



The Second Annual
Undergraduate Research
and Creativity Symposium

“Providing opportunities for students to participate in undergraduate research and creative projects is a cornerstone of a quality university education and a hallmark of Methodist University’s experiential learning offerings. This program not only prepares our students for entry into the best graduate and professional schools, but also enables them to develop their career plans based on such experiences. Signature programs such as these help promote a culture of excellence that is so much a part of the Methodist University.”

President Ben Hancock

CENTER FOR UNDERGRADUATE RESEARCH AND CREATIVITY MISSION STATEMENT

The mission of the Methodist University Center for Undergraduate Research and Creativity is to establish educational opportunities that are collaborative and inquiry-based with the intention that every Methodist University student has access to exploratory learning across the curriculum.

METHODIST UNIVERSITY



JOURNEY

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STUDENT KEYNOTE SPEAKERS

Elicia Kieser is an intelligence analyst for Araxid in Fayetteville, North Carolina. She completed her undergraduate work at Methodist University and received a Bachelor of Science in Justice Studies with a concentration in Applied Forensic Science. Elicia is currently pursuing her M.S. in Justice Administration at Methodist University. As an undergraduate, she was a member and President of the Criminal Justice and Forensic Science Association, and a member of Alpha Delta Pi. She has presented research findings at two state conferences for the North Carolina Criminal Justice Association. She recently co-authored, with Dr. Eric See, ancillary materials for *Criminological Theories: Introduction, Evaluation, and Application*. For her research efforts while at Methodist, she was awarded the undergraduate student research award from the Department of Justice Studies.

Paul Stroebel is a six-year army veteran who served with the 82nd Airborne Division in Iraq and Afghanistan. He attends Methodist University in Fayetteville, North Carolina, where he majors in writing and studies veterans' literature from the last 100 years. He is the student editor of *Tapestry*, the Methodist University journal, and his short story "Antidote" is published in the forthcoming anthology *Home of the Brave: Somewhere in the Sand*.

WEEK AGENDA

Monday | April 15, 2013

11 a.m. – Noon: Faculty Presentations
Various locations

Tuesday | April 16, 2013

11 a.m. – Noon: Public Reading of
"Letter from Birmingham Jail" by
Dr. Martin Luther King, Jr.
Library Amphitheater,
Birmingham Public Library Site

Wednesday | April 17, 2013

8:30 a.m. – 4:45 p.m. – Symposium Day
See presentation schedules

8:00 p.m. – Keynote speaker Dr. Sanjay
Gupta on "Medicine and Media" in Reeves
Auditorium, tickets required

Thursday | April 18, 2013

6:30 p.m. – 8 p.m. – Student poetry
reading and reception, PA Auditorium

Friday | April 19, 2013

11 a.m. – Noon – Faculty Research
Presentations, Various locations

6 – 8 p.m. – Reception for the Senior Show
for graphic design students. The show will
be presented April 19 – May 11 in the
William F. Bethune Center for Visual Arts.

SYMPOSIUM AGENDA

Time	Event	Location
8:30 a.m.	Student Keynote Speaker - Paul Stroebel	Hendricks Science 222
9:00 – 11:00 a.m.	Morning Session*	Various
11:00 – 11:45 a.m.	Chapel	Chapel
11:45 a.m. – 1:00 p.m.	Lunch Break	
1:00 p.m.	Student Keynote Speaker - Elicia Kieser	Hendricks Science 222
1:30 – 3:00 p.m.	Afternoon Session/Poster Session	Various/Berns Student Center
3:15 – 4:45 p.m.	University Award Ceremony	Reeves Auditorium

*Please note that student posters will be on display beginning at 9:00 a.m. in the Berns Student Center. However, students will only be available for discussion/questions from 2:00 - 3:00 p.m.

PRESENTATION SCHEDULE

MORNING SESSION

Foreign Language | History

9:00 a.m. LaFountain, Bella

9:20 a.m. Jacobs, Patrick

9:40 a.m. Dessauer, Daniel

10:00 a.m. Dessauer, Daniel

10:20 a.m. Dessauer, Daniel

10:40 a.m. Duprey, Michael

Math | Chemistry | Education

9:00 a.m. Ceesay, Abdoulie

9:20 a.m. Jabati, Mariama

9:40 a.m. Ceesay, Abdoulie

10:00 a.m. Chandiga, Moses

10:20 a.m. Hiller, Linden

10:40 a.m. Sweeten, Krista

Computer Science | Biology

9:00 a.m. French, Larry

9:20 a.m. Fritts, Eric

9:40 a.m. Lee, Jeremy

10:00 a.m. Perez Hidalgo, Melvin
Nicholls, Lemuel

10:20 a.m. Devico, Frank

10:40 a.m. Shields, Lucas

English | Literature

9:00 a.m. Friel, Miranda

9:20 a.m. Stroebel, Paul

9:40 a.m. Gallero Jr., Eduardo

10:00 a.m. Smith, Derek

10:20 a.m. Friel, Miranda

10:40 a.m. Stroebel, Paul

Alumni Dining Room

The "Foibe"

La Celestina: Transitional Work of the Spanish Middle Ages and Renaissance

Considering Identity: Creating an Independent Study While Studying Abroad

The Party is Always Right: SED, Stasi, and the Failure of "Real Existing Socialism"

Rubber, Ideology, Coltan: The Cyclical History of Conflict in Central Africa

Meta-Network Analysis within Cosa Nostra

Heritage Dining Room

Application of the second derivative test to functions of 1, 2, 3, ... n variables.

Isolation of Bioactive Diterpenes from *Andrographis Paniculata* by HPFC

Studies on Asymmetric Michael Addition Reactions

Famous Bridges and Mathematics: Is There a Connection Between Mathematics and Bridges?

Multiple Adverse Effects of the No Child Left Behind Act in Relation to Diverse Learners

Cyberbullying: Impact, Prevention, and Intervention for Elementary Schools

Hendricks Science 122

A Civil War Program to Support Education and Tourism in North Carolina

Implementation of Databases in a Living Assistance Application

A Database Application for "The Care Clinic" of Fayetteville, N.C.

The MU Market Exchange

Loss of Life and Revenue

A Justification for Proposed EMS (Ambulance) Minimum Billing

Adaptational Morphology of the Hammerhead Cephalofoil:

Testing Small Scale Models to Determine How the Initial

Forms of this Structure Benefitted Hammerhead Sharks (Family: Sphyrnidae)

Hendricks Science 222

Of Knights and Gunslingers

War is Hell

The Avengers: Heroes Past and Present

Guards! Guards! and the Modern Meme

Beneath the Same Sky: Myth and Location as Recontextual Healing in Silko's Ceremony

Never Coming Home

PRESENTATION SCHEDULE

AFTERNOON SESSION

Psychology

- 1:30 p.m. Bradley, Dequan
Diggs, Ashlyn
Murphy, Cierra
- 1:50 p.m. Green, Robert
Gonzalez, Jose
Bagley, Richard
Beasley, Kayla
Murphy, Cierra
Williams, Wytisha
Bradley, Dequan
- 2:10 p.m. Green, Robert
Beasley, Kayla
Meindl, Katherine
Bagley, Richard
- 2:30 p.m. Meindl, Katherine
Beasley, Kayla
Bagley, Richard
Diggs, Ashlyn
Wallace, Raul
Johnson, Brandon
Neal, Beth

Alumni Dining Room

- Task Difficulty and Task Uniqueness on Social Loafing
- Auditory Affective Verbal Learning: A Replication
- Sleep Effect on Visual-Spatial Memory
- Paired-associate Learning and Mental Rotations Test

Psychology

- 1:30 p.m. Gonzalez, Jose
Neal, Beth
Williams, Wytisha
- 1:50 p.m. Wallace, Raul
- 2:10 p.m. Johnson, Brandon

Heritage Dining Room

- Perceptual Learning on College Students with Good, Medium, and Poor Sleep
- Parent-Student Attachment and Its Influence on College Adjustment
- Alcohol and Student Adaptation

Military | Health Care Policy

- 1:30 p.m. Jones, Paul
- 1:50 p.m. Albrecht, Amanda
- 2:10 p.m. Young, Vanita
- 2:30 p.m. Caddick, John
Coopwood, Vince
Leighner, Michael
Campbell, Jasmine
Vestal, Mark
Haber, Jake
Pugh, Erica

Hendricks 122

- A Research Proposal: The Coordination of Services for Transitioning Disabled Veterans
- How Do Military People View the Medical Model of Depression?
- Military Mothers Talk About Race Relations in the Military Metropolis
- Effect of Socioeconomic Status on Access to Eye Care



PRESENTATION SCHEDULE

Health Care Policy | Political Science

1:30 p.m. Lainez-Barahona, Julieta
Susic, Dzana
Mbula, Maturgula
Molosky, Cody

1:50 p.m. Gobeljic, Jasmina

2:10 p.m. Rainford, Tarama

2:30 p.m. Hammond, Lois

Theater

1:30 p.m. Arnold, Jeremy

1:50 p.m. Nieves, Glenn

POSTER PRESENTATIONS

Exhibits

All students
are present from
2:00-3:00 p.m

Bennett, Tyler

Breitenbach, Stephanie

Edwards, Sean

Fegley, Erin

Hare, Serena

Rada, Amanda
Huneycutt, Emily

Horne, Casey
Carter, Edwin
Brown, Melissa
Blanchard, Michael
Sheppard, Ravon
Berthold, Roland
Rogers, Teven

