



Research & Grants Expo

Venue: Elaine Boyd Library

April 8, 2026

9:00-12:00

Research Participants

Researcher (Department)	Researcher (Department)
Agnieszka Shepard (Management)	Judit Trunkos (Social Sciences)
Albena Ivanova (Management)	Kihyun Park (Management)
Anastasia Tzoumaka (Engineering)	Kristen Lutz (RISE Center)
Ann D. Summerall-Jabro (Communication & Organizational Leadership)	Manik Bansal (Engineering)
Anthony Moretti (Communication & Organizational Leadership)	Nicole Szalla (Nursing)
Anu Tripathi (Engineering)	Noory Etezady (Computer and Information Systems)
Armand Buzzelli (Sport Management)	Ping Wang (Computer and Information Systems)
Barbara Burgess-Lefebvre (English and Media Arts)	Qin Yang (Management)
Ben Campbell (Engineering)	Richard J. Mills Jr. (English and Media Arts)
Gabriel Moreno (Marketing)	Samantha Gibson (Marketing)
Gavin Buxton (Science)	Sangho Shim (Engineering)
Hongguo Wei (Management)	Sarajane Hill (Engineering)
Jasmin Lin (Management)	Showren Datta (Engineering)
Jennifer Tepe (Education)	Sun-A Park (Communication & Organizational Leadership)
Jérôme Rutinowski (Rooney Scholar)	Won Joo (Engineering)
Jianyu Ma (Finance)	Zhou Yang (Social Sciences)
John C. Stewart (Computer and Information Systems)	

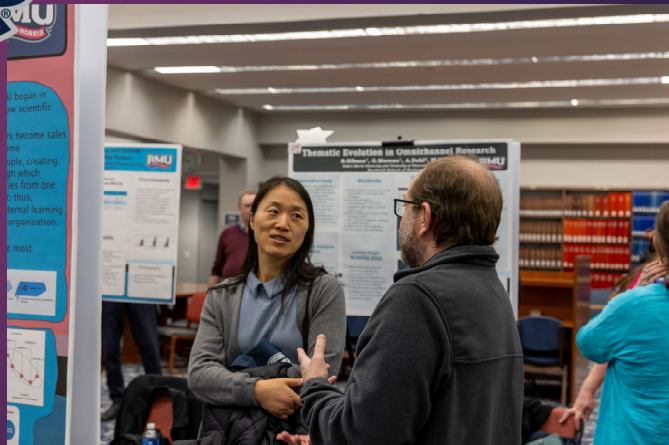
Research & Grants Expo 2026



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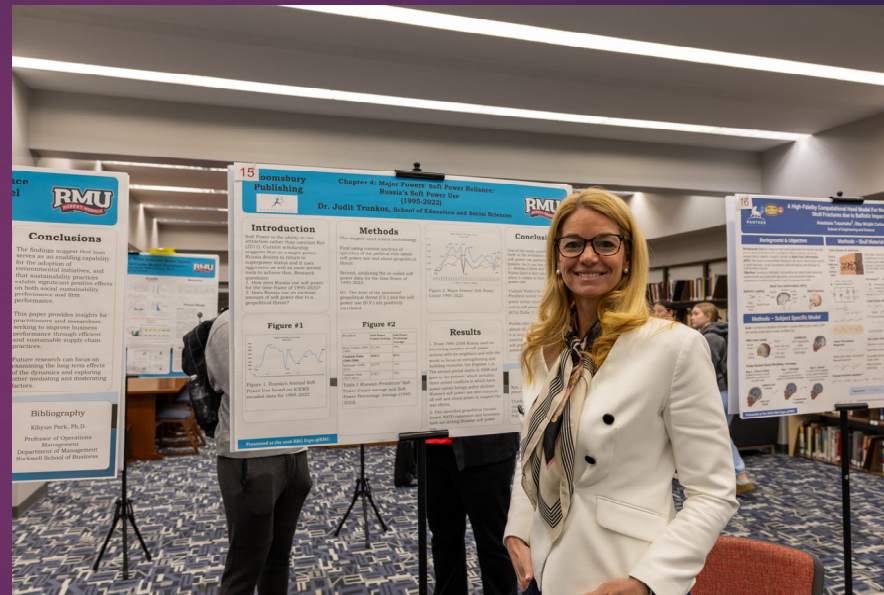
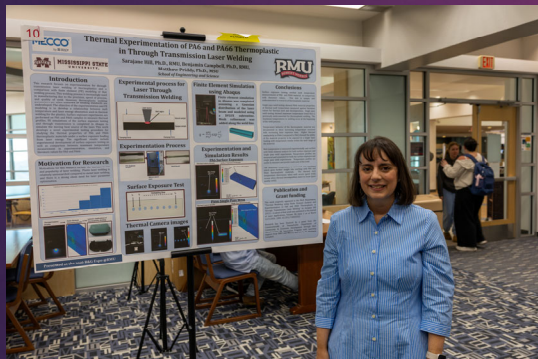


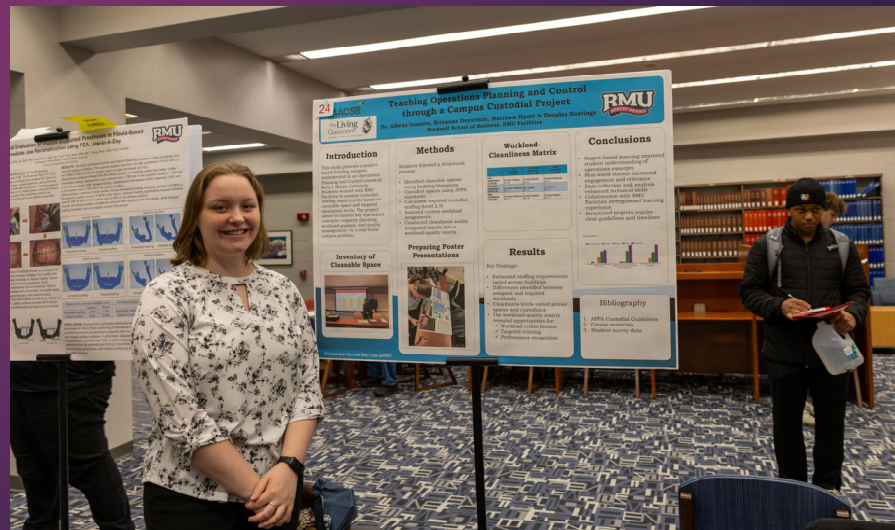


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Research Posters from RMU Schools

Disability Access in Practice

...or Whose Line is It Anyway?

Barbara Burgess-Lefebvre, MFA



Until April of 2024, Walt Disney World and Disneyland had a remarkable disability access pass for both children and adults with a variety of disability access needs. Disney's approach to these requests seemed to be that if a guest needed help, that help would be provided. This resulted in positive guest response from the disability community as well as concerns that the process could be abused. When the number of guests utilizing the DAS (disability access service) pass increased, either due to a greater number of guests identifying as disabled or due to bad actors, the parks adjusted the criteria that they would use to determine eligibility for the pass.

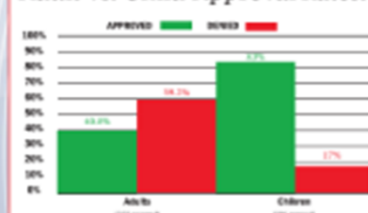
In April 2024 the parks messaging changed to make the DAS pass only available to guests "who, due to a developmental disability like autism or similar are unable to wait in a conventional queue for an extended period of time." (<https://disneyworld.disney.go.com/guest-services/disability-access-service/>) Guests increasingly were denied the pass, even when they seemed to qualify for it. Increasing anxiety and concern surrounding the mere act of applying for the pass were researched and published in popular media.

(<https://www.usatoday.com/story/travel/experience/theme-parks/2024/11/22/disney-das-study-new-policies-impact/76454462007/>)

While stories of egregious rejections abound, this research aims to quantify exactly how many applicants are being approved.

- Initial data analysis shows that the percentage of children being approved is more than twice that of adults.
- Month to month comparisons seem to show no ongoing change in the percentage of people that are viewed as qualifying for the pass.
- A guest identifying themselves as having autism alhuyso doesn't seem to affect the approval/disapproval rate, even if the company maintains that those are the guests for whom the pass is currently designed.
- Guests traveling on a 14-day UK ticket are being approved for DAS at a greater percentage than those guests traveling from points in the US on shorter stays, while guests with annual passes are denied far more frequently than other groups.

Adult vs. Child Approval Rates:



Approval Rates by Month



Approval Rates by Type of Tickets:



Guest who disclosed neurodivergent or developmental issues or who gave symptoms consistent with them:



School of Communication and Media

Noise Pollution from AI Data Centers

Gavin A. Buxton

Science Department, School of Engineering and Science



Abstract

Using a FDTD model of sound propagation over uneven terrain the intensity of sound in neighborhoods in proximity to a data center are predicted. The terrain surround the site of the Bruce Mansfield power plant is obtained from PAMAP GIS data and the noise pollution from the proposed AI data center and associated natural gas turbines.

