LAKE CAMPUS SCHOLARSHIP

Lake Campus Research Report - 2017

Research Initiative Program Overview

The Lake Campus is home to numerous technical, associates, bachelors, and graduate programs. These programs are run across a student population of approximately 1,200 students and facilitated by approximately 40 full time faculty. The scholarly achievements contained in this report represent faculty's commitment to pedagogy and their areas of study as they contribute to their classrooms, disciplines, and community.

The Lake Campus Research Initiative provides a unique internal funding source for faculty and students. This program is designed to help drive the scholarly production of the campus by providing monies for research infrastructure, supplies, travel, and publishing costs as well as sponsoring events that contribute to the campus research mission.

The Lake Campus Research Coordinator is pleased to present the third annual Lake Campus report of research activities. This report provides a listing of the scholarly and creative endeavors from Lake Campus faculty during the 2017 calendar year and spans a variety of disciplines and formats. This report has been compiled from faculty submissions of scholarly achievements. Congratulations to Lake Campus faculty for their success and much encouragement as they continue in the future.

Strategic Highlights from 2017

- The second annual Lake Campus Research Symposium was held in Dicke Hall. The event grew to be centered around 30+ research projects presented by 50+ faculty and students and was attended by over 200 people from the campus community.
- The internal grants and scholarly expenses program that was launched in 2015 continued to provide research support to both faculty and students.
- Several research and teaching related workshops related to building proposals, writing research papers, and identifying grant support were held.
- For the second year in a row, faculty and faculty mentored students produced 100+ units of research spanning peer reviewed journal articles, contracts and grants, books, book chapters, book reviews, novelettes, reference works, short fiction works, plays, and scholarly presentations.
Research Articles


**Technical Reports**

• Jacquemin SJ, Johnson LT, Dirksen TA, Mescher TM, McGlinch GM. 2017. Changes in Water Quality in Grand Lake St Marys Watershed Following Manure Application Regulations. *Quick Facts Sheet Prepared by Ag Solutions (Mercer County, OH)*.

**Books and Edited Collections**

Book Chapters, Short Fiction, and Articles in Collections

Book Reviews and Literary Critiques

- Wilson DH. In Press. Review of “Deleuze and Baudrillard: From Cyberpunk to Biopunk” by Sean McQueen. *Journal of Science Fiction Film & Television*.

Conference Presentations and Proceedings


**Faculty Contracts and Grants**

• Attariani H. 2017. Material By Design: A New Road Map to Strengthen Low-dimensional Nanostructures via Defect Engineering. Amount: $10,000. Funding Source: Computational Grant.
- Clayton A. 2017. Stream Table Model for Surface and Subsurface Water Flow Studies with Respect to Biology, Earth and Environmental Sciences, and Education Science Departments. Amount: $2,000. Funding Source: Lake Campus Research Initiative.
- Crites B. 2017. STEM Day. Amount: $1,200. Funding Source: WOEF Board and College of ECE.
- Crites B. 2017. STEM at the Lake. Amount: $1,000. Funding Source: Mercer County Civic Foundation.
- Crites B. 2017. STEM Night in Lucy’s Lab. Amount: $1,000. Funding Source: Space Grant Consortium.
- Daniel D. 2017. Lake Campus Student 2018 Study Abroad Tour of Central Europe. Amount: $1,500. Funding Source: WOEF Board Grant.
LAKE CAMPUS SCHOLARSHIP
Lake Campus Research Symposium - 2018

Event Program

April 19, 2018

Dicke Hall

11:00 am – 1:30 pm
Research Symposium Overview

The Lake Campus Research Committee is pleased to present the third annual Lake Campus Research Symposium. The Lake Campus Research Symposium provides an opportunity for the campus to showcase the scholarly achievements of faculty and students and represents one of the pillars of the Research Initiative Program. The presentations in the symposium demonstrate faculty and student commitment to pedagogy and their respective disciplines as they advance their classrooms, study areas, and community. Congratulations to Lake Campus faculty and students for their success and much encouragement as they continue in the future.

2018 Symposium Presentation Abstracts

- **Abromavich H, Huelskamp A. 2018. How Does Exercise Affect Cystic Fibrosis?**
  
  Our project will focus on exploring the evidence of how an active lifestyle helps children with cystic fibrosis. We will explain what the disease is and the physiology of the disease. We will explain the experiments used to test the children and the assessment tools used to record the results. We will then conclude the project with giving our opinion on the effects of exercise on children with cystic fibrosis based off of our research.

