantages, the Urban Factory has struggled to gain traction in an industry deeply attached to long-established supply chains and outsourcing practices.

This case places students in Silla's shoes as he debates how best to overcome resistance from brands, vendors, and entrepreneurs who worry about higher costs, uncertain returns, and operational disruptions. The case discussion includes discussing overproduction in the fashion industry and the postponement model as a way to drastically curtail overproduction and reduce inventory levels (as an application of the inventory formulas that they have learned in a core OM course). The discussion's centerpiece is how too coordinate the different stakeholders in a

value chain to achieve an environmentally positive objective when each one has different incentives, goals, and constraints.

More information: https://www.iesepublishing.com/jeanologia-scaling-sustainable-jeans-english.html

Professor Mohammad Dehghani, Northeastern University

07 Integrating Generative AI for Solving Operations Research Problems

In my Applied GenAI course for MSOM, students develop GenAI-assisted solutions for key OR problems.

1. Beer Game Model: GenAI tracks demand/shipping and suggests order quantities, allowing students to compare AI-driven vs. manual decisions.
2. Scheduling: Students learn to formulate and solve optimization problems with GenAI, enhancing real-world scheduling strategies.
3. SinGPT: A GenAI block in simulation analyzes system status in real-time, aiding decisions on dispatching, event analysis, and insights.

More information: I can share those via github that everybody can access and use

Professor Emily Zhu Fainman, Texas State University

08 Innovative Teaching with A Real-World Case Study in Business Analytics

I incorporate hands-on case studies to enhance student engagement and learning in Business Analytics courses. Specifically, I use a case study of Airbnb listings in Austin, leveraging data to support all three levels of analytics: descriptive (data visualization, missing values, text mining of reviews), predictive (regional clustering, time-series demand forecasting, price estimation), and prescriptive (profitable Airbnb operations). This approach allows students to translate data-driven insights into actionable business strategies.

Craig Fernandes, PhD Candidate, Operations Research at University of Toronto

09 Case Study: Using End-to-End Analytics to Construct Lineups in Wheelchair Rugby

We developed a case study on wheelchair rugby (WCR) that integrates descriptive, predictive, and prescriptive analytics using real data and insights from Canada's Olympic team coach and sport scientists. The case, which has been implemented nearly a dozen times, is published in INFORMS Transactions on Education and won first place in the INFORMS Case Competition.

A central theme is evaluating player value and constructing optimal lineups to maximize win probability, key challenges in sports analytics. Students apply exploratory data analysis and statistical modeling to assess player value, followed by mathematical optimization to select lineups. This end-to-end approach builds practical skills for solving complex real-world problems.

The hypothetical client is Canada's WCR coach, who seeks data-driven lineup strategies. A distinctive feature of WCR is a knapsack-style constraint: each player has a physical rating, and the total on-court rating must remain below a fixed threshold, adding a real-world constraint not often seen in other team sports.

The case includes: (i) Exploratory data analysis and visualization, (ii) Regression modeling, (iii) Linear and mixed-integer optimization, including piecewise-linear objectives, (iv) A comprehensive Python notebook (fully solved or skeleton version), and (v) 25 structured questions covering the full analytics pipeline.

It is adaptable for undergraduate courses in applied analytics or operations research, as well as MBA classrooms, with dedicated teaching plans for each. Survey feedback highlights strong student and instructor engagement. Students report gaining a deeper understanding of the predict-then-optimize framework and the distinctions between different types of analytics. As one student shared: "I honestly love analytics & sports, and I loved this case because it helped me explore more about analytics in sports. It was also pretty challenging, which made it very exciting to solve."

More information: https://doi.org/10.1287/ited.2023.0282ca.
Moreover, a ORMS Today blogpost covers the case here:
https://pubsonline.informs.org/do/10.1287/orms.2023.02.03/full/

Professor Daniel Guetta, Columbia Business School

10 Teaching market design and the deferred acceptance algorithm using an in-class game

We created an interactive game designed to teach the fundamentals of market design to a broad range of audiences. The gameplay is simple - students split into teams, and within each team, students are assigned to either be a company with one slot to fill and preferences over candidates, or a candidate looking for a job with preferences over companies. The game is live and interactive, allowing students to roam the room and try to "convince" others to accept or make an offer.