Mallary, Johntavis

Vasiljevic, Tijana

Jones, Antjuan
Johnson, Donita
Lane, Douglas
Zentner, Krista
Quinnstrickland, Theresa

Alston, Antonio
Carter, Christopher

Hendricks 222

Healthcare Legislation: Upcoming Changes

Factors that Influence Human Development Among Nations:
A Comparative Analysis

Religion and Politics: A Cross-National Study

A Stormy Friendship: Saudi Arabia and the United States'
Evolving Trade Relationship

Reeves Auditorium

Looks Get in The Way

Tennessee Williams' *The Case of the Crushed Petunias*

Berns Student Center

Applying the Lorenz Curve and Gini Coefficient to
Grade Distribution at MU During the Fall 2011 Semester

Determination of Tetrahydrozoline (THZ) Levels in Eye Drops

Outcomes Associated with Alcohol Use in College Undergraduates

Spatial Patterns and Host-Parasite Associations of Mistletoe
(*Phoradendron leucarpum*) on the Methodist University Campus

The Effects of Decaying Flesh on the Rate of Plant Decomposition

Meth, the Mind, and Methods

Harpsichord Restoration

Correlation Between Stress and Injury in Men's and Women's DIII Basketball

The Effect of Glucose on Post-Mortem Ethanol Production in *Candida Albicans*

Methcognition

Stormwater Regulation: Is it Doing Enough?

PRESENTATION SCHEDULE

Exhibits

All students
are present from
2:00-3:00 p.m

Steel, Lauryn
Mrkovic, Samra
Krunich, Stephen

Hare, Serena

Fredrick, Alesha
Gray, Kellisha
Howell, Derick
Meurer, Melinda
Molina, Stormey
Rivenbark, Gerron
Smith, Risa
Thompson, Natalie
Verhine, Antonia

Berns Student Center

Are Coal Fired Power Plants The Major Contributor to Mercury Pollution?

Testing the Efficacy of Rid-X and Septic Tank Health

The Cold Case Initiative: Undergraduate Students Assisting in
Research and Preservation of Cold Cases

A Collaborative Book Project: Social Work
Ethical Dilemmas from Students' Perspectives

UNDERGRADUATE RESEARCH AND CREATIVITY

**ENGAGING STUDENTS IN THEIR COURSE WORK THROUGH COLLABORATIVE PROJECTS TO
CREATE AN ENVIRONMENT WHERE STUDENTS ARE EMPOWERED BY THE CURRICULUM**

GOAL: To provide students with opportunities to conduct original research and creative projects that will increase their competitiveness and readiness for graduate school and their chosen careers.

There are increasing numbers of student-faculty collaborative research and creative projects. These exploratory learning experiences include work in the sciences and social sciences, as well as the fine arts and humanities. Before graduating, every student should have the opportunity to take part in undergraduate research or a creative project with a member of the faculty.

The University hosts an annual mini-conference to display recent research projects that students have completed. Last year's Undergraduate Research and Creativity Symposium showcased 29 projects.

METHODIST UNIVERSITY



JOURNEY

The “Foibe”

Bella LaFountain; Senior; Global Studies, TESL certification; Fayetteville, NC
Advisor: Dr. Cristina Francescon

Between roughly 1943 and 1949 thousands of Italians living in the Trieste, Gorizia, and Istrian Peninsula were tortured, shot, or pushed to their deaths in rocky rifts known as “foibe” by Tito’s communists, determined to cleanse Yugoslavia of its Italian population; these killings are known as the Foibe killings. Many of those killed were sympathizers of Benito Mussolini’s fascist regime, while others were simply innocent civilians.

Many question whether these murders can be considered a form of ethnic cleansing. For my research, the definition of ethnic cleansing used is the following: the attempted elimination of an ethnic group because of its counter viewpoints to that of the majority (Webster definition). Through examination of the motives behind the killings, it seems fairly evident that there were killings done for cleansing purposes and thus can be characterized as a form of ethnic cleansing.

The secret nature of the killings is quite an interesting aspect of this horrible event; there are a couple of suggested reasons given as to why it has been kept so low key until recent years. Italy is thought to have not wanted to emphasize to the world that it had been, in fact, defeated; this is one such proposition given as to why the killings were not more highly publicized. Another such suggestion to the massacre’s seemingly secret nature comes from the thought that the “Italian-Istrians,” as they are classified, did not want the communists of Italy to know that they were part of, in any way, the socialists in Istria (who had different motives altogether than the communists of Italy and were not connected with them whatsoever).

The importance of this research is to get the word out about the events that took place considering that only in recent years has public attention been brought to these horrible events in Italy’s World War II history. It has produced political discussion in Italy, even now in particular, between those loyal to more politically leftist parties and those more centrist and rightist in ideologies. On February 10, 2013 (the day of remembrance in Italy of the Foibe Massacres), a movie titled “Foibe” was released and shown to the public in the United States; this film is the newest film created that deals with the happenings of the Foibe Killings.

La Celestina: Transitional Work of the Spanish Middle Ages and Renaissance

Patrick Jacobs; Junior; Spanish and Athletic Training; Smithfield, NC
Advisor: Dr. Cristina Francescon

From the late 1400s to the early 1500s, the literature of Spain was greatly affected by the emerging renaissance and the Middle Ages it was leaving behind. *La Celestina*, written by Fernando de Rojas and published in 1499, encompasses aspects including courtly love from the Middle Ages and physical love from the Renaissance. Also, through the literary text, we see the heavy Italian influence in Spain, especially concerning the philosophical movement Italy had produced, Italian Humanism.

La Celestina is one of the great works of this transitional period. Throughout the text, we see evidence of the influence of the Middle Ages and Renaissance. Rojas uses the words of a love-sick Calisto to portray the beautiful Melibea as some sort of goddess. His passion for her is portrayed through words describing her pure body and unstained soul, showing influence of the Dolce Stil Nuovo of the Italian Middle Ages. In other parts, we see the influence of humanism during the Renaissance when Rojas reveals Calisto’s sexual, lustful longing for Melibea by vividly describing her physical aspects. These are only examples of two characters nonetheless. In this work, the combination of two completely different literary and historical periods suggests that it is truly a transitional novel. Rojas’s characters and plots are filled with these ideas, and they are demonstrated throughout the entire novel.

Considering Identity: Creating an Independent Study While Studying Abroad

Daniel Dessauer; Senior; History & Political Science with a concentration in International Relations; Neuhof, Germany
Advisor: Dr. Karen Kletter

While studying abroad in the summer of 2012, I attended the Hochschule Fulda – University of Applied Sciences. In addition to taking classes there, I also wrote an Independent Study focusing on the city. The final research paper was titled “Molding Identities in Fulda – Tracing the Influence of St. Boniface.” The paper explains the influence of past events on the identity of the region in the present. It begins in pre-Roman times, with the settlement of the area by Celts and Germanic tribes, and places special emphasis on the missionary, bishop and martyr Boniface, who is buried in the city’s cathedral to this day. After tracing the development of identity from the founding of the city by Boniface, who was declared a saint, to the present day, the paper deals with a large variety

of internal and external factors which influenced the city. Examples include the Reformation, the founding of the nation-state of Germany, the secularization, the “Machtergreifung” by the Nazis, and the looming threat of Soviet invasion through the “Fulda Gap” during the Cold War. By tracing the development of identity from the early years of recorded civilization to the present day, I will explain the way the inhabitants of Fulda and the surrounding area are viewed and view themselves, both through ascribed and asserted identities.

The Party is Always Right: SED, Stasi, and The Failure of “Real Existing Socialism”

Daniel Dessauer; Senior; History & Political Science with a concentration in International Relations; Neuhof, Germany
Advisor: Dr. Peter Murray

“The Sword and Shield of the Party – The Stasi and SED Domination of GDR Society” was originally written as my senior research thesis. It poses the question of how the dreaded “Stasi,” the political police force of the GDR, managed to prop up the autocratic SED regime for so long and how it suddenly failed, ultimately enabling the reunification of Germany. In addition to following the blatant and systemized disregard for human and individual rights in the supposedly “humanistic system” of “real existing socialism,” this paper also traces the economic strain put on an already fragile economy by what one author has called “the most complete police state in human history.” The paper ultimately concludes that the Stasi began as a very effective and efficient secret police, but decades of ever-increasing size and scope of operations, recruitment of the best and brightest away from other necessary function in society, and missing reforms ultimately led to the downfall of both the Stasi and the police state which it protected.

Rubber, Ideology, Coltan: The Cyclical History of Conflict in Central Africa

Daniel Dessauer; Senior; History & Political Science with a concentration in International Relations; Neuhof, Germany
Advisor: Dr. Carl Dyke

This presentation is based on research done for a class in Contemporary World History in the fall of 2012. With the conflict in the Democratic Republic of the Congo (DRC) heating up, the cycle of violence in Central Africa is in the news once more. While Columbian and Tantalum are the current reasons for the fighting, the “casus bellum” has been largely interchangeable. Public interest in the deadliest conflict since World War II ebbs and flows with the intensity of the fighting, and this paper argues that the irregular, yet cyclical, spiral of war would continue for another reason, even if Columbian and Tantalum suddenly became uninteresting. The research for the class consists of a total of three papers. The first deals with conflict minerals, the second with the Congo conflict, and the last is a comprehensive research paper which ties in actors, factors and wars from pre-colonial times, through the Belgian occupation, the Cold War, and into current times. Research from all materials submitted will be used to present a large picture of the dilemma facing the Congo.