- **Brotherton C. 2018. Does Stereotype Threat Affect the Memory of Older Adults?**
  
  The aim of this proposed study is to examine the effect stereotype threat has on older adult’s memory performance. Stereotype threat on memory is important to examine because this knowledge can help us to understand the decline of memory with age. The participants in this study are 50 years old or older and will be randomly assigned to either the control group or stereotype group. The participants in the stereotype group will be told that the purpose of the study is to see if the experimenter can replicate the findings of a previous study that suggests age has a negative impact on older adult’s memory. The participants will complete a memorizing phase, a distractor phase, and a recall phase to test their memory performance. The participants in the stereotype group are predicted to recall more incorrect words than the control group.

  
  Asian Americans make up 5.6% of the entire U.S population; this began when more than 20% of Asians came to the United States as refugees. In this presentation we will be taking a closer look at the many cultural traditions expressed by this group. All around the world people express emotions and view certain situations in different ways; as healthcare professionals it is our job to recognize these differences and accommodate our patients in a beneficial way. We will be looking at health care, common diseases associated with the group, marriage, life expectancy, religion and the traditions belonging to Asian Americans. This presentation will help to give us a better understanding of the background from a healthcare perspective of this culture.
Ciampaglio CN, Clayton AA, Fuelling LJ, Poore P. 2018. Consolidation of Unconsolidated and Soft Sediments for use in Thin Section and Core Analysis

Soft rock samples, unconsolidated sediments and soft rock - unconsolidated cores must be consolidated before undergoing slicing and polishing. Care must be taken during the consolidation process so that soft rock specimens do not disintegrate, while unconsolidated specimens must utilize techniques that do not disrupt the internal structure of the sediment. Most soft sediment and unconsolidated sediment consolidation procedures use multi-part chemical systems and successive dehydration and infiltration techniques. These are usually time intensive, expensive, and use hazardous chemicals. Furthermore, most of these techniques were developed for biological specimens with much smaller volumes than petrographic specimens. A more practical approach involves consolidating soft rock samples and unconsolidated core sediments using common, less expensive, and relatively safer epoxies and adhesives. These materials can be diluted with solvents such as acetone, ethanol, or xylene to decrease working viscosities. The diluted solution can be dripped slowly on the surface of a heated soft sediment block, or unconsolidated sediment core, then allowed to cure. Soft sediment/interlayered shale cores from a Mississippian-age site in central Kentucky and a Permian age site in Kansas were consolidated with cyanoacrylates, epoxy putties, and diluted (20% xylene) two-part resins in order to infiltrate and solidify the sediment. Once cured, the cores were embedded in plaster and sectioned lengthwise into slabs. The slabs were then polished revealing the internal bedding structure. Portions of the sections were cross-sectioned and thin-sectioned. The resulting polished slabs and thin-sections exquisitely exposed the internal bedding structure and lithology of the in-situ cores and sedimentology.

Clayton AA. 2018. Faunal Description and Analysis of a Fossiliferous Lag Layer Identified along the Clapp Creek Tributary in Williamsburg County, South Carolina

The city of Kingstree is located in Williamsburg County within the east-central portion of the South Carolina coastal plain. Within city limits, along and adjacent to Clapp Creek, a tributary of the Black River, an extremely fossiliferous layer exposes a variety of shark, fish, and reptilian teeth, scales, and bones (Weems & Bybell 1998). The age of the faunal elements within the unit span the Late Cretaceous (Maastrichtian) through the Early Quaternary (Pleistocene). Due to the high concentration of vertebrate and phosphatic material present, this highly fossiliferous layer is referred to as a “bonebed”. A bonebed is a lag layer within which the vertebrate material represents more than 5% of the supporting matrix. The fossiliferous sediment is exposed by excavating approximately two meters below the surface of the bank of the creek.