In a first round, the market is allowed to unfold without centralized planning, and then in a second round, it is allowed to unfold with centralized planning. The game then provides the instructor with a control panel that summarizes the outcomes of both rounds, and allows a lively discussion of the differences between the two rounds.

The game has several pedagogical aims:

- Introduce the concept of market design and of efficient markets
- Demonstrate the complex dynamics of matching markets
- Discuss what a "good" outcome is in a matching market, and the inherent tradeoffs involved in balancing various "good" outcomes, with a specific focus on stability
- Demonstrate the deferred acceptance algorithm (invented and popularized by David Gale, Alvin Roth, Lloyd Shapley) and its benefits

- Provide a dynamic, live, in-person exercise to illustrate the underlying principles

The game has thus far successfully been used at Columbia, Yale, and UCLA, and we would be happy to share the game, our slides, and relevant teaching notes with others.

More info: https://daniel.guetta.com/job_market_game

Professor Ming Hu, Rotman School of Management, University of Toronto

11 A Case on Potty Parity: Stadium Restroom Design

We use a case with a DEI angle and an Excel-based macro to teach queueing concepts and service operations management. The case won 2024 INFORMS Case Competition. In view of the long wait times for women and the lack of accessibility for LGBTQ+ individuals when they use restrooms, this case provides a set of analytical tools to evaluate wait time disparity among users for different restroom configurations. In this case, a stadium manager who faces complaints about excessive restroom wait times aims to retrofit the restroom layout to improve both efficiency, measured in terms of wait time, and fairness, measured in terms of totalitarian and Rawlsian scores. Given that customers have diverse preferences over the use of restroom types, in three modules, students learn to (i) evaluate queuing parameters for a mix of heterogeneous populations, (ii) evaluate queuing metrics for various restroom layouts and discuss their wait time disparities, and (iii) evaluate and discuss the fairness of access to restroom facilities from a diversity, equity, and inclusion (DEI) perspective. By completing this case, students gain an understanding of service systems, learn about process flexibility concepts, and become familiar with DEI concepts and measures. The primary objectives of the case for students are to understand the trade-offs between efficiency and fairness, develop an understanding of multiobjective problems, and improve their skills in employing queuing concepts and tools.

More information: https://pubsonline.informs.org/doi/10.1287/ited.2023.0051ca

Professor Bora Keskin, Duke University Fuqua School of Business

12 AI Integration in Supply Chain Education

As a supply chain educator with expertise in emerging technologies and data-driven methods, I redesigned my MBA elective “Value Chain Innovation” to demonstrate how generative AI can transform managerial judgment and decision making. I encouraged my students to employ AI tools while preparing for class and completing assignments, and I asked them to critique AI model outputs and explain where they agreed or disagreed.

My key pedagogical innovations in the class are as follows.

1. AI-versus-traditional analytics competitions: To complement case discussions, I designed competitive in-class data exercises solved in teams. Half the teams used AI tools, while others relied on traditional analytics tools such as Excel. After completing each exercise, we compared the quality and speed of solutions as well as the resulting insights. These comparisons sparked lively debates

about the trade-offs in each approach. Students reported that this head-to-head format was both “fun” and “eye-opening.”

