

Research & Grants Expo

March 20, 2024

9:00-12:00

Research Participants

Researcher (School)

Ping Wang (Computer Information Systems, SIHSS)
 Hubert D'Cruze (University of Maryland)
 Ping Wang (Computer Information Systems, SIHSS)
 Sushma Mishra (Computer Information Systems, SIHSS)
 Francis Hartle (Social Sciences, SIHSS)
 Qin Yang (Management, RSBUS)
 Patricia Kardambikis (Education, SNEHS)
 Benjamin Campbell (Engineering, SEMS)
 Judit Trunkos (Social Sciences, SIHSS)
 Anu Tripathi (Engineering, SEMS)
 Rika Wright Carlsen (Engineering, SEMS)
 Sushan Nakarmi (Post-Doc, SEMS)
 Yaohui Wang (Post-Doc, SEMS)
 Rika Wright Carlsen (Engineering, SEMS)
 Manik Bansal (Post-Doc, SEMS)
 Anastasia Tzoumaka (Post-Doc, SEMS)
 Nelle Stahura (Office of People and Culture)
 Lisa Hernandez (Office of People and Culture)

Researcher (School)

Samantha Gibson (Marketing, RSBUS)
 Gabe Moreno (Marketing, RSBUS)
 Samantha Monda (Psychology & Health Sciences, SNEHS)
 Erin Neuman-Boone (Psychology & Health Sciences, SNEHS)
 Nicole Szalla (Nursing, SNEHS)
 Nooredin (Noory) Etezady (Computer Information Systems, SIHSS)
 Barbara Burgess-Lefebvre (Arts and Humanities, SIHSS)
 Johnna Lefebvre (Undergraduate, SIHSS)
 Hasan Celik (Management, RSBUS)
 Sedat Cevikparmak (Desales University)
 Hasan Uvet (Georgia Gwinnett College)
 Saban Adana (John Carroll University)
 Yavuz Idug (University of North Texas)
 Carl Ross (Nursing, SNEHS)
 Janelle Johns (AHN Residency Director)
 Sangho Shim (Engineering, SEMS)
 Sulaiman Syed Irshad, DeShawn Falls, & Abdulrhman Kojan (Undergraduate, SEMS)

Research Participants

Researcher (School)

Tracy Frazier (Center for Student Success)
Maureen Keefer (Dean of Students Office)
Chloe Persian Mills (Elaine Boyd Library)
Jackie Klentzin (Elaine Boyd Library)
Hyla Willis (Arts & Humanities, SIHSS)
Sushma Mishra (Computer Information Systems, SIHSS)
Reese Martin (Undergraduate, SIHSS)
Robby Pava (Undergraduate, SIHSS)
Hongguo Wei (Management, RSBUS)
Niani Reyes (Undergraduate, RSBUS)
Kihyun Park (Management, RSBUS)
Vicki Donne (Education, SNEHS)
Ruth Auld (DePaul School)
Shanté Eberhardt (The Neighborhood Academy)
Alicia Cassels (Center for Innovative Teaching)

Researcher (School)

Ann Summerall-Jabro (Communication & Organizational Leadership, SIHSS)
Chris Groendyke (Mathematics, SEMS)
Zhou Yang (Social Sciences, SIHSS)
Jianyu Ma (Finance, RSBUS)
Yun Chu (Marketing, RSBUS)
Betsy Guimond (Nursing, SNEHS)
Jessica Kamerer (Nursing, SNEHS)
Margaret Rateau (Nursing, SNEHS)
Anazyia Varsani (Undergraduate, SNEHS)
Mykaela Schneider (Undergraduate, SNEHS)
Won Joo (Engineering, SEMS)
Aditi Gupta (University of Pennsylvania)
Yoonhyuk Huh (University of Pennsylvania)
Brian Chang (University of Pennsylvania)

Research & Grants Expo 2024



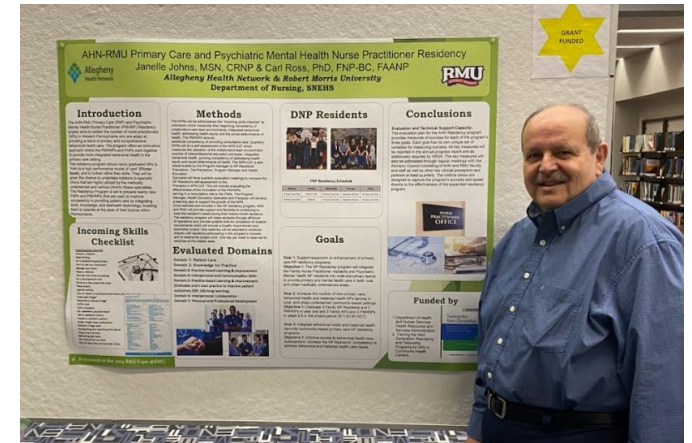
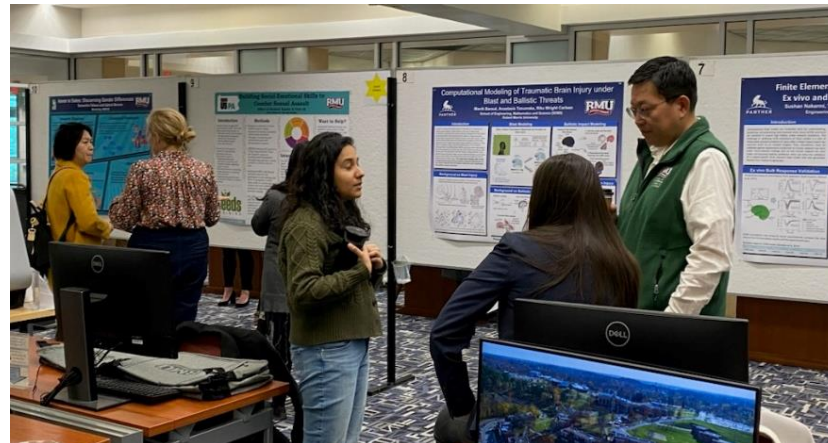
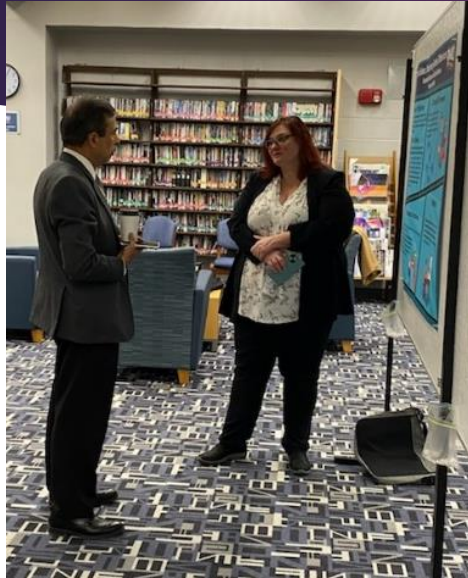
Research & Grants Expo Plaque Award



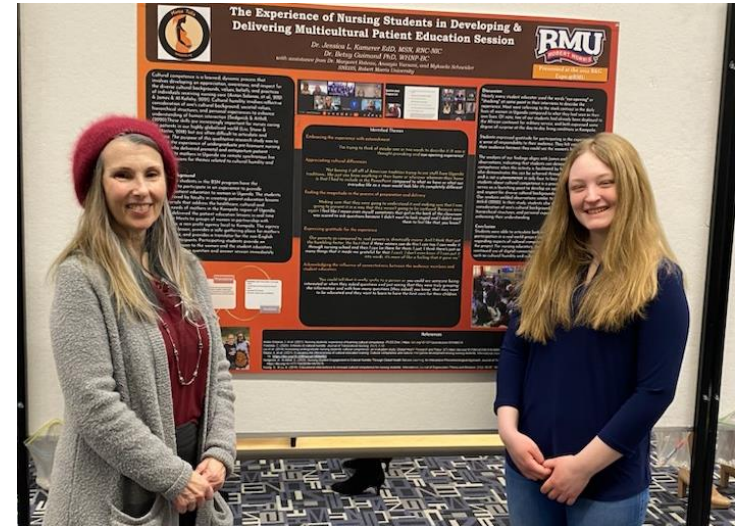
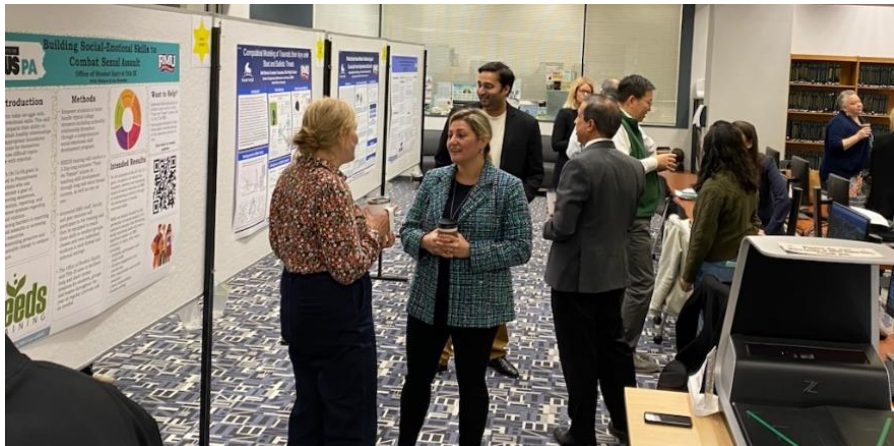
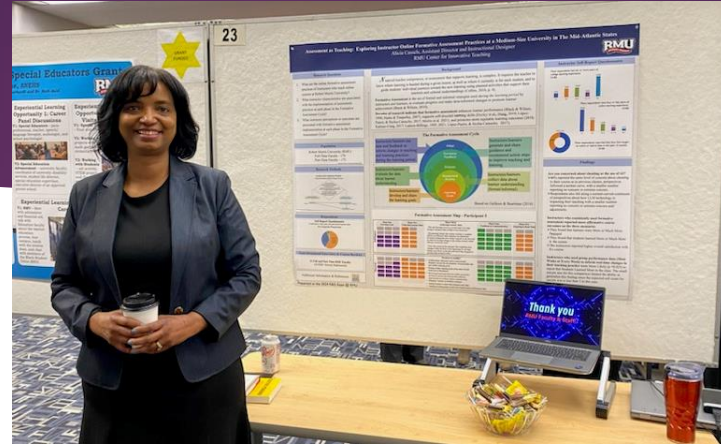
Research & Grants Expo 2024



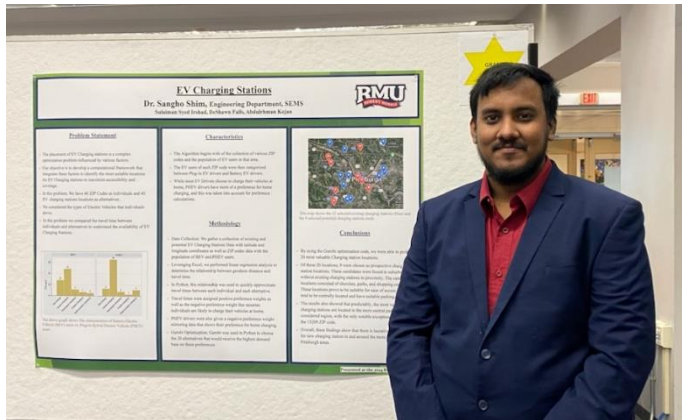
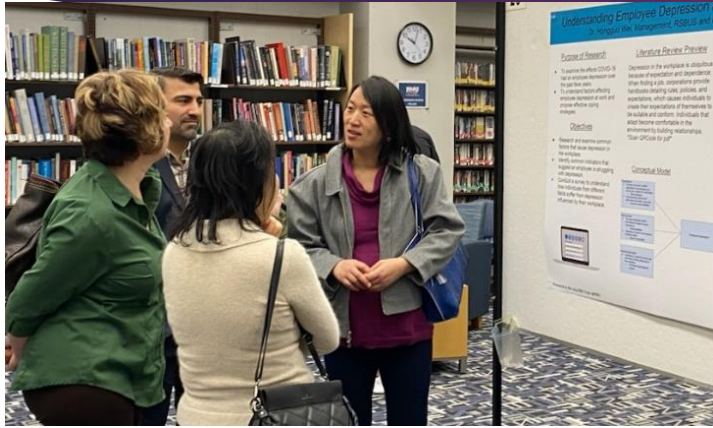
Research & Grants Expo 2024