Lithified sedimentary rocks, comprised of calcium carbonate, often contain valuable information in the form of vertebrate and invertebrate faunal material. This information holds the clues to past sedimentary environments and structures. Paleontologist work to disintegrate the organismal remains from the consolidated material without destroying or marring the structure of the fossil remains. Past literature provides little information regarding an effective procedure to extricate the fossiliferous material without marring its structure. Previous work has been conducted using a 10% solution of acidic acid. This method did little to no damage to the fossil assemblages, however, it was ineffective at total breakdown of the lithified rock fabric. A more effectual acid for this process is an aqueous solution of formic. I previous investigations researchers used 10% formic solution and buffered the acidic solution. The [formic acid] is a stronger and quicker procedure however does have its own disadvantages; the buffering raises the solution’s pH and thus devalues the formic acid’s efficacy. This procedure also produces a precipitant [calcium formate] that encrusts the rock material and consequently renders the formic acid ineffective. This systematic research is investigating the optimal formic acid percentage to ensure dissolution of calcium carbonate rocks by modifying the temperature, stir rate, percent solution, and not buffering the acidic solution. The ultimate objective is to find the superlative balance of these variables to ensure
total dissolution without damaging the fossil material. In this presentation, the current data shows that the methods being utilized are producing positive results. The ultimate outcome of this research will be to give researchers the ideal combinations of heat, concentration and stir rate to guarantee the most effective dissolution of calcium carbonate sedimentary rocks.


  This current study will examine the effect of text box size and survey method on response quality. Fifty undergraduate students from Wright State Lake Campus will be recruited to participate. A 2x2 factorial design was used, with participants being randomly assigned to four different conditions. The conditions will be a combination of text box size (small versus large) and survey method (paper versus online). Response quality will be measured as the number of words per question answered. It is hypothesized that participants will give answers higher in response quality in the online condition and in the larger text box condition. This is important to study due to the fact that many studies within the social sciences, course evaluations, and academic exams are conducted using surveys and open-ended questions.

- **Crites N, Tuthill B. 2018. Heart Failure, the Leading Cause of Death**

  In this project, research will be gathered on heart failure patients who are over the age of 65 years old. Heart failure occurs when the heart cannot adequately pump the blood to the rest of the body. The results of this study will determine the effectiveness of treatments in different stages of heart failure based on mortality rates. The stages for heart failure are lettered A through D. Stage A occurs when the person has risk factors for heart failure but no symptoms. Stage B progresses onto changes to the heart but still no symptoms. Symptoms arise with stage C along with physiological changes to the heart. Finally, stage D is the last stage of heart failure. Treatments need to be specialized in order to relieve symptoms. Palliative care is the typical course of treatment for stage D. The research question being answered in this project is; In patients 65 and older, how does early detection of congestive heart failure (Stage A and B) compared to late detection (stage C and D) affect treatment options and mortality rates?

- **Daniel DT. 2018. Paracelsus and His Religious Legacy: Radical Theology and Spiritualism in Interconfessional Paracelsianism**

  Theophrastus Bombast von Hohenheim, or Paracelsus (1493/4–1541), is often called the “Luther of the Physicians” because of his revolutionary medical ideas. However, Paracelsus also espoused radical religious views that played an important role in the Paracelsian “reformation” of medicine and natural philosophy. Some scholars have noted the Paracelsian exegesis of the Genesis creation story, utilized by Paracelsian iatrochemists to counter “pagan” Galenic medicine. Yet, Paracelsus’s idiosyncratic theology and its inter-confessional reception receive scant attention. I will note Paracelsus’s teaching on the “new creation” by Christ and characterize his radical spiritualism—Paracelsus extolled the spiritual unity of all true believers while criticizing institutionalized Christendom, the “Mauerkirche.” I will also touch on his theological reception, which occurred in a heterodox and usually clandestine setting. The latter was significant to Paracelsianism and a compelling example of complex relationships across confessional boundaries during the Reformation.