2. Generative-AI coaching and prompt refinement: In some sessions, we focused on prompt engineering. In particular, we demonstrated and discussed how minor wording tweaks can push a large language model toward opposite yes-or-no recommendations. I used these examples to reinforce the importance of precision and critical thinking in supply chain management.
3. Research-teaching integration through AI: Generative AI can also enable bringing cutting-edge research topics into the classroom. In one session, I covered my recent “Blockchain Newsvendor” paper by running live regression analyses and simulating the performance of alternative strategies. Only a few years ago, it would have been practically impossible to complete these workflows within a single class session.
4. Oral evaluations to probe depth of understanding: Because students can consult AI on any take-home work, I shifted a larger share of assessment to oral discussions. For example, in the final project presentations in my class, brief and targeted questions quickly revealed whether teams had thought critically about their analyses rather than deferring to an AI model.
5. AI applications in practice: Beyond deploying AI inside the classroom, we also spotlighted real-world uses of the technology. We devoted a class to the use of AI and computer vision in recycling operations and circular supply chains. After analyzing contamination rates and recovered volumes across material types, students proposed data-driven improvement strategies—linking classroom analytics directly to emerging industry practice.

These changes not only raised engagement and course evaluations but also helped students view AI as a disciplined decision-support partner, not an infallible oracle. I will continue to refine the aforementioned innovations in order to achieve more comprehensive AI integration in OM education that maintains rigorous learning outcomes while embracing technological change.

Professor Michael Klein, San Jose State University

13 Disaster Response Game

Effective disaster response requires time-critical decisions to get personnel and supplies to the right places as quickly as possible. Such operations are complicated by the need for coordination among multiple stakeholders. We developed a serious online game for humanitarian logistics courses. Our development effort includes the creation of a flexible digital platform for delivering game-style simulations for undergraduate and graduate education and for response training within large enterprises. The system has instructional design interfaces for creating a wide range of disaster scenarios including, but not limited to, earthquakes, floods, pandemics, storms, and wildfires.

Klein MG, Jackson PL, Mazereeuw M (2022). Teaching humanitarian logistics with the Disaster Response Game. Decision Sciences Journal of Innovative Education, 20, 158–169, DOI: 10.1111/dsji.12261.Pricing/Analytic: Competitive Pricing Game, 2-sided Platform Game, News Vendor (P,Q)*

More information: https://www.disastergame.net/

Professor Daniela Hurtado-Lange, Northwestern University

14 AI Cases: From Long PDFs to Interactive AI Conversations

MBA teaching is empowered by case studies, where the students read an extensive description of a realistic scenario and use the knowledge acquired in class to propose a solution. These traditional case studies are carefully constructed to include extensive contextual information, accommodating the diverse backgrounds of MBA students and guiding their problem-solving process. However, AI tools have modified the students' behavior. They frequently load the case files to an AI platform, ask for a summary of the situation, and even for the solution to the key questions. Hence, the pedagogical activity is undermined.

We propose a transformation of the case method: AI cases. Instead of asking the students to read a long description, we created AI personas representing key stakeholders. Similarly to a traditional case, each stakeholder has a unique perspective on the problem and acceptable solution. The stakeholders may also grant access to supplemental materials (such as data, images, and videos).

The key difference between traditional and AI cases is how the students learn about the scenario. In AI cases, "talking" to the stakeholders is the only way to obtain information. Besides making the process of finding out information more interactive, AI cases accommodate more students' needs. For example, the students might explore the case in different languages or ask questions about what is considered general knowledge for some cultures. They can even discuss potential solutions.

The reception of AI cases with MBA students has been phenomenal. The grader of the reports submitted by the students was deeply impressed by their performance in this case. He highlighted the quality of their proposed solutions and the depth of the analysis regarding implementation and potential challenges. We also collected data about the students' experience via anonymous surveys, and the results are impressive. They acknowledge that they worked more hours in the AI case than in traditional cases, but they liked it better. Their favorite aspects are the interactivity, the ability to ask questions 24/7, and the realism of the experience. Many MBA students have experience in consulting or are looking to work in this environment, so they loved the idea of finding information by interviewing key stakeholders. The students also enjoyed thinking critically about the situation and organizing their thoughts to plan helpful questions.