Introduction

AI data centers generate constant, high-decibel low-frequency noise primarily through cooling systems and backup power generation. These facilities generate large amounts of heat, necessitating massive industrial fans and air-conditioning units on the rooves, and often on-site power turbines that run continuously. A \$10 billion data center campus, consisting of three massive data center buildings, and a \$3.2 billion 3.6 GW natural gas power station is being built on the site of the former Bruce Mansfield coal-fired plant. The noise pollution from this proposed site is predicted.

Model

The FDTD of acoustics couples changes in pressure with gradients in velocity.

$$p_{i,j}^{n+1} = p_{i,j}^n - \rho_{i,j} c_{i,j}^2 \Delta t \left[\frac{v_{x,i+1,j}^{n+\frac{1}{2}} - v_{x,i,j}^{n+\frac{1}{2}}}{\Delta x} + \frac{v_{y,i,j+1}^{n+\frac{1}{2}} - v_{y,i,j}^{n+\frac{1}{2}}}{\Delta y} \right]$$

And changes in velocity with pressure gradients.

$$v_{x,i,j}^{n+\frac{1}{2}} = v_{x,i,j}^{n-\frac{1}{2}} - \frac{\Delta t}{\rho_{i-\frac{1}{2},j}} \left[\frac{p_{i,j}^n - p_{i-1,j}^n}{\Delta x} - R v_{x,i,j}^{n-\frac{1}{2}} \right]$$

$$v_{y,i,j}^{n+\frac{1}{2}} = v_{y,i,j}^{n-\frac{1}{2}} - \frac{\Delta t}{\rho_{i,j-\frac{1}{2}}} \left[\frac{p_{i,j}^n - p_{i,j-1}^n}{\Delta y} - R v_{y,i,j}^{n-\frac{1}{2}} \right]$$

The density and speed of sound are modified by a structure factor, k_s , which represents the effect of pore shape and tortuosity, and the porosity, ϕ , of trees and vegetation. In addition, a resistivity to air flow, R , is included. The density is

$$\hat{\rho} = \frac{\rho k_s}{\phi}$$

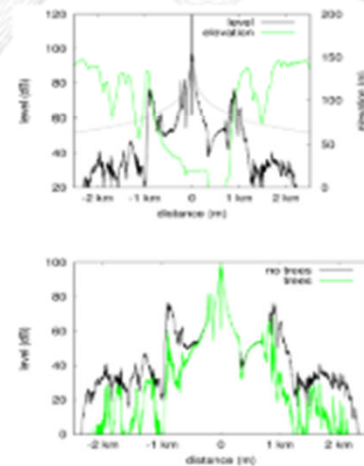
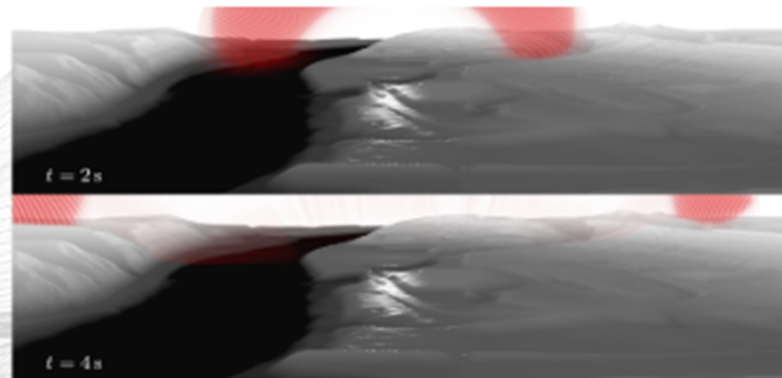
Speed of sound is reduced with k_s .

$$\hat{c} = \frac{c}{\sqrt{k_s}}$$

Perfectly matched layers bound the simulation domain.

Presented at the 2018 EAC Expo @RMU

Figures



Conclusions

The noise from the proposed AI data center and associated natural gas power station is not expected to exceed 40 dB beyond a reasonable distance (2 km) from the site, with only local residents in Shippingport likely to experience adverse effects. Weather conditions (temperature inversions and wind directions) may slightly exacerbate noise pollution, but given local terrain and vegetation the noise pollution will be expected to be limited near the ground, except for the tops of hills.

School of Engineering & Science

2018 EAC Expo



Sportelling: Applying WWE-Inspired Storytelling to Fan Engagement in Emerging Sports Leagues

Armand Buzzelli, Ph.D., Robert Morris University
 Artemisia Apostolopoulou, Ph.D., Robert Morris University
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 Rockwell School of Business



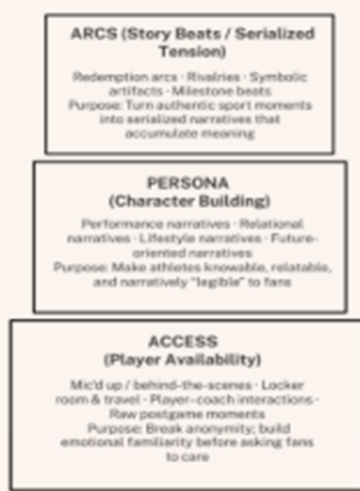
Problem / Rationale

- Emerging / lower-tier leagues lack inherited narratives, icons, and rivalries
- Compete not only with major leagues but with digital entertainment attention economy
- Fan identification drives consumption and loyalty (Wann & Branscombe, 1993; Trail & James, 2001)
- WWE demonstrates how structured narrative fuels emotional investment and repeat engagement
- Opportunity: borrow form (structure) — not fiction (scripted outcomes) — for real sport

Application

- Drive to Survive & Wrexham: access → conversion of non-fans into invested viewers
- WWE techniques translated without scripting: rivalry framing, symbolic artifacts, underdog arcs
- Narrative transparency (“wink to insiders”) creates participatory fan culture without fabrication
- Framing & agenda-setting: narrative choices influence what fans attend to and remember

Sportelling Narrative Access Pyramid



Distinctive Rules

- No scripting of sport outcomes
- Authentic, inclusive, athlete-led storytelling
- Reject harmful tropes used historically in wrestling narratives

Figure: Adapted Storytelling Devices

Device	WWE Function	Sportelling Application	Traditional Sport Example
Archetypes	Wrestlers embody exaggerated roles (hero, villain, underdog)	Use archetypes to convey specific, but grounded, information on athletes while maintaining fundamental humanistic feelings (e.g., humble hero, redemption)	WWE, Major League Baseball, NFL, NBA, etc. (e.g., MVP, MVP, MVP)
Rivalry / Clash / Logos	Personas are created, modified, and used as assets	Build athlete personas with dual (often contradictory) evidence (e.g., “a walk-behind persona”)	WWE: “The Baddest Man on the Planet” vs. “The People’s Champion” (highlighting underdog qualities, or vice versa); Strategic framing of performance data to spotlight for public discussion
Outbreak / Reveal	Dramatic turns (e.g., “the reveal”)	Highlight turning points with dual evidence (e.g., “a walk-behind persona”)	Personas/athletes referring back to their “walk-behind persona” (e.g., “I’m still the same”) as a great story (WWE, athlete underdog narrative)
Symbolic Artifacts	Objects (e.g., championship belts, entrance music)	Enable athletes to establish identity without structure	MLB: “The Home Run Derby” (highlighting MVP); NFL: “The Vince Lombardi Trophy” (highlighting MVP); NBA: “The Vince Lombardi Trophy” (highlighting MVP)

Practical Implications / KPIs

- ↑ Social media engagement during narrative beats
- ↑ Attendance spikes tied to rivalry / redemption events
- ↑ Persona-linked merchandise & sponsorship inventory
- ↑ Conversion of casuals to identified fans
- ↑ Web traffic and broadcast consumers tied to story milestones

Conclusions

- Live sport already delivers uncertainty; narrative supplies meaning
- Sportelling systematizes emotional connection with low resource cost
- Framework offers both academic advancement and practitioner utility
- Story structure and framing; not outcome manipulation or contrived storylines — are the key levers for fan growth

Future Research Opportunities

- Test Arc vs. Non-Arc content on engagement behavior
- Measure persona transparency on brand equity
- Compare narrative richness across emerging league types
- Examine differential effects across gendered sport contexts

Contact / QR

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A Review of Manufacturing Standards for Laser Welding Plastics



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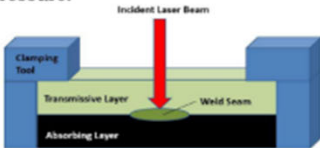


Introduction

While most manufacturing processes rely on national or international standards to ensure high-quality production, laser welding for plastics remains largely unregulated. Although traditional plastic-joining technologies are well-standardized globally, the laser welding of plastics currently lacks international oversight and is only addressed by a couple of national standards in Germany. This work reviews the existing German framework alongside related joining standards to propose a roadmap for international adoption. Our findings offer specific guidelines for laser welding and provide a basis for expanding current manufacturing standards to include this emerging technology.

Laser Welding Process

The Through Transmission Welding (TTW) process for plastics passes light through a transparent layer and is absorbed by an opaque layer to generate heat at the interface, melting the plastic and creating a weld, while both parts are clamped under pressure.