- **Downing A, Sudhoff E. 2018. Pressurized Air Mattresses and Positioning Techniques to Decrease Pressure Ulcer Incidence**

  Hospitals provide wonderful care for people who are at their worst; however, complications have the potential to arise in every patient’s hospital experience. One complication that has become more common in healthcare is that of pressure ulcers. A pressure ulcer is defined as an inflammatory process to a specific area due to prolonged
exposure to external pressure (Ricci et al., 2013). Pressure ulcers are a completely preventable complication, yet the incidence of them continues to increase. Some factors that lead to this problem is the lack of education, knowledge deficit, the shortage of staff, and lack of time (Tallier et al., 2017). Since pressure ulcers are preventable, we wanted to find the best solution to fix the problem. We did this by comparing the use of pressurized air mattresses with frequent manual repositioning of the patient. Pressurized mattresses are very elastic, which helps distribute the weight of the patient throughout, decreasing the risk of bed sores from developing compared to that of frequent manual repositioning which is already an established part of pressure ulcer prevention. Both interventions had strengths and weaknesses to their uses and both need to be further looked at and discussed to see their effectiveness in preventing the occurrence of pressure ulcers.

- Faragher M. 2018. “PRIDE IN THE BRITISH ACHIEVEMENT”: Britain in Pictures and the Quantification of Propaganda

Beginning in 1941, the first of 132 short books about the history of Britain and its culture was published through collaboration between Collins and Ad Print, and produced through a backdoor commission by the Ministry of Information. This series, called Britain in Pictures, attempted to show the depth and significance of British cultural contributions to a global audience. Particularly, the book series sought to woo British colonies and other neutral countries, who were susceptible to German propaganda which lambasted Britain as hypocritical colonizers of the worst order. This project will use the methods of digital textual analysis to explore the nature of propaganda at a quantitative level in Britain in Pictures. Using OCR (optical character recognition) versions of the texts and the textual analysis tool Voyant, the poster will demonstrate how patterns and themes of language usage and word proximity in the series helped produce effective Allied messaging across the world.


The purpose of this research was to administer Smartsafe, an empowered reality-based self-defense program, to women and girls in Tijuana, Mexico and investigate the experience of women and girls in Smartsafe seminars. Using a convenience, purposive sample, I approached the girls and women who competed the seminars. Through consent and assent, I collected forty surveys. Within the forty surveys, three aggregate groups emerged: girls eight to thirteen years of age; women over the age of thirteen; and private school teachers. This poster is a presentation of the survey findings in the areas of risk of violence perceptions, self-defense perceptions and my observations from conversation within the community and environment. The findings suggest that the lived reality of the girls and women in Tijuana, Mexico reflect their observed sense of urgency in the self-defense seminars.


With the help of two generous grants provided by WSU’s Lake Campus, Middle Childhood pre-service teachers were able to attend the annual state conference and also present reading strategies during a break out session on adolescent literacy. More than 50 teachers, administrators and pre-service teachers attended our session. We received outstanding feedback, including an invitation to present during a professional development day for Cedarcliff Schools’ K-12 Teaching Staff in Cedarville, Ohio.

- Goettemoeller K, Spangler T. 2018. The Effect of Intergenerational Interactions on Elderly Quality of Life
As the geriatric population grows, it is imperative for nurses to understand how to better care for them. We are researching the effect of late-life depression on the elderly population, and how it relates to their quality of life. We are wondering if there are better treatment options to use in combination with existing pharmacological treatment in order to decrease elderly depression rates. Through academic research, we have found that the nonpharmacological use of intergenerational programs for the elderly has shown significant positive results relating to their mental and emotional health. Intergenerational programs are an important intervention to be implemented into every community to enhance elderly quality of life.

- Grimes K, Sobe T, Richardson K. 2018. Healthcare and Hispanic Americans

Some Hispanic Americans encounter challenges in their daily lives that affect their health outcomes. For example, many Hispanic Americans work long hours at lower wages. Further, many face discrimination due to communication barriers. Family, faith, and church are often important cultural center points that unite a Hispanic communities, and considerations of these aspects should be taken into account. Hispanic-Americans are at a higher risk for heart disease, diabetes, and obesity. As a health care provider, it is important to have knowledge of the cultural differences involving spiritual beliefs, nutrition, and preference of medical treatment to provide the best quality of care.

- Harshbarger J, Fullenkamp M, Lefeld M. 2018. Greek Culture and Healthcare

The Greek culture is unique from other cultures, and it important to consider the differences they possess when taking care of a patient in the health care setting. In the United States there are over one million Greek Americans living throughout the country. Our research project will review the communication style, space, social organizations, time, environmental control, and biological variations in regards to the Greek culture. Greek people tend to have different views and beliefs when it comes to medical care. As a nurse, it is important to provide holistic care to every patient encountered throughout their career.


