

**BETHEL UNIVERSITY PRESENTS**

# **FIRST ANNUAL DAY OF SCHOLARSHIP**

Recognizing the fundamental importance  
of research, scholarship, and writing.  
Visit more than 40 posters brought to  
you by the faculty of Bethel University.

**Anderson Center 460  
October 25, 2023  
2-5 p.m.**

# Day of Scholarship

*Recognizing the fundamental importance of research, scholarship, and writing. Visit more than 40 posters brought to you by the faculty of Bethel University.*

## **1. *A new Algorithm for Determining Energy and Charge Deposition in Spacecraft Insulators***

Brian P. **Beecken**, Physics and Engineering

Space is filled with highly energetic electrons, many of which originate from the sun. All earth satellites must have insulators. Unfortunately, the insulators absorb both the electrons and the energy that they are carrying. Once sufficient charge accumulates, it is released in a sudden and destructive pulse which can destroy the onboard electronics and solar panel. The depth of penetration of the electrons in the insulators varies with incident energy, flux, and material. Determining the deposition profiles is key to understanding and mitigating the threat to satellites.

## **2. *Creation and Development of a Next Generation Simulation Model for Spacecraft Charging***

Brian P. **Beecken**, Physics and Engineering

Spacecraft, particularly satellites, endure the bombardment of high-energy electrons. These electrons charge up the insulators on the spacecraft. Eventually, the charge commonly can exceed 100,000 volts. The result is an electrostatic discharge which will potentially cripple the spacecraft. A computer simulation model has been developed that will predict if and when the discharge will occur.

## **3. *Is "Divine Hiddenness" evidence for atheism? A response to J. L. Schellenberg***

Jim **Beilby**, Biblical and Theological Studies

The problem of divine hiddenness is an objection to Christianity that claims that a perfectly loving God would make his existence more obvious than it, in fact, is. The philosopher, J. L. Schellenberg has argued extensively there are some people who fall into the category of "non-resistant nonbelievers," people who desire to believe in and be in relationship with God, but who cannot due to the lack of evidence for God's existence. Schellenberg argues that the existence of non-resistant nonbelievers is incompatible with God's being perfectly loving and all-powerful. In response, I argue that even if there are non-resistant nonbelievers, Schellenberg's argument fails because he fails to acknowledge two important realities: (1) God's provision of evidence of his existence does not mean that all humans will see that

evidence and (2) it is possible that some people are nonresistant to the idea of God's existence, but still unwilling to accept the personal implications of God's existence.

#### ***4. The problem of religious peer disagreement: A response to Harold Netland***

**Jim Beilby**, Biblical and Theological Studies

The problem of religious peer disagreement is this: suppose there are people that are your "epistemic peers" - they are just as intelligent, informed, and sincere as you - but they reject your religious beliefs. Does the existence of skeptical epistemic peers force Christians to withhold or evidentially support their religious beliefs? In this paper, I critique Harold Netland's work on religious peer disagreement on three fronts: (1) his identification of epistemic peers, (2) his understanding of the epistemic implications of religious peer disagreement, and (3) the viability of his demand for additional evidence as a response to instances of peer disagreement.

#### ***5. A Reconciliatory Approach to Marketing: A Case of The Marginalized***

**Mauvalyn Bowen**, Business

This paper integrates the use of Biblical principles in the discussion about marketing practices and shares a vision for ways that marketing can be reconciliatory and God-honoring. It further detailed some perspectives of how marketing may be considered in the context of the kingdom of God. An example of a case of "the marginalized" was presented to demonstrate the redemptive nature of marketing. The paper then concludes with a call for Christian educators to do some heavy lifting in presenting the discipline of marketing to students to empower them to be cupbearers and future shapers.

#### ***6. The Impact of Political Polarization on Church Life in the Upper Midwest***

**Andrew Bramsen**, History, Philosophy and Political Science

Political polarization in the USA has been rapidly increasing since the 1990s. During that same time period, demographic data has shown both a growing population of religious "nones" who no longer identify with a faith tradition and a declining influence for churches and church leaders as the political identities of American Christians becomes more and more central to who they are.

This presentation explores this dynamic, examining how rising polarization is impacting church life by drawing on twenty-six interviews with upper Midwest pastors that the author conducted during his 2021 sabbatical. Across denominational lines and urban, rural and suburban contexts, pastors expressed deep concern about the impact of political polarization on their churches and gave specific examples of

the challenges this is creating. The interviews suggested that the particular challenges polarization created for church life varied based primarily on geographic location, not denominational difference.