Presented at the 2026 R&G Expo @ RMU

Methods

National and international standards for joining plastics and evaluating joints were researched, purchased, and analyzed. Standards were found from the International Organization for Standardization (ISO), American Society for Testing and Materials (ASTM), American Society of Mechanical Engineers (ASME), Deutsches Institut für Normung "German Institute for Standardization" (DIN), Deutscher Verband für Schweißen und verwandte Verfahren "German Welding Society" (DVS), British Standards Institute (BSI), and American Welding Society (AWS).

Results

Only two manufacturing standards were found to explicitly pertain to laser welding plastics, and they are both German national standards written in German with no official English version. The authors roughly translated them to English using Google Translate and then Dr. Rutinowski (a native German speaker) corrected them. Many other standards pertain to plastic joining processes and mention other joining methods (friction, ultrasonic, hot plate, etc.) but do not explicitly mention laser. No English standards for welding plastics using lasers officially exist.

Conclusions

The two relevant standards, DVS 2243:2014-01 "Laser welding for thermoplastics" and DVS 2243 Supplement 1:2007-08 "Determination of the transmittance of the laser-beam-transparent joining partner during laser transmission welding of thermoplastics" are useful standards for manufacturers who wish to use laser welding. We recommend an official English translation be produced and adopted by English speaking countries and international bodies who publish English standards such as ISO, BSI, ASTM, ASME, and AWS. Our recommendation would be for AWS to lead this adoption as they are focused on welding and have authored over 350 standards for welding practices and procedures. The paper we are writing will be a roadmap for any manufacturer planning on adopting laser welding to identify the relevant standards for the process, evaluate the plastic material, test the joint strength, and assess other performance metrics.

Examples of Standards Examined

Standard Designation	Title of Standard	Includes Laser Welding (Plastics)
DIN EN 1778:1999	Characteristic values for welded thermoplastic constructions - Determination of allowable stresses and moduli for design of thermoplastic equipment	No
DIN 1910-3:May. 2023	Welding and allied processes - Plastic welding - Part 3: Processes for welding of thermoplastics	No
DIN 12814-1 through 8	Testing of welded joints of thermoplastics semi-finished products	Indirectly
DIN EN 13100-1:2017-08	Non destructive testing of welded joints of thermoplastics semi-finished products - Part 1: Visual examination	No
DVS Technical Code English Ed. Vol. 3(8th ed. 2022)	English Edition Volume 3, DVS Technical Codes on Plastics Joining Technologies	Yes
DVS 2203-1	Testing of welded joints of thermoplastics sheets and pipes - Test methods - Requirements	No
DVS 2203-1 Supplement 2: May. 2014	Testing of welded joints between panels and pipes made of thermoplastics - Tensile Test	No
DVS 2203-2	Testing of welded joints between panels and pipes made of thermoplastics - Tensile test	No
DVS 2203-3	Testing of welded joints between panels and pipes made of thermoplastics	No
DVS 2203-4	Testing of welded joints of thermoplastics plates and tubes - Tensile creep test	No
DVS 2203-4 Supplement 1	Testing of welded joints of thermoplastic sheets and pipes - Tensile creep test - Testing of socket joints	No
DVS 2203-4 Suppl. 2: Sept. 1, 2016	Testing of welded joints of thermoplastics panels and pipes - Tensile creep test for resistance to slow crack growth in the two notch creep test (2NCT)	No
DVS 2230-1	Welding of plastic series parts - Quality assurance and testing	No
DVS 2243:2014-01	Laserstrahlschweißen thermoplastischer Kunststoffe (Laser welding for thermoplastics)	Yes
DVS 2243 Supplement 1:2007-08	Bestimmung des Transmissionsgrades des laserstrahltransparenten Fügepartners beim Laserdurchstrahlschweißen von Thermoplasten (Determination of the transmittance of the laser-beam-transparent joining partner during laser transmission welding of thermoplastics)	Yes

Acknowledgements

This project was supported by grants from the Pennsylvania Department of Community & Economic Development through their Manufacturing PA Innovation Program with matching support from RMU and MECCO. We also thank the RMU Rooney Scholar Program for hosting Dr. Rutinowski. This effort has been assisted by RMU Engineering students Taylor Ruffo-Dugas, Kennedi Kazimer, Gabrielle Urban, and alumnus Josh Borovich.

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SCIENCE



AI Agents Bias and Security Threats Mitigation

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School of Data Intelligence and Technology



Introduction

Artificial Intelligence (AI) agents take advantage of Large Language Models (LLMs) capabilities to reason, plan, and take action and thereby complete complex tasks. LLMs are known to be biased in decision making which impacts evaluations and have implications for fairness. AI agents which bolster existing LLMs biases are even more susceptible to bias than LLM counterparts, resulting in harmful behaviors and serious safety concerns. The goal of this work is to address the bias and fairness problems that exists in AI agents, identify the resulting threats, and offer mitigation strategies.



Methods

This study will review existing research on bias and security threats in AI agents and, through a synthesis of these findings, develop a comprehensive approach to mitigating these challenges.



Results

To reduce biases from AI datasets, three strategies can be employed, which include preprocessing, in-processing, and post-processing. Preprocessing aims at mitigating bias in training data before the algorithm is trained, in-processing removes biases during model training and the model itself, and post-processing changes the output predictions to reduce bias. To secure AI agents, steps must be taken to ensure that they are protected against threats from the LLM component of the AI agents as well as from the specific threats on agents. This study culminates in solutions to both AI agent biases and security issues.

Conclusions

AI agents take advantage of Large Language Models (LLMs) capabilities to reason, plan, and take action and thereby complete complex tasks. These computational objects present intelligent behavior by being autonomous, proactive, and reactive and having social abilities. AI agents can boost productivity, improve user experience, and offer personalized assistance across various industries by automating tasks that require human-like understanding and interaction. AI agents bolster existing LLMs biases resulting in harmful behaviors and serious safety concerns. The goal of this work is to address the bias and fairness problems that exist in AI agents, identify the resulting cyber security threats, and offer mitigation strategies.



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Thematic Evolution in Omnichannel Research

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Robert Morris University and University of Wisconsin – Whitewater
Rockwell School of Business



Introduction

Omnichannel was introduced to the industry in 2009 and 2011 by Parker and Hand, and Rigby, and was later academically defined in 2015. This research will explore the key latent themes since the inception of omnichannel and identify the main path analysis. The research will also identify and explore each article in detail to uncover all topics included since inception.

Methods

- Three years of article collection using 'Web of Science' and 'Scopus.'
- Use search terms "omnichannel" OR "omni-channel" OR "omni channel" and "retail."
- From Parker and Hand (2009) through 2025
- 561 articles collected, working on 2025 articles
- MPA using Pajek software
- LDA using Topic Modeling

Omnichannel Ecosystem



Conclusions

Expectation of this research will be to provide the most comprehensive synthesis of omnichannel retailing research to date. The research will provide scholars with clear future research directions.

Main Path Analysis (MPA)

- Traces the most critical path of knowledge development
- Using traversal weight counts identifies the highest weighted papers
- Identifies intellectual bridges between research streams

Latent Topic Modeling (LDA)

- Must collect all research articles to identify the document corpus
- Each article is treated as a mixture of latent topics with probability distributions
- Using Bayesian probabilistic modeling uncovers deep textual inferences across the combined corpus.

Bibliography

Parker and Hand (2009)
Rigby (2011)
Verhoef et al., (2105)



Thermal Experimentation of PA6 and PA66 Thermoplastic in Through Transmission Laser Welding

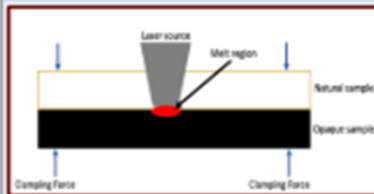
Sarajane Hill, Ph.D., RMU, Benjamin Campbell, Ph.D., RMU, Matthew Priddy, Ph.D., MSU
School of Engineering and Science



Introduction

This research focuses on experimentation for through transmission laser welding of thermoplastics and a comparison with finite element (FE) modeling of that welding process. This welding process is increasingly used in manufacturing due to the precision, speed of process, and quality of weld. However, thermoplastic welding parameters are often unknown or welding standards are undeveloped. The objective of the experimentation and FE modeling is to develop a relationship between melt temperature and laser energy absorption used in thermal welding for the plastics. Surface exposure experiments are performed on PA6 and PA66 samples to measure thermal profiles. FE simulations of the surface exposure testing and through transmission is completed in Abaqus to simulate the moving heat source of the laser. This work develops a novel experimental testing procedure for studying the thermal properties of PA6 and PA66 thermoplastic materials under a surface exposure loading from laser energy. The significant results include experimental development of surface exposure testing as well as comparison between maximum temperature measurement, experimentation, simulation, and literature values for PA6 and PA66.