In the Spring, WSU Lake Campus hosts a job fair to assist students in finding full time employment. We were curious, what are the most important factors in applicants in landing a job? Beyond the match between the job vacancy and the applicant’s specific major, how important are other factors, such as GPA, activities, first impressions and work experience? To find answers to these questions, human resource representatives from various sized firms in a variety of industries is conducted. These firms are asked to rank factors that influenced their recent hiring decisions and also how closely the applicants major matched the job opening. Knowing how firms respond will help students in their current job search and inform future students on how best to prepare.


Constructed wetlands are becoming an increasingly important management tool to reduce nutrient rich agricultural runoff in the Great Lakes region. The objective of this study was to assess the removal efficiency of two constructed wetlands operating on tributaries of Grand Lake St. Marys (Prairie Creek and Coldwater Creek) located in northwest Ohio. Water samples were collected weekly during summer and fall 2017 (N=24) from inflow and outflow points where they were analyzed for nutrient (nitrate-N, total phosphorus, dissolved reactive phosphorus) concentrations following standard EPA colorimetric methods. Overall, while both wetlands experienced high mean nutrient inputs (concentrations in mg/L) across both fall and summer seasons ranging from 0.4 to 4.3 NO3-, 1.1 to 1.7 TP, and 0.2 to 0.6 DRP, respectively, high removal efficiencies (often in excess of 75%) produced significantly reduced outflow concentrations (paired t tests; p<0.05) largely consistent with EPA recommended TMDL target values for watersheds of these size (~20mi2: 1.0 mg/L NO3, 0.10 mg/L TP). Extending
these concentration reductions to effect size and loading impact, mean monthly stream discharge rates compared with wetland discharge data (continuously monitored using pressure transducers) revealed that PC and CC Treatment Train Wetlands were found to have processed an average of 10% to 29% of flows during summer and 40% to 35% of flows during the fall season, respectively. This study demonstrates the importance of constructed wetlands towards freshwater conservation strategies.

- Junker C. 2018. An Intersectional Analysis of Wallace Stegner’s *Angle of Repose*
  If Wallace Stegner’s 1971 novel *Angle of Repose* has a central question, it might be: how do people make their spaces and lives habitable? What configuration does it take to reach the “angle of repose,” the space at which loose pieces can remain in place, stable? For the narrator of the novel, Lyman Ward, who calls himself a “Nemesis in a wheelchair,” making his daily life habitable consists primarily of his ability to escape, which he accomplishes through writing – and thus imaginatively inhabiting — his grandmother’s life in the American West. Embedded within Lyman’s narrative is the novel he is writing about Susan Ward, whose attempts at habitability also rely upon the way that she (re)writes the “uncivilized” Western space in order to make it picturesque for both herself and her Eastern readers. For both Lyman and Susan, their own spaces and their own bodies must be altered, if only imaginatively – dominated and molded so that they better meet their expectations and ideals. For these characters, what makes space and bodies habitable or un-habitable is based on a number of assumptions about gender, class, ability, and space itself, assumptions that have been recently called into question in the fields of ecocriticism, feminism, and disability studies. Yet, most of the critical scholarship on this novel has focused on either the ecocritical implications or the feminist complications of the novel. Rarely has Angle of Repose been examined in light of both ecocriticism and feminism together, and never has it been read through the lens of disability studies. This project analyzes the tangled relationship between ability, space, and gendered bodies through the lenses of disability studies, ecocriticism, and ecofeminism. My analysis of this work reveals the perils of considering states of embodiment and social categories of identity as independent from one another and offers the opportunity to examine how bodies, space, and writing are entangled and enmeshed.

  The goal of nursing is to provide quality care to diverse populations across a range of cultures. Cultures vary when it comes to communication, space, social organization, time, and environment. In the United States, approximately 2.2% of the population identifies as Jewish. While this may seem like an insignificant amount it is still important that we provide the best quality of care and take their beliefs and practices into consideration. Our presentation will focus on how to provide competent care to the Jewish population. We will further assess common diseases associated with the Jewish culture and investigate how their beliefs affect their healthcare, nutrition, family roles, and daily life.