Meta-Network Analysis within Cosa Nostra

Michael Duprey; Senior; Global Studies; Hope Mills, NC
Advisor: Dr. Carl Dyke

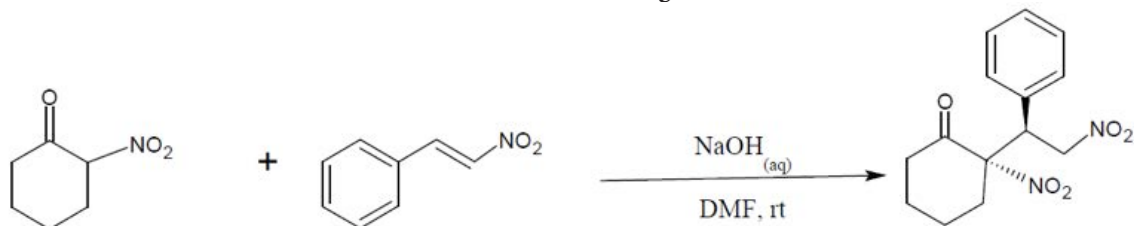
While traditional social network analysis (SNA) has proven useful in making visual sense of relational data within covert networks, such analytical methodologies do not provide insight which necessarily reflects the network in its entirety. Applying strict SNA to the Sicilian organized crime network, Cosa Nostra, shows a hierarchical network with a regimented top-down flow of information. However, to understand the full topology of a network, it is critical that the entire multiplex meta-network is taken into consideration. The ongoing project involves: (1) text mining unstructured data obtained from criminal reports and confessions of “turned” mafiosi to construct an empirical meta-network model of Cosa Nostra; (2) applying the R statistical package and ORA/ DyNet software against the network to examine information flow through the “knowledge network,” and (3) eventually constructing a predictive multi-agent model. The preliminary results show stark divergence between the knowledge network and the hierarchical social network, such that information flows in a more democratic, flattened state, connected by only a few actors displaying high degrees of centrality. By isolating and targeting these linchpin actors, more damage may occur to the entire network than if simply nominal organizational leaders were target for removal.



Studies on Asymmetric Michael Addition Reactions

Abdoulie Ceesay; Senior; Chemistry with a Concentration in Biochemistry; Kombo North, The Gambia

Advisor: Dr. Zhihong Xu



Solvent and catalyst effects on enantioselectivity in asymmetric Michael addition of α -nitrocyclohexanone and nitroalkene (trans- β -nitrostyrene) were investigated. Michael addition, a type of conjugate addition, adds a carbanion nucleophile to an α , β -unsaturated carbonyl compound. It is one of the most effective C-C bond formation reactions in organic synthesis. Reactions were carried out at room temperature with NaOH in solvents such as dichloromethane, THF, acetonitrile, DMSO etc., and catalysts such as tetraethyl ammonium bromide, 4-dimethylaminopyridine, scandium (III) triflate, trifluoro acetic acid etc. Enantiomeric products were observed and regioselectivity was well controlled. Reactions were monitored by TLC, and final compounds were purified by flash chromatography and identified by spectral methods.

Isolation of Bioactive Diterpenes from *Andrographis Paniculata* by HPFC

Mariama Jabati; Sophomore; Chemistry with a concentration in biochemistry; Freetown, Sierra Leone

Advisor: Dr. Zhihong Xu

Andrographis paniculata is a medicinal plant with multiple applications and it is commonly found and prescribed in Asia. *A. paniculata* has been found to have many pharmacological properties such as anti-inflammatory, anti-cancer, immunomodulation, anti-infective, anti-hepatotoxic, anti-atherosclerotic effects, and anti-oxidative effects. The two most abundant bioactive compounds of this plant are andrographolide and 14-Deoxy-11, 12-didehydroandrographolide. Various techniques have been used to extract and isolate these diterpenes from *A. paniculata*, which include HPLC, bioactive guided conventional column chromatography, chromatographic fractionation and recrystallization. However, large scale isolation still remains challenging. Here, we report the development of an efficient method of isolating these two compounds by HPFC. The compounds are identified by spectral methods and compared to the reported literature data. This method might be used for the isolation of other diterpenes from *A. paniculata* in large scales.

Application of the Second Derivative Test to Functions of 1, 2, 3...n Variables

Abdoulie Ceesay; Senior; Chemistry with a Concentration in Biochemistry; Kombo North, The Gambia

Advisor: Dr. Shivappa Palled

The second derivative test determines the nature of a critical point of a function, which is whether the critical point is a local minimum, local maximum, a saddle point, or none of these. Generally, for a function of n variables, it is determined by the algebraic sign of a certain quadratic form, which in turn is determined by eigenvalues of the Hessian matrix. The general second derivative test states that:

Suppose $f(x)$ is a function of x that is twice differentiable at a stationary point x_0 .

1. If $f''(x_0) > 0$, then $f(x)$ has a relative minimum at x_0 .

2. If $f''(x_0) < 0$, then $f(x)$ has a relative maximum at x_0 .

The extremum test gives slightly more general conditions under which a function is a maximum or minimum. If x is a two-dimensional function that has a relative extremum at a point (x_0, y_0) and has continuous partial derivatives at this point, then $f_x(x_0, y_0) = 0$ and $f_y(x_0, y_0) = 0$. The second partial derivatives test classifies the point as a local maximum or relative minimum.

Defining the second derivative test discriminant as:

$$D = f_{xx} f_{yy} - f_{xy}^2$$

Then,

1. If $D > 0$ and $f_{xx}(x_0, y_0) > 0$, the point is a relative minimum.

2. If $D > 0$ and $f_{xx}(x_0, y_0) < 0$, the point is a relative maximum.

3. If $D < 0$, the point is a saddle point.

4. If $D = 0$, higher order tests must be used.

Thus, in this paper focus is on the second derivative test applied to functions of 1, 2, 3 ... n variables. This test is applied to a variety of functions ranging from quadratic to multivariable calculus in Mathematics, as well applicable in Physics, Computer Science and Chemistry. Additionally, the second derivative forms the bases in many symbolic computational work and advanced computational techniques for fluid dynamics.

Famous Bridges and Mathematics: Is there a connection between Mathematics and Bridges?

Moses Chandiga; Freshman; Math and Computer Science; South Sudan, Juba
Advisor: Dr. Shivappa Palled

Bridges, which are simple or complex, are built across the world to connect places. Bridges have become a vital part of the economy of the regions where they are built. Though people enjoy the grandeur and the beauty of bridges, they hardly ever understand the mathematics behind such magnificent constructions. The mathematical concepts of Geometry, functions, and distance measurements have played a significant role in the construction of bridges. The mathematical computations are done on cable elongations, arches, lengths, widths, heights, distances, frictions, tension forces, compressions and stress forces. To understand the complexity of a bridge, one needs understand a great deal of mathematical reasoning. There is a unique relationship between the structural magnificence of a bridge and the mathematics. In this presentation, we look at some of the most famous bridges and explore the mathematics behind their constructions.

Multiple Adverse Effects of the No Child Left Behind Act in Relation to Diverse Learners

Linden Hiller; Senior; Elementary Education; Onida, SD
Advisor: Dr. Jennifer Mour

This paper and accompanying presentation will examine No Child Left Behind (PL 107-110) and its adverse effects in regard to diverse learners. No Child Left Behind, enacted in 2001 was designed to ensure adequate yearly progress for all students. Despite its intentions for all students to show academic growth, there are adverse effects for diverse learners. Specifically, they are not tested in accordance with goals as set for by Individual Education Plans. Further, suggestions to address this issue will be provided.

Cyberbullying: Impact, Prevention, and Intervention for Elementary Schools

Krista Sweeten; Senior; Elementary Education; Mullica Hill, NJ
Advisor: Dr. Jennifer Mour

Cyberbullying can be defined as “willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices” (Hinduja and Patchin, 2010, p. 208). Cyberbullied females have been found to be 3.2 times more likely to commit suicide than non-cyberbullied females, while cyberbullied males are 4.5 times more likely to commit suicide than non-cyberbullied males. The purpose of this review was to examine English-written database research articles that seek to provide solutions (both prevention and intervention) to cyberbullying for teachers and parents. Findings of the 17 studies concluded that knowledge of legislature, curriculum and current technology are ways to help control the issue of cyberbullying. Also, computer safety needs to be taught and combined with quality, character education. Cyberbullying is preventable when the aforementioned methods are put into place in the classroom.

A Civil War Program to Support Education and Tourism in North Carolina

Larry French; Junior; Computer Information Technology with a concentration in Multi-Media; Fayetteville, NC
Advisor: Dr. Terry House

This Civil War Software Program for North Carolina is designed with a special emphasis on Education and Tourism. The program highlights the Civil War special battlefield sites and museums of the state. The program’s purpose is to help users to gain a better understanding of our past history from 1861 to 1865 and encourage them to visit these sites throughout North Carolina. With information and visual effects, the program shows how each area and battle affected the whole scope of the war within North Carolina in general. It also breaks down the strategy, tactics and the campaigns that were waged throughout North Carolina and how it impacted the Confederate Army and ultimately led to its demise.