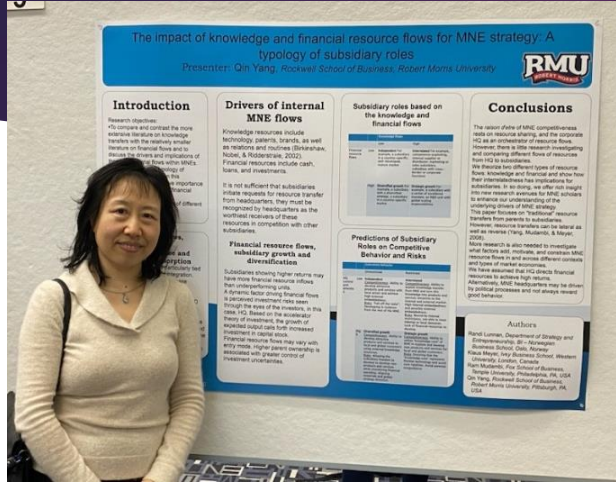
Research & Grants Expo 2024



Research & Grants Expo 2024



Research & Grants Expo 2024





Research Posters from RMU Schools & RMU Library



Introduction

Research Focus

Explore Gen AI in pentesting for security vulnerability assessment

Significance

PT key to vulnerability discovery;
 Big data in PT for processing;
 Gen AI/LLMs potential:

- Automation
- Efficiency
- Accuracy
- Interactivity

Question/Goal

AI help for human pentesters?

AI-Assisted Model

Double-edged Sword

Benefits

- Early threat detection
- Implement 0-trust better
- Improved efficiency/accuracy
- Threat profile prediction

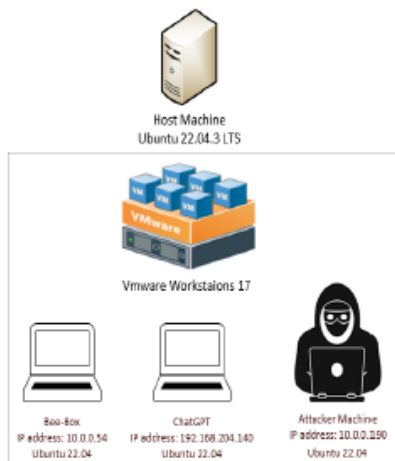
Risks/Limitations

- Malicious misuse
- Disclosure of sensitive info
- Misleading hallucinations
- Potential copyright violations in training data

Methods

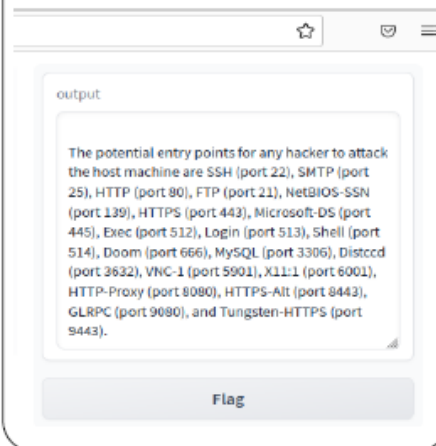
- Simulation testing
- Gen AI/LLM: ChatGPT-4
 - Improved content/interactivity
 - Limited training and no memory
- VMWare network: training data
- VM#1: Vulnerable Target
 Bee-Box VM
 - bWAPP "buggy web application"
 - Apache server vulnerable configs
 - Wireshark for data capture
- VM#2: Attacker
- Nmap scripting engine (NSE)
 - `nmap -p --script ssl-heartbleed -sV 10.0.0.54`
 - `nmap -p -sV --script=http-sql-injection 10.0.0.54`
- VM#3: ChatGPT-4 AI tool
 - Trained with data from VM#2
 - Chatbot integrated with LLM

VMware Network



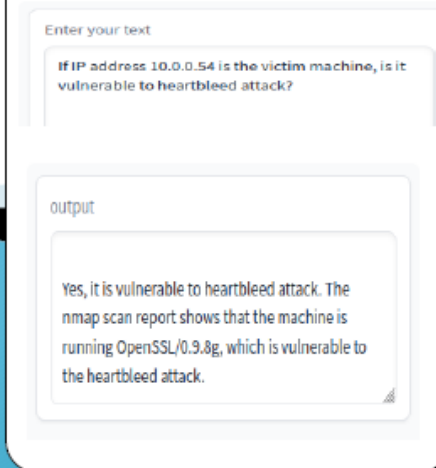
Sample Finding 1

Attack Entry Points



Sample Finding 2

Heartbleed Vulnerability



Sample Finding 3

Apache Exploitation How-to



Acknowledgement

- This research is accepted to be published by Springer.
- This research is funded by NSF grant#2234554.



CyberCorps Scholarship for Service: Excellence, Ethics, and Strategic Thinking

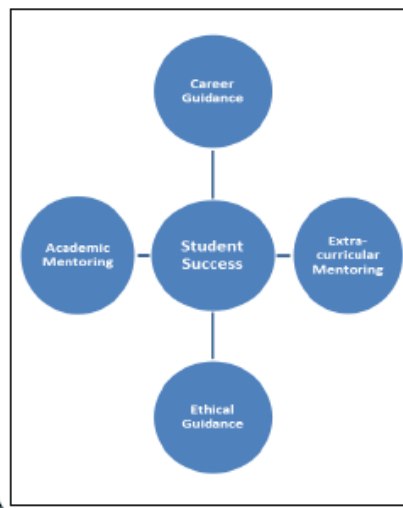
PI: Dr. Ping Wang; Co-PIs: Dr. Sushma Mishra, Dr. Francis Hartle
Computer & Information Systems, SIHSS, RMU



Introduction

This NSF grant (# 2234554) is awarded to RMU by the National Science Foundation to establish and implement a 5-year CyberCorps® Scholarship for Service (SFS) program to recruit and develop strong cyber talent to defend America's cyberspace during 2023 – 2027. The grant award totals near \$4m and is renewable upon satisfactory performance review.

Mentoring Model



Methods

- Recruit >=20 diverse cyber talent
- Complete BS/MS Cybersecurity
- Receive comprehensive mentoring
- Achieve technical excellence
- Develop cyber strategic thinking
- Achieve academic & pro success
- Deliver professional cyber service
- Program environment variables
 - SFS Scholarship support
 - NCAE-CDE designation
 - Government partnerships
 - Curriculum innovations
 - Cybersecurity research
 - Ongoing SFS seminars
 - Ethical guidance
 - Extra-curricular activities
 - Summer internships

Project Goals

- Recruit and develop cyber talent
 - At least 20 in 5 years
 - Diversity goals
- Provide excellent education & KSAs in cybersecurity
- Curriculum innovations
 - Excellence
 - Research
 - Ethics
 - Strategic thinking
- Comprehensive mentoring and partnerships for student success
- Engage in cybersecurity research and dissemination
 - Faculty
 - Students

Funding Support

- SFS Scholarship Package**
- Full cost of tuition and fees
 - Annual Stipend \$27k for undergrads
 - \$37k for grads (BS/MS)
 - Annual pro allowance \$6k
- Placement Assistance**
- OPM/SFS Job Fairs
 - Employer engagement
 - Job search training
- Research Support**
- Faculty research
 - Guided student research

Academic Excellence NCAE Designation



Year 1 Accomplishments

Recruitment

- Reached recruiting goal for Cohort 1
- Strong background and diversity

Curriculum Innovations

- New course offerings required for SFS:
- SFS Seminar, Cybersecurity Research, Cybersecurity Ethics

Mentoring

- Monthly mentoring report

Research

- Faculty research presentations & publications
- Guided student research presentations & publications

Extra-curricular Activities

- NCL Medals: 2 Platinum, 3 Gold, 1 Silver
- NCAE Cyber Games

LEADERSHIP By DESIGN: EXPANDING THE PRINCIPAL PIPELINE



Patricia Kardambikis PI (SNEHS), Mary Hansen (SNEHS), Michael Quigley (SNEHS/SIHSS)

Introduction

- ❖ Pennsylvania Department of Education grant-funded program originated to create a pipeline of highly effective school leaders with the appropriate skills and tools to increase student achievement and to improve school climate.
- ❖ Together, RMU, Propel and Commonwealth Charter School hoped to address the need for diverse, trained, and highly effective school leaders.

LEAD Program Leadership by Design

- ❖ Competency-based graduate program.
- ❖ Focuses on the eight domains associated with school leadership:
 - organizational leadership,
 - instruction and assessment,
 - standards-aligned curriculum development,
 - teacher evaluation,
 - budget and finance,
 - school law,
 - collaboration/communication,
 - school/community relations
- ❖ Involves a one-year principal residency to build an operational knowledge base.

Program Components

- ❖ Targeted Professional Development on Diversity, Equity and Inclusion pedagogy for Ethical Educational Leadership.
- ❖ Social and Emotional discussions along with Culturally Responsive instruction.
- ❖ Guest Speakers in DEI with recorded sessions.
- ❖ Professional Development: Online resources (DataWise and OverDrive) along with Library resources.
- ❖ Mentor sessions with RMU's liaisons.
- ❖ Leadership Lending Library. These resources will enhance the induction process for the newly certified Principal.
- ❖ Preparation and support for the outcome-based field experience.
- ❖ Speakers
 - Ms. Angela Allie – Executive Director of the Institute for Learning (IFL) at the University of Pittsburgh.. Former Principal of Propel Andrews Street High School, and previous Executive Director of Equity, Pittsburgh Public Schools.
 - Dr. Michael Quigley, Associate Professor of Organizational Leadership and Education at RMU. Specialties: Diversity, Cultural Competence along with Culturally Responsive Curriculum.

Grant Covered Components

- ❖ Full funding to complete the 15 credits for seven Principal Candidates, including:
 - Course textbooks.
 - Principal Mentor Stipends.
 - Principal Mentor and RMU faculty supervision working as a team to provide mentorship and feedback.
 - Course embedded seminars with focus on Diversity, Inclusion and Equity education and leadership.
 - Licensure exam cost for PDE principal certification.
 - Continued Professional Development including a lending library.

PARTNERS: Propel Charter Schools and Commonwealth Charter Academy (CCA)

- Propel is a large charter school serving a diverse, high poverty student body in 13 locations in Allegheny County.
- CCA is the largest K-12 public charter school in PA and exists to provide equitable access to all student populations. CCA supports the skills of principals, ensuring the social architecture of schools.

Program Evaluation

Data from Several Sources

- ❖ Performance Scorecard Rubric for Principal Portfolio
- ❖ Performance Scorecard Summary and Reflection
- ❖ Mentor Principal's Program Evaluation of the RMU-LEAD Principal Certification Program
- ❖ RMU-LEAD Mentor Evaluation of Intern's Experiences and Achievements
- ❖ RMU-LEAD Principals Program Exit Surveys and Alumni Survey
- ❖ Internship Experiences Matrix

Program Evaluator: Dr. Mary Hansen

Current Status:

- ❖ 7 Principal Candidates Completed the LEAD program.
 - 15 Credits along with 360 hour Internship Residency.
 - 7 Principal Mentors.
- This coursework is "a must for those educators already working in these roles to have an impact on equity driven education."



Redesign of Intro to Engineering

Ben Campbell, Ph.D.