  Arab immigration peaked in the United States between 1880 and 1945, in some part due to economic hardships. The majority of immigrants came from Syria, who were forced to seek elsewhere for refuge from liberation/civil wars from the Ottoman Empire. As of today, 3.5 million Americans can trace their roots to an Arabic country. There is religious diversity among this population. Seeking education is the primary reason for immigrants coming to the U.S. today, migrating with their families and living in communities. From a cultural perspective, it is important for health care providers to understand customary practices and beliefs within Arab American society. It is essential for nurses to incorporate these beliefs when providing healthcare and understanding the different gender roles male and females play in their culture.
Menker M, Schneider R, Felver J, Post J. 2018. Amish Culture and Healthcare

The Amish culture is very predominant in our area and have been influencing the culture surrounding us since the 18th century. Amish typically follow strict gender roles; women oversee the housework and the men are in charge of the field work. The women are heavily relied on to care for the members of the family, typically eight to nine members. The Amish culture is one of strong spiritual belief; they use their beliefs as a guideline to live their lives. This presentation explains the Amish culture and defines their culture as a whole. Living in a community where the Amish have a strong influence, it is essential as health care providers to be competent in all aspects of other cultures.


The proposed research is designed to address the effects of school start times on stress levels of adolescents. Participants of approximately 200 summer camp attendees will be randomly assigned to two different camp start times. Problem questionnaires will be administered on the first and last day of the summer camp to assess perceived level of stress in domains of school, parents, and self; total sleep time, wake times, and bed times will also be assessed. Because adolescence is a transitional phase which produces development in the cognitive, physical, social, and behavioral realms, it is vital to examine if early school start times are contributing to adolescent’s perceived stress, thus producing negative consequences. It is expected that students who are in the early start group and have early wake times will report higher levels of stress and less total sleep time.

Rollins S. 2018. Effect of Marriage on Psychological Well-Being

This proposed study will examine the effect of marriage on psychological well-being. The sample for this study will be engaged students recruited from Christian colleges. This population is useful to recruit from because they will presumably have long engagements but also will not be cohabitating. Participants will participate in either marriage counseling or individual counseling and their levels of depression, emotional support, and marital stress will be tracked over the course of six years. The research hypothesis is that the patterns of psychological well-being seen in marriages are caused by the psychological well-being a person brings into the marriage. Therefore, it is expected that individual counseling will cause improvements in both psychological well-being and marriage quality, while marriage counseling will show improvements in marriage quality but will fail to show significant changes in psychological well-being.

Schwartz A. 2018. The Influence of Socioeconomic Status and Environmental Stressors on Suicide Rates in Young Adolescents

The purpose of this proposed study is to examine the effect of socioeconomic status and environmental factors (unemployment, mental illness, etc.) on suicide rates in young adolescents. Participants will participate in a survey that asks a series of questions about social status, environmental questions, and if they have attempted suicide. The expected outcome of these results would be an increase in attempted suicide rates for lower socioeconomic status teens that are facing environmental stressors.

Sheriff E, Post K. 2018. In Newborns, Does Exposure to Maternal Drug Use Compared to no Maternal Drug Use While In Utero Influence Birth Defects?

It is not uncommon for individuals to have drugs in their systems daily in the society we are currently living in. Life gets tough and sometimes people run to drugs and alcohol for a coping mechanism- without ever realizing
the effects it has on their bodies. For pregnant women, illicit drug use during pregnancy is highly frowned upon and even severely dangerous for the fetus. Drugs and alcohol can cause premature birth, stillbirth, miscarriages, cardiovascular problems, respiratory problems, neurovascular problems, and many more different systems of the body is affected. Tobacco is most frequently used substance during pregnancy while alcohol, cannabis, and other illicit substances are often utilized. Polysubstance, use of two or more drugs or alcohol, is common during pregnancy. Not only are illicit drugs bad for everyone, but they are also detrimental to the growth and development of a fetus. Every single person’s body metabolizes drugs at different rates, which makes it hard to accurately determine how much is too much. Therefore, medical professionals tell pregnant mothers that no alcohol or drug use is safe for the fetus. A national statistical study done by the National Institute on Drug Abuse, every twenty-five minutes a baby is born addicted to opiates. There are few existing treatments for prenatal substance use. This research project provides information for the drugs involved in prenatal exposure including nicotine, alcohol, marijuana, opiates, cocaine and methamphetamines and their effects on the fetus and newborn.