While most Civil War software programs are aimed with education in mind or for gaming purposes, this program will try to combine a little of both of these ideas to hopefully be able to verbally and visually encourage the user with little knowledge to learn more and help the expert with previously unavailable tools for research. With the use of illustrated maps and 3D multi-media, this program will be able to help the user understand the location and the actions and visualize the event better. The emphasis will be placed on building the Graphical User Interface for the program and presenting an initial limited prototype for “The Civil War Program for the state of North Carolina.”



Implementation of Databases in a Living Assistance Application

Erik Raymond Fritts; Senior; Computer Information Technology; Raeford, NC

Advisor: Dr. Terry House

This research is a continuation of a project started in September 2012 titled "Autism Daily Guide." ADG is an application designed to help Autism Spectrum Disorder youth gain a sense of independence through use of a mobile device. Allowing guardians to give guidance a single task at a time from a distance will give the ASD youth the perception of independence and freedom. This is important for developing a sense of confidence that prepares them for the adult world. The project has left the design phase and is now in the initial build phase. In order for the application to work effectively, it must have dynamic database integration. There must be a local database on the mobile device at the least. There are some things that must be decided through testing of the initial build. Is the SQLite database configuration available on mobile devices going to be a viable database solution in itself? The way information is networked from guardian to ASD youth must be considered. Due to the highly dynamic nature of the data in this application I believe it would be best to implement a dual database system. The mobile database would mirror the server database by syncing data when appropriate. The server database would serve as a holding area to buffer and prevent data overflow that would slow down operations.

A Database Application for The Care Clinic of Fayetteville, NC

Jeremy Lee; Senior; Computer Information Technology with a concentration in Business Information Systems; Fayetteville, NC

Advisor: Dr. Terry House

For a non-profit organization that has been operating for 10+ years, it is all too easy to fall behind technologically, especially with the rate at which technology is ever-growing. The most important objective for any non-profit is the mission, and for The Care Clinic located in Fayetteville, that mission has always been to provide free quality health care to the Cumberland County community. Dealing with computer issues should be the least of its worries. Computers exist to make our lives simpler, not complicate them, but like any other machinery, it cannot be expected to perform optimally if it is not properly maintained. In order for any non-profit organization to thrive, system upgrades are essential. The primary research goal of this project is concerned with designing software for assisting The Care Clinic in handling everyday tasks like keeping records of its donors and volunteers, organizing annual fund-raising events and keeping track of all incoming donations. By establishing a reliable and efficient system, all records will be accurately maintained and organized in a way that is easy for staff members to use the data to suit the needs of their organization without having to get tangled up with software issues and can instead focus on the task at hand.

The MU Market Exchange

Melvin Perez; Junior; Computer Information Technology (CIT) Multimedia; San Jose, Costa Rica

Lemuel Nicholls; Junior; Computer Information Technology (CIT) Business; Georgetown, Guyana

Advisor: Dr. Terry House

The "MU Market" application will allow Methodist University (MU) students, staff, and faculty members to sell, buy and rent items to each other over a local server-based network. The scope of this project is to provide a local, secure and feasible way for MU personnel to engage in a market exchange over a network. It will be developed in an HTML environment with JavaScript, PHP and MySQL.

The website will be accessible with a direct link, which will be on the Methodist University domain. However, only persons with a valid and active MU email will be able to add, edit or remove advertisements. The MU Market website will facilitate the marketing, communication and listing of products; however, for security purposes, it will not provide an option to process any financial transactions.

We decided to create the MU Market application because currently there is no system or process, to include the campus bookstore, for MU personnel to exchange goods. The MU Market Application will provide a user-friendly network for Methodist personnel to acquire or trade items.

"Loss of Life Revenue" – A Justification for Proposed EMS (Ambulance) Minimum Billing

Frank W. De Vico, Jr; Senior; Computer Information Systems, Business Information Systems; Fayetteville, NC

Advisor: Dr. Tat Chan

So Emergency Medical Service companies can track and document types of dispatched calls, EMS calls are generally dispatched as ALS (Advance Life Support) or BLS (Basic Life Support). Sometimes when an EMS crew arrives on a scene; after assessing the patient, the patient refuses transport to a local care facility. In accordance with the current standard, when a patient refuses a transport, the

EMS company collects \$0.00 in fees. With many refusals across the county the EMS companies lose revenue. Furthermore, when a patient refuses transport, it places a more critical needs patient on standby or pending status and cause a loss in life. When an EMS crew is dispatched, the 911 operator assigns an EMD (Emergency Medical Dispatch) code to that call, again after assessing the patient the EMD code may be downgraded or upgraded.

This database software will track dispatched calls. Some information contained in this database will be date and time of the call, who responded to the call, the EMD code, patient billing info, and care facility. With this information, it can be determined the number of calls, by date or patient, that are refused, causing a loss in revenue. It is the hope of this developer to provide a tool for EMS Company to lobby legislation to at least bill a minimum fee for non-transported or refused calls.

Adaptational Morphology of the Hammerhead Cephalofoil: Testing Small Scale Models to Determine how the Initial Forms of this Structure Benefitted Hammerhead Sharks (Family: *Sphyrnidae*)

Lucas Shields; Senior; Biology with a concentration in Zoology; Houston, TX

Advisor: Dr. Rob McCandless

The origin and initial morphological function of the uniquely shaped heads of hammerhead sharks (family: *Sphyrnidae*) has been a topic of debate for many years. This laterally expanded and dorso-ventrally flattened head shape is known as a cephalofoil. A variety of hypotheses have emerged in an attempt to explain the adaptational advantage of this feature. Review of phylogenetic evidence and careful analysis of evidence regarding published hypotheses has led to the development of a hypothesis that has yet to be published or tested. The “reduced drag” hypothesis states that the initial adaptive function of the sphyrnid cephalofoil was a reduction in hydrodynamic drag. This hypothesis proposes that the cephalofoil emerged in a greatly expanded form that was very thin and blade-like. This feature likely reduced hydrodynamic drag on the animal and later provided a medium for the development of the highly specialized sensory and locomotory functions found in extant species. This hypothesis will be tested using small scale models placed in a column of flowing water to determine if a difference in hydrodynamic drag is observable based on the anatomical shape of the Winghead shark (*Eusphyrna blochii*) when compared to an outgroup that does not possess a cephalofoil. The models will be mounted directly to a tension meter and placed in a column of flowing water. Statistical analysis will be used to determine if any difference between the amounts of drag measured on each model is relevant to the hypothesis.

“Of Knights and Gunslingers”

Miranda Friel; Freshman; English Literature; Alexandria, VA

Advisor: Dr. Emily Leverett

What could a gun wielding warrior possibly have in common with a Medieval knight? Surprisingly, quite a bit. Roland Deschain, the enigmatic protagonist of Stephen King’s *The Dark Tower*, bears many resemblances to the ideal Romantic hero. Like King Horn and Havelock the Dane, Roland is of noble lineage, possesses remarkable battle prowess, and is physically distinguished from common people. He also follows a social code that echoes the chivalric code found in *L’Morte Darthur*. His love interest also embodies the prototypical Medieval woman, from her long blonde hair to her sparkling gray eyes. Thus, even though *The Dark Tower* contains modern elements of fantasy and science fiction, two central characters parallel personality archetypes from over 500 years ago, the work itself can be categorized according to the genre of the Medieval Romance.

“War is Hell”

Paul Stroebel; Senior; Writing; Milford, IN

Advisor: Dr. Emily Leverett

Medieval memes permeate our modern culture and literature. Last fall I conducted a literary analysis of “The Siege of Jerusalem” and compared its account of war to discussions of modern war from the last one hundred years, as well as some of the important critical responses to these literary works. As a veteran and a student of literature, I find that there is a continued theme through war literature that goes beyond the surface of *The Siege of Jerusalem*. Veteran-writers’ struggles are personally meaningful, and the discoveries I have made indicate a commonality of experience for wartime survivors both past and present. In my presentation, I will both read excerpts from my paper and also discuss the similarities in modern accounts of war literature.

“The Avengers: Heroes Past and Present”

Eduardo Marling Gallero Jr.; Senior; Justice Studies with a minor in English; Fayetteville, NC

Advisor: Dr. Emily Leverett

Using our developed knowledge of medieval meme culture, I propose to demonstrate how memes have thrived in a popular contemporary setting, and specifically how much they apply to Joss Whedon’s box office hit-movie, *The Avengers*. In my presentation, I will demonstrate the prevalence of medieval memes in *The Avengers* and other pop-culture media, as well as correlate their ideas



of heroism, feminism, beauty and other memes to medieval classics such as Havelok the Dane, King Horne and characters from Sir Thomas Mallory's *Le Morte D'Arthur*. Finally, I will compare the heroes of old to the heroes of new: Lancelot to Captain America, Gawain to Thor, and Tryamour to The Black Widow. These characters and situations greatly resemble their medieval predecessors and their ability to capture the imagination of the public remains unchanged.