Department of Engineering, SEMS
Robert Morris University



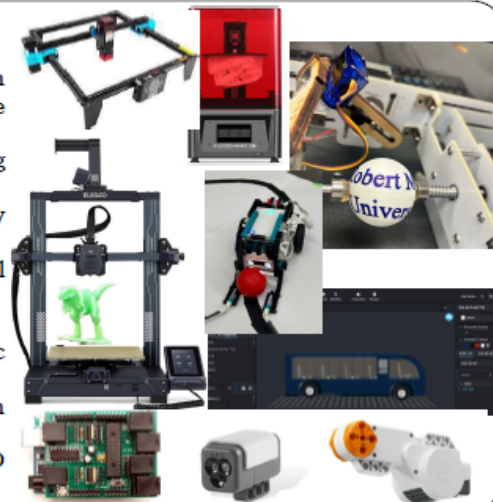
Introduction

To update the curriculum for ENGR1010, Introduction to Engineering, a focus group of three junior engineering students worked with Dr. Campbell to review and revise the course. To make the topics more engaging, instructional methods were researched to reduce the lecture content and replace it with a flipped classroom active learning approach. One result was a framework for a semester long group project that would challenge students with creative open-ended problem solving.

Project Options

The 28 students were placed in their first or second choice to make seven groups of four students

1. Fused Deposition Modeling (FDM) 3D printer
2. Masked Stereolithography Apparatus (MSLA) 3D printer
3. Eggbot (computer control marking of round objects)
4. Laser Marking System
5. LEGO MindStorm Robotic Inventor Set
6. LEGO Studio 2.0 Design Software
7. Bricktronics/Arduino and LEGO MindStorm NXT components.



Conclusions

Working in groups of 4 appeared to be a good size to keep students involved. Assigning project roles (Project Manager, Software Engineer, Hardware Engineer, and Compliance Engineer) gave specific responsibilities to each student. Many of the projects utilized equipment purchased by the engineering department or engineering clubs. In some instances students were given the option to buy the hardware to use for their group and keep after the course ended, which one student did with the Laser Marking system for \$150. The only project that did not require hardware was the free Studio 2.0 software used to design LEGO sets. This could be used for every project in a class if other resources were unavailable. Any ENGR1010 instructor could develop their own projects using the framework or use any of these seven examples. These project approach can also be shared with college in high school partners to enhance their programs.

Framework for Projects

General project plan for Engineering 1010	Specific Example: Laser Marking System
1-2 classes of building standard model and learning code	1-2 classes assembling the laser marking system kit. Test and calibrate the system
1-2 classes of demonstrating application of system/device	1-2 classes learning the software and refining the marking process. Make test marks.
1-2 classes of experimenting with code	1-2 classes learning about image processing programs (Inkscape) and create vector images
1-2 classes of small engineering challenge	1-2 classes designing and marking an original object to solve an engineering challenge. Test your pattern on different materials.
2-4 classes of design and building of final project following engineering design process	2-4 classes for the final project following engineering design process to create a customized laser marked product. Make tooling or a jig to index/align the items to be marked.
Final Exam Week: Group Presentations/ Demonstrations	Show what you designed and made, explain process during final exam period. Give take-home exam in place of in-class exam

Results

Of the 28 class meetings (75 minutes each) eight were devoted to the project by using flipped classroom methods to reduce the amount of lecture time and replace it with assigned pre-readings with quizzes, discussion boards, and out-of-class activities. Class time was then split between a review of concepts, discussion, activities and projects workdays. Each project day culminated with a progress report submission with a required number of deliverables following the framework sequence. Students were also encouraged to work outside of class on their projects to gain a better understanding of the technology.

Acknowledgments

Special thanks to engineering students Bria Jamison, Hannah Lacek and Joe Gusherowski for acting as a focus group to review the ENGR1010 curriculum and helping to develop and test these project ideas.

Testing the Geopolitical Theory of European Countries' Soft Power Use in Gallarotti's (2023) Alternative Paths to Influence

Soft Power and International Politics

Judit Trunkos, PhD
Social Sciences, SIHSS



Introduction

Soft power has been defined as the ability make others want what you want using persuasion and attraction (Nye 2011).

To answer the question, why some democracies use more soft power than others, this book chapter turns to a theory based on geopolitics.

Methodology

Based on Trunkos (2021), the dependent variable was created by:

- Separating Soft Power Actions and Soft Power Resources (Figure 1)
- Recoding the ICEWS event data into two categories, either as a soft power action or as a hard power action, and then calculating the soft power action percentage over the total power usage (Figure 2)

Theory and Methodology

The theory implies that when there is the perception of threat, the political elite creates a narrative that focuses on national security and the country starts to rely on a higher level of soft power in order to balance against the threat.

Using statistical analysis of 29 European democracies, this book chapter looks at the impact of geopolitical threat on democracies' soft power reliance.

H1: Democratic countries with more geopolitical threat use more soft power actions than countries with less geopolitical threat.

Figure 1. New Classification of Foreign Policy Instruments Based on the Separation of Resources and Actions into Soft Power and Hard Power Categories

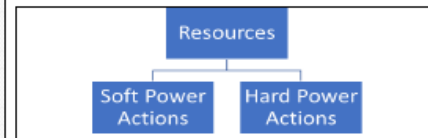
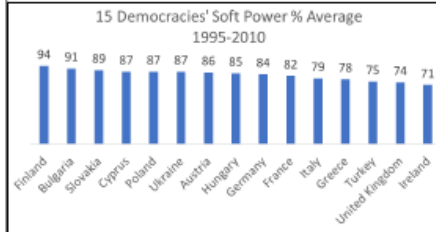


Figure 2. 15 Democracies' Soft Power Action % for the time frame 1995-2010



Results

For the time-period of 1995-2010, the results reveal that geopolitical threat is a statistically significant variable which boosts soft power use.

This result provides a strong explanation to why Finland, Austria, Hungary, Germany use a high level of soft power each year while countries with lower geopolitical threat scores such as Ireland and Turkey do not.

Conclusion

The findings provide answers regarding countries' alliance-building processes as well as suggest that the three main paradigms of international relations, namely Realism, Idealism and Constructivism, are more compatible than previously stated.

Using soft power to balance against threat ensures that the aggressive neighbor is not provoked into aggression and the weaker maintains its independence, while strengthening its outreach with other countries.

The book earned Joseph Nye's endorsement from Harvard University.

Bibliography

Nye, J.S. (2011). *Future of Power*. New York: Public Affairs.

Trunkos, J. (2021). Comparing Russian, Chinese and American soft power use: A new approach. *Global Society*, 35(3), 395-418.



Finite Element Head Model Validation Against Ex vivo and In vivo Experimental Data Sets

Sushan Nakarmi, Yaohui Wang, Anu Tripathi, Rika Wright Carlsen
Engineering Department, SEMS - Robert Morris University

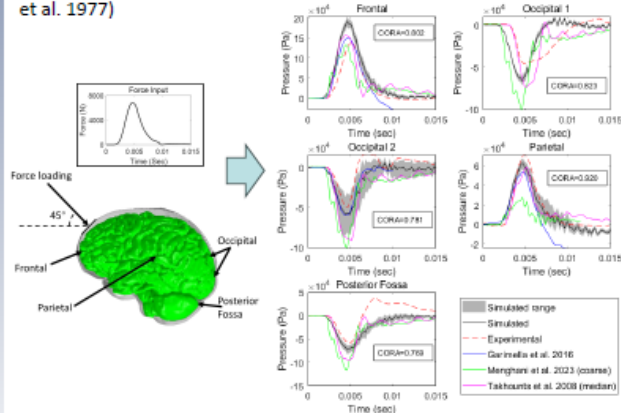


Introduction

Computational head models are invaluable tools for understanding, predicting, and preventing mild traumatic brain injury (mTBI) and must be validated to ensure high fidelity under relevant conditions. The challenge in validating mTBI predictions of head models is a lack of measurable physical evidence of injury after a head impact event has occurred (such as on medical images). Thus, simulations must be validated against experiments conducted on human cadavers (ex vivo) under injury-relevant loadings and on live human subjects (in vivo) under non-injurious loading conditions. Here, we show the validation of a subject-specific finite element head model that was generated directly from medical imaging data.

Ex vivo Bulk Response Validation

Intracranial pressure time history from cadaveric head impacts (Nahum et al. 1977)



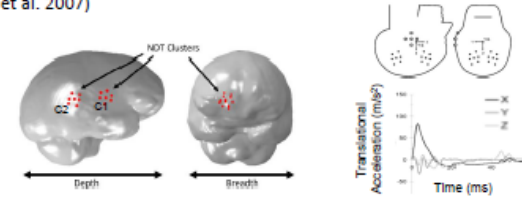
CORA (Correlation and Analysis) scores quantitatively compare the time history from the simulation results and the experimental data.

Biofidelity scale for CORA score (Giordano et al. 2016):

Scale	Unacceptable	Marginal	Fair	Good	Excellent
CORA score	0.00-0.26	0.26-0.44	0.44-0.65	0.65-0.86	0.86-1.00

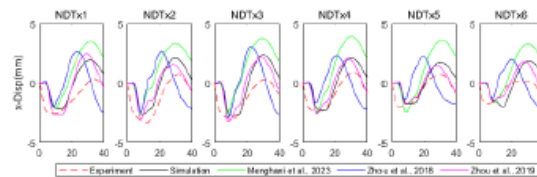
Ex vivo Shear Response Validation

Tissue strain and displacement from cadaveric head impacts (Hardy et al. 2007)

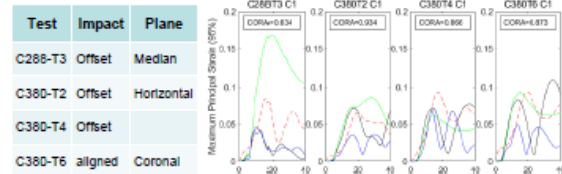


Neutral density targets (NDT) were embedded in cadaveric brains to track the brain-skull displacement in head impact tests

Head kinematics from a representative head impact test (C288-T3)



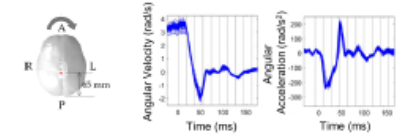
Comparison of representative NDT displacements (x-axis) between our simulated results and experimental results from Hardy et al. and other finite element modeling studies for test case C380-T4



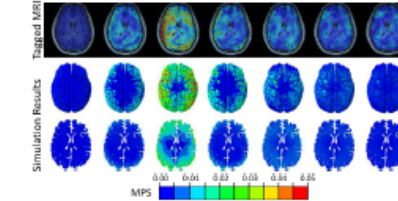
Test	Average NDT CORA	Comparison of the maximum principal strain (MPS) of the NDT clusters between our simulated results and experimental results from Hardy et al. and other finite element modeling studies
C288-T3	0.58 (Fair)	
C380-T2	0.60 (Fair)	
C380-T4	0.67 (Good)	
C380-T6	0.63 (Fair)	

In vivo Experiments

Brain tissue strain measurements under mild head accelerations using tagged MRI (magnetic resonance imaging) techniques (Knutsen et al. 2020)

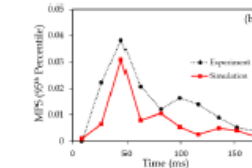


Angular kinematics of the head during neck rotation (axial rotation)



Maximum principal strain (MPS) in the brain tissue from the experiment (top) and simulation (bottom two rows)

MPS from the experiment (black) and our simulation (red) results in a CORA score of 0.79 (good)



Conclusions

Our validation results showed good agreement with the experimental data, confirming that our human head model is producing high fidelity simulation results.

Acknowledgement

We gratefully acknowledge the Panther program and support from the Office of Naval Research (Dr. Timothy Bentley) under grant N00014-21-1-2044 and N00014-22-1-2828.