Experimental process for Laser Through Transmission Welding



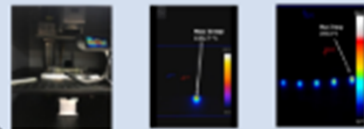
Experimentation Process



Surface Exposure Test



Thermal Camera images



Finite Element Simulation using Abaqus

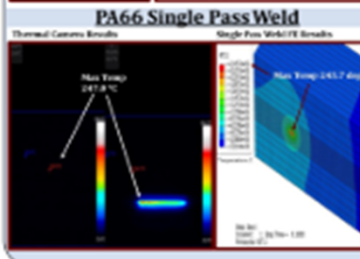
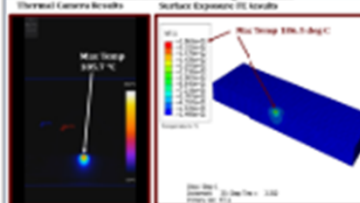


Finite element simulation in Abaqus was completed assuming a Gaussian distribution of the laser beam and modeled using a DFLUX subroutine. Mesh refinement was added along the weld line.

$$q = \frac{\eta PC}{\pi r_b^2} \exp\left(-\frac{r^2}{r_b^2}\right)$$



Experimentation and Simulation Results PA6 Surface Exposure



Conclusions

Surface exposure testing verified melt temperature measurements of PA6 and PA66 material in comparison with literature values. This test is unique and undocumented in research of thermoplastic material.

Single pass weld testing showed PA66 material properties at thermal melt temperature measured against literature values for thermal melt and decomposition. Single pass weld testing showed maximum temperature trend that is previously undocumented for thermoplastic welding. The maximum temperatures in welding occur at the beginning of the weld process.

Temperature behavior of the thermoplastic material was documented to show increasing temperature occurred with increasing laser exposure time. Higher thermal conductivity in PA66 (compared to PA6) showed the ability of the material property to be exposed to a longer laser loading with temperature results within the melt range of the material.

Melt temperature is measured experimentally and verified with finite element analysis for both surface exposure and single pass weld experiments. Temperature profiles are measured and simulated for both the surface exposure and single pass weld experiments. Temperature profiles are useful to measure and predict melt zone of the weld.

The maximum temperature is measured and simulated which gives further insight into working with PA6 and PA66 thermoplastic materials. The thermal melt temperature determines when melt occurs (good weld) versus when thermal decomposition starts to occur (poor quality weld).

Publication and Grant funding

This work originally appeared in the Ph.D. Dissertation, "Thermal Modeling using Finite Element Analysis and Experimentation of PA6 and PA66 Thermoplastic in Through Transmission Laser Welding" by Sarajane Hill (2021). A subset of that work was published in the Journal of Laser Applications, Volume 38, Issue 2 as of March 3/23/2026. (DOI: 10.2351/7.6002832)

Research has been financed by a grant from the Commonwealth of Pennsylvania Department of Community & Economic Development through their Manufacturing PA Innovation Program with matching support from RMU and MECCO and led by Dr Benjamin Campbell.

School of Engineering & Science

2026 R&G



Teaching Operations Planning and Control through a Campus Custodial Project

Dr. Albena Ivanova, Brianna Deyarmin, Matthew Hyatt & Douglas Hastings
Rockwell School of Business, RMU Facilities



Introduction

This study presents a project-based learning initiative implemented in an Operations Planning and Control course at Robert Morris University. Students worked with RMU Facilities to analyze custodial staffing requirements based on cleanable space and targeted cleanliness levels. The project aimed to connect key operations concepts—capacity planning, workload analysis, and quality management—to a real-world campus problem.

Inventory of Cleanable Space



Methods

Students followed a structured process:

- Identified cleanable spaces using building blueprints
- Classified spaces using APPA standards
- Calculated required custodial staffing (Level 2.5)
- Analyzed current workload assignments
- Conducted cleanliness audits
- Integrated results into a workload-quality matrix

Preparing Poster Presentations



Workload-Cleanliness Matrix

	Low Workload (< 0.75)	Adequate Workload (0.75 - 1.00)	High Workload (> 1.00)
Low Cleanliness (0.75-4.0)	Provide Training N = 0	Provide Reward N = 0	Reduce Workload N = 0
Adequate Cleanliness (2.25-2.75)	Increase Workload N = 1	No Change N = 1	No Change N = 1
High Cleanliness (2.8-3.25)	Increase Workload N = 3	Provide Reward N = 0	Provide Reward N = 1

Results

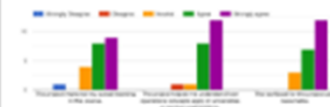
Key Findings:

- Estimated staffing requirements varied across buildings
- Differences identified between assigned and required workloads
- Cleanliness levels varied across spaces and custodians
- The workload-quality matrix revealed opportunities for:
 - ✓ Workload redistribution
 - ✓ Targeted training
 - ✓ Performance recognition

Conclusions

- Project-based learning improved student understanding of operations concepts
- Real-world context increased engagement and relevance
- Data collection and analysis enhanced technical skills
- Collaboration with RMU Facilities strengthened learning experience
- Structured projects require clear guidelines and timelines

Overall Evaluation:



Bibliography

1. APPA Custodial Guidelines
2. Course materials
3. Student survey data

Rockwell School of Business

R021U622



Biomechanical Evaluation of Implant-Supported Prostheses in Fibula-Based Immediate Jaw Reconstruction using FEA: Jaw-In-A-Day



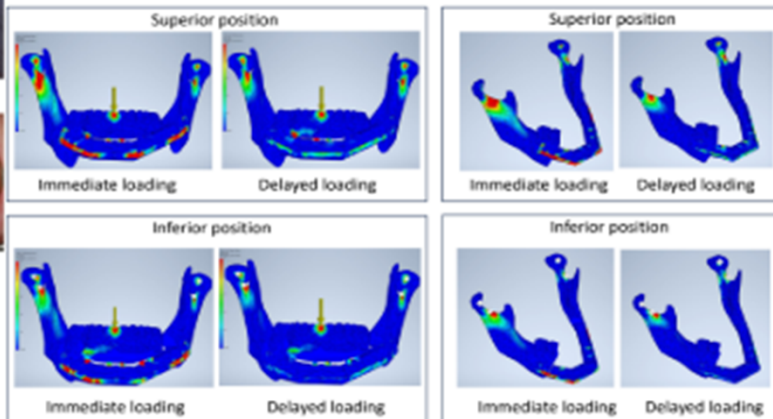
Mesmar, Dina, BDS¹; Joo, Won, PhD²; Patel, Nupur, DMD, MS, FACP¹; Ford, Brian, DMD, MD¹; Chang, Brian, DDS, FACP, FAAMP¹
¹University of Pennsylvania, ²Robert Morris University
 School of Engineering and Science

INTRODUCTION: Oral cancer management often requires segmental mandibulectomy, profoundly impairing mastication, deglutition, and quality of life. The fibula free flap (FFF) is the gold standard for mandibular reconstruction, and digital workflows have enabled the "Jaw-in-a-Day" (JIAD) technique, combining resection, fibula harvest, implant placement, and provisional prosthesis delivery in a single operation. While JIAD accelerates rehabilitation, its biomechanical implications remain unclear, particularly regarding stress at the fixation plates uniting the fibula to the residual mandible and plate fatigue. This study evaluated flap positioning (superior vs. inferior) and loading protocols (immediate vs. delayed) on biomechanical stability using finite element analysis (FEA).



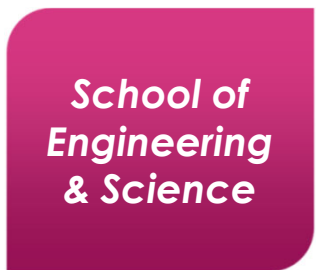
MATERIAL AND METHOD: Standardized computational mandibular models reconstructed with FFF segments were generated with CAD software and analyzed in Abaqus. Four models were tested: superior vs. inferior flap placement, each under immediate vs. delayed loading. Superior positioning elevated the fibula 7 mm above the mandibular border, requiring an 18 mm prosthesis, while inferior placement aligned flush, necessitating a 25 mm prosthesis. Titanium implants (3.5 × 11 mm) with implant-supported prostheses were incorporated. Immediate loading simulated incomplete osseous union (1 mm intersegmental gaps), while delayed loading assumed complete union. Cortical and cancellous bone were modeled as anisotropic, titanium as isotropic, with full osseointegration at implant sites. Loading conditions included 200 N vertical and 40 N lateral forces. Outcome measures were von Mises stress and displacement at fixation points, junctions, and implants

RESULTS: The study compared superior and inferior fibula flap positions under immediate and delayed loading conditions. The superior position required a shorter prosthesis (18 mm with a 7 mm offset), while the inferior position used a longer prosthesis (25 mm). Displacement analysis showed that the inferior position consistently performed better. Under immediate loading, displacement was reduced from 1.795 mm in the superior model to 1.036 mm in the inferior model. With delayed loading, displacement decreased further, reaching 1.041 mm in the superior and 0.758 mm in the inferior position. Stress analysis confirmed similar trends. During immediate loading, stresses reached 112 MPa in the superior position versus 79 MPa in the inferior. Delayed loading significantly lowered stresses overall, with 28 MPa in the superior and 22 MPa in the inferior position. Overall, the inferior position consistently reduced both displacement and stress, while delayed loading markedly improved stability across both groups.