"Guards! Guards! and the Modern Meme"

Derek Smith; Junior; Writing; Knoxville, TN
Advisor: Dr. Emily Leverett

I will explore Terry Pratchett's *Guards! Guards!*—a Discworld novel that concerns Wonse, who summons a dragon, and Vimes and Carrot, who fight the dragon to stop it from eating Lady Ramkin—to argue that Pratchett uses medieval memes in the creation of his characters. I will compare the novel to various medieval texts such as Havelock the Dane, Lay le Fraine and Sir Gowther. By doing this, I find that the characters of *Guards! Guards!* are not only similar to medieval characters in roles but also in their actions. These similarities include Carrot's heroic characteristic, Wonse's villainous nature, Vimes' redemption and Lady Ramkin's similarities to damsels in distress. I will also examine modern memes throughout my argument, such as police memes and Clint Eastwood memes, to indicate that memes are still evolving today.

Beneath the Same Sky: Myth and Location as Recontextual Healing in Silko's Ceremony

Miranda Friel; Freshman; English Literature; Alexandria, VA
Advisor: Dr. Kelly C. Walter Carney

In Leslie Marmon Silko's 1977 novel *Ceremony*, Tayo is a young World War II veteran returning home. Facing the horrors of warfare has left Tayo empty like "white smoke," bereft of a sense of identity. After Western doctors fail to heal him, Tayo turns to medicine men for help. A forward-thinking healer named Betonie invites Tayo to participate in a traditional Navajo sand painting ritual, which requires Tayo to assume the role of a mythical culture hero. The sand paintings exemplify the importance of myth and location in Laguna and Navajo beliefs and, following his participation in the sand painting rituals, Tayo enacts the ceremony on a larger scale by traveling to various New Mexico locations and actually becoming a culture hero himself. The two ceremonies – the sand painting ritual and the one Tayo performs himself – heal both Tayo and his community, and could perhaps heal the entire world.

Never Coming Home

Paul Stroebel; Senior; Writing; Milford, IN
Advisor: Dr. Robin Greene

As veterans from the last two major U.S. conflicts return home, they find themselves struggling to make sense of their wartime experiences. Last spring I wrote a thirty-page literary analysis in which I surveyed and examined two to three authors' works for every major period of conflict over the last one hundred years as well as some of the important critical responses to these literary works. As a veteran and as a student of literature, I find that these veteran-writers' struggles are personally meaningful, and the discoveries I have made about war and its impact offer biblio-therapeutic benefits. In my presentation, I will both read excerpts from my paper and also discuss the therapeutic impacts that the study of war literature offers veterans.

Task Difficulty and Task Uniqueness on Social Loafing

Dequan Bradley; Senior; Psychology with Clinical and Counseling Concentration; Chapel Hill, NC
Cierra Murphy; Junior; Psychology with Clinical and Counseling Concentration; Anchorage, AK
Ashlyn Diggs; Junior; Psychology with Human Performance Concentration; Panama City, Panama
Advisor: Dr. Katharine Snyder

Social loafing is a well-documented social behavior phenomenon that creates deficits in productivity in various settings. In this experiment, a sample of 59 students from a small liberal arts school was assessed on the ability to create usages for specific everyday items (e.g. a detached doorknob) of either easy or hard difficulty. Students either worked in a group of five individuals or by themselves, so as to assess the possibility of social loafing in the group setting. It was hypothesized that subjects in the large group condition would come up with fewer usages for easy items than subjects in the individual condition. Results revealed that performance was significantly better for individuals working alone as opposed to group settings. Applications to educational group projects will be discussed.

Auditory Affective Verbal Learning: A Replication

Robert Green; Junior; Writing; Brooklyn, NY
Jose Gonzalez; Senior; Psychology; Houston, TX
Déquan Bradley; Senior; Psychology with Clinical and Counseling Concentration; Chapel Hill, NC
Kayla Beasley; Senior; Psychology; Autryville, NC
Cierra Murphy; Junior; Psychology Clinical and Counseling Concentration; Anchorage, AK
Wytisha Williams; Senior; Psychology; Hammond, LA
Advisor: Dr. Katharine Snyder

Research has documented that the manner in which we learn and process emotional stimuli differs from how we learn to process neutral stimuli. Assessing how we learn to recall emotionally relevant stimuli is useful to many fields, such as clinical psychology, neuropsychology and rehabilitation, criminology, victimology, and etc. The Affective Auditory Verbal Learning Test (AAVLT) is an emotional alternative to the well-known Auditory Verbal Learning Test (AVLT). In this experiment, a sample of college students will learn a list of positive, negative or neutral words over a series of five trials (Snyder, Harrison, and Shenel, 1998). Results revealed statistically significant main effects of both trial (recall improved for later trials) and location (recall was best for the first five words presented). The anticipated list by location interaction approached significance. Results are consistent with prior research (Everhart, Demaree, and Harrison, 2009). The application of emotional learning research to brain physiology and neuropsychology practice will be discussed.

Sleep Effect on Visual-Spatial Memory

Robert Green; Junior; Writing; Brooklyn, NY
Kayla Beasley; Senior; Psychology; Autryville, NC
Katherine Meindl; Senior; Psychology with Clinical Counseling Concentration; Butler, PA
Richard Bagley; Senior; Psychology; Houston, TX
Advisor: Dr. Katharine Snyder

The effect of sleep quality on spatial memory performance on the Rey Complex Figure Drawing (RCFD) was evaluated in the present study. College student participants completed the RCFD copy, immediate and delayed recall drawing tasks as well as the Pittsburgh Sleep Quality Index (PSQI). Subjects were grouped based upon levels of sleep quality (adequate, inadequate, and somnolence). In sum, it was hypothesized that subjects in the inadequate and somnolent groups would score lower on the immediate and delayed figure recall trials. Results revealed that immediate and delayed scores were significantly lower than the copy condition for all groups. No interaction between the figural task conditions and sleep classification was found. This is likely due to the low number of participants within the somnolence and inadequate categories. Future research applications will be discussed.

Paired-associate Learning and Mental Rotations Test

Katherine Meindl; Senior; Psychology with Clinical Counseling Concentration; Butler, PA
Kayla Beasley; Senior; Psychology; Autryville, NC
Richard Bagley; Senior; Psychology; Houston, TX
Ashlyn Diggs; Junior; Psychology with Human Performance Concentration; Panama City, Panama
Raul Wallace; Senior; Psychology with Clinical and Counseling Concentration; Manchester, Jamaica
Brandon Johnson; Junior; Psychology with Clinical and Counseling Concentration; Fayetteville, NC
Elizabeth Neal; Senior; Psychology with Clinical and Counseling Concentration; Reidsville, NC
Advisor: Dr. Katharine Snyder

The present study evaluated how presentation style impacts student learning. High imagery word pairs (e.g. “elbow” and “grandmother”) and low imagery word pairs (e.g. “soul” and “fact”) were presented on note cards for participants to learn. Learning was then assessed by presenting one word from the pair (e.g. “elbow”) and asking participants to recall the associated word (e.g. “grandmother”). Further assessment of imagery skills was also accomplished using the Mental Rotations Test (MRT), where subjects have to mentally rotate objects in their head and determine if a stimulus item is the same or different. Results revealed a statistically significant main effect of paired associate learning, with statistically greater recall for the high imagery word pairs than the lower imagery word pairs. A significant main effect on the MRT also revealed significantly greater recall for Phase 2 trials compared to Phase 1 trials (a practice effect). No interaction was found. Application of the present findings to course presentation styles, textbook construction and instructional technology will be discussed.



Perceptual Learning on College Students with Good, Medium, and Poor Sleep

Jose Gonzalez; Senior; Psychology; Houston, TX

Elizabeth Neal; Senior; Psychology with Clinical and Counseling Concentration; Reidsville, NC

Wytisha Williams; Senior; Psychology; Hammond, LA

Advisor: Dr. Katharine Snyder

Prior research has indicated that sleep rejuvenates the mind and improves cognitive functioning. Students who do not receive quality sleep have impaired cognitive abilities. Koffel and Watson (2010) created the Iowa Sleep Disturbance Inventory (ISDI) as an instrument designed to measure self-reported sleep disturbances. Using the Iowa Sleep Disturbance Inventory, sleep disturbances can be identified among college students. John Ridley Stroop also identified that a reaction-timed interference in a task is longer when the stimuli of cards have different colors on the words (Stroop, 1935). Using a modified version of the Stroop test, a Directional Stroop Test, the present study assessed the impact of sleep quality on susceptibility to distraction. Poor quality sleep led to significantly greater deficits on the distraction trial of the directional Stroop test. Applications of the present study to academic performance will be discussed.

Parent-Student Attachment and Its Influence on College Adjustment

Raul Wallace; Senior; Psychology with Clinical and Counseling Concentration; Manchester, Jamaica

Advisor: Dr. Katharine Snyder

One factor related to student adaptation to college is the impact of adaptive and maladaptive parenting styles. Prior studies have shown that secure parent-student attachment plays a role in student adjustment to college (Mattanah, 2004). This research extends the Student Adaptation to College work by Credé (2012), and the parental styles work by Mattanah (2011), by assessing the influence of attachment on college adjustment. It was hypothesized that students having insecure parental attachment would experience greater difficulty adjusting to college than students with a secure parental attachment. Fifty participants completed the "Parental Attachment Questionnaire" (PAQ; Kenny, 1992) and "Student Adaptation to College Questionnaire" (SACQ; Credé, 2012). The PAQ measures affective quality of attachment, parental fostering of autonomy, and parental role in providing emotional support. The SACQ measures academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment/goal commitment. The institutional attachment/goal commitment portion was not utilized because it is irrelevant to this study. Lack of findings and directions for future research will be discussed.