Building Social-Emotional Skills to Combat Sexual Assault



Office of Student Equity & Title IX

Nelle Stahura & Lisa Hernandez

Introduction

Students today struggle with social-emotional skills. This skill deficit impacts their ability to:

- Establish healthy relationships
- Set appropriate boundaries
- Advocate for themselves
- Discuss difficult topics
- Cope with rejection

The *It's On Us PA* grant is awarded to Pennsylvania institutions who can demonstrate a goal of:

- Improving awareness, prevention, reporting, and response systems regarding sexual violence.
- Reducing barriers to reporting sexual assaults or accessing vital resources.
- Implementing proactive and sustainable change to campus culture.



Methods

- Empower students to better handle typical college stressors including unhealthy relationship dynamics through a comprehensive social-emotional skill development program.
- SEEDS training will conduct a 3-Day long intensive "Train the Trainer" course in teaching skill development through long and short format courses, as well as one on one.
- Interested RMU staff, faculty and peer mentors will participate in the training and then be equipped to teach these skills to student groups, classes and even individual students in both formal and informal settings.
- The Office of Student Equity and Title IX aims to facilitate long and short format sessions for students, groups and teams throughout the year at regular intervals and as needed.



Intended Results

For the purposes of the *It's On Us* grant, our goal is to reduce the frequency, severity and emotional impact of sexual assaults at RMU by empowering students through the development of social-emotional skills.

While we remain focused on the prevention of sexual assault, it is natural to assume that developing social-emotional skills will have a significant impact on RMU students in many other ways including:

- Academic performance and study skills
- Campus engagement and satisfaction
- Peer relationships and conflict resolution
- Career preparedness
- Problem solving

Want to Help?

Interested Staff and faculty are invited to join us for a 3-Day "Train the Trainer" course, July 15,16,17 at RMU.

Participants will learn to teach these skills to student groups, in the classroom, and one on one.

Scan below to receive updates:





Humor in Sales: Discerning Gender Differences

Samantha Gibson and Gabriel Moreno
Marketing, RSBUS



Research Objective

To investigate male and female salespeople's nuanced application of humor as an adaptive selling strategy in various sales contexts (B2B and B2C) and its impact on shaping customer trust, perceived product quality, and sales performance.

Humor in Sales

Research shows that humor effectively builds rapport, enhances customer relationships, and potentially improves sales outcomes.



However, the application and impact of humor can vary significantly between male and female salespeople, largely due to societal norms and gender stereotypes. When using humor, females might face more scrutiny and be judged more harshly than their male counterparts.

Conceptual Framework

The effectiveness of humor is moderated by the salesperson's gender and type of interaction. This study will examine humor (affiliative, self-defeating, aggressive), salesperson gender, and sales context (B2B, B2C)



Expected Contributions

This research seeks to deepen the understanding of humor in sales, exploring gender and context differences on its efficacy.

The insights aim to offer actionable insights for sales training, enhance adaptive selling strategies across different industries, and reinvigorate the academic discourse on gender roles and stereotypes in professional sales environments.



Method

A mixed-methods approach will be used, incorporating both qualitative and quantitative data. Surveys will gather data from both salespeople and customers. Structural equation modeling will be used to explore the hypothesized relationships.



WHAT IS SIMULATION?

High Quality Simulation is the gateway to Innovation in Education

At its core, simulation replicates real-life scenarios in a controlled environment, offering practitioners a safe space to practice and refine their technical and non-technical clinical skills.

Testimonial videos from Counseling in Psychology Students



Term	Students
Fall 2022	N=5
Fall 2023	N=13
Fall 2024	N=16

Design & Procedures

Using Kirkpatrick's Model we devised an evaluation process for learner feedback

Year 1 2022-2023: Data from 18 student trainees who complete the pre-post battery of assessment including the COSE inventory, the DASH survey, and the Satisfaction survey

In Year 3 2025: Data from 20 community members who complete the pre-post battery of assessments including the COSE inventory, the DASH survey, and the Satisfaction survey

Simulation with Student and Standardized Patient (SP) Recording



DEVELOPING A SIMULATION PROGRAM

- Guided by Research in Best Practices
- Simulation Experts
- Subject Matter Experts
- Technology
- Space
- Time
- Costs
- Develop Scripts
- Identify and Train Actors
- Orient students
- Provide clear objectives
- Record sessions
- Live peer and faculty observations

Example Schedule 2-Hour Sessions
 Class time was 5:30-8pm allowing time for group pre-briefing and debriefing

TIME	169: NICOLE	171: ERIN	172: ANDREW	174: KRISTEN
IP ADDRESS	10.21.18.2	10.21.18.9	10.21.18.16	10.21.18.23
	SP: Zilda	SP: Christa	SP: AJ	SP: Erin
6:00-6:20	Student 1	Student 2	Student 3	Student 4
6:25-6:45	Student 5	Student 6	Student 7	Student 8
6:50-7:10	Student 9	Student 10	Student 11	Student 12
7:15-7:35	Student 13			

ASSESSMENT & EVALUATION

Kirkpatrick's Model



Counseling Self Estimate Inventory (COSE)

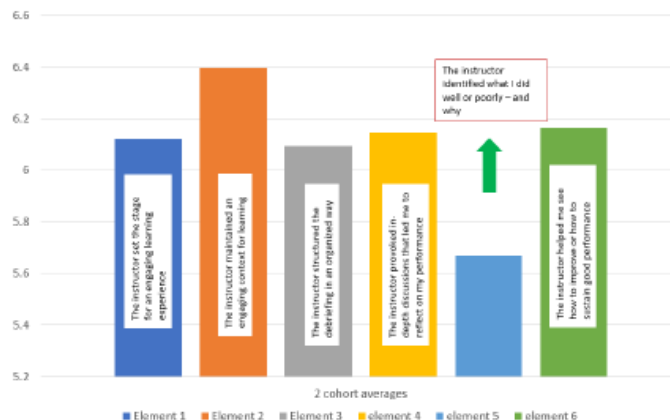


Rating Scale

Rating	1	2	3	4	5	6	7
Descriptor	Extremely Ineffective / Detrimental	Consistently Ineffective / Very Poor	Mostly Ineffective / Poor	Somewhat Effective / Average	Mostly Effective / Good	Consistently Effective / Very Good	Extremely Effective / Outstanding

Data N = 18
 1 year of data combined

2022-2023 DASH Survey N=18



APPLICATIONS IN BEHAVIORAL HEALTH

Simulation-based learning provides opportunities for counseling students to fine-tune their skills in a safe environment and better prepare for clients and situations that they may encounter in a clinical setting. It can also provide robust learning when live training is limited (i.e. rural areas w/limited providers). Some uses and benefits include:

- Increase student readiness for practicum/internship
- Provide a more authentic experience than role play
- Give exposure to special populations or less common issues
- Observe and model "counseling in action"
- Provide opportunities to evaluate student skills and offer real-time feedback
- Target training for a particular need of an organization
- Offer continuing education for current professionals

Creative Simulation Scenarios in Behavioral Health Training:

- Ask students to identify a problem that they have struggled with in their training and create a simulated reenactment.
- Assess a student's diagnostic skills by simulating a scenario where they diagnose a client.
- Simulate an interdisciplinary treatment team collaboration.
- Practice responses to a crisis situation.
- Simulate a counseling experience with a client from a different culture.

PROFESSIONAL DEVELOPMENT





A Privacy Metric Model for IoT for Homes

Noory Etezady, PhD

Dept. of Computer & Information Systems, SIHSS



Introduction

- Internet of Things (IoT) has exponentially increased consumers data collection through device sensors.
- Most users are not aware of the unseen collection of data.
- This poses new security and privacy challenges.
- Privacy metrics help users understand the level of privacy protection of their devices and potentially motivate them to configure their privacy features.
- This study proposes to construct a model for smart home privacy metrics.
- The privacy metric model can be used to develop privacy metrics for various smart home devices.



Methods

- Understanding of specific privacy risks is dependent on the context and situation of a specifically implemented technology.
- This research builds on Karwatzki et al. (2022) research that privacy risk is a multidimensional concept.
- This study aims to develop a model for smart home privacy metrics.
- The model will be based on the analysis of smart home users perceived privacy risks.
- A survey will be designed in the context of smart homes and based on existing valid and reliable surveys from prior privacy risk research.
- The designed survey will be administered using a crowdsourcing platform.
- The result of the survey will be analyzed in order to understand how various smart home privacy risks are weighted by the study participants.

Internet of Things (IoT)

00000000000000000000
 00000000000000000000
 00000000000000000000

"I am but a "0" in the vast binary digital universe. Let's hope one day I become a "01" bit of Internet Safety, IoT and Cybercriminal Psychology data."

Michael Noory, PhD, ©2024



Anticipated Results

- A model for smart home privacy metric.
- The resulting privacy metrics model can be used to develop privacy metrics for IoT for home (smart home) devices.
- Privacy metrics help users understand the level of privacy protection of their devices and motivate them to configure their privacy features.



Conclusions

- The rapid growth of Internet of Things (IoT) devices has exponentially increased consumers data collection through device sensors.
- Although IoT adds convenience to people's life, it poses new security and privacy challenges.
- Privacy metrics are needed to help users understand the level of privacy protection of their devices and persuade them to configure privacy features.
- Several studies have called for more research on privacy metrics
- This study proposes to build a model for smart home privacy metric which can be used to develop privacy metrics for smart home devices.

Bibliography

- Dinev, T., Xu, H., Smith, H. J., & Hart, P. (2013). Information privacy and correlates: An empirical attempt to bridge and distinguish privacy-related concepts. *European Journal of Information Systems*, 22(3), 295–316. <https://doi.org/10.1057/ejis.2012.23>
- Hang, M., Lanza, J., & Gewald, H. (2021). Only if it affects me! The influence of privacy on different adoption phases. *Proceedings of the Forty-Second International Conference on Information Systems (ICIS 2021)*, Austin, TX, 1-17.
- Karwatzki, S., Trezza, M., & Veit, D. (2022). The multidimensional nature of privacy risks: Conceptualisation, measurement and implications for digital services. *Information Systems Journal*, 32, 1126-1157.

Best Practices in Guest Assistance for Disabilities

Barbara Burgess-Lefebvre M.F.A., Arts & Humanities, SIHSS & Johnna Lefebvre



Disneyland, Paris

- To identify as a person in need of accommodations:
- Partial preregistration is available, 60 days in advance
 - Must provide government-issued proof of disability.
 - For a US citizen, this would include military or social security paperwork.
 - A letter from a doctor is not acceptable.
 - They will accept a handicap pass from the National Forest (which is still a federal government-issued proof of disability)



Using DAS in Disneyland Paris:

- Once you do all of the virtual preregistration, you need to wait until you arrive at the gate to complete the registration.
- Show ID and proof of registration
- Receive a plastic ID card (with photo) to show to CMs at each attraction which gains you admittance to premier access or access via an aut ramp

Pluses:

- Almost immediate entrance to any attraction
- Because this pass is so much harder to qualify for there are fewer guests using these lines
- Qualifying DAS pass guests and one accompanying guest receive 25% off of their ticket media
- DAS is available for length of stay

Minuses:

- Have to disclose diagnosis at some point to a governmental official and to Disneyland Paris.
- Many more hoops to jump through prior to heading to the parks



Universal Parks, Florida

- To identify as a person in need of accommodations:
- A guest hoping to be granted a disability pass must register and be cleared with IBCCES (The International Board of Credentialing and Continuing Education Standards).
 - IBCCES requires paperwork substantiating a disability. Either from a government entity or a signed letter from a doctor.
 - Guest submits an application and should hear back within a week to 10 days if they have been approved (or if they need to submit other paperwork)
 - The IBCCES card is good for one year after issuance.



- If the guest plans to visit one of the Universal parks in the next 48 hours, guests with an IAC card can visit guest services (either in or directly before the gate but NOT at Citywalk). Waiting there will be anywhere from walk up to (more likely) about 30 minutes. They can then speak about needed accommodations in person.
- If the visit is further off the rest of the substantiation can be done virtually.