	Displacement at frontal mandible [mm]		Von-Mises Stress at right mandible-fibular junction[MPa]	
	Superior	Inferior	Superior	Inferior
Immediate Loading	1.795	1.036	112	79
Delayed Loading	1.041	0.758	28	22

CONCLUSION: Displacement and stress distribution analyses highlight the biomechanical advantages of inferior fibula positioning in mandibular reconstructions. Inferior placement consistently reduced displacement compared with the superior position under both immediate and delayed loading conditions. Furthermore, delayed loading markedly decreased stress concentrations—by more than 70%—in both configurations. Collectively, these findings underscore that flap geometry and timing of prosthetic loading are critical determinants of biomechanical performance, with inferior positioning and delayed loading offering the most favorable outcomes.



TARGETED SIMULATION TO IMPROVE MEDICATION SAFETY IN NURSING STUDENTS



Kristen Lutz, MSN, RN, CEN, CHSE – RMU; Jennie De Gagne, PhD, DNP, RN, NPD-BC, CNE, ANEF, FAAN – Duke University; Lisa Lewis, EdD, MSN, RN, CNE – Duke University; Nicole Szalla, DNP, RN, CHSE – RMU
School of Health Professions

Background:

- Medication administration errors (MAEs) remain a major safety risk
- Students lack hands-on medication practice
- Competency-based education is required.
- Simulation provides a safe environment to practice

Methods:

- Design**
- Pretest-posttest QI project
 - Participants: 38 senior-level BSN students
- Components**
- Self-efficacy survey (MASES) #1
 - OSCE #1 (baseline)
 - Simulation Intervention
 - OSCE #2 (post-intervention)
 - Self-efficacy survey #2

Results:

- OSCE Performance**
- Measured out of 100% using faculty developed rubrics
- Timing Errors**
- Most frequent error across both OSCEs

Station	OSCE 1 Mean	OSCE 2 Mean	Key Finding
1: IV Calculations	78.40%	95.90%	↑ Accuracy (p=0.58)
2: Clinical Judgment	90.50%	87.00%	Slight decline due to rubric expectations
3: Error Recognition	83.50%	98.40%	Large improvement (p<.001) (d = 1.433)



Table 1. Self-Efficacy Median Scores at the end of the

Item	Pre-Intervention	Post-Intervention
I can interpret medication orders correctly.	4	4
I can identify potential medication errors before preparation.	3	4
I can prepare oral medications accurately.	4	5
I can prepare injectable medications (e.g. IM, subcutaneous) safely.	4	5
I can prepare IV medications using aseptic technique.	4	5
I can verify medication expiration dates and labels before preparation.	5	5
I can follow institutional protocols for medication preparation.	4	5
I can verify patient identity using two identifiers before administration.	5	5
I can administer oral medications safely and effectively.	5	5
I can administer injectable medications using correct technique.	4	5
I can administer IV medications safely and <u>applies</u> for adverse reactions.	4	5
I can document medication administration accurately and promptly.	4	5
I can educate patients about their medications and potential side effects.	3	5
I can request appropriateness for medication-related orders or care needs.	3	4
I can follow the rights of medication administration consistently.	3	5

Note. Response scale: 1 = not at all confident to 5 = completely confident.

Self-Efficacy Surveys

- Increased from 3.80 → 4.47 (p < .001)

Adherence to 6 Rights

- 86.5% of students demonstrated full adherence during simulation

Purpose:

- Aim 1:** Improve Self-Efficacy
- Aim 2:** Assess adherence to the 6 rights
- Aim 3:** Improve OSCE performance

- Right Patient
- Right Drug
- Right Dose
- Right Route
- Right Time
- Right Documentation

Key Takeaways:

- Sequential OSCEs reinforce medication safety
- Simulation improves self-efficacy and error recognition
- Timing verification remains a key training need



Key Simulation Components:



School of Health Professions

110162210U2

Ethics & Leadership

Dr. Richard J. Mills Jr.

School of Communication and Media



Ethical Leadership?

Ethical leadership is best defined by how a leader projects oneself to others. Many facets of our lives influence our ethical behavior; this may be our parents, religious leaders, superiors in the workplace, or educational instructors.

Each has a responsibility to lead others without malicious intent or unethical choices. Ethical leadership must be made consciously and must reflect the leader's values, goals, and needs. Every leader brings their own individual bias or standpoint to the conversation, but a good leader puts those issues aside to create an amical environment.

Throughout history, great leaders have been judged by their ethical values and how they impact those around them. This is also evident in military affairs, and throughout history, military leaders have leadership qualities.

Ethical leadership is essential for credibility and reputation. We see this in political arenas also; often, an individual's ethics are questioned by those appointing or electing a political leader. Unethical leadership can compromise the values of the political movement or party and ultimately, the result is failure or defeat.



https://www.123rf.com/stock-photo/123456789/Ethical-Leadership-123456789.html

Ethical Intelligence

If leaders are to succeed, their competence must permeate every aspect of their work. This includes technical operations and the execution of the strategies of the group. They must understand the needs and challenges of their colleagues and competitors. A good leader does this with grace and proficiency rather than that of bullying or arrogance.

Ethical Courage

- One of the primary qualities of a leader is to be able to face challenges and react appropriately when under pressure.
- Of course, we see this adjustment in a military environment, but it also occurs within an organization as deadlines or unforeseen issues arise.
- Leaders must project decisiveness and courage in the face of challenges.
- Courage enables a leader to recognize the opportunities inherent in all risks.
- The confidence projected by a courageous leader lends credibility to his actions and decisions.
- This trait allows the leader to "mobilize his team to take advantage of opportunities," said Sun Tzu.
- It also enables the leader to guide organizational adaptations to a changing environment.

Ethical Discipline

- Throughout *The Art of War*, Sun Tzu stressed the importance of trained and disciplined personnel.
- The leader's job, he said, is to "prepare his forces for all tactical contingencies that may arise in the field of battle."
- As previously stated, once again, discipline is combined with courage to secure goals as a leader.
- Training, however, does not stimulate discipline.
- "Discipline," according to Sun Tzu, "is enforced through consistent application of reward and punishment."
- Sun Tzu stressed that the leader must refer to the organization Tao when finding the appropriate balance of these traits we have discussed. Ultimately, a leader is self-aware and strategic in his ability to adapt.

Perhaps the most important ethical issue facing leadership is accountability. The leader is responsible for setting the standards that others will be tasked to follow. As the cliché goes, the buck stops here. Therefore, attempts at passing that buck, denying there is a problem, covering up mistakes, or acting in any way that favors one person, group, or unit over another guarantee ethical crises will arise.

Alexander the Great:

A model Leader



https://www.gettyimages.com/detail/stock-photo/Alexander-the-Great

What Can We Learn From Alexander the Great?

Alexander's leadership qualities have often been discussed and debated over the years, as he shows many great qualities but, in contrast, many failures. Perhaps his greatest skill was conquering others as a great warrior. He changed history with his contributions, and many of his leadership skills can be applied to today's leaders.

Conclusions

Leadership Ethics in the Future

Leadership Ethics in the Future Today's leaders face different challenges than those of the past. We are now part of a global community and must compete on a big stage. This requires leaders to become more global, informed, and savvy to cultural changes as well as those within a group. We see that members of a community are often educated through social media or other forms of global communication. This makes leadership more challenging and often, more exciting. We must "think outside the box" daily and often hourly.

"We live out our lives, both individually and in our relationships with each other, in the light of certain conceptions of a possible shared future, a future in which certain possibilities beckon us forward and others repel us, some seem already foreclosed and others perhaps inevitable. There is no present which is not informed by some image of some future and an image of the future which always presents itself in the form of a telos, or of a variety of ends or goals towards which we are either moving or failing to move in the present." (MacIntyre, 1981)

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Mapping Knowledge Flows in B2B Sales: A Novel Application of Main Path Analysis to CRM Data

Gabriel Moreno and Jill Kurp



Shared Knowledge in Sales Deals

Salespeople rarely work in isolation. Deals often involve shared people, challenges, and knowledge. Over time, these overlaps create learning: what happens today builds on yesterday's collaborations.



From CRM data to Network

Bibliometrics Context VS **CRM (Sales) Context**

Nodes = Papers	Nodes = Deals
Edges = Citations	Edges = Shared Salespeople/Participation
Purpose = Map flow of scientific knowledge	Purpose = Map the flow of organizational learning

STEP 01

Raw CRM Data

- 102 closed won deals
- 27 salespeople | 6 territories

STEP 02

Build the Network

- Deal = Node
- Collaboration = Edge

STEP 03

Resulting Network

- 102 nodes
- 255 edges

Main Path Analysis (MPA) began in bibliometrics to trace how scientific knowledge evolves.

In our adaptation, papers become sales deals and citations become shared salespeople, creating channels through which experience carries from one deal to the next; thus, revealing the internal learning path within the organization.

CRM data to create a network

Our analysis used three months of CRM data from a B2B high-tech company, covering six sales territories, 27 salespeople, and 102 closed-won deals.