## **7. *Embedded Genres in the New Testament***

Jeannine **Brown**, Seminary

This forthcoming monograph addresses embedded genres in the New Testament and asks the question, What difference does careful attention to ‘genres within genres’ make for interpretation? The book, to be published in 2024, is based on my lecture series at Acadia Divinity College in 2022. There is little, sustained theoretical exploration of the role of embedded genres in either biblical studies or in literary studies. The heart of the book (chapters 2-4) provides analysis of three examples of embedded genres across the New Testament. One example is vigorously debated (Philippians 2:6-11 as poetic); the second is usually overlooked (riddles by Jesus in Matthew); and the last is uncontested but takes up so much of the letter that its presence begs explanation (the household code in 1 Peter).

## **8. *Seminary Faculty Books and Articles***

Jeannine **Brown**, Seminary

The seminary faculty have a number of recent books, journal articles, book essays, and other published materials. These will be displayed in a shared space, with various faculty available to discuss their projects.

## **9. *Glow Soap Faucets for Medical Settings - Partnering with a Startup***

James **Christenson**, Chemistry

Hand hygiene is critical in many sectors of society and particularly in medical settings. Abluo is a startup company that designed an automated faucet with a black light and glowing soap. This allows users to visualize soap coverage during lathering and soap removal during rinsing. A study run at Bethel University found that users had 2.7x fewer bacteria on their hands after using an Abluo glow soap faucet system compared to a standard handwash. A glow soap faucet system was also installed at Regions Hospital (St. Paul, MN). The response from medical professionals was overwhelmingly positive, with 95% agreeing with the statement that occasional use of a glow soap faucet system would reduce healthcare associated infections (HAIs).

## **10. *Does Face Recognition Correlate with Narcissism? A Replication.***

Sherryse **Corrow**, Psychological Sciences

Prosopagnosia is a disorder that affects one's ability to recognize the faces of other people, despite normal vision and memory. A recent study (Giacomin et al., 2022) suggested that face recognition ability is directly correlated with the degree to which someone has narcissistic personality traits (a self-centered and exaggerated sense of self-importance). If this is the case, it may provide clues as to why people with prosopagnosia have such limited ability to recognize others. In this study, we attempted to replicate Giacomin's work using well-validated measures of face recognition ability. This project was led by four Bethel students who presented their work at the Vision Sciences Society Conference in St. Petersburg, FL in May 2023.

## **11. *Institutional Impact of the BUILD Program: Postsecondary education for students with intellectual disabilities***

Jessica **Daniels**, Education, Mary **Lindell**, Education, and Jodi **Wolkerstorfer**, Education

The current higher education environment is plagued with declining enrollment (Eide, 2018) and shrinking budgets (Doyle, 2020) while historically under-represented and under-served students, including those with intellectual disabilities (ID) (Thoma, et al., 2011), have traditionally experienced limited access to higher education (Thelin, 2011). The purpose of this study was to research the institutional impact of the BUILD program, one university's effort to increase access to and the effectiveness of higher education for all students, including those with ID, while simultaneously expanding the prospective student enrollment pool. Through a qualitative case study analysis, this research explored and evaluated the implementation and impact of integrating the BUILD program at the university. The findings indicate that as students in BUILD integrate and succeed within the campus space, traditional students, faculty, and staff are changing from their interactions with students with ID. The BUILD program impacted and continues to impact the community member experience and identity development, organizational policy and systems, and culture and subcultures of the university. Additionally, this study explored the pathways to improving the inclusivity of university systems as this mid-sized university meets the challenges of offering an integrated residential college experience to students with ID. The findings of this research project, the implications of the BUILD program, and the experience and outcomes of these students with ID are critical to inclusiveness in postsecondary educational understanding, policy, and practice. This study is part of a broader research project that includes a phenomenological study of BUILD student experiences (Lindell et al., 2021) and longitudinal data being collected on the self-determination and quality-of-life outcomes of BUILD graduates (in progress).

## ***12. Use of Best Practices in Exam Item Creation, Analysis, and Revision: Nursing Faculty's Knowledge, Use, and Implementation Barriers and Facilitators***

**Julie De Haan, Nursing**

The ultimate goal of nursing education is to prepare graduates to provide excellent, safe patient care. The implementation of exam item best practices can significantly contribute to this process. This study examined nursing faculty's use of best practices for exam item creation, analysis, and revision and best practice barriers and facilitators. Through a quantitative, cross-sectional, descriptive correlational research study, the research demonstrated that faculty inconsistently use exam item best practices. Faculty research participants identified ways to enhance the use of best practices and suggestions to nursing leadership were developed based on the data. With faculty development and an outlined support system in place, faculty will be more equipped to implement exam item best practices and contribute to the goal of well-prepared graduates.