Using the pass at Universal Florida:

- Guest is given a paper form that must be signed and countersigned at each attraction. This pass is good for the length of stay
- Guest and their party go to an attraction and note the return time. If they decide to use their card at the attraction, an employee will initial the card and indicate a return time that is usually about 10 minutes shy of the posted return time. This is to acknowledge that there will still be a wait upon entering the line.
- Guests with disability pass use the same line that the guests with Express Pass use. If the line is under 25 minutes, the guest is allowed to immediately enter that line.



Pluses:

- The more detailed application process means that a guest is set for the next year, not only at Universal Florida but also at many parks across the country including all Six Flags parks and Universal Studios Hollywood.
- (Sesame Place, Water World (Colorado), Knoegels, Splash Splash Water Park, Six Flags (Discovery Kingdom, Fiesta Texas, Great Escape, Great America, Dorney Lake, Magic Mountain, Mexico, New England, Georgia, Texas, St. Louis, Great Escape, and Hurricane Harbor [NJ and TX]), La Ronde, Frontier City, Hurricane Harbor (OKC, Phoenix, Splashtown, and Concord) and Universal Studios Hollywood)
- Immediate entrance for short lines

Minuses:

- Guests have to get to each attraction before they can enter the "virtual line". Because Universal has a circular set up that makes it difficult to do anything else while "waiting" without a lot of backtracking.
- Employees make mistakes and the guests need to really keep track of the return times noted on the paper.
- Paper products can be damaged on wet rides
- Because the same line is used for express pass users, the line can still be over 30 minutes long



	Walt Disney World	Disneyland Paris	Universal Studios	Kennywood
Pre-Registration	X			
App	X			
No/Minimal Wait			X	X ²
Third Party Approval Required		X	X	
Discount Tickets		X		



Presented at the 2018 B&E Expo at RMU



Walt Disney World

- To identify as a person in need of accommodations:
- If a guest chooses to preregister (preregistration is available 30 days in advance, but not required):
 - All accompanying guests need to be connected to the Disability Access Service (DAS) requester on My Disney Experience.
 - The requester must have accepted the terms on the website.
 - The requester must follow the link on the website to a test with a cast member.
 - The requester must indicate their interest in preregistering for DAS and wait between five minutes and eight hours for a cast member to join a virtual chat. In that chat, the DAS applicant must verbalize their need for accommodations (they are reminded not to give a diagnosis).

- If DAS is granted, the cast member takes a photo of the guest that will appear when they use the service in the park.
- The DAS recipient is allowed to preselect two attractions per park per day where reservations for the park have been made (with certain exceptions).
- These preselected attractions are assigned an hour-long return window and are not available once that window has expired.

- If a guest registers upon arrival at guest services:
- All accompanying guests need to be connected to DAS recipient on My Disney Experience.
- The same questions are asked of the applicant as in the virtual chat.
- No preselected attractions are available.

Using DAS in WDW:

- Upon swiping ticket media and entering the park, the DAS recipient, or another person in their party, can view available attractions and return times and select one. They need not be at that attraction to select it. At the assigned time the group goes to the Lightning Lane entrance and scans in. Once the group has passed the second swipe point (where there is one) the group can make another DAS reservation.
- Not including any preselected attractions, the DAS recipient can only hold one return pass at a time. While there is a return time there is no expiration time – it remains available for the rest of that day.



Pluses:

- Not having to be at the attraction to register for the return time
- Being able to see all return time options in the app.
- Fairly quick admittance to the attraction upon return time. This varies depending on the day and attraction. Generally, that translates to anything from immediate seating and a 20-minute wait.
- DAS is made available for length of stay

Minuses:

- Not being able to plan the day in detail.
- A guest with little familiarity with the park may spend a good bit of time wandering to find the attractions they have booked, and may not know what else they can do nearby while they wait.



Kennywood Park (Pittsburgh)

- Identifying as a person in need of accommodations:
- To be given a guest assistance pass at Kennywood, a guest must apply at guest services for each day they attend the park.
 - No need for outside verification.

Using the pass at Kennywood:

- Guests are given a paper pass good for a single day. They go to the first attraction that they wish to ride and are admitted to an abbreviated queue. (There are still occasional waits in these lines for up to 20 minutes.)
- After they ride the ride, the operator notes the time that they would have waited for the attraction in the regular line.

- The guest must now wait that amount of time before they use the pass at another attraction, effectively "waiting" in line after they ride.

Pluses:

- Immediate return time for the first attraction
- Once in the system, they can pull up your information so you do not have to refill out the survey

Minuses:

- Need to visit guest services for each visit
- Paper passes can get damaged



The Big Reveal...

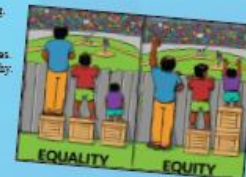
This research was meant to discuss how the Disneyland Paris system – although the most difficult to obtain, provided the most accessibility in the park with the easiest use and least waiting. And that stricter application processes weeded out the "cheaters and liars" who apply for assistance that they don't need.

After talking with Jan GoNun of the Wayfaring Band in Denver Colorado our opinions have changed. The Wayfaring Band is a group that takes people with disabilities on grand experiences. Their motto is "An Adventure where everyone belongs". The Wayfaring Band's outlook is that when disabled people ask for help, they should get it without needing to defend or explain why.

If we are advocating for equity we need to focus on making equity easy to get and not worry about those who would abuse the system.

With these ideas in mind it seems these parks should only require a guest who needs

accommodations ask for them without having to prove their necessity. While an appropriately generous system may be an abuseable one, that can't be the issue that constrains a park's approach. With a generous system, more guests needing accommodations will receive them and this will make parks that operate in that way a step closer to equitable.





AHN-RMU Primary Care and Psychiatric Mental Health Nurse Practitioner Residency

Janelle Johns, MSN, CRNP & Carl Ross, PhD, FNP-BC, FAANP

Allegheny Health Network & Robert Morris University
Department of Nursing, SNEHS



Introduction

The AHN-RMU Primary Care (FNP) and Psychiatric Mental Health Nurse Practitioner (PMHNP) Residency project aims to bolster the number of nurse practitioners (NPs) in Western Pennsylvania who are adept at providing a blend of primary and comprehensive behavioral health care. The program offers an innovative approach where the PMHNPs and FNP's work together to provide more integrated behavioral health in the primary care setting. The residency program allows newly graduated NPs to "train to a high performance model of care" (**Flinter book**), and to further refine their skills. They will be given the chance to undertake rotations in specialty clinics that are highly utilized by the medically underserved and various chronic illness specialties. The Residency Program is set to prepare twenty new FNP's and PMHNPs (five per year) to improve competency in providing patient care by integrating skills, knowledge, and telehealth technology, enabling them to operate at the peak of their license within Pennsylvania.

Incoming Skills Checklist

Incoming Skills Checklist

- Present a Patient
- Note Writing
- Do a Detailed Physical Exam
- How to talk to a consultant
- Manage your Inbox
- Place a referral
- Provide well child counseling
- Do a telemedicine visit
- Perform a Pap smear/Wet prep
- Place orders
- Agenda setting
- How to obtain a social/personal history (pre-hospital)
- Chest pain triage*
- Respiratory distress triage*
- COVID calls
- Falls evaluation
- Do a pediatric physical exam
- Take a pediatric history
- Present a pediatric patient
- Order weight dose medications
- Pediatric triage calls*
- Recognizing and reporting child abuse
- Using smart phrases
- Delivering bad news
- Use Interpreter services
- How to deal with new provider stress



Methods

The NPRs will be administered the "incoming skills checklist" at orientation which measures their beginning competency of collaborative care team environments, integrated behavioral health, addressing health equity and the social determinants of health. The PMHNPs take an additional competency of providing consultative care. Quarterly, NPRs will do a self-assessment of the NPR-CAT which measures the utilization of the collaborative team environment, practice of interprofessional education principles, integrated behavioral health, growing competency of addressing health equity and social determinants of health. The NPR-CAT is also disseminated by the Program Manager to NP Residents' Preceptors. The Preceptors, Program Manager and Health Education Specialist will have quarterly evaluation meetings to compare the NP Resident's self-assessment to the Preceptor's NPR-CAT. This will include evaluating the effectiveness of the innovation of the PMHNPs serving in a consultative role to the FNP's. The Program Manager, Health Education Specialist and Preceptor will develop a learning plan to support the growth of the NPR. Once selected and enrolled in the NP residency program, AHN and RMU will provide support and flexibility to scheduling to meet the resident's needs during their twelve-month residency. The residency program will rotate students through off-hours of operations and provide suitable time for completion of didactic requirements which will include a Quality Improvement and leadership project. One weekday will be selected to schedule didactic with residents participating in the program's modules and to reserve for project work. One day per week is reserved for electives at the rotation sites.

Evaluated Domains

- Domain 1: Patient Care
- Domain 2: Knowledge for Practice
- Domain 3: Practice-based Learning & Improvement
- Domain 4: Interpersonal and Communication Skills
- Domain 5: Practice-based Learning & Improvement: (Evaluates one's own practice to improve patient outcomes; EBP, Life-long learning)
- Domain 6: Interpersonal Collaboration
- Domain 7: Personal and Professional Development



DNP Residents



FNP Residency Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
Primary Care Site	Admin Time	Primary Care Site	Specialty Elective	Primary Care Site
Primary Care Site	Didactic	Primary Care Site	Specialty Elective	Primary Care Site

Goals

- Goal 1:** Support expansion or enhancement of primary care NP residency programs.
Objective 1: The NP Residency program will integrate the Family Nurse Practitioner residents and Psychiatric Mental Health NP residents into multi-disciplinary teams to provide primary and mental health care in both rural and urban medically underserved areas.
- Goal 2:** Increase the number of new primary care, behavioral health and maternal health NPs serving in rural, and urban underserved community-based settings.
Objective 1: Graduate 3 Family NP Residents and 2 PMHNPs in year one and 3 Family NPs and 3 PMHNPs in years 2-4 in the project period (9/11/23-8/10/27).
- Goal 3:** Integrate behavioral health and maternal health care into community-based primary care NP residency programs.
Objective 1: Improve access to behavioral health care.
Subobjective: Increase the NP Residents' competency to address behavioral and maternal health care needs.

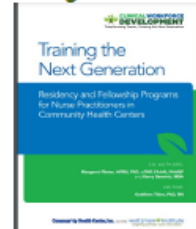
Conclusions

Evaluation and Technical Support Capacity: The evaluation plan for the AHN Residency program provides measures of success for each of the program's three goals. Each goal has its own unique set of variables for measuring success. All key measures will be reported in the annual progress report and as additionally required by HRSA. The key measures will also be addressed through regular meetings with the Advisory Council consisting of AHN and RMU faculty and staff as well as other key clinical preceptors and partners at least quarterly. The metrics below are designed to capture the program's success and speak directly to the effectiveness of the expanded residency program.



Funded by

- Department of Health and Human Services Health Resources and Services Administration
- Training the Next Generation: Residency and Fellowship Programs for NPs in Community Health Centers



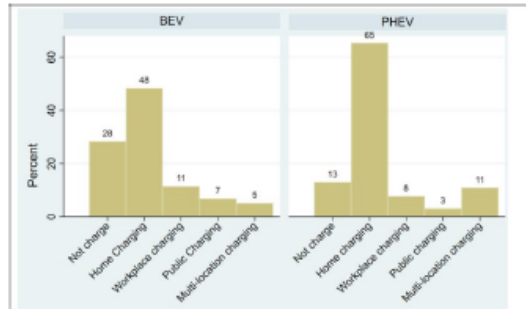
EV Charging Stations

Dr. Sangho Shim, Engineering Department, SEMS
Sulaiman Syed Irshad, DeShawn Falls, Abdulrhaman Kojan



Problem Statement

- The placement of EV Charging stations is a complex optimization problem influenced by various factors.
- Our objective is to develop a computational framework that integrates these factors to identify the most suitable locations for EV Charging stations to maximize accessibility and coverage.
- In this problem, We have 40 ZIP Codes as individuals and 40 EV charging stations locations as alternatives .
- We considered the types of Electric Vehicles that individuals drove.
- In this problem we compared the travel time between individuals and alternatives to understand the availability of EV Charging Stations.