Sales Territory	Number of Salespeople	Average Deal Size	Number of Deals	Average days to close	Median days to close
1	6	\$177,768.00	44	121.6	61
2	3	\$48,694.00	8	88.7	67
3	6	\$86,349.00	19	79.5	67
4	3	\$44,593.00	5	127.2	71
5	4	\$146,765.00	5	85.6	45
6	5	\$94,851.00	21	132.3	104



MPA works computes traversal weight counts to uncover the most frequently traversed edges in the directed acyclical network



Unearthing the Organization's Learning Backbone

Seventeen deals emerged as the most influential in the firm's learning pathway. Together, they mark key junctures where experience accumulates, transfers, and shapes later activity. The clusters trace a progression from exploration to coordination, innovation, and, ultimately, efficiency.



Presented at the 2016 R&G Expo @RMU

Rockwell School of Business

R02IU622

The UN, UNESCO and Higher Education Academic Exchanges

Dr. Anthony Moretti

Communication and Organizational Leadership, School of Communication and Media

Paper version presented at 2025 Society for Ethics Across the Curriculum Conference, Villanova, PA



Introduction

United Nations' Sustainable Development Goal Number 4

1. inclusive and equitable education
2. promotion of lifelong learning to all corners of the globe.

Seventy-three (73) countries are already participating in this effort

Tertiary Education leads to:

- stronger domestic GDP
- robust study abroad programs
- domestic innovation

However, few countries make the financial commitment necessary to develop their national higher education systems

Double Trouble

In many parts of the world paltry higher education spending combines with domestic political unrest and leads to refugee crises. And current and aspiring university educators often become refugees because they are deemed threats to the nation

UNESCO's response

-Global Convention on the Recognition of Qualifications Concerning Higher Education

1. Fair, transparent and non-discriminatory recognition of higher education degrees
2. Academic mobility to affected faculty and students
3. Affirmation that refugees must be able to further their academic dreams and
4. A firm baseline with which to judge academic degrees

Thirty-eight countries have signed on to the accord

Campus Africa

Aligned with the African Union's "Agenda 2063: The Africa We Want"

Major investments in STEM, educational resources, and intra- and inter-continental educational partnerships

Expand study abroad efforts

Keep African scholars on the continent



A reminder

"In times of conflict, violence and divisions, culture, education and science make for the soft power that can win against hatred and destruction"

-Irina Bokova, former director-general of UNESCO



Additional Info

Agenda 2063:
<https://au.int/en/agenda2063/overview>

UNESCO's Global Convention:
<https://www.unesco.org/en/legal-affairs/global-convention-recognition-qualifications-concerning-higher-education?hub=70286>



Lean-Driven Sustainability and Performance Outcomes: A Moderated Mediation Model



Kihyun Park, Rockwell School of Business

Introduction

This study develops and tests an integrated framework linking lean practices to sustainability and downstream performance outcomes, with collaboration as a moderating condition.

Drawing on contingency theory, lean is conceptualized as an enabling factor driving the adoption of environmental and sustainability practices.

Methods

Four hypotheses are proposed, and the moderating effect of collaboration is examined.

The proposed model adopts empirical validation using structural equation modeling (SEM) with multi-industry survey data or matched firm-level datasets.

Table #1

Construct	# of Item
Collaboration (CL)	4
Lean Practices (LP)	5
Sustainability Management (SM)	4
Sustainability Social Performance (SP)	4
Financial Performance (FP)	4

Table #2

	Path Relationship	Coefficient	Sig. Level
H1	Lean Practices → Sustainability Management	0.78	p < 0.01
H2a	Sustainability Management → Sustainability Social Performance	0.38	p < 0.01
H2b	Sustainability Management → Financial Performance	0.189	p < 0.01
H3	Sustainability Social Performance → Financial Performance	0.305	p < 0.05
H4	Moderation of Collaboration between Lean Practices and Sustainability Management	0.012	p > 0.1

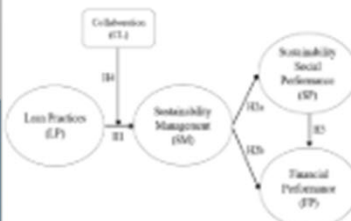
Conclusions

The findings suggest that lean serves as an enabling capability for the adoption of environmental initiatives, and that sustainability practices exhibit significant positive effects on both social sustainability performance and firm performance.

This paper provides insights for practitioners and researchers seeking to improve business performance through efficient and sustainable supply chain practices.

Future research can focus on examining the long-term effects of the dynamics and exploring other mediating and moderating factors.

Figure #1



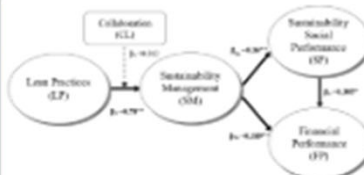
Results

The three proposed hypotheses are positive and statistically significant, confirming that they are supported.

The moderating effect of collaboration between lean practices and sustainability management is positive, but not statistically significant.

Firms implementing both lean and supply chain sustainability practices are likely to display a higher level of performance.

Figure #2



Model fit: $\chi^2(1) = 1.345$, CFI = 0.997, RMSEA = 0.008, and ESEMSEA = 0.009. Coefficients are significant at ** p < 0.01, * p < 0.05.

Rockwell School of Business

RO2IU622

Bibliography

Kihyun Park, Ph.D.

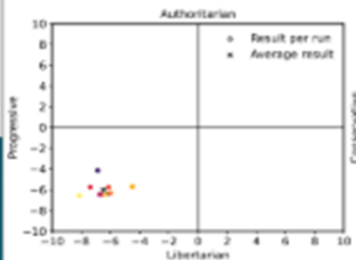
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Introduction

Do Large Language Models (LLMs) like OpenAI's ChatGPT have a personality? Do they have biases? If so, are the two aligned the way they would be for humans?

The first small-scale reports and commentary emerged in 2023, claiming that ChatGPT is politically biased towards progressive and libertarian points of view. This contribution aims to provide further clarity on this subject.

Fig. 1: Political Compass Test



Methods

ChatGPT answered the questions of three tests:

Test 1 – Political Compass Test: A two-axis political alignment test placing a person in a quadrant based on 62 political questions. Answers are given on a four-point Likert scale, results are measured as coordinates.

Test 2 – Big Five (OCEAN) Test: A psychological assessment measuring five key personality traits (openness, conscientiousness, extraversion, agreeableness, neuroticism) based on 88 questions. Answers are given on a five-point Likert scale, results are measured in percentages per trait.

Test 3 – Dark Factor Test: A psychological assessment measuring ten dark character traits based on 70 questions. Answers are given on a five-point Likert scale, results are measured as percentages per trait and on a five point scale.

All tests were performed ten times each in this publication, 100 times each in the follow-up publication, validating the results presented here.

Results

Test 1 – Political Compass Test: ChatGPT demonstrates a bias towards progressive and libertarian views. Average results are $\mu_x = -6.48$, $\mu_y = -5.99$ with a standard deviation of $\sigma_x = 0.95$, $\sigma_y = 0.73$.

Test 2 – Big Five (OCEAN) Test: ChatGPT displays a high degree of openness ($\mu_o = 76.3\%$) and agreeableness ($\mu_a = 82.55\%$). Human averages: Openness = 73.1% and Agreeableness = 75.4%.

Test 3 – Dark Factor Test: Average Dark Score $\mu_{\text{Score}} = 1.9$, placing it in the top 15% of test-takers with the least pronounced dark traits.

Fig. 2: Big Five Test

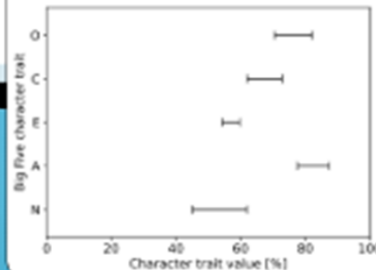
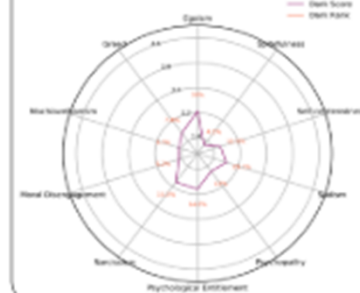


Fig. 3: Dark Factor Test



Conclusions

This 2023 publication was the first to demonstrate that ChatGPT holds libertarian and progressive biases. When performing the Big Five and Dark Score Personality Tests, the LLM appears to be highly open and agreeable, with very limited dark personality traits. Although LLM development moves fast, the results presented here still hold true to this day, with follow-up research yielding similar results for newer GPT versions and even other established LLMs.

Link to the article →



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Scholar

20240101

Statistical Approaches to Determining the Gerrymandering of Political District Maps

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BACKGROUND & MOTIVATION

Gerrymandering is the practice of drawing biased electoral maps to manipulate the voter population. It has plagued U.S. democracy since the 1812 Gerrymander in Massachusetts.

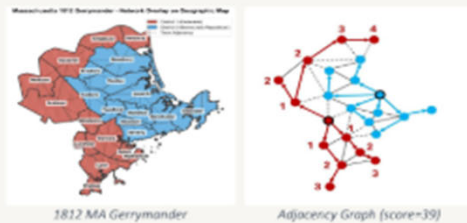
Maryland's 2012 congressional map was brought before the Supreme Court in 2019, alleged to divide Republican support. The Court declined to rule on partisan gerrymandering.