## ***13. Concepts of Chemical Dependency***

**Amy Evans, MA in Counseling; Addictions Certificates**

Concepts of Chemical Dependency's 11th edition continues the work of the original author, Harold Doweiko. Dr. Amelia (Amy) Evans revised the 10th and 11th editions, when Doweiko was no longer able to continue his work on this textbook. Used in a variety of undergraduate and graduate departments, the text provides a solid understanding of substance use disorders and covers a variety of relevant topics related to addictions. After introducing the reader to reasons we should all be concerned about substance misuse in society, there is an overview of why individuals may choose to turn to substances and how these substances impact the body. Understanding of a variety of substances is covered in chapters 4-16. The reader then explores the impact of substance use on particular groups, including those who might be marginalized in society (chapters 17-22). Chapters 23-38 cover topics relevant to the treatment of substance use disorders, as well as controversial topics such as legalization of cannabis.

## ***14. SPARK Digital Commons***

**Lyndi Fabbrini, Library, and Kari Jagusch, Library, and Kimberly Werner, Library**

SPARK: Scholarship, Publishing, Arts, Research, and Knowledge

Institutional Repositories (IRs) like SPARK showcase and preserve a university's scholarship and creative work under one umbrella. Because SPARK is search optimized as well as open access, its works are easily discoverable and viewed on the web, "extending Bethel's reach and reputation" on a global scale, as the map dashboard dynamically illustrates. And with each download, citation count, and pageview,

Bethel's scholarship rises higher within Google's rankings. Authors receive monthly statistical reports of these interactions. SPARK provides a stable web address and improved management of scholarly resources for Bethel departments. Today we are showcasing how SPARK can be used for Events like the Day of Scholarship.

### ***15. Holistic Review: Application to Post-Baccalaureate Nursing Education***

Kristi **Gustafson**, Nursing

Literature review/survey of best practices; tools and measures to consider experiences, attributes, and metrics of applicants; considerations for the student and cohort experience; addressing healthcare workforce needs and needs of the nursing profession; application to post-baccalaureate (second-degree) nursing admission processes

### ***16. Documentation of recent Faculty and Staff Exhibition in the Olson Gallery***

Amanda **Hamilton**, The Department of Art + Design

The faculty and staff of the Department of Art and Design are all active artists and designers, making varied work and exhibiting professionally. This slideshow includes images documenting the recent biennial Faculty and Staff Exhibition, which ran from August 30 through October 8, 2023 in the Olson Gallery. This exhibition included work from Heather Nameth Bren, Amanda Hamilton, Amy J. Harr, Jessica Henderson, Mark Johnson, Bre Reed, Kenneth Steinbach, Lex Thompson, Jeffery Wetzig, and Michelle Westmark Wingard.

### ***17. Tel Shimron and Archaeology of Israel***

Kaz **Hayashi**, Seminary

Tel Shimron Excavations is an archaeological project taking place in northern Israel. Tel Shimron Excavation seeks to understand the ancient world, including the world of the Bible, through rigorous archaeological investigation, in order to provide resources for the study of Levantine history and culture over the last five thousand years. The project aims to add to our understanding of the social, economic, and political world that produced and transmitted the Bible and other early texts of Christianity, Judaism, and Islam. Through the use of sophisticated technology and methods, Tel Shimron Excavations has uncovered a fortified Canaanite city (1800 - 1200 BCE), fragments of a First Temple period Israelite city (destroyed by Assyria in 734-2 BCE), a Hellenistic farming outpost supplying the port of Acco, a first century CE Jewish community, and Mamluk farming village. During the 2023 season, our team of world-

renowned experts unearthed a rare and exquisitely preserved vaulted passageway dating back 3,800 years.

## **18. *Japan, Anime, and Theology***

**Kaz Hayashi**, Seminary

This poster presents two publications related to Japan, anime, and theology. While each publication is different, they both ask “How do Japanese anime and popular culture reflect the beliefs of the people, and how can we view these beliefs from a biblical theological lens?” The book *Anime, Philosophy, and Religion* explores the diversity of anime themes and content by an international group of scholars. The article “Holograms and Idols: The Image of God and Artificial Transcendence in the Cultural Phenomenon of the Japanese Vocaloid Hatsune Miku” argues how the popularity of hologram concerts reflects the universal human desire for a relationship with the divine.