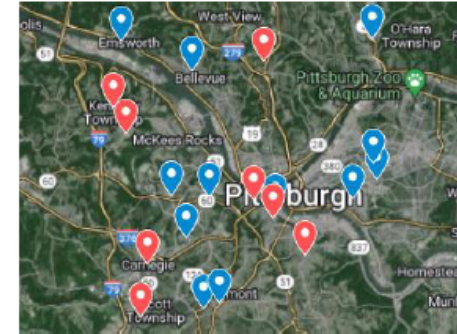
The above graph shows The characteristics of Battery Electric Vehicle (BEV) users vs. Plug-in Hybrid Electric Vehicle (PHEV) users.

Characteristics

- The Algorithm begins with of the collection of various ZIP codes and the population of EV users in that area.
- The EV users of each ZIP code were then categorized between Plug-in EV drivers and Battery EV drivers.
- While most EV Drivers choose to charge their vehicles at home, PHEV drivers have more of a preference for home charging, and this was taken into account for preference calculations.

Methodology

- Data Collection: We gather a collection of existing and potential EV Charging Stations Data with latitude and longitude coordinates as well as ZIP codes data with the population of BEV and PHEV users.
- Leveraging Excel, we performed linear regression analysis to determine the relationship between geodesic distance and travel time.
- In Python, this relationship was used to quickly approximate travel times between each individual and each alternative.
- Travel times were assigned positive preference weights as well as the negative preference weight that assumes individuals are likely to charge their vehicles at home.
- PHEV drivers were also given a negative preference weight mirroring data that shows their preference for home charging.
- Gurobi Optimization: Gurobi was used in Python to choose the 20 alternatives that would receive the highest demand base on these preferences



This map shows the 12 selected existing charging stations (blue) and the 8 selected potential charging stations (red).

Conclusions

- By using the Gurobi optimization code, we were able to pick the 20 most valuable Charging station locations.
- Of these 20 locations, 9 were chosen as prospective charging station locations. These candidates were found in suburban areas without existing charging stations in proximity. The candidate locations consisted of churches, parks, and shopping centers. These locations prove to be suitable for ease of access as they tend to be centrally located and have suitable parking.
- The results also showed that predictably, the most valuable charging stations are located in the more central parts of the considered region, with the only notable exception being near the 15209 ZIP code.
- Overall, these findings show that there is lucrative opportunity for new charging station in and around the more suburban Pittsburgh areas.



PA Hunger-Free Campus Grant



Tracy Frazier and Maureen Keefer, Dean of Students Office

RMU is a PA Hunger-Free Campus!

How is RMU utilizing the Hunger-Free Grant to combat these alarming statistics?

- Improving to the Colonial Cupboard
- Providing a fresh food source via the Colonial Garden
- Creating a Hunger-Free Campus Task Force
- Communicating to increase community awareness
- Assisting students with applications for the Supplemental Nutrition Assistance Program (SNAP)
- Assessing RMU Students using the Student Basic Needs Survey



During the pandemic, over 4 million students were food insecure, and 1.5 million students were experiencing homelessness (NPSAS, 2020)

Students Basic Needs Survey, RMU Results (The Hope Center For College, Community, and Justice at Temple University), 568 student responses

- 41% of the respondents experienced at least one of the following: food insecurity, housing insecurity, homelessness
- 28% of survey respondents experienced limited or uncertain availability of nutritionally adequate and safe food or the ability to acquire such food in a socially acceptable manner in the prior 30 days
- 26% of survey respondents experienced one or more challenges that prevented them from having a safe, affordable, and consistent place to live in the previous year
- 9% of survey respondents did not have a fixed, regular, and adequate place to live at some point during the previous year



Poster designed by: Bridget Crum

Presented at the 2024 R&G Expo @RMU

Understanding Employee Depression and Coping Strategies

Dr. Hongguo Wei, Management, RSBUS and Niani Reyes, Student

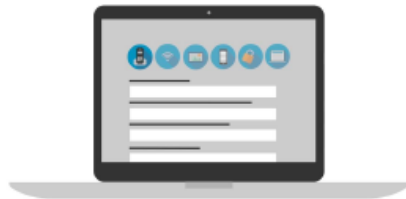


Purpose of Research

- To examine the effects COVID-19 had on employee depression over the past few years.
- To understand factors affecting employee depression at work and propose effective coping strategies.

Objectives

- Research and examine common factors that cause depression in the workplace.
- Identify common indicators that suggest an employee is struggling with depression.
- Conduct a survey to understand how individuals from different fields suffer from depression influenced by their workplace.

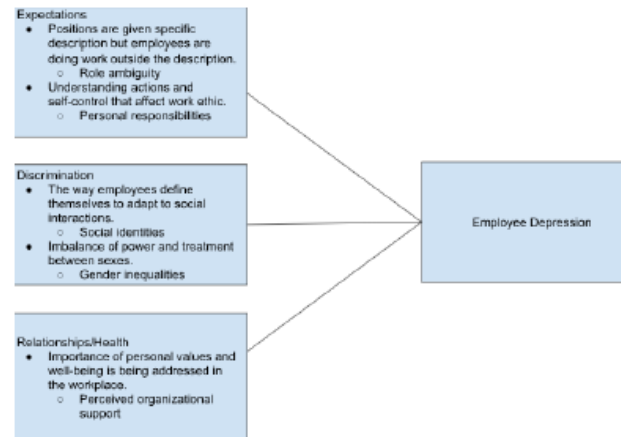


Literature Review Preview

Depression in the workplace is ubiquitous because of expectation and dependence. When finding a job, corporations provide handbooks detailing rules, policies, and expectations, which causes individuals to create their expectations of themselves to be suitable and conform. Individuals that adapt become comfortable in the environment by building relationships.

Scan QRCode for pdf

Conceptual Model



Data Collection and Analysis

- The data was collected via social media, from individuals who work in schools, healthcare, IT professionals, food service workers, and finances.
- There were 32 responses to the 43 questions (5-point Likert scales). With ages ranging from 18 to about retirement age.
- We used SPSS to calculate the correlations between the factors and depression.

Results

- Perceived organizational support, gender inequality, and social identity expressed the most correlation with employee depression.
- As individuals seeking a long term career, they identify those three potential issues before making the commitment.
- Addressing these issues at work, will help decrease employee depression, and teach employees positive ways to deal with it.

PDE Developing Future Special Educators Grant

Vicki Donne, SNEHS

In partnership with Shantè Eberhardt and Dr. Ruth Auld



Introduction

In PA and across the country, there is a teacher shortage, with a persistent, severe shortage of special education teachers. To address the problem, the federal Office of Special Education Programs created a database of career resources and made grants available to the states. The PDE received one of these grants. In turn, K-12 schools and universities were tasked with designing experiential learning opportunities (ELO) for secondary students to explore the special education field.

DePaul School for Hearing & Speech



- Approved Private School
- 74 students who are deaf/hard of hearing
- Birth – 8th grade
- Audiological and speech in-house services and itinerant hearing support services

Grant

One of the goals of the PDE Attract, Prepare, and Retain initiative is to attract skilled, compassionate and, diverse individuals to the varied career options within the field of special education to support the success of students with disabilities. RMU, TNA, and DePaul were awarded a 2-year grant under the PDE Developing Future Special Educators Grant. Attendance at the ELOs included 107 post-secondary students.



The Neighborhood Academy (TNA)



- Private School
- 151 students
- 100% minority
- 6th – 12th grade
- 100% college acceptance rate

Experiential Learning Opportunity 1: Career Panel Discussions

Y1: Special Educators – para-professional, teacher, speech/language therapist, audiologist, and school psychologist



Y2: Special Education Advancement – university faculty, coordinator of university disability services, student life director, special education supervisor, executive director of an approved private school

Experiential Learning Opportunity 2: Field Visits to DePaul

Y1: Special Educators in Action – Tour and Observation

Y1: Working with Students – art projects with pre-school students; math games and school store with elementary students



Y2: Working with Students – art activity, STEM project, and theatre experience

Experiential Learning Opportunities 3 & 4: Career Path

Y1: RMU – Meet with admissions and financial aid, talk with Education faculty about the teacher education process, tour campus, lunch with the interim dean, and chat with members of the Black Student Union (BSU)



Y2: RMU – Meet with admissions and financial aid, tour campus, join a special education class, lunch with the interim dean, and chat with members of BSU. Students from TNA and RMU will go to DePaul to teach a lesson.



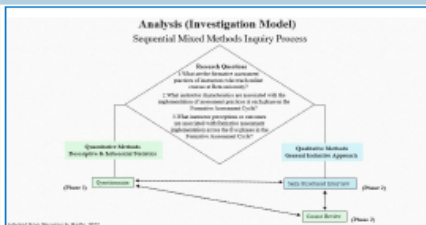
Research Questions

1. What are the online formative assessment practices of instructors who teach online courses at Robert Morris University?
2. What instructor characteristics are associated with the implementation of assessment practices at each phase in the Formative Assessment Cycle?
3. What instructor perceptions or outcomes are associated with formative assessment implementation at each phase in the Formative Assessment Cycle?

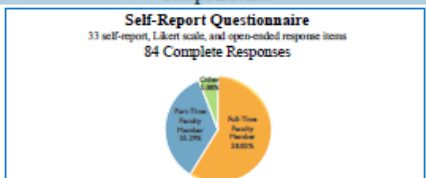
Population

Robert Morris University (RMU)
Full-Time Faculty - 179
Part-Time Faculty - 171

Research Methods



Respondents



Semi-Structured Interviews & Course Reviews

11 Full and Part-Time RMU Faculty
All RMU Schools Represented

Additional Information & References



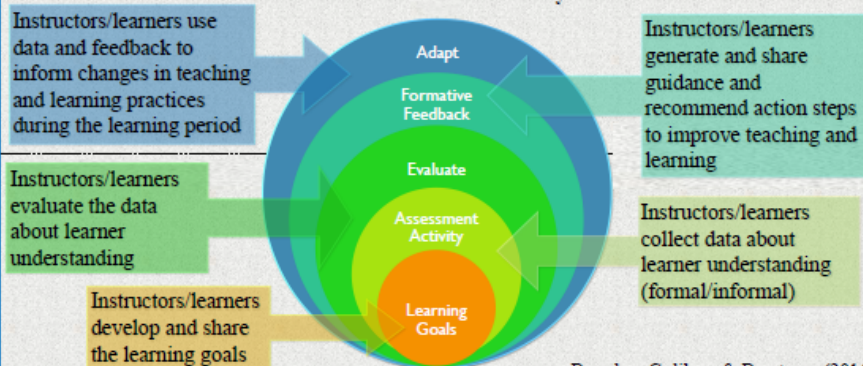
Background

Nuanced teacher competence, or assessment that supports learning, is complex. It requires the teacher to know where learning is headed during a given lesson, as well as where it currently is for each student, and to guide students' individual journeys toward the new learning using planned activities that support their interests and cultural understandings (Collins, 2016, p. 4).

Formative Assessment is the set of formal and informal strategies used *during the learning period* by instructors and learners, to evaluate progress and make data-informed changes to promote learner achievement (Black & Wiliam, 2010).

Decades of research indicate that formative assessment enhances learner performance (Black & Wiliam, 1998; Hattie & Timperley, 2007), supports self-directed learning skills (Deeley et al., Hung, 2019; López-Pastor, & Sicilia-Camacho, 2017; Morris et al. 2021), and promotes more equitable learning outcomes (2010; Kalinec-Craig, 2017; Ladson-Billings, 1995, 2021; López-Pastor, & Sicilia-Camacho, 2017).