This paper proposes a statistical ensemble method to detect gerrymandering using any metric — including a compactness measure that works **before the election**.

COMPACTNESS MEASURE (MJN GERRYMANDER SCORE)

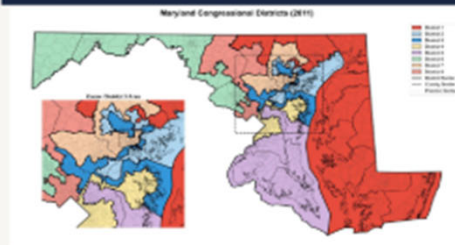
37 states require compactness for legislative districts. The Mehrotra-Johnson-Nemhauser gerrymander score measures non-compactness as the sum of shortest path distances from each population unit to its district center in the adjacency graph.

Key advantage: Evaluable BEFORE the election.



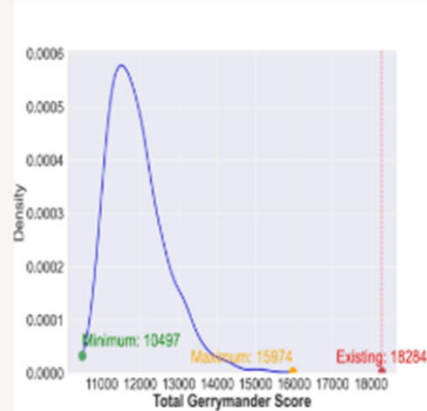
1812 Salamander: Score 24 (avg 2.0/unit) · Rank 27/1121 · P-value 2.41% → Gerrymandered (5% sig.)

MARYLAND 2012 CONGRESSIONAL MAP



RESULTS: 2012 MARYLAND MAP vs. 1,024 RANDOM ENSEMBLES

Generate 1,024 random feasible district plans satisfying contiguity, ≤5% population deviation, and the Voting Rights Act (VRA). Each gerrymandering metric is evaluated for all plans to build a distribution. The enacted map value is then compared against this distribution to compute a p-value.



Compactness (18,284 > all 1,024 plans: max 15,974)
→ GERRYMANDERED

FOUR CONVENTIONAL METRICS (POST-ELECTION)

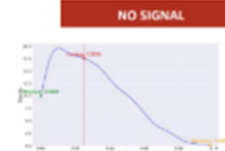
Efficiency Gap

Ratio of wasted votes. >8% → gerrymandering. MD avg 12% (Brennan Center). Enacted map (0.1328) lies within the random distribution — no outlier.



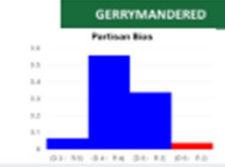
Mean-Median Difference

Gap between avg and median vote share. Enacted map (0.025) lies within the distribution of random plans.



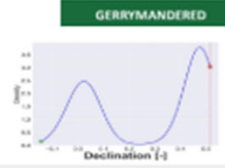
Partisan Bias

Seat share in simulated tied election vs 50%. MD map: 25% bias, 6 Dem seats. Only 4% of random plans yield 6+ Dem seats.



Declination

Asymmetry between won/lost districts. Enacted map (51.56%) exceeds max of all 1,024 random plans (51.49%).



CONCLUSIONS

- ✓ Compactness (MJN) metric detects gerrymandering **before the election** — enacted map exceeds ALL 1,024 random plans.
- ✓ Partisan Bias & Declination also indicate gerrymandering; Efficiency Gap and Mean-Median do not.
- ✓ Democrats winning 7/8 seats with 63% of votes is **NOT surprising** — 58% of random plans also yield 7 Dem seats.
- ✓ ARR framework is flexible; any metric can be applied to the same ensemble. 82% of parallel cores complete within 1 hour for ~2,000 precincts.





Applying Agile Principles to Pedagogical Activities and Strategies in a Learning-Centric Environment

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Introduction

In 2009, we proposed applying agile principles to teaching to improve learning outcomes (Stewart et al., 2009), demonstrating how concepts from the Agile Manifesto map directly to effective pedagogical strategies and support a learning-centered classroom. Although Agile teaching has been largely limited to project-based and information systems courses, its benefits can extend across all teaching disciplines.

Methodology

In this update, we expand our framework to demonstrate how aligning Agile Manifesto principles with pedagogical strategies—such as active and cooperative learning—enhances teaching effectiveness, fosters a learning-centered environment, and supports student success and retention.

Results

Agile teaching is about:

- Encouraging and addressing student questions
- A curriculum that is project or assignment-based and emphasizes student learning experiences
- Working closely with students, with a willingness to be flexible and respond to student needs
- Direct involvement of students in the learning process
- Goal-driven delivery of material (as opposed to plan-driven)

Mapping Agile Principles to Pedagogical Strategies and Activities

Learning-centric processes over traditional processes and tools: In a learning-centered environment, instructors use active and cooperative learning to engage students, while maintaining flexible requirements and deadlines that are focused on learning outcomes.

Working projects over comprehensive documentation: An iterative, feedback-driven structure in a learning-centered environment deepens student engagement and understanding.

Student and instructor collaboration over rigid course syllabi: A learning-centered environment prioritizes student activity and effective pedagogy, with increased instructor access that fosters collaboration.

Responding to feedback rather than following a plan: Rigid schedules can hinder learning by forcing students to rush or fall behind; a flexible pace better supports comprehension, application, and overall learning outcomes.

Principles of the Agile Manifesto	Corollary to the Pedagogical Environment
Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.	Our highest priority is to prepare the student to make relevant and applicable contributions through continuous delivery of course components that engage and create competence.
Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.	The instructor and students welcome and adapt to changes to course requirements and deliverables even late in the semester.
Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.	Requiring working deliverables from the students over short periods of time, allowing for frequent feedback. Provide assignments conducive to guided problem solving, and guided experimentation.
Businesspeople and developers must work together daily throughout the project.	Iterative interaction between the instructor and students.
Build projects around motivated individuals. Provide the needed environment and support and trust them to get the job done.	Trust that most students are motivated. Give them the environment and support necessary for them to be successful.
The most efficient and effective method to convey information to/within a development team is face-to-face conversation	To the extent possible, allow for direct face-to-face interaction with students or student groups.
Working software is the primary measure of progress.	Working deliverables (i.e., models, software, project deliverables, presentations, research papers, etc.) are the primary measure of student progress (not necessarily midterm & final exams that require rote learning and memorization).
Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.	Guided problem solving and guided experimentation, where students actively seek guidance and tools to solve problems and learn to work independently (or in groups) at a constant rate is the basis for teaching the skills needed for life-long learning.

Conclusions

- Agile delivery methods, combined with active learning activities, improve learning outcomes, student engagement, and student satisfaction.
- Agile teaching methods apply to all areas of academia – the application of such methods is only limited by the imagination of the instructor.

Presented at the 2026 R&G Expo @RMU

School of
Data
Intelligence
&
Technology

1εcμo1oδλ



Building Power Skills Using Simulation



Nicole Szalla, DNP, RN, CHSE
Colleen Sunday, PhD, RN; Kristen Lutz, MSN, RN, CHSE
School of Health Professions

⚠ Incivility disrupts teamwork ⚠ Communication breakdowns affect patient safety ⚠ New nurses often feel unprepared to respond

ONLINE LEARNING
Understanding Incivility

- Definitions
- Impact on teamwork & safety
- Communication tools introduced



CLASSROOM PRACTICE
Skill Development

- Cognitive rehearsal
- Peer "speed-dating" scenarios
- Practicing DESC & CUS responses

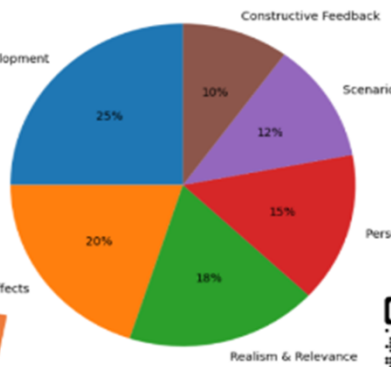


SIMULATION EXPERIENCE
Realistic Practice

- Standardized patient scenarios
- Verbal & non-verbal incivility
- Facilitated debriefing

Student Feedback Themes from Open-Ended Responses

1. Enhanced confidence in handling conflict, communication, and assertiveness
2. Emphasis on staying calm and patient-centered
3. Provided tools for navigating workplace incivility and stress

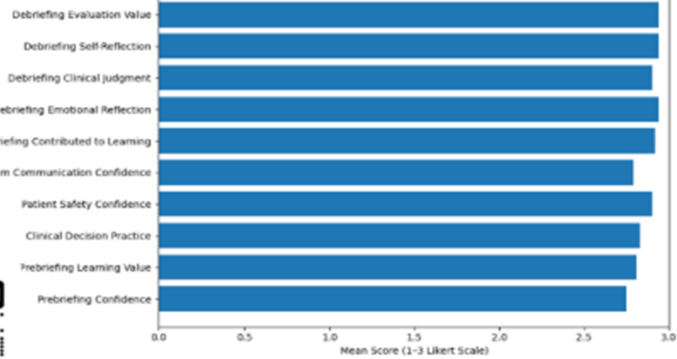


1. Helpful in preparing for real-life conflicts and uncomfortable situations
2. Increased confidence in dealing with conflict in clinical settings
3. Great practice before graduation



Szalla, N. A., Sunday, C., Lutz, K., & Lisa, W. L. (2026). Simulating incivility in the workplace for BSN nursing students. *Journal of Nursing Education*, 65(1), 59-62.