Alcohol and Student Adaptation

Brandon Johnson; Junior; Psychology with Clinical and Counseling Concentration; Fayetteville, NC

Advisor: Dr. Katharine Snyder

Alcohol consumption and abuse is a reoccurring factor in poor academic and social adjustment among college students. In this study, the effects of alcohol consumption related to student adaptation to college were assessed. It was hypothesized that students reporting low levels of alcohol usage and subsequent complications would score higher overall on each of the subscales of the Student Adaptation to College Questionnaire (SACQ; Kenny, 1991). The SACQ is a measure that has been used for over a decade in assessing factors related to student success in the college environment (Crede, 2012). Results revealed a significant relationship between alcohol consumption (self-reported perceived positive effects) and full scale adjustment to college. Applications to programs aimed at identifying and preventing alcohol-related problems on college campuses will be discussed.

A Research Proposal: The Coordination of Services for Transitioning Disabled Veterans

Paul Jones; Senior; Social Work; Fayetteville, NC

Advisor: Dr. Carla Fagan

There is now an excess of 1.7 million veterans from the wars in Iraq and Afghanistan. The decrease of deployments to Afghanistan has seen an increased level of general discharge separations to reflect a peacetime mission. Transitioning service members with disabilities face a myriad of tasks related to separating from the military and assuming a new role within the civilian community. As a result of the increased drawdowns, there has been a disturbing pattern of homelessness and under serviced incidents among disabled soldiers in the greater Fayetteville, North Carolina region. Social workers play a key role in helping service members access the programs and service for which they qualify both during active-duty service and once they are veterans. Social workers at Fort Bragg and the Veteran's Administration have stepped up efforts to meet the increase numbers of separating service members. There is, however, evidence that many former service members are not gaining access to available resources to which they are entitled.

How Do Military People view the Medical Model of Depression?

Amanda Albrecht; Junior; Sociology; Bunnlevel, NC

Advisor: Dr. Regina Smardon

This paper reports on an Internet-based survey of military and civilian men. The research literature on depression in the military suggests that the percentage of female soldiers seeking treatment for clinical depression is higher than male soldiers (Braswell & Kushner, 2010). It is also known that this statistic mirrors the civilian population in which women account for the majority of diagnoses of depression and are more likely to seek treatment (Nolen-Hoeksema1990). Similarly, men are more likely to successfully commit suicide in both the military and civilian population. In recent years the percentage of men in the military who commit suicide has exceeded the suicide rate among the men in the civilian population (Braswell & Kushner, 2010). What is not known is whether military people take a dimmer view of the medical treatment options for depression than civilians. This survey was designed to test three hypotheses: 1) Military men find less legitimacy in the medical model of depression than civilian men, 2) Military men find less legitimacy in medical experts than civilian men, 3) There will be no significant difference between military and civilian women's view on depression. Although these findings are preliminary, they are important for thinking about policy initiatives aimed at reducing the suicide rate in the military.

Military Mothers Talk about Race Relations in the Military Metropolis

Vanita Young; Senior; Sociology; Fayetteville, NC

Advisor: Dr. Regina Smardon

I am analyzing 10 in-depth interviews with military mothers about their perceptions of race relations. I began this project with the objective of uncovering differences between race relations on-post and off-post in surrounding civilian communities. My own experiences attending high school in Fayetteville and being a soldier stationed at Fort Bragg inform my questions about race relations in this community. My sample includes mothers who are active duty soldiers and civilians married to soldiers, as well as mothers who are raising their children in homes on and off base. I will describe how mothers of military children see race relations play out in their children's lives. The mothers I am interviewing are of different races, to optimize the variety of situations I am able to document. Very little is known about the sociology of military childhood, and even less is known about how children from military families experience race relations within the military communities. This qualitative study sheds light on an important aspect of daily life that few people outside of military mega-base communities know about.

Effect of Socioeconomic Status on Access to Eye Care

John Caddick; Senior; Health Care Administration; Fayetteville, NC

Vince Coopwood; Sophomore; Health Care Administration; Fayetteville, NC

Michael Leighner; Freshmen; Health Care Administration; Fayetteville, NC

Jasmine Campbell; Senior; Health Care Administration; Fayetteville, NC

Mark Vestal; Junior; Health Care Administration; Fayetteville, NC

Jake Haber; Sophomore; Health Care Administration; Fayetteville, NC

Erica Pugh; Freshmen; Health Care Administration; Fayetteville, NC

Advisor: Dr. Warren McDonald

We analyzed the theoretical and empirical literature on access to eye care, as well as conducted surveys at local optometry offices and eye health insurance providers. These considerations summarized access to eye care using a sociological framework. The majority of the studies we had access to identified various issues, although limited information could be found on the socioeconomic advantages of access to eye care. According to the Centers for Disease Control, in 2008 nearly 28 percent of the North Carolina population insisted they were unable to schedule eye care appointments due to the fact that the visit itself was either too expensive or they had no insurance. The CDC also insisted that nearly 46 percent of residents suffered from a visual impairment. Inequality can be found in relationship to eye care in N.C. Better targeting of resources and efforts toward people with low income, or absence of insurance, may reduce these disparities. This study intends to address the necessity of access to eye health in the state of N.C.



Healthcare Legislation: Upcoming Changes

Julieta Lainez-Barahona; Sophomore; Nursing; Mechanicsburg, PA

Dzana Susic; Junior; Business Administration with Concentration in Healthcare Administration; Zavidovici, Bosnia & Herzegovina

Maturgulu Nada Mbula; Junior; Business Administration with Concentration in Healthcare Administration; Nairobi, Kenya

Cody Molosky; Sophomore; Business Administration with Concentration in Healthcare Administration; Bayboro, NC

Advisor: Dr. Warren McDonald

Statistics reveal there are about 44 million Americans who are currently unable to get health care insurance. The Patient Protection and Affordable Act (PPACA) also known as “Obama Care” was signed into law on March 23, 2010, by President Obama aimed at reforming the American health care system. Its main focus is on regulating the health insurance industry to provide affordable health insurance to all Americans and reduce spending costs in health care. In order to accomplish this, the Obama Care will expand Medicare and Medicaid to offer assistance to those Americans who cannot afford healthcare. This research project is based on how the PPACA will impact current healthcare legislation on Medicare and Medicaid, including the Children Health Insurance Program (CHIP), how federal and/ or state “cooperatives” will be established to provide coverage, as well as taxes to be paid to afford and maintain the upcoming changes. The research was conducted to educate and/or inform the general student body, but mainly students who are planning to get a career in healthcare services, especially in Healthcare Administration, about the changes that will not only affect businesses but individuals in the middle to lowest economic brackets of our society, since it will affect the way insurance is purchased. The reader will have an idea of what to expect from a healthcare insurance point of view when he/she goes to a hospital, a medical appointment or goes over his/her payment allowances with an employer.

Factors that Influence Human Development among Nations: A Comparative Analysis

Jasmina Gobeljic; Senior; Political Sciences with a concentration in International Relations; Zivinice, Bosnia-Herzegovina

Advisor: Dr. Andrew Ziegler

This study utilized a quantitative analysis of aggregate data to examine the influence of different factors on human development. A secondary analysis of the 2010 Global file in MicroCase software was conducted.

The research was developed through in-depth analysis of the range of factors that have an influence on human development. The selected factors were divided in three groups: economic, social and political. The most surprising finding was that political variables had more variables that were strongly related to human development than the other two sections of research. Among the political variables, the strongest correlation existed between human development and government accountability. A strong relationship also existed between human development and political competitiveness. However, social variables that, based on the literature reviewed were expected to have a strong relationship with human development, like happiness and trust, did not have any statistically significant relationship with human development.

Although the expectations are that the strongest relationship should exist between the economic variables and human development, this research did not find this theory supported. The findings of this research indicate that more research needs to be done in regards to political factors that influence human development, since they might be more influential in solving problems of human development than it is commonly perceived.

Religion and Politics: A Cross-National Study

Tarama Rainford; Senior; Political Science concentration on International Relations; West Palm Beach, FL

Advisor: Dr. Andrew Ziegler

It is important to understand how religions impact the political values and make-up of a nation. This research is a quantitative analysis of surveyed data that outline the critical role religion plays in global politics. This cross-national empirical study explains how religion influences and shapes global politics, specifically countries’ political structure and political freedom. For this study, two of the major world religions were chosen to illustrate the unique relationship between religion and world politics.

The major findings were that in the political structures of Islamic countries, religion plays a strong and important role. Religion is embedded in the governmental structure and is used to shape how policies are integrated for a cohesive interaction within the global community. Political freedom is limited due to the autocratic nature of Muslim countries. Conversely, religion plays a more moderate role in the political structures of Christian countries. Christians use religion as a guideline to help create laws and policies that govern predominately Christian countries. Political freedom is highly recognized due to the democratic nature of Christian countries.

As policy makers seek to implement new laws and policies, these findings can influence new regulations and strategies pertaining to foreign policies and international relations. This research shows the need for more involvement throughout the global community in resolving issues of the global arena.