Throughout the last several years, there has been a growing need for increased numbers of registered nurses in hospitals. This is due to the increase in acuity of patients as well as the patient’s shorter lengths of stay. The organization, technology, and push towards a more effective and cost-efficient system is always a priority. However, patients in critical care settings have been recognized to be affected the most by nurse-patient ratios. Although all patient wards are of great importance, individuals in the intensive care unit have the most demanding medical issues that require vigilant care. Research has revealed that the workload and resources used by nurses has a direct effect on the overall patient status. Therefore, it is imperative that the safety and quality of patient care reflects the nurse/patient ratio, and the knowledge and experience of the staff. It has been proven that nurse to patient ratios have a direct correspondence to hospital acquired infections such as ventilator associated pneumonia. So why do healthcare systems not take this into account when staffing nurses on their units? There are various strategies that can be carried out to properly staff employees when dependent patients are relying on the nurse’s care throughout their hospital stay. Within our project, we have compiled research to evaluate nurse to patient ratios in ICU settings to present information from various sources in regards to whether or not having a 1:1 nurse to patient ratio is effective in decreasing the risk for ventilator associated pneumonia and adverse effects.

- Simons C. 2018. Instructional Design for Online Learning

Online learning provides the benefit of convenience, particularly to non-traditional students who work full time and care for a family. However, teaching and learning online poses several challenges including lack of student engagement. Students often feel isolated and may not have the motivation they experience in face-to-face class settings. Overcoming these challenges begins with effective course design following Quality Matters principles. This poster describes Quality Matters requirements and demonstrates how its principles are implemented in my online classes to improve student learning and engagement.

- Simons C. 2018. Competency-Based Education: A New Pedagogical Model

A national debate has been brewing about the ability of the current credit-based system in higher education to meet the needs of non-traditional students. In the credit-based system, students pay for a certain amount of credits (typically 120) which they must earn by passing required courses to get a degree. For an undergraduate degree, this generally takes four years. The problem is that seat-time generally does not correlate with what graduates can do when they complete their programs. Furthermore, credit-based programs can be isolating to non-traditional students who lack access. Therefore hundreds of universities in the US including Michigan State
University and Purdue have been experimenting with a new model in higher education that is based on competency instead of number of credits accumulated. In other words, students are assessed based on what they can do rather than what they know or the time they spend in the classroom. This poster illustrates how this model works and how it can be implemented.

- **Simons C, Henry N. 2018. Glycemic Index of Pinto Bean Fortified Breads**
  Pulses are known to digest slowly due to the presence of resistant starches. Hence they are described as having a low glycemic index. This is excellent for people with diabetes or those who are concerned with weight management. Therefore, pinto bean starch was extracted from dry pinto beans, and added to bread formula at 5%, 10% and 15% to determine effect on expected glycemic index (eGI). The study found that eGI of bean-fortified bread was not significantly lower than white bread. This is possibly due to complete gelatinization of native bean starch and hence increased susceptibility to digestion by α-amylase enzymes. Hence, due to the poor retention of resistant starch in native pinto bean starch, the addition of pre-prepared bean resistant starch in the form of RS3 to bread is recommended as a better approach to lower glycemic index.

- **Simons C, Henry N. 2018. Production of Low-Glycemic Index Ingredient from Pinto Beans**
  Although native bean starches have a high concentration of resistant starch (RS), retention is poor after cooking and gelatinization. However, if pre-prepared RS starch in the form of RS3 is added, better retention will be realized due to its high thermo-stability. Hence, in this study, a method was developed to produce a new RS ingredient from pinto bean starch which has a low expected glycemic index of only 20. Adding this ingredient to breads and bakery products is likely to be very effective in controlling blood glucose in diabetes patients.