On top of all the benefits for students, AI cases are instructor-friendly. Creating an AI case is accessible to most educators using tools such as Custom GPTs for each stakeholder. Stakeholders are programmed via prompts that specify the scenario, access to supplemental material (such as data and images), personality, and relationship with other stakeholders. While the setup has a fixed cost to creating an AI case, the returns in student learning and engagement far outweigh the investment.

Professor Kyle Maclean, Ivey Business School - Western University

15 **Using Supreme Court Cases to Teach Statistics: Students for Fair Admissions v Harvard.**

Along with a co-author I have written a case study of a landmark supreme court case: "Students for Fair Admissions v Harvard". The case focuses on how two experts with competing models came to wildly different conclusions: one found that Harvard discriminated against Asian Americans, and the other found there was no discrimination. The case allows for a rich discussion of the "art" of modelling, including p-hacking, the definition of interaction variables, when to include independent variables, and if data should be filtered for certain things. This is all done in the high profile context of this case. In my experience, using this case in class is highly memorable for students and brings a real world context to statistical modelling.

More information: https://www.iveypublishing.ca/s/product/students-for-fair-admissions-v-harvard-statistics-in-the-courtroom/01tOF000004WVrBYAW

Tan Hong Ming, Senior Lecturer, Department of Analytics and Operations at National University of Singapore

16 **Designing AI-Resistant Assessments in Predictive Analytics**

In my course DBA3803 Predictive Analytics in Business, I allowed my students access to LLMs during a final in-class quiz. I reframed this as a challenge and opportunity to design assessments that could withstand AI assistance by emphasizing critical thinking, contextual understanding, and mathematical reasoning.

Objectives and Innovation

The key objective was to foster critical thinking, real-world problem-solving, and adaptability in students navigating a GenAI-enabled world. Rather than banning AI tools, I allowed their use and deliberately designed questions that LLMs alone could not answer effectively. The innovation lies not in blocking technology, but in raising the cognitive demand of assessments beyond what GenAI can handle.

Implementation Strategy

1. Visual and Analytical Question Design: I embedded visual elements such as figures and graphs requiring interpretation (e.g., counting objects, inferring parameters), which are notoriously difficult for LLMs to parse. These required genuine comprehension and analytical reasoning—skills students must develop for real-world applications.
2. Contextual and Class-Specific Knowledge: Questions were constructed around discussions unique to our classroom context. For instance, I included standard definitions of inference from sources like Google Cloud and asked students to contrast these with our course-taught interpretations. Since LLMs lacked access to our class nuances, students needed to recall and apply specific course content.
3. Layered Complexity and Application: Several questions were multi-dimensional—combining mathematical, contextual, and visual reasoning.

One example involved evaluating model performance with insufficient data, prompting students to critically assess when they had enough information to make a decision. The correct answer ("I can't decide") was selected by only 37%, demonstrating the challenge and efficacy of such design.

4. Mathematical Reasoning: Interpretation of hyperparameters, calculation from charts, and data analysis were used to ensure students engaged with numerical reasoning—a known weak spot for LLMs without the context of course-taught frameworks.

Impact and Lessons for MSOM Educators

This approach empowered students to use GenAI responsibly while relying on their own conceptual understanding and critical thinking. Educators in the MSOM community can adapt this framework by:

- Embedding visual and mathematical elements that LLMs struggle to interpret correctly.
- Designing questions that reference in-class discourse or use non-standard applications of definitions.
- Building multi-layered scenarios requiring students to synthesize different types of knowledge.
- Encouraging ambiguity and open-ended responses where the "correct" answer depends on reasoning, not recall.

By embracing GenAI as part of the learning environment—rather than resisting it—educators can raise the bar on assessment design and better prepare students for the challenges of AI-infused decision-making in business operations.

Abel Sapirstein, PhD Student in Operations Research at Georgia Institute of Technology

17 Expanding Research Access: Piloting a Course-Based Undergraduate Research Experience in the OR Classroom

Background

Undergraduate research experiences (URE) have often been structured as an apprenticeship wherein an undergraduate student is involved in a faculty-led research group and receives mentoring from the faculty member or a graduate student within the group. This style of URE limits the number of undergraduate students who can access research.