A Stormy Friendship: Saudi Arabia and the United States' Evolving Trade Relationship

Lois Hammond; Junior; Political Science with a concentration in International Relations and a minor in Financial Economics;
Professional Writing Certificate; Osu, Ghana

Advisor: Dr. Andrew Ziegler

Trade between the Kingdom of Saudi Arabia and the United States of America has been centered mainly on oil, and the U.S. dependence on oil has made Saudi Arabia one of America's close allies in the Middle East. This paper analyzes the trade relationship between the U.S. and Saudi Arabia and the benefits of this relationship to each actor, while focusing on how the trade between the two nations has changed, that is, if it has due to major turning points in history like the 9/11 attacks and the Arab Spring. Also being analyzed is the effect Saudi Arabia's trade relationship with the United States has had on its relations with other nations in the Middle East. Conclusions will be made based on data presented by the United States Trade Representative, US Department of Commerce, Saudi Arabia Ministry of Commerce and peer review journals.

"Looks Get in the Way"

Jeremy Arnold; Junior; Theatre; Fayetteville, NC

Advisor: Dr. Evan Bridenstine

D.M. Larson's *Looks Get in the Way* takes place in a diner and shows how physical attributes tend to get in the way of personality. In addition to presenting this short comedy, I will be presenting the stages in directing and what it takes to present an effective and entertaining show. I will be going through notes I have taken throughout each phase and present the progress that was made, as well as the difficulties.

Tennessee Williams' "The Case of the Crushed Petunias"

Glenn Nieves; Junior; Theater; Riverside, California

Advisor: Dr. Evan Bridenstine

I will be directing and presenting Tennessee Williams' *The Case of the Crushed Petunias*. This 1941 play is a departure from Tennessee Williams' southern sensibility and sensuality. However, the message of breaking free of routine and embracing life remains universal.

Applying the Lorenz Curve and Gini Coefficient to Grade Distribution at MU during the Fall 2011 Semester

Tyler Bennett; Freshman; Mathematics & Computer Science; Hope Mills, NC

Advisors: Dr. Peggy Batten & Dr. Daniel Bennett

The Lorenz Curve and Gini Coefficient are used in financial analysis to understand the wealth distribution among nations and to determine wealth inequality. I will use data from the grade distribution at Methodist University during the fall semester of 2011 and apply these two techniques to determine the grade inequality among the grades earned during this semester.

Determination of Tetrahydrozoline (THZ) Levels in Eye Drops

Stephanie Breitenbach; Junior; Chemistry with a concentration in Forensic Science; Owings, MD

Advisor: Dr. Stephanie Hooper Marosek

Tetrahydrozoline (THZ) is a compound that is commonly found in certain brands of over the counter ear drops and eye drops such as Visine, targeting specific symptoms such as redness. This substance is used to give one individual an edge over another. If ingested orally, THZ depresses the central nervous system, and leaves victims vulnerable to sexual assault. This compound impairs memory and judgment and produces a period of unconsciousness. This drug is not easily identified by typical drug analysis, and it is very easy for an individual to obtain. A recent case study evaluated a woman who had ingested a drink containing unknown amounts of THZ. About 20 hours after the drug had been ingested, both blood and urine samples were taken. No drugs were found in her blood, but THZ was detected in her urine using a method known as gas chromatography (GC).

The purpose of this research is to analyze levels of THZ in different brands of eye drops. Protocol for this work includes standard solution preparation and quantitative analysis of these standards by Ultraviolet/Visible (UV/Vis) spectroscopy. In addition, amounts of THZ would be measured in the different types of eye drops. Ultimately, these results would be beneficial in determining the amount of eye drops that need to be ingested to achieve the desired effects. It would also allow for further investigation of how the THZ interacts with the human body, is metabolized and produces certain symptoms.



Outcomes Associated with Alcohol Use in College Undergraduates

Sean Edwards; Sophomore; Psychology; Holmes Beach, FL

Advisor: Dr. Mark Kline

For this study we surveyed 195 students from Methodist University and Elon University. We contacted them via email and asked them to complete a survey about their drinking habits. The current knowledge about undergraduate drinking has been mainly from large-state institutions (Weschler, Lee, Kuo & Lee, 1999), and we know very little about smaller, private, liberal-arts universities. There is general knowledge about the negative outcomes of drinking, but very little is known about the outcomes associated with discrete drinking episodes (Weschler, Lee, Kuo & Lee, 1999). This study has been designed to address these gaps in literature. We collected a weekly timeline of follow-back assessments of alcohol use and outcomes from students from those universities. We asked about their drinking quantity on each drinking occasion and about the outcomes from those drinking occasions. Analyses revealed that student drinking at Elon and at Methodist is consistent with the quantity and frequency found at larger, state schools. The outcomes indicate that students experience far more positive than negative outcomes with a ratio of 45 positive outcomes for every negative outcome reported. This has implications for the lack of effectiveness for most prevention programs and why students continue to drink, despite messages about the harm associated with alcohol use.

Spatial Patterns and Host-Parasite Associations of Mistletoe (*Phoradendron Leucarpum*) on Methodist University Campus

Erin Fegley; Junior; Biology with concentration in Ecology and Natural History of Plants; Morehead City, NC

Advisor: Dr. Clay Britton

Mistletoe, *Phoradendron leucarpum*, is a parasite to many of the hardwood trees in North Carolina. In this preliminary report of the mistletoe on Methodist University campus, there will be a measure of the expanse of mistletoe on each tree (in percent coverage) and an evaluation of any host to parasite associations; for example, one particular species of tree might be more susceptible to the parasitic attack than another. Additionally, it will be investigated as to whether there is a concentration of mistletoe in a certain spatial area. Over the next few years, the progression of the mistletoe will be tracked to determine if there is a connection between host species and mistletoe growth and whether it is detrimental to the hardwood trees on campus. Hypothetically, there could be an increase in the amount of oak mistletoe on campus by 30 percent in the next year.

The Effects of Decaying Flesh on the Rate of Plant Decomposition

Serena Hare; Senior; Biology with concentration in Health Occupation Science Minor in Forensic Science; Raeford, NC

Advisor: Dr. Clay Britton

Forensic botany is a relatively new field of study that uses plants to help solve crimes. It is underutilized and offers great potential to assist in solving crimes. There are many forensic cases that involve plant materials in some way, shape or form. Plant materials, such as flowers, pollen or seeds can be collected as evidence at a crime scene. In addition, a dead body may be found buried in the woods, surrounded by plants that can be useful in a criminal investigation.

The hypothesis that will be tested is that decomposing bodies will affect the rate of decomposition of plant material. This hypothesis will be tested by examining the change in weight of decomposing plant material, chlorophyll degradation, and eventually degradation of plant enzymes associated with photosynthesis. Gathering this data will assist law enforcement in investigating an equivocal death, and give them another tool in determining approximate time of death or time of placement of a body. The poster will showcase background information, the experimental design and preliminary data. This study will be continued into the summer and the next academic year.

Meth, the Mind, and Methods

Amanda Rada; Junior; Environmental and Occupational Management; Fayetteville, NC

Emily Huneycutt; Senior; Chemistry (Pre-Pharmacy); Locust, NC

Advisor: Dr. Deborah Branson and Dr. George Hendricks

The chemical makeup of methamphetamine (meth) is easily accessible to the average person. The ease of access to materials leads to dangerous and hazardous conditions in methamphetamine producing home labs. One of the biggest concerns is the cleanup and disposing of chemicals properly to get the home back to livable conditions and remove the toxins from the environment. The biochemical effects of meth on the body are much more severe than other drugs. The production of meth not only created hazard to the environment, but also to the general public. We hope to get across the danger of meth, not only to our bodies, but also the environment.

Harpischord Restoration

Casey Horne; Junior; Music; Fayetteville, NC
Edwin Carter; Senior; Music Education; Fayetteville, NC
Melissa Duffield; Senior; Music with a Concentration in Fine Arts Management; Conneaut Lake, PA
Roland Berthold; Junior; Music Education; Royal, VA
Michael Blanchard; Junior; Music Education; Fayetteville, NC
Tevin Rogers; Junior; Music Education; Sanford, NC
Ravon Sheppard; Junior; Music Performance; Aberdeen, NC
Advisor: Dr. Scott Marosek

The students in Dr. Marosek's Music History class have rebuilt and restored a harpsichord, the predecessor of the modern piano. The instrument itself is a Zuckerman Flemish replica and was made from a kit by a previous music history class at Methodist, but fell into disrepair. The restoration process involved ordering replacement parts, restringing the instrument, replacing and repairing several jacks (whose plectra pluck the strings), repairing cracks in the body and making several other adjustments.

Correlation Between Stress and Injury in Men's and Women's DIII Basketball

Johntavis Mallory; Senior; Psychology; Gainesville, FL
Advisor: Dr. Mark Kline

This study is going to analyze different athletes stress level using a survey known as the LESCA (Life Events Scale for Collegiate Athletes) attempting to target the athletes who are potentially under a significant amount of stress. This study will also be analyzing the personality and the coping resources of the athletes using the Hamilton Personality survey that highlights individuals who may suffer from the Somatic Trait Anxiety. We will also be using the Brief Cope scale, which measures an individual's ways of coping with stress. All surveys will be used in unison to determine the correlation between stress and injury.