- **Simons C, Henry N. 2018. Milling and Fractionation of Pulse Flours**
  Utilization of pulse flours is increasing worldwide due to their health benefits. One way to expand product utilization is to mill and fractionate pulses according to particle size. This could potentially produce product fractions with differences in composition and functional properties. However it is important as a first step to determine percentage yield of fractions. Hence, twelve pulses (pinto bean, navy bean, black bean, black eyed pea, lentil, split pea, small red bean, mayocoba bean, chick pea, lima bean, kidney bean, and great northern bean) were milled at 10000 rpm using a centrifugal mill and then fractionated for 20 minutes using a Ro-tap sieve separator. Particulates were separated on 20, 30, 40, 60, 70, and 80 mesh sieves. The percentage fractions obtained showed significant differences indicating variability in hardness and fracturability. Chickpea produced the lowest percentage flour (5.6%) while lima beans produced the highest (23%). In a further study, pinto beans were milled at different speeds (6000, 8000, 10000, 12000, 14000, 16000, and 18000 rpm) to determine effect of speed on flour yields. Flour yield at 6000 rpm was 14.16 % and did not increase significantly by doubling speed to 12000 rpm. However, yields gradually increased significantly from 15.32% at 14000 rpm to 20.89% at 18000 rpm. This data is important for estimating the lowest energy consumption for the highest flour yield.

  Black beans get its color from the presence of anthocyanins in the seed coat. Anthocyanins are phytochemicals that act as antioxidants, reducing free radical damage and aging in the body. Therefore, it is necessary to minimize anthocyanin loss during cooking. One approach is to breed for varieties that demonstrate high anthocyanin retention. Therefore, six black bean varieties (Loreto, Jet, Zenith, Zorro, Eclipse, and T-39) were obtained from North Dakota State University - Bean Breeding Program. The beans were soaked for 17.5 hours, and then canned in glass jars using an autoclave at 121 oC for 25 minutes. Color retention was then determine using a hand-held colorimeter. Black color retention in varieties, based on calculated chroma and hue angles.
indicated the following order: Zenith > Zorro > T-39 > Loreto > Eclipse > Jet. This result supports previous work using a more sophisticated color measurement system. Therefore, this study demonstrates that a simple hand-held colorimeter can be just as effective in differentiating color between varieties of cooked black beans.


Jehovah’s witness is a group currently comprised of 8.45 million members. This religion originated in the 1870’s from Pittsburgh, Pennsylvania and was founded by Charles Taze Russell. This once small religion has now branched globally. The international headquarters is located in Warwick, New York and currently create literature on their interpretation of the Bible. Members of this religion are best known for spreading the word by heading door to door and passing out pamphlets such as “The Watchtower” and “Awake!” With this religion comes several medical exemptions that a nurse must recognize. The most common exemption is related to blood. Since Jehovah’s Witnesses are becoming widely apparent, it is important for nurses to understand the rules of the religion in order to be a competent nurse.

- **Stomel JM, Longsworth L. 2018. Expression and Purification of TAQ Polymerase**

Taq polymerase is a heat stable DNA polymerase and functions as the workhorse enzyme in any molecular biology lab. It is the primary tool used in performing PCR (Polymer Chain Reaction) experiments where DNA is replicated up to 1017 times its original concentration. PCR is also the bedrock technology for many other tests in molecular biology. In this project, we demonstrate a method to clone, express, and purify Taq polymerase using equipment and facilities here at the lake campus.

- **Will N, Heckler K. 2018. Benefits of the Use of Medical Marijuana in Children with Epilepsy**

Medical marijuana is a major controversy. Several states are legalizing medical marijuana use medicinally and recreationally. While the states are passing these laws, the nation still defines medical marijuana as illegal, which also adds to the controversy. The use of medical marijuana in children further contributes to this problem. Despite the stigma against medical marijuana, there are still people traveling across the country in order to get to a state in which they can use medical marijuana for the treatment of their children’s seizures. If medical marijuana would help decrease or even eliminate seizures for children with epilepsy, why not give it a chance? More research of the subject could lead to an effective treatment to decrease the seizures of epileptic children.

- **Wilson DH. 2018. Natural Complexions.**

Natural Complexions is a collection of satirical vignettes and “docufictions” that explore the dynamics of contemporary American media pathology. Extrapolated from actual news stories, spam emails, advertisements, social networks, and other scraps of disposable infotainment, the book punctuates the absurdist spiritus mundi that galvanizes the cultural landscape. Wilson ultimately depicts the relationship between nature and technology through the interactions of over 100 characters, among them movie stars, ex-presidents, televangelists, motivational speakers, con artists, back-alley philosophers, forensics experts, Biblical kings, and a mysterious trickster named Brian Gonka who haunts the pages of the narrative like an electric ghost.