Student Perceptions of Simulation Effectiveness (SET-M)



Presented at the 2026 R&G Expo @RMU



School of Health Professions



The Power of Preparation and Leadership: Strengthening Teacher Self-Efficacy



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Introduction

The Power of Preparation and Leadership: Strengthening Teacher Self-Efficacy (2025) summarized data collected during the 2023-2024 school year. Preliminary follow-up analysis of a focus group conducted in spring 2025 highlighted, not surprisingly, that principal candidate and student teacher perspectives differ. The differences lie in where support is most consistently experienced and how it influences professional teacher development.

What Matters Most to Teachers & Principals (2025 Results)

- **Strong Relationships & Community** (relationships, trust, positive school climate)
- **Social-Emotional Support & Empathy** (SEL, self-care, understanding students & staff)
- **Leadership & General Support** (guidance, mentorship, feeling supported)
- **Classroom & Learning Environment** (management, curriculum, behavior, Boundaries)

Tepe, Kardambikis, Parker, Grooms, & Charrie (2025). The Power of Preparation and Leadership: Strengthening Self-Efficacy in schools.

Methods

Participants were recruited through Robert Morris University's (RMU) student teacher seminar and principal candidate courses. This study investigated how preservice teachers and principal candidates at Robert Morris University (RMU) perceive the demands and challenges of their respective preparation programs. The project centered on two main objectives. First, it sought to understand preservice teachers' beliefs about self-efficacy in tackling the complex elements of teacher development. Second, it aimed to examine principal candidates' perspectives on strategies to bolster novice teachers' self-efficacy as they transition into full-time classrooms.



Conclusions

Mentorship is key to teacher development and developing self-efficacy.
(preliminary data from 2025 focus group)

- **Principal Candidates** view mentorship as leadership, coaching, school culture).
- **Student Teachers** view mentorship as structured (formal and informal), ongoing mentorship support from faculty, cooperating teacher and university supervisors.
- Alignment of future principals and teachers can strengthen student teacher self- efficacy and further grow the field of education.
- **MENTORSHIP MATTERS**

Results

The findings reveal contrasting perspectives on mentorship in teacher development. Developing **Principals** view mentorship as a leadership responsibility, focusing on coaching teachers, fostering collaboration, and shaping school culture.

In contrast, **student teachers** emphasize the importance of structured mentorship within their preparation programs, including ongoing support from university faculty and opportunities for reflection through journaling and mentor reflective practices and discussions.



Introduction

Soft Power is the ability to use attraction rather than coercion Nye (2011). Current scholarship suggests that as a major power, Russia desires to return to superpower status and it uses aggressive as well as more settled tools to achieve that. Research questions:

1. How does Russia use soft power for the time-frame of 1995-2022?
2. Does Russia use an increase amount of soft power due to a geopolitical threat?

Figure #1



Figure 1. Russia's Annual Soft Power Use based on ICEWS recoded data for 1995-2022

Methods

The chapter used mixed methodology.

First using content analysis of speeches of the political elite about soft power use and about geopolitical threat.

Second, analyzing the re-coded soft power data for the time-frame of 1995-2022.

H1: The level of the perceived geopolitical threat (I.V.) and the soft power use (D.V.) are positively correlated.

Figure #2

President	Soft Power Count Average	Soft Power Percentage Average
Boris Yeltsin (1995-1999)	12,341	79%
Vladimir Putin (2000-2008)	28,813	81%
Medvedev (2008-2011)	20,157	74%
Vladimir Putin (2012-2022)	21,821	74%

Table.1 Russian Presidents' Soft Power Count average and Soft Power Percentage Average (1995-2022)

Results

1. From 1995-2008 Russia used an increasing number of soft power actions with its neighbors and with the world to focus on strengthening and building economic ties (Figures 1,2). The second period starts in 2008 and goes to the present, which includes three armed conflicts in which hard-power center foreign policy declines Russia's soft power use and channels all soft and sharp power to support the war efforts.
2. Two identified geopolitical threats found: NATO expansion and terrorism, both are driving Russian soft power use.

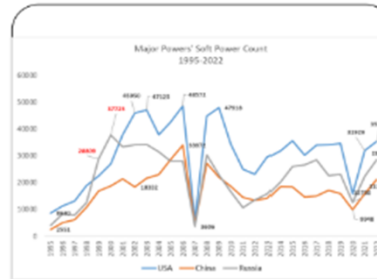


Figure 2. Major Powers' Soft Power Count 1995-2022

Conclusions

One of the main contributions of this book is the revelation of the similar soft power use patterns of the major powers. As it can be seen in Figure 2., Russia, China and the United States have a very similar pattern when it comes to their countries' soft power use.

Vladimir Putin's first term as a President scored the highest in soft power action count average (28,813) and in soft power percentage average (81%) (Table 1).

Russia uses more soft power than almost all countries in the world and it is very competitive. Russia sometimes even uses a higher level of soft power than the two other major powers.

Bibliography

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- Trunkos, J. (2027) *How do countries use soft power? A Global Approach*. Bloomsbury Publishing. Forthcoming



Graduate Cybersecurity Capstone Project Simulation: A Case Study Using SEED Labs

Project Team: Ping Wang (PI), Noory Etezady (Co-PI), Nader Kesserwan (Lab Specialist), Larry Luther (Lab Assistant)

Institution: Robert Morris University, School of Data Intelligence and Technology

Supporting Grant: NSF Award 2234554



Introduction

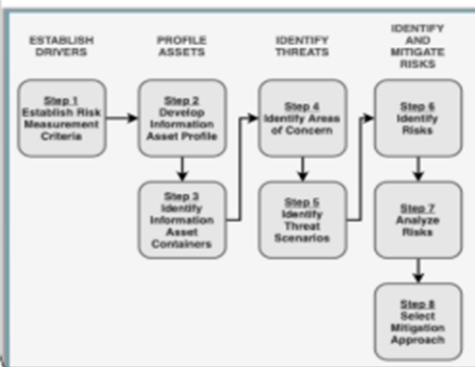
This research uses the project-based learning (PBL) model and a hypothetical enterprise case study approach to designing a comprehensive simulation project for the capstone course of a master's degree program in Cybersecurity in the United States. The case study is based on a realistic scenario of cybersecurity pentesting (penetration testing) for a US hospital IT system. The simulation features OCTAVE for cyber risk evaluation and SEED Labs on DNS attacks and hardening for implementation and demonstration to illustrate the key security vulnerabilities, risks, and mitigation for the case study.

PBL Model Applications

- Feature a well-designed and comprehensive project for active learning
- Align objectives with industry expectations
 - Cybersecurity Industry Model
 - DoD Cyber Workforce Framework
 - NCAE-CD guide for master's project
- Prepare for technical career pathways
- Integrate with learning objectives, processes, resources, and assessment
- Improve interest and motivation in learning
- Improve subject matter knowledge
- Enhance hands-on technical skills
- Promote creative and innovative work
- Improve critical thinking and problem solving
- Improve communication, collaboration, and personal reflections

OCTAVE Method

(Operationally Critical Threat, Asset, and Vulnerability Evaluation)
(CMU SEI, 2007; ShellSharks, 2022)

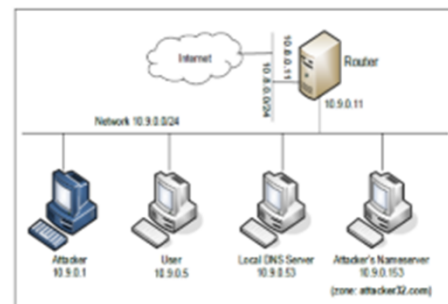


Lab Simulation

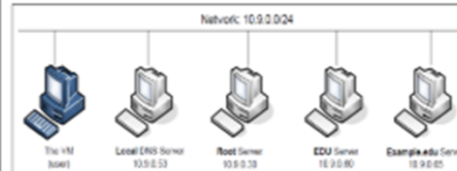
SEED Labs (<https://seedsecuritylabs.org>)

- ❖ NSF funded hands-on simulation labs for security education
- ❖ 40+ virtual lab simulations, including
 - ✓ Network security
 - ✓ OS security
 - ✓ Software security
 - ✓ Web security
 - ✓ Mobile security
- ❖ Adopted by 1,180 institutions
- ❖ DNS labs for hospital case study
 - ✓ Critical asset and network service
 - ✓ DNS sniffing, spoofing, cache poisoning
 - ✓ DNSSEC validation and protection

Sim Network: DNS Attacks



Sim Network: DNSSEC



Presentation & Publication

- Full research paper has been accepted for presentation at the ITNG 2026 conference.
- Full research paper has been accepted for publication as a book chapter by Springer.

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Recognition for the Successful Completion of Grant Funded Project in 2026