The Effect of Glucose on Post-Mortem Ethanol Production in *Candida Albicans*

Tijana Vasiljevic; Junior; Chemistry with a concentration in Forensic Science; Bihac, Bosnia and Herzegovina
Advisor: Dr. Stephanie Hooper Marosek

Ethanol analysis is an important factor of forensic autopsies, as it is frequently conducted. *Candida albicans*, a very common yeast found in human remains, has been shown to produce elevated levels of ethanol in post-mortem analysis, especially in subjects with diabetic or dietary sugar conditions. This research focuses on an investigation of production of ethanol by *Candida albicans* in samples with a consideration of the potential glucose effect on such production. The quantity of glucose present determines the ethanol production, which is an indication that *Candida albicans* uses glucose for its ethanol production. We shall assume that amount of glucose present is proportional to the amount of ethanol that should be produced, for the assumption is that as glucose concentration increases, the ethanol concentration increases. For this experiment yeast samples will be grown and exposed to varying levels of glucose to examine the correlation glucose has with ethanol production. Samples will be analyzed with Ultraviolet/Visible Spectroscopy, and the limit of detection and limit of quantification will be determined. Our goal is to successfully detect ethanol and determine the quantities of ethanol present in various yeast samples that have been exposed to different glucose levels. This research will potentially establish a relationship between glucose concentrations in human remains and elevated post-mortem ethanol amounts.

Methcognition

Antjuan Jones; Junior; Justice Studies; Wauchula, FL
Donita Johnson; Senior; Justice Studies; Elizabethtown, NC
Hunter Lane; Senior; Justice Studies; Smithfield, NC
Krista Zentner; Sophomore; Justice Studies; Yorktown, VA
Terri Quinnstrickland; Junior; Social Work; Fayetteville, NC
Advisors: Dr. George Hendricks and Prof. Dave Pauly

This presentation will educate the Methodist University community on the inherent dangers of the drug, Methamphetamine (Meth). A question and answer session will be used and a visual demonstration of the chemicals used to manufacture Meth will be viewed. Holly (2005) noted that methamphetamine has a 95 percent to 98 percent addiction rate. Disturbingly, Meth is the most addictive drug in the United States. It is important for the general public to be aware of the devastating effects of this drug. Advocacy and change can only take place with the proper education on the issue. Our presentation, from a Justice Studies and Social Work perspective, will help to educate the Methodist University community on the dangers of Meth. The concept of Methcognition will be introduced as a method of educating the community about the dangers of Meth.



Stormwater Regulation: Is it doing enough?

Antonio Alston; Junior; Environmental Management; Roanoke Rapids, NC

Chris Carter; Junior; Environmental Management; Shelby, NC

Advisor: Kurt Smith

The Cape Fear River Basin is the largest river basin in the state of North Carolina, covering some 9,149 square miles. The river runs through significant agricultural area, as well as quickly developing urban areas like Fayetteville, N.C. The river continues, despite significant regulation, aimed at buffering agricultural practices and controlling urban stormwater run-off, to experience problems of elevated levels of nitrogen, phosphorus and sedimentation. Our poster will address the question is: is environmental regulation doing enough?" We will examine existing data on the river, as well as analyze some original data gathered through water sampling and a corresponding chemical analysis.

Are Coal Fired Power Plants The Major Contributor to Mercury Pollution?

Lauryn Steel; Senior; Environmental Occupational Management with a concentration in Regulatory Compliance; Concord, NC

Advisor: Dr. Deborah Branson

The use of coal-fired power plants is a prevalent type of technology used to create cheap energy. They are used in many countries due to the fact that coal is abundant in the earth and is relatively cheap to buy and use. Countries such as India, China and the United States use this type of fuel because they each have large deposits of coal. However, this cheap source of energy is contributing to pollution of the environment and causing problems to humankind as well. The byproducts that result from coal-burning include acid rain, greenhouse gas emissions, mercury particles and fly ash. While research is ongoing into alternate forms of energy, pollution from the burning of coal continues to be a problem in the present and will remain an issue into the foreseeable future. My exploration of the effect of mercury on the fish of North Carolina and subsequently the effect on humans that consume them has taken several turns. I wish to discover more about the origins of the pollutants, especially mercury, and the ways it transforms in water into the toxic form, methyl mercury. Studies reveal that the rivers of the Sandhills area of N. C. with blackwater streams are especially contaminated. I wish to explore the potential source of the pollutants and if the chemical makeup of tannic water is contributory to the lethality of the fish in the waters.

Testing the Efficacy of Rid-X and Septic Tank Health

Stephen Jordan Krunich; Junior; Biology with a concentration in Microbiology; Yokosuka, Japan

Samra Mrkovic; Junior; Biology with a concentration in Microbiology; Dobo, Bosnia and Herzegovina

Advisors: Dr. Lori Brookman and Dr. Clay Britton

The purpose of this study is to test whether Rid-X helps maintain a healthy septic tank. A review of the literature shows minimal research testing Rid-X's claim of being scientifically formulated and proven to work. Two sets of experiments titled, "Impacts of Biological Additives, Part 1: Solids Accumulation in Septic Tanks," and "Impacts of Biological Additives, Part 2: Septic Tank Effluent Quality and Overall Additive Efficacy," concluded that the only statistically significant improvement in septic health between the three tested products (Rid-X, Liquid Plumr and Drano) was a drop in the biological oxygen demand in septic tanks that were well-maintained and were regularly pumped and treated with Liquid Plumr. Neither of the tests showed a statistically significant improvement for Rid-X treated tanks. We will analyze the validity of their claims, as well as Rid-X's through the use of Biological Oxygen Demand, Total Suspended Solids (TSS), and coliform tests.

For each of these tests, equal weights of canine feces will be distributed between three Erlenmeyer flasks, one set of control flasks containing only feces, another set of control flasks containing feces and water, and a third set of treatment flasks containing feces, water and Rid-X. A second set of flasks will be prepared in the same manor with Liquid Plumr instead of Rid-X, so we can better compare our results to that of the previous studies. The flasks will be kept in the dark to minimize photosynthesis and better replicate a septic environment.

The Cold Case Initiative: Undergraduate Students Assisting in Research and Preservation of Cold Cases

Serena Hare; Senior; Biology with concentration of Health Occupation Science

and minor in Applied Forensic Science; Raeford, NC

Advisor: Prof. Dave Pauly

There are approximately 16,000 homicides in the United States each year. Since 1980 an estimated 167,000 of these have remained unsolved and ultimately "cold." Cases go cold primarily due to the lack of resources, such as detectives, analysts and administrative assistants, to properly investigate each case. It takes thinking outside the box to resolve these issues in our communities to bring answers and closure to families.

This presentation will demonstrate how Methodist University Forensic Science students have supported regional law enforcement agencies by providing their extra set of eyes and knowledge to active cold cases, creating on-line video summaries of unsolved cases; and by coordinating training to regional law enforcement via homicide seminars. Forensic Science students learn from training by forensic science professors, attendance at professional training conferences, and by homicide detectives through practical case review. The MU student interns provide a greatly needed asset to understaffed law enforcement agencies. The poster session will demonstrate the process of researching cases and creating cold case cards by Methodist University students, as well as, YouTube videos and professional conference presentations provided to North Carolina law enforcement.

A Collaborative Book Project: Social Work Ethical Dilemmas from Students' Perspectives

- Alesha Fredrick, Senior Social Work Major, Hometown: Greenville, NC
 - Kellisha Gray, Senior Social Work Major, Hometown: Charleston, SC
 - Derrick Howell, Junior Social Work Major, Hometown: Mapelwood, NJ
 - Melinda Meurer, Senior Social Work Major, Hometown: Monroe, MI
 - Stormey Molina, Senior Social Work Major, Hometown: Westwego, LA
 - Gerron Rivenbark, Junior Social Work Major, Hometown: Snow Hill, NC
 - Risa Smith, Senior Social Work Major, Hometown, Toledo, OH
 - Natalie Thompson, Senior Social Work Major, Hometown: Chicago, IL
 - Antonia Verhine, Senior Social Work Major, Hometown: Frankfurt, Germany
- Advisor: Dr. George Hendricks**

Exhibiting ethical behavior is important to being a successful citizen in our society. Poor ethical decision-making places Social Workers at risk of harming their clients. Understanding ethical behavior in the field of Social Work is important to being well-trained.

Students in the Social Work Human Behavior II course became interested in an “outside reading” book about the ethical dilemmas encountered in Social Work practice. The assigned readings from the book encouraged students to take an in-depth look at ethical dilemmas within the National Association of Social Work (NASW) Code of Ethics. What started out as an assignment motivated the students to use their creative thinking skills to write a book on ethical dilemmas from student perspectives. Students had to create ethical scenarios that might be encountered in upcoming field placements. The students also learned about the publication process, which includes multiple revisions, class dialogue, and the importance of disagreement and compromise. The students acquired a new appreciation for the rigor of the publication process.

Through the publication of this book, It is our hope that Social Work students have begun to understand the importance of the NASW Code of Ethics and the complexities of the ethical decision making-process.

NOTES

[Engage. Enrich. Empower.]

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THE INAUGURAL

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DR. SANJAY GUPTA

Neurosurgeon

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Medicine and Media

8 p.m. | Reeves Auditorium | Methodist University Campus
April 17, 2013

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The event is part of the Second Annual
Undergraduate Research and Creativity Symposium.