## **19. *An Equitable Technology Infrastructure Model: Sustained Technology Practices Implemented During COVID-19 That Address Educational Inequities***

**Jennifer Hill**, Education, Ed.D. Leadership in K-12 Administration and **Tracy Reimer**, Education, Ed.D. Leadership in K-12 Administration

The COVID-19 pandemic ushered in a dramatic shift to online learning for K-12 public schools, requiring school districts to address inequities that were illuminated in the remote learning model. This poster summarizes a multi-year research project. Study 1 (2020), a mixed-method survey distributed to District Technology Directors, focused on how school districts responded to the technology needs of students and families while in hybrid and distance learning models. Study 2 (2022), a focus group comprised of District Technology Directors, examined the practices implemented during remote learning that were sustained as the pandemic waned. The Equitable Technology Infrastructure Model highlights the research findings that the pandemic was an opportunity to reimagine schools for the success of all students through an infrastructure that includes effective instruction, school-home partnerships, and law and policy development.

## **20. *Particle Discovery Lab for education & outreach***

**Julie Hogan**, Physics & Engineering

The Compact Muon Solenoid experiment (CMS) at the CERN Large Hadron Collider records proton-proton collision data in order to study the particles and forces that exist in very high energy conditions. CMS releases data to the public after several years of internal analysis. This data has a rich history of use for middle school or high school education, but is not widely used by college students in the US. Bethel



students and I have built an intermediate-level undergraduate lab experience in which students reinforce physics learning objectives and learn statistical data analysis skills while "discovering" a particle. A short form of this exercise has been adapted for high school outreach events, including an immersive virtual reality world in which students can explore the CMS detector and extract data from several collision events. This poster presents the development of these exercises and plans for future publication.

## ***21. Search for pair production of vector-like quarks in CMS Run 2 data***

**Julie Hogan, Physics & Engineering**

The Compact Muon Solenoid experiment (CMS) at the CERN Large Hadron Collider records proton-proton collision data in order to study the particles and forces that exist in very high energy conditions. The 2012 discovery of the Higgs boson was a triumph for the field of particle physics, but pointed toward the probable existence of unknown high-mass particles. Vector-like quarks (VLQs) are a possible type of high-mass fermions, and their decays to lighter particles create exciting detector signatures. This search utilizes deep machine learning to both identify decay products of VLQs in the detector and to separate potential signal events from background. The results do not show evidence of VLQs but stretch CMS sensitivity to these particles forward by a significant amount in our chosen final state. This work was recently published in the *Journal of High Energy Physics* and featured 6 Bethel student coauthors who participated via the Bethel Edgren Scholarship, summer research, and senior thesis research.

## ***22. Patient Centered Care Coordination: the Impact of a Non-Acute Care Clinical Curricular Module on Nursing Student Learning Outcomes***

**Ann Holland, Nursing**

This poster reports on the results of a study that investigated the impact of a clinical curricular module for teaching patient-centered care coordination on BSN student learning outcomes. Prior to the development of the clinical curricular module, the junior-level curriculum in the Bethel nursing program contained disparate student learning experiences in non-acute care settings. The module brought these existing and new learning experiences together into a cohesive curriculum using the Chronic Care Model as a conceptual framework. The quasi-experimental study was one of the first nursing education research studies conducted about the important and emerging professional nursing role of care coordination. Using data generated from quantitative instruments and qualitative focus groups, the clinical curricular module produced positive and significant effects on student learning.

### **23. *Evaluation of a Unique Care Coordination and Transition Management Clinical Module***

**Debbie Solomon**, Nursing

A two-year curriculum evaluation was undertaken to guide development of a unique clinical curricular module focused on care coordination and transition management. The module, in place in the junior curriculum since 2015, had been modified through the years in response to changes in faculty, clinical partners, and department resources. The COVID-19 pandemic significantly limited student field experiences, requiring development of existing and new on-campus simulated learning experiences. Three analytic processes were used to evaluate how teaching methods and resource utilization contributed to student achievement of learning outcomes. The results led faculty to reinstate field experiences in home care and hospice settings and to schedule guest speakers to better prepare students for meeting the needs of patients living with chronic and complex health problems in the community.