The Formative Assessment Cycle



Based on Gulikers & Baartman (2016)

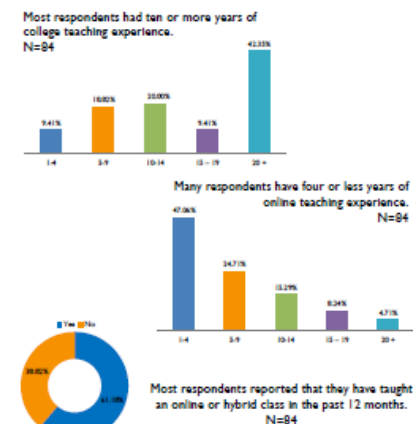
Formative Assessment Map - Participant 5

	Phase One Learning Goals	Phase Two Collecting Learner Data	Phase Three Analyzing Learner Data	Phase Four Feedback & Communication	Phase Five Adapting in Real-Time
Self-Report	4 (Green)	4 (Green)	4 (Green)	4 (Green)	4 (Green)
Observed	4 (Green)	4 (Green)	4 (Green)	4 (Green)	4 (Green)

Practices to consider:

- Collaborating with peers and/or instructional designers around the development of measurable unit and weekly learning goals
- Posting weekly learning goals at the start of each week/unit in Blackboard
- Reviewing formal and informal weekly assessment activities to ensure that they provide sufficient opportunities to evaluate student understanding
- Engaging learners in feedback dialogue
- Asking learners to share their planned next steps
- Updating teaching plans in real-time based learner performance data

Instructor Self-Report Questionnaire



Findings

Are you concerned about cheating or the use of AI?
 >60% reported the same level of concern about cheating in their course as in previous classes, perspectives followed a normal curve, with a smaller number reporting no concern or extreme concern.
 > Respondents also fell along a normal-curved continuum of perspectives about how LLM technology is impacting their teaching with a smaller number reporting no concern or extreme concern and/adjustments.

Instructors who consistently used formative assessment reported more affirmative course outcomes on the three measures:

- > They found that learners were More or Much More Engaged
- > They found that students learned More or Much More in the course
- > The instructors reported higher overall satisfaction with the course

Instructors who used group performance data (Most Weeks or Every Week) to inform real-time changes in their teaching practice were More Likely (p=0.025) to report that Students Learned More in the class. The small sample size for this comparison limited the ability to generalize this finding since the expected cell count for sample size is less than 5 in this case.

AUTO SULT: AN R PACKAGE FOR GENERATING LIFE CONTINGENCIES PROBLEMS

Chris Groendyke, Ph.D., F.S.A.
(SEMS)



The Problem: Typesetting Life Contingencies Notation is a PAIN!

Anyone who's ever taught a life contingencies course knows how tedious it is to typeset life contingencies problems, not to mention detailed line-by-line solutions.

But students want (need?!) lots of practice problems (and solutions) to master the fundamental relationships.

The Solution: Automated Problem and Solution Generation

AutoSULT is an R package that automatically generates problems and solutions for many types of standard life table problems. It is based on the Standard Ultimate Life Table (SULT), as defined in *Actuarial Mathematics for Life Contingent Risks* (3rd edition, 2020) by Dickson, Hardy, and Waters (AMLCR3e).

This open source tool can be used by instructors (and students) for homework, tutorials, recitations, or quizzes.

Sample Output

Chapter 9 SULT Problems

Notes

- $i = 5\%$
- Lives are independent

Problems

- $A_{\overline{34:44:\overline{6}}}$
- ${}_{35}q_{44:37}$
- ${}_{28}P_{33:56}$

Really!?! Who ever thought this was a good idea?

Solutions to Chapter 9 SULT Problems

- $A_{\overline{34:44:\overline{6}}} = A_{34:44} - {}_6E_{34:44} \cdot A_{40:50} = 0.16327 - 0.74033 \cdot 0.21163 = \boxed{0.00659}$, where ${}_6E_{34:44} = {}_6p_{34:44} \cdot v^6 = 0.99211 \cdot 0.74622 = 0.74033$, where ${}_6p_{34:44} = \frac{\ell_{40}}{\ell_{34}} \cdot \frac{\ell_{50}}{\ell_{44}} = \frac{99338.3}{99593.8} \cdot \frac{98576.4}{99104.3} = 0.99211$
- ${}_{35}q_{44:37} = {}_{35}q_{44} \cdot {}_{35}q_{37} = 0.21368 \cdot 0.10449 = \boxed{0.02233}$
- ${}_{28}P_{33:56} = {}_{28}P_{33} + {}_{28}P_{56} - {}_{28}P_{33:56} = 0.96664 + 0.66058 - 0.63854 = \boxed{0.98868}$, where ${}_{28}P_{33:56} = \frac{\ell_{61}}{\ell_{33}} \cdot \frac{\ell_{84}}{\ell_{56}} = \frac{96305.8}{99629.3} \cdot \frac{64506.5}{97651.2} = 0.63854$

AutoSULT Details

The package generates PDFs with problems (and accompanying solutions) from Chapters 3, 4, 5, 8, and 10 of AMLCR3e, using randomized ages and term lengths, with several customizable options, including problem order randomization, and an optional problem summary table.

How to Obtain AutoSULT

The AutoSULT package for R is available for download on [GitHub](#) and can be installed using the `install_github()` function, which requires the `devtools` (Wickham et al., 2020) package.

Acknowledgements

Many thanks to Adam Combs, Brian Hartman, Diana Skrzydlo, and my ASCI 4100/4110 students at RMU.

The `actuarialsymbol` (Beauchemin and Goulet, 2019) and `actuarialangle` (Goulet, 2019) packages are used.

Comments and suggestions for improvement are welcomed at groendyke@rmu.edu.

Introduction

Background

- Gross receipts taxes (GRTs) have been heavily criticized for a long time. The major criticism comes from the tax pyramiding effect which leads to several other concerns, such as the incentive for vertical integration.
- Despite heavy criticism of GRTs, states have shown renewed interest in them.

Research Questions

- Are there economic reasons for states to do so?
- How do GRTs perform relatively to feasible alternatives - corporate income taxes (CITs)?

Contribution to the Literature

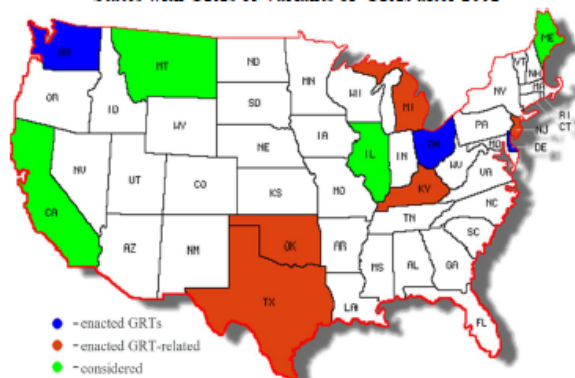
- The paper provides a new perspective on the relative effects of GRTs versus CITs.

Resurgence of Gross Receipts Taxes

States with GRTs in 2002



States with GRTs or Variants of GRTs after 2002



- enacted GRTs
- enacted GRT-related
- considered

Theoretical Analysis

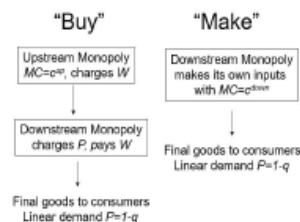
How does a GRT perform relatively to a CIT with single sales factor apportionment?

Comparison of Four Aspects

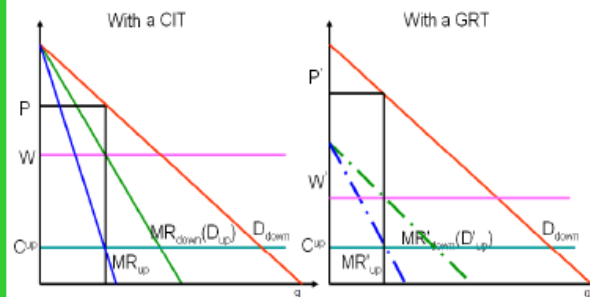
- Incentive to vertically integrate
- Profit shifting from out-of-state to in-state firms
- Incentive to distort organizational form choice
- Incentive to invest in cost-saving innovation

Baseline Model

"Make" or "Buy" Decision under Both Tax Systems



Theoretical Implications



Model Extensions

Extend the Baseline Model to Investigate Various Impacts:

- Allow upstream and downstream firms to locate in different states
- Allow firms to choose between corporate and noncorporate forms
- Allow firms to invest in R&D to lower the marginal cost of production

Robustness Checks:

- Alter the assumptions about the market structure
- Allow upstream and downstream firms to bargain over input prices

Summary of the Theoretical Findings

- GRTs lower the price of the inputs/intermediate goods; thus, they do not always cause vertical integration.
- GRTs can help the home state to shift the profits from out-of-state upstream firms to in-state downstream firms.
- GRTs reduce the incentive to distort organizational forms arising under the CITs; consequently, firms would charge a lower price for the final goods.
- GRTs, however, lead to lower investment in cost-saving innovation.
- Perceptions about GRTs are not necessarily true. The appropriate analysis should examine the relative advantages and disadvantages of GRTs over feasible alternatives.



The Experience of Nursing Students in Developing & Delivering Multicultural Patient Education Session

Dr. Jessica L. Kameron EdD, MSN, RNC-NIC

Dr. Betsy Guimond PhD, WHNP-BC

with assistance from Dr. Margaret Rateau, Anazyia Varsani, and Mykaela Schneider
SNEHS, Robert Morris University



Presented at the 2022 R&G Expo @RMU

Cultural competence is a learned, dynamic process that involves developing an appreciation, awareness, and respect for the diverse cultural backgrounds, values, beliefs, and practices of individuals receiving nursing care (Antón-Solanas, et al, 2021 & James & Al-Kofahy, 2021). Cultural humility involves reflective consideration of one's cultural background, societal values, hierarchical structures, and personal experiences to enhance understanding of human interaction (Sedgwick & Atthill, (2020). These skills are increasingly important for nurses caring for patients in our highly globalized world (Liu, Stone & McMaster, 2018) but are often difficult to articulate and measure. The purpose of this qualitative research study was to examine the experience of undergraduate pre-licensure nursing students who delivered prenatal and antepartum patient education to mothers in Uganda via remote synchronous live learning sessions for themes related to cultural humility and competence.

Project Background

Pre-licensure students in the BSN program have the opportunity to participate in an experience to provide antenatal patient education to woman in Uganda. The students were mentored by faculty in creating patient education lessons and materials that address the healthcare, cultural and resource needs of mothers in the Kampala region of Uganda. Students delivered the patient education lessons in real time via Google Meets to groups of women in partnership with Mama Tulia, a non-profit agency local to Kampala. The agency streams the lesson, provides a safe gathering place for mothers to participate, and provides a translator for the non-English speaking participants. Participating students provide an educational lesson to the women and the student educators and faculty offer a question and answer session immediately following the lesson.



Identified Themes

Embracing the experience with astonishment

"I'm trying to think of maybe one or two words to describe it. It was a thought-provoking and eye-opening experience"

Appreciating cultural differences

"Not basing it all off of American tradition trying to use stuff from Uganda traditions... like just you know anything in their home or wherever whatever their home is that I had to include in the PowerPoint compared to what we have or what our everyday life as a mom would look like it's completely different"

Feeling the magnitude in the process of preparation and delivery

"Making sure that they were going to understand it and making sure that I was going to present it in a way that they weren't going to be confused. Because once again I feel like I mean even myself sometimes that girl in the back of the classroom was scared to ask questions because I didn't want to look stupid and I didn't want them to feel like that, you know?"