Teaching Innovation

We developed and piloted a course-based undergraduate research experience (CURE) in an undergraduate introductory statistics course taken by non-industrial engineering majors. A CURE is a learning experience in which "whole classes of students address a research question or problem with unknown outcomes or solutions that are of interest to external stakeholders." Our hypothesis was that exposing students to industrial engineering/operations research (IE/OR) through a CURE may influence their likelihood of pursuing a career or graduate school in an IE/OR-related field.

CURE Design

Our CURE consisted of 3 in-person lectures, 2 intermediate assignments, a final report, and a final presentation. During the first lecture, we introduced the research questions that the students would be exploring: “Which locations (among a set of candidate locations) should we select to expand a service of interest for a geographic region? How do these decisions impact different populations of interest?” We provided an example research question and walked the students through how to collect spatial data that would be needed to answer these questions. Our example research question was: “Which places of worship should we select to include food pantries for metro Atlanta? How do these decisions impact women of childbearing age?”

We then grouped students in threes and, providing a template, asked them to define a research question of interest to their group related to access. For example, one group’s question was: “Where should we replace parking lots with community gardens to increase access for elderly populations?” Then, students used the resources we developed (web scrapers, databases, etc.) to gather the data needed to answer their research questions. We built auto graders that students could use to help debug and clean their data, which reduced the amount of data wrangling performed by students.

With their problem-specific data in hand, students identified baseline access levels and chose two context-appropriate models from a portfolio of provided optimization models. Then they solved selected optimization models resulting in several different expansion policies that would help improve access to their service of interest. We asked students to explore how their expansion plan might impact different stakeholders and how it could vary under various objective functions. Finally, students wrote an executive summary to communicate their findings to relevant stakeholders and presented findings to their peers.

Evaluation

This CURE was piloted in Spring 2025. Many of its components could be in part or whole by other educators. With IRB approval, we are conducting pre-course and post-course surveys for both the CURE and non-CURE sections of this course. We are optimistic that these survey results will allow us to quantify how our CURE impacts student attitudes toward optimization and student education outcomes.

More information: We are eager to share course materials and will soon have a website with our materials and example projects. Until then, please reach out to Abel Sapirstein (asapirstein3@gatech.edu) for materials or to learn more!

Professor Abraham (Avi) Seidmann, Boston University, Questrom Business School

18 Analytical OM Classroom Games (FREE)

Incorporating challenging Analytical OM Classroom Games into our curriculum and executive training is not just beneficial; it's transformative. Our platform, www.TradewindBusiness.com, serves as a crucial “Bridge to Reality” and is completely free to use.

We proudly offer eight exhilarating and highly competitive games designed for seamless integration into any lecture. Student teams engage in dynamic competitions within carefully controlled environments that mirror real-world market competition. Each game is rooted in the latest principles of Operations Research, Operations Management, Artificial Intelligence, and Economics, ensuring they are straightforward to set up and utilize. These thought-provoking games ignite student engagement by vividly demonstrating the dynamic nature of operations management.

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Here's our lineup of powerful games: the News Vendor Game, the (P, Q) News Vendor Game, the AI/News Vendor Game, the Fishing Game (focused on capacity competition and Cournot pricing), the Beer Supply Game (featuring several instructor-controlled ERP information policies along the supply chain), the popular Two-Sided Platform Game, the Competitive Pricing Game (exploring Bertrand Competition), and the Stock Trading Game.

Don't miss out on the opportunity to elevate your classroom and executive training with our Analytical Classroom Games. Embrace the change; revolutionize your approach to teaching operations management today!

More information: Simply register as a Professor at: https://www.tradewindbusiness.com/

Professor Jordan Tong, University of Wisconsin-Madison

19 Tong Lego Challenge

The Tong Lego Challenge (TLC) is a simple constrained integer program turned into a game that you can play in a classroom with Legos. It is designed to introduce optimization concepts and definitions in an engaging and memorable way. I do it in about 60-75 minutes, but it could be adapted to be shorter or longer.