### **24. *Corruption and Reforms: A Dynamic Panel Data Study***

**Jeff Jacob**, Business

In a previously published paper we empirically showed that rather than democracy, a country's quality of institutions, like contract enforcement, have a statistically significant and positive impact on economic growth. During my sabbatical, I am working on a follow up paper in which is examining the effect of democracy on the control of corruption in a sample of more than 120 countries, spanning 40 years of data. Using GMM based dynamic longitudinal data analysis methods, we find that democratic quality, specifically, the accumulated stock of democratic capital in a country has a significant impact in reducing government corruption. We also find that sequencing financial sector reforms before integrating with the global economy also help lower a country's corruption level.

### **25. *Relational Virtues and Alliance Correspondence in Psychodynamic Psychotherapy***

**Peter Jankowski**, Marriage & Family Studies

**Objective:** We responded to the need to establish psychodynamic psychotherapy as evidence-based by utilizing a practice-based research design involving non-manualized outpatient treatment.

**Method:** We employed a longitudinal mixture modeling approach to evaluate treatment effectiveness and tested the theorized role of relational virtues (i.e., gratitude, forgiveness) as signs of progress in psychodynamic treatment. We also examined the influence of alliance correspondence on treatment outcome. The sample consisted of clients (N = 185; Mage = 40.12; 60% female; 74.1% White) receiving long-term psychodynamic psychotherapy.

Results: A 3-class solution best fit the data, with one class exhibiting growth in gratitude and forgiveness, improved symptoms, and a greater likelihood of symptom improvement relative to well-being gains. Alliance correspondence influenced subgroup membership, with greater similarity between clinicians' and clients' perceptions about the alliance predicting greater likelihood of belonging to the subgroup showing highest levels of virtues and well-being, lowest symptoms, and improved well-being across five time points.

Conclusion: Findings highlight the potential utility of monitoring (a) gratitude and forgiveness as signs of treatment progress and (b) clinician and client agreement about the working alliance, in the context of providing psychodynamic psychotherapy with an aim toward promoting symptom reduction and improved well-being.

## ***26. When old management practices no longer work: Creating Psychological Safety in a Remote Workplace***

**Peggy Kendall**, Communication Studies

When over 28% of all employees in the US report working primarily online, it is not surprising that the old ways of managing people may not be effective in this new virtual workplace. As part of an Edgren Scholarship, Peggy Kendall and Senior Triston Thomas conducted qualitative interviews with online workers to better understand how Psychological Safety is impacted by the virtual workplace. Three challenges to Psychological Safety emerged, including image management, relational uncertainty, and "perceived frenzy". Recommendations are provided to help managers better understand how to share information, create safe spaces for team work, and engage in intentional interactions.

## ***27. Computational Chemistry at Bethel***

**Rollin King**, Chemistry

In the 21st century, computational methods play a significant role in all areas of chemistry, ranging from small-molecule spectroscopy to drug design. Research in computational chemistry is multidisciplinary, involving the application of physics, math, and computer science to address questions and challenges in chemistry. This poster will survey the field, highlight the outstanding work of Bethel students, and present a couple of ongoing projects.

## **28. *Physician Assistants/Associates with Doctoral Degrees: Where Are They Now?***

**Alicia Klein**, Physician Assistant

Original Research: The impact of holding a doctoral credential by clinically practicing physician assistants (PAs) remains unknown. The purpose of this study was to investigate practice patterns and describe demographic characteristics of PAs who have terminal doctoral degrees. This was a secondary analysis, using descriptive bivariate statistics and chi-square tests, with data obtained from the 2021 Salary Survey of the American Academy of PAs. There were statistically significant differences in practice patterns and demographic factors between PAs with and without doctoral degrees. Taken together, holding a doctoral credential may improve upward mobility at workplaces. This study was among the first to analyze data surrounding the characteristics of clinically practicing PAs with terminal doctoral degrees. We hope this work may shed more light on the potential impacts of doctoral degrees for PAs and provide needed evidence for the ongoing debate on whether the PA profession should move to doctoral level training.

## **29. *In Pursuit of Change: Teach for America and the Movement to Improve Education***

**Elisabeth Lefebvre**, CAS Education

Since at least the 1980s, significant scrutiny has focused on improving almost every aspect of the U.S. educational system. Central to many of these debates are teachers – how they're recruited, how they're trained, where they teach, and how long they persist in the profession. Drawing on longitudinal qualitative and archival data collected as part of a broader research project conducted over the past decade, this poster considers as a case study Teach for America (TFA), a fast-track alternative certification program, and its work to end educational inequity by changing our teachers. This poster outlines not only TFA's program, but also its theory of change, through an analysis of its development of the Twin Cities region. In considering TFA, this research engages with a range of contemporary debates, including those surrounding teacher training and distribution, as well as the impact changing teachers has on the educational system as a whole.