Expressing gratitude for the experience

"Our poverty as compared to, real poverty is, drastically insane. And I think that just the humbling factor, the fact that if these women can do this I can too. I can make it through nursing school and then I can be there for them. I just, I think there's just so many things that it made me grateful for that. I can't, I don't even know if I can put it into words, it's more of like a feeling that it gave me."

Acknowledging the influence of connectedness between the audience members and student educators

"You could tell that it really spoke to a person or you could see someone being interested or when they asked questions and just seeing that they were truly grasping the information and with how many questions [they asked] you know, that they want to be educated and they want to learn to have the best care for their children."

Discussion

Nearly every student educator used the words "eye-opening" or "shocking" at some point in their interviews to describe the experience. Most were referring to the stark contrast in the daily lives of women in Uganda compared to what they had seen in their own lives. Of note, two of our students had already been deployed to the African continent for military service, and both expressed some degree of surprise at the day-to-day living conditions in Kampala.

Students expressed gratitude for participating in the experience and a sense of responsibility to their audience. They felt connected to their audience because they could see the women's faces.

The analysis of our findings aligns with James and Al-Kofahy's (2021) observations, indicating that students can demonstrate cultural competence when the activity is facilitated by faculty. In addition, it also demonstrates this can be achieved through virtual experiences and is not a phenomenon in only face to face encounters. Teaching students about cultural competence is a process, and this project serves as a launching point to develop an appreciation, awareness, and respect for diverse cultural backgrounds (Young & Lu, 2018). Our analysis yielded observations similar to those of Sedgwick and Atthill (2020). In their study, students also described the consideration of one's cultural background, societal values, hierarchical structures, and personal experiences as eye-opening, enhancing their understanding.

Conclusion

Students were able to articulate both an appreciation for participation in a real-world project and astute observations regarding aspects of cultural competence and humility gained from the project. For nursing educators, these findings support the continued use of digital connections to reinforce learning concepts such as cultural humility and cultural competence.



References

Antón-Solanas, I. et al. (2021). Nursing students' experience of learning cultural competence. PLOS One. | <https://doi.org/10.1371/journal.pone.0259802>

Faronda, C. (2020). A theory of cultural humility. *Journal of Transcultural Nursing*, 31(1), 7-12.

Liu et al. (2018) Increasing undergraduate nursing students' cultural competence: an evaluation study. *Global Health Research and Policy*, 3(7) <https://doi.org/10.1186/s41256-019-0062-2>

Majda, A. et al. (2021). Evaluating the effectiveness of cultural education training: Cultural competence and cultural intelligence development among nursing students. *International Journal of Environmental Research and Public Health*, 18. <https://doi.org/10.3390/ijerph18084002>

Sedgwick, A., & Atthill, S. (2020). Nursing Student Engagement in Cultural Humility Through Global Health Service Learning: An Interpretive Phenomenological Approach. *Journal of Transcultural Nursing*, 31(3), 304-311. <https://doi.org/10.1177/1043659619870570>

Young, S., & Lu, K. (2018). Educational Interventions to Increase cultural competence for nursing students. *International Journal of Organization Theory and Behavior*, 21(2), 85-97. <https://doi.org/10.1108/IJOTB-03-2018-0026>



INTRODUCTION

- Immediate implant placement is a favorable procedure in anterior zone due to its ability to preserve soft tissue and hard tissue structure.
- Bone grafting assures adequate positioning of labial cortical plate and helps maintain osseous - gingival tissue relationship (Araujo 2009), and aids in increased bone mineral density of newly formed bone (Araujo and Lindhe 2009).
- Bone grafting helps overcome limitations arising due to lack of bone grafting. 93% cumulative survival and 88.1% cumulative success rate for immediate implants with bone grafts.
- Degidi, and Sanz et al, reported that grafting can reduce labial crest reduction and coronal horizontal reduction. However, Paolantonio et al. 2001 reported that immediate implant placement avoids resorption process of labial bone plate
- The study aims to compare the biomechanical difference in surrounding bone due to the presence and absence of graft material, bio-oss collagen, as compared to an immediately loaded implant placed in adequate bone.

METHOD

- The models were developed for primary stability and ITI case selection criteria for immediate loading with Palatal aspect and 3mm of apical implant was engaged with cancellous bone.
- A 3D FEA model of an anatomical maxilla bone block with crestal cortical bone and cancellous bone from tooth #6 - #11, and standard thread $\varnothing 4.0 \times 13$ mm implant were developed. Right maxillary central incisor was extracted to simulate socket space.
- The control model (T_c) consisted of an implant at a fully healed extraction site. The extraction socket was filled with fully remodeled cancellous bone. Palatal aspect and 3mm of apical implant was engaged with cancellous bone for primary stability.
- The model (T_g) consisted of an implant with new grafting material in the extraction socket
- The model (T_x) was generated to simulate ossification of graft after a time interval when the graft is partially ossified.
- The material properties in the FEA model were determined using published data and research articles while the ones for the graft (modulus, Poisson's ratio, and etc) were decided considering its morselized state (Table 1). The interface between a bone graft-cancellous bone, implant-cancellous bone, and implant-graft were set based on ossification in the graft

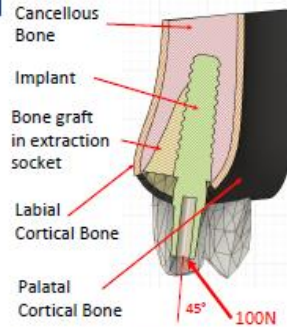


Fig 1: Sagittal cross section view of FEA model (Left). Material properties for the model (Table 1) A 100N force in labial gingival direction was applied on the abutment of the implant.

	Ti-6Al-4V	Cortical Bone	Cancellous Bone	Bone Graft T_g	Bone Graft T_x
Elastic Modulus (MPa)	105000	17000	2000	100-1600	1000
Poisson Ratio	0.32	0.30	0.30	0.2-0.3	0.25
Yield Strength (MPa)	830	49	4.8	0.05-1.45	2.4
Tensile Strength (MPa)	1050	52	N/A	N/A	N/A

Table 1. List of materials used in the FEA and their properties used for the simulation



Fig 2: Frontal model view with the implant location

RESULTS AND DISCUSSION

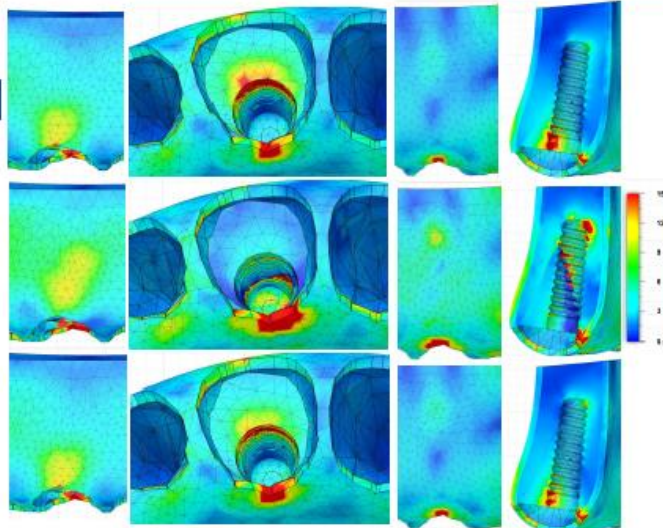


Fig 3 : Von-Mises stress [MPa] distribution of T_c , T_g , T_x (Top to Bottom) From left to right, Labial view, Transverse view, Palatal view, and Sagittal view

	Labial Cortical	Palatal Cortical	Bone around the neck of implant	Bone around the apex of implant	Max displacement of implant
Control Model T_c	13.55	5.20	21.90	12.83	0.12
Study Model T_g	11.40	11.50	7.20	46.60	0.30
Study Model after partial ossification T_x	15.30	6.10	16.50	15.61	0.41

Table 2. Stress in the labial bones and displacement of the implant from the FEA models

- The stress pattern starts resembling the control model as the graft ossifies at T_x as shown even stress distribution in the labial bone around the implant and higher stress in labial cortical plate.
- The study model T_g showed much higher stress in the bone around the apex of the implant and interface between the graft and cancellous bone
- The control model and partially ossified model showed more evenly distributed stress in the bone.
- Total displacement of the implant also showed the study models has higher than the control model.

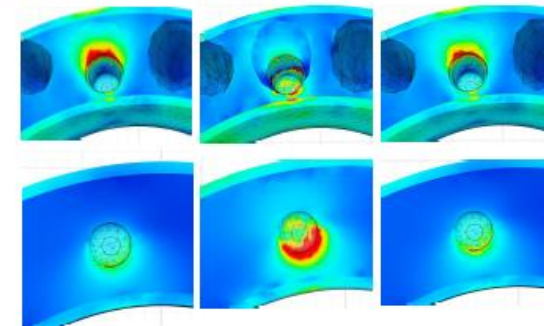


Fig 4: Transverse section view of labial bone at implant neck (Top) and apex (Bottom) T_c , T_g , T_x (Left to Right)

- The study model has much higher stress [MPa] at palatal cortical bone (11.50 vs. 5.20) and labial bone around the apex of implant (46.60 vs. 12.83)
- Higher than 15 MPa stress at the interface between grafting and cancellous bone in the study model, which is higher than the given yield strength of the cancellous bone (4.8 MPa) in this FEA.
- This may suggest peri-implant bone loss especially in the where bone resorption occurs more readily.
- This study concludes similar to previous studies that graft material does not cause any significant difference in stress pattern as ossification continues.
- There are aberrant forces present around a post extraction immediate loaded implant site that require diligent management of occlusal forces.
- The future study will include rate of ossification of the grafting material per different time points, implant location per grafting material, different graft materials



**Recognitions for the
Successful Completion
of Grant Funded
Projects in 2023**



Congratulations

to

Won Joo (PI)

On the successful completion of the

Korea Institute of Civil
Engineering and Building
Technology (KICT)

Grant Funded Project titled

"Development of Walking Assistant
and Safety Enhancement Technology
for Elderly Pedestrian"

2016-2022



Congratulations

to the project team

Won Joo (PI)

Arif Sirinterlikci (Co-PI)

Rika Carlsen (Co-PI)

On the successful completion of the

DCED-PA Manufacturing
Innovation Program
Industry Partner:

Union Orthotics & Prosthetics

Grant Funded Project titled

"Adopting Additive Manufacturing
Technologies for Orthotics and Prosthetics"

2016-2023



Congratulations

to the project team

Paul Badger (PI)

Arif Sirinterlikci (Co-PI)

Ergin Erdem (Co-PI)

On the successful completion of the

National Institute for Occupational
Safety & Health (NIOSH)

Grant Funded Project titled

"Evaluation of Factors Influencing
Emissions from Fused Deposition
Modeling Process"

2018-2023



Congratulations

to

Kirstyn Kameg (PI)

On the successful completion of the

Fine Foundation

Grant Funded Project titled

"Access to Interprofessional
Mental Health Education (AIME)
for Youth"

2018-2023



Congratulations

to

Ben Campbell (PI)

On the successful completion of the

DCED-PA Manufacturing
Innovation Program
Industry Partner: MECCO

Grant Funded Project titled

"Exploration of Laser Degating and
Welding of Plastics for Commercial
Opportunities"

2021-2023



Congratulations

to the project team

Timothy Jones (Co-PI)

Andrew Ames (Co-PI)

On the successful completion of the

The International Animated Film
Society (ASIFA) Hollywood -
Animation Educators Forum

Grant Funded Project titled

"Reframing Materials: Best Practices for
Inclusive and Accessible Learning in an
Interdisciplinary Animation Lab"

2021-2022



Congratulations

to

Stuart Allen (PI)

On the successful completion of the
Interfaith Youth Core (IFYC)

Grant Funded Project titled

"Faith and Health Grant"

2022-2023



Congratulations

to

Timothy Jones (PI)

On the successful completion of the

Unity and Meta

Grant Funded Project titled

"Create with VR grant"

2022