In each round of the game, your team acts as a boutique woodworking company who must decide which items to build and sell to the market. The goal is to decide how many of each type of item to build to maximize profits and beat other teams, where you are constrained by how many component pieces you have available. The learning objectives are to: (1) Help students conceptualize optimization model components and definitions. (2) Motivate the value of learning how to build optimization models.

I created the TLC after a few years of teaching my "Prescriptive Modeling and Optimization" course to (primarily) masters of business analytics students. A few trends and observations motivated me to do so:

1. GenAI. The development of GenAI reduces the importance of knowing the details of how to code and debug. At the same time, it increases the importance of being able to more deeply understand and communicate at a more conceptual level the optimization model you want programmed or analysis you want performed.

2. Memorable Foundation. I wanted something memorable to be able to refer to as common knowledge whenever students had trouble remembering or conceptualizing definitions (e.g., objective, decision variables, and constraints) or other optimization-related concepts.
3. Engagement. I needed something more light-hearted and engaging following an exam to introduce the optimization module. I also wanted more yelling in my class; a surefire way to get engagement, in my opinion :).

More Information: I've made all materials and a teaching note available for free via my website [https://www.jordan-tong.com/tlc]. I only ask that you send me a photo of your group playing if you use it! :)

Professor Alan Scheller-Wolf, Tepper

20 Sustainable Operations Class

I have a few that may be of use:

1. I have developed a course in Sustainable Operations for the undergraduates and MBAs, in which we combine high-level arguments about the merits and drawbacks of proposed sustainability actions as well as analytical tools to evaluate them from the profit and sustainability perspectives. A lot of our discussion centers on who should pay for sustainability (and why), as this is a central question for a business school audience (and society at large). This can bring in taxes, subsidies, negative externalities, tariffs, etc.
2. The course uses a number of cases -- one of which I really like is Sian Flowers (HBS) -- this is a nice combination of SCM and sustainability.
3. The students present a sustainability project at the end of the term. This enables them to do creative work (and yes, leverage AI as they want), and also provides nice variety to the class. Evaluating work overall in the age of AI is, in general, a problem I have not solved.

More Information: Contact me -- I am happy to share materials!

Professor Yao Zhao, Rutgers University

21 Hunger Chain: A competitive simulation for teaching SCM

The Newsvendor model and shortage gaming (panic orders, hoarding, and the Prisoners' Dilemma) are important and timely topics in the operations management curricula especially after the COVID-19 pandemic. They are hard to lecture but easy to play out. The Hunger Chain simulation (aka Hunger Games) provides an action-based competitive online simulation for instructors to engage the students in the experiential learning of these topics, making instruction and learning fun and effective for both online and on-campus classes.

Through the simulation, students learn by doing (1) shortage gaming (panic order, hoarding) and the value of information (2) supply rationing for efficiency and fairness (3) supply chain competition (and the Prisoners' Dilemma) (4) decision making under uncertainty – the Newsvendor model.

Hunger Chain simulation is unique because it lets students compete for limited supply, thus one student's action may affect other students' pay-off (if I get more, then you will get less). This competitive mindset is largely missing from the main-stream operations management curricula because students are taught mostly how to optimize internal operations without paying attention to external competitive environment.

Hunger Chain won multiple awards, such as 2021 Decision Sciences Journal of Innovation Education (DSJIE) Best Teaching Brief awards, Finalist – 2019 DSI Instructional Innovation Award. As of March 4th 2025, nearly 1000 games are played by 3000 students teams under the guidance of 130 instructors from around the world. Most instructors reported "students love the games" and the game boosted their teaching evaluations.

Hunger Chain simulation is an one-page web application, easy to operate by both instructors and students.

More Information: https://yzhao12345.github.io/#hunger