## **30. *THE EXPERIENCE OF BURMESE REFUGEE STUDENTS IN HIGHER EDUCATION: BLOOMING OUT OF CONCRETE***

**Minyoung Lim**, Social work department

This study explored the lived experiences of Burmese refugee college students' resettlement and the role that social support plays in that approach.

A qualitative study using thematic analysis was conducted by analyzing 32 in-depth individual interviews with Burmese refugee students in higher education. Through an in-depth examination of the lived experiences of Burmese refugee college students' resettlement, four main themes were identified: challenges of resettlement, resettlement needs, the resources of social support, and resettlement experiences. Refugee students actively cultivated their life and showed aspirations of being successful members of this new environment. Even though they faced many challenges and needs identified through interviews, the participants overcame these barriers including a different culture and language and prosper in their lives in the host country. The social support from the co-ethnic community and people in the host country both affected the participants' successful resettlement. Co-ethnic community also plays an important role to pursue higher education. The study findings will be used by social work practice, programs, and policies to improve the success of Burmese refugee students' resettlement. This study would serve as a foundation for enhancing refugee students' resettlement and understanding the critical role of social support resources during the resettlement period.

\*This research was awarded the Outstanding Dissertation Award from the Korean American Social Work Educators Association at the annual Council for Social Work Education conference in California, in 2022.

### ***31. Nano-Optics: Light, Matter, and Single-Molecule Imaging***

**Nathan Lindquist**, Physics and Engineering

Light and matter interact in fascinating ways at the nano-scale, allowing scientists to image, probe, analyze, or manipulate single molecules. This interdisciplinary field has opened the doors to a vast array of insights and applications, including single-molecule sensors, advanced photonic devices, and novel forms of microscopy. This poster summarizes work done at Bethel over the past few years in the areas of nano-imaging, nano-sensing, and nano-manipulation.

### ***32. Camp Hope: Hope Theory Provides the Platform for Teachers to Retreat from Retreating***

**Peg McCormick**, CAS and CAPS/GS Education, and **Geri VonGrey**, CAS and CAPS/GS Education

In June of 2022, 2023, and forthcoming in 2024, teachers came to the Bethel University campus to participate in Camp Hope, a retreat for public and private educators. The 3-day experience provided a place for teachers to rest, reflect, and learn about Hope Theory as a pathway to emotional and spiritual restoration (Snyder, 1994, 2002; Gwinn & Hellman, 2019). The design of this retreat was a response to what we learned from a 5-year study on the retention and occupational wellness of our 2016 education program completers. Out of six measures of workplace satisfaction (Maslach, 2004), two of the six variables, Community and Values, emerged as potential focal points for intervention and later served as a framework for our retreat model. Following the camp experience, teachers participated in a monthly Professional Learning Network meeting to support their praxis of Hope Theory. This action project was

created and continues to support the continued growth of our teachers and to help mitigate future burnout.

### ***33. Exploring the Occupational Health and Longevity of New General and Special Education Teachers: A five-year study of novice teachers prepared by Bethel University***

Peg **McCormick**, SPED GS, CAS EDU, and Geri **VonGrey**, SPED GS, CAS EDU

For over 20 years, the Education Departments of Bethel University have prepared teachers to serve K-12 students in Minnesota's public schools. Each year, for accreditation and continuous program improvement data are gathered on their teaching performance and their satisfaction with the training they receive at Bethel. However, we are unsure about how long our newly inducted teachers stay in the field, what challenges they face as novice teachers, and how workplace factors influence the onset or mitigation of occupational burnout. In 2016, we recruited 65 teacher candidates from Bethel's undergraduate and graduate education programs to participate in a longitudinal study spanning five years after program completion to learn more about who stays in the field, who leaves, and why. After initial consent, 43 participants continued through 10 phases of data collection using the Maslach Burnout Inventory/Areas of Workplace Satisfaction (MBI/AWS). Results suggested the second and fourth years in the classroom as most challenging for new teachers. Across all areas of Workplace Satisfaction, 'workload' emerged as a singular correlate with burnout factors of emotional exhaustion and depersonalization. Workplace factors of Community and Values were most often rated as consistent areas of satisfaction across the first years of induction.

### ***34. Minnesota and The Science of Reading***

Abbey **Payeur**, Education

Research shows that when reading instruction aligns with how the brain learns to read, nearly all students can become proficient readers; yet longitudinal data shows that 30- 40% of students in Minnesota and around the country are not reaching this potential. How are teacher preparation programs instructing preservice teachers to teach reading? What shifts are being made in Bethel's Education Department, in Minnesota, and around the country as more is known about the science of reading? Abbey Payeur's research project looked at how the 29 teacher preparation programs in Minnesota teach reading and completed a qualitative and a thematic analysis of how what is taught aligns with the science of reading. This poster shares the study results and shares examples of how Bethel is leading the way in preparing teachers to teach all students to read.

### **35. *Restored Soul: A Selection of Poetry***

Angela Shannon **Preston**, English and Journalism

"Restored Soul" is the working title of a manuscript of poetry. The poster will display selections of poems that stem from African-American culture, community, and faith. There will also be poems inspired by Minnesota and Bethel.

### **36. *Moral Preferences of Different College. Majors***

Angela **Sabates**, Psychological Sciences

Advising college students regarding their choice of major has significant implications for life. Thus far, research on these advising efforts have focused on career interests and personality traits. Given the reality that choosing a major and a career is a multifaceted phenomenon, the current study explored whether differing preferences for specific moral values is also an integral part of that choice. Results of the current study suggest that students from the various categories of majors have significant differences in preferences for moral values, and this should be considered in the advising process.

### **37. *Educating with Empathy: Empowering Students to Build Bridges Across Differences***

Sara **Shady**, Philosophy and Office of Inclusive Excellence

This project explores the powerful role empathy can play in helping us constructively navigate the significant differences that often divide us in the 21st century (politics, race/ethnicity, religion, etc.). I define empathy as an intellectual and moral virtue and defend its importance within the larger context of virtue ethics. I also explore practical ways to help students develop empathy in curricular and co-curricular settings.

### **38. *Seeing the Invisible: Projects on Flow Imaging from the Fluid Mechanics Lab***

Keith **Stein**, Physics and Engineering

Shadowgraph and schlieren imaging are popular flow visualization techniques because, despite the straightforward setup and reliance on very simple geometrical optics principles, they provide powerful methods for capturing high-quality images of what would otherwise be invisible flow phenomena. Application of these methods along with high-speed video recording can reveal detailed pictures of fast flow events that may last for just a fraction of a millisecond. These techniques are being utilized in the Bethel Fluid Mechanics lab course (PHY423/ENR423) and in a number of student-faculty research

projects. We present snapshots of a few recent student-faculty projects utilizing shadowgraph and schlieren imaging.

### **39. *Artistic Collaboration***

Jonathan **Veenker**, Music and Theatre

"Filled With Light" is a poem written by Angela Shannon Preston in the form of a Villanelle. She has graciously allowed me to set her words to music to be sung by Merrin Guice Gill in an upcoming faculty recital. The strict form of the villanelle and its recurring three line stanzas led to a connection with the 12 Bar Blues form. The 19 lines of the poem are divided into three sections of six, six, and seven. These musical sections follow the harmonic structure of the Blues set in A minor.

### **40. *Using Private Equity to Acquire Multifamily Assets***

Drew **Whitson**, Business

In Spring of 2023 Endurus Capital, a Minnesota-based private equity real estate firm, raised approximately \$10M of private investor funds to purchase a 94 unit townhome in Columbus, Ohio for \$20M. The project focused on both the total capital stack (sourcing of debt and equity), investor projected return, as well as the use of funds for deferred maintenance and property improvements. Detailed information related around risk management and investments criteria will as be included as well as an overview on the multifamily asset class.

### **41. *Education and Innovation Requirements for Design Thinking Jobs***

Molly J. **Wickam**, CAPS Business and GS Education

Design thinking is a problem-solving approach based on design theory, design-cognition, social constructivism, and reflection. Since business and industry are seeking employees with design thinking knowledge and skills in order to infuse products and services with innovation, the purpose of the study was to understand the educational qualifications and innovation skills related to design thinking that are sought by employers seeking undergraduate business majors. Content analysis of a nationwide dataset of LinkedIn job descriptions was performed to discover attributes such as educational level, years of required experience in design thinking, and type of bachelor's degree sought. Findings showed an anomaly between the skills-first hiring trend and the results of the study which found that employers want hires to have a bachelor's degree, although not necessarily a business degree. Additionally, innovation skills are important to employers hiring employees for design thinking positions. Business management programs need to make the case that they are prepared to teach innovation and other skills that help students obtain jobs in design thinking.



## **42. *Border of Dreams: A Textura Documentary***

**Scott Winter**, English and Journalism

The Problem: Textura magazines are expensive and consumers are moving to video. In light of those problems, how can Textura fulfill its dreams of connecting cultures and disciplines through social justice storytelling in a viable way that reaches a large audience?

The Solution: An Edgren Scholars grant and NYCAMS grant to retell our best Textura Guatemala 2022 story as a social justice documentary called Border of Dreams.

The process: By hiring a Guatemalan director and editor from former partnerships, the student-professor collaboration of Junior Soraya Keiser and Professor Scott Winter traveled through the summer of 2022 and spent a year building and marketing the film

The conclusions: The storytelling became so impactful-- it will play in at least six states and two countries and got selected to at least one film festival -- that we're building a documentary into future trips in Textura India 2024 and Textura Palestine 2026. More importantly, the partnership taught everybody new ways to tell stories.

## **43. *Study abroad, open-source laboratories, and citizen science***

**Brandon J. Winters**, Chemistry

For over 30 years, students and faculty from Bethel University, St. Paul have been traveling to the Amazon rainforest of Ecuador each January. In the course titled, Ecology in the Tropics: Natural History & Future Prospects- Ecuador & the Galapagos Islands students spend three weeks engaging in ecological, cultural, and research-focused activities while also observing and discussing the various impacts of human occupation on the natural environment. The need for cheap and portable laboratory equipment for these research activities along with the growing popularity of open-source equipment development and the growth of relationships with local communities have given rise to several new projects or initiatives that focus on bringing contextually meaningful science equipment and curriculum to remote communities around Ecuador. In this work, Bethel students conduct small research projects on environmentally relevant topics such as microplastics, plant chlorophyll concentrations, or atmospheric aerosols and VOCs with equipment developed and assembled in-house. Long-term goals of this work are to develop primary and secondary education curricula to accompany said research projects, develop and provide laboratory equipment for local school-age kids and community members to partner in contextually relevant environmental citizen science initiatives, and to install sensors for long-term atmospheric monitoring in remote locations of the Amazon and surrounding ecosystems. A description of current equipment and projects will be provided along with discussion of next steps in developing these community-based relationships for long-term success and sustainability.

#### ***44. Participation in the Adoptive Kinship Network Contact: Application for Adoption Competent Family Life Education***

Gretchen Miller **Wrobel**, Psychological Sciences

Family life educators (FLE) provide essential support for many complex family forms. Supporting the complexity unique to adoptive families requires specific understanding of the adoption kinship network (AKN: birth family, the adopted person, and adoptive family network). As adoptive and birth families negotiate contact over the life cycle, the possible relationships within the AKN are numerous. Using data from the Minnesota-Texas Adoption Research Project (MTARP: Grotevant, McRoy, Wrobel, & Ayers-Lopez, 2013), a 30 year longitudinal study of contact in adoptive families, cross-network contact in the AKN at three separate stages of development will be described. Cross-network contact is defined as contact between any member of the adoptive family and any member of the birth family. Case examples describing profiles of cross-network contact, including changes in birth family and adoptive family participation, across different stages of adopted person development will be presented. Lastly, implications for FLEs are discussed.

#### ***45. Telemedicine for Prenatal Care During the COVID-19 Pandemic***

Katrina **Wu**, Nurse-Midwifery Program, Department of Nursing, Social Work, and Community Health

In the United States, 24.4% or approximately 1 million pregnant individuals, do not receive early or sufficient prenatal care each year. Due to its widespread adoption during the pandemic, understanding how it was implemented and insights from user experiences can inform the utilization of telemedicine as a potential long-term strategy to improve access to prenatal care. For this national, convergent mixed methods study, researchers surveyed 196 perinatal providers and 749 pregnant patients during the COVID-19 pandemic. Findings indicated mild to moderate satisfaction across six telehealth usability domains. While the majority of participants reported they did not use blood pressure cuffs and fetal Dopplers during virtual visits, many believed this would increase their confidence in utilizing telemedicine beyond the pandemic. Further exploration on the inclusion of physical exam components, visit frequency, and safety is warranted.