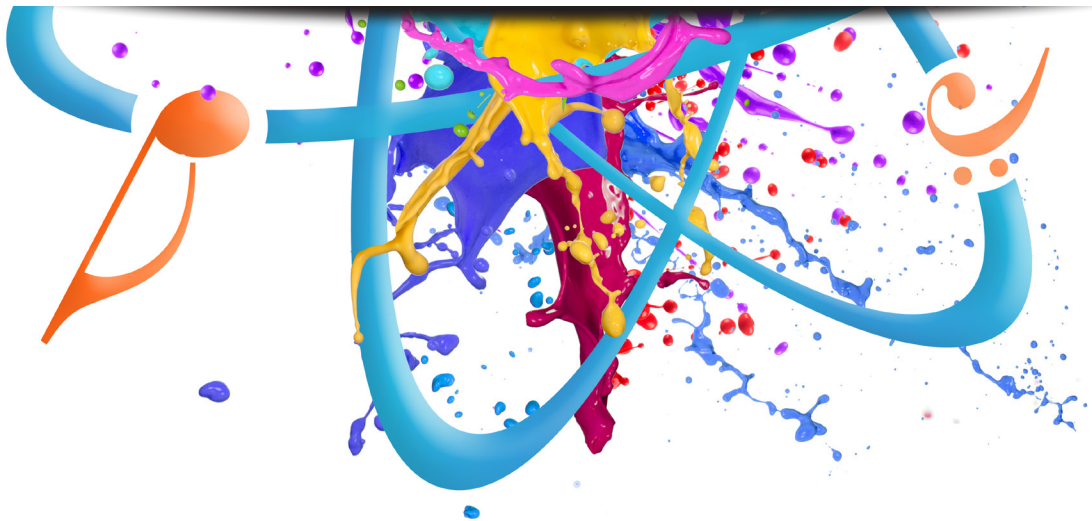


# 10TH ANNUAL



SYMPOSIUM OF  
**ARTISTS** AND *Scholars*



**APRIL 19 & 20, 2018**

[randolphcollege.edu/sas](http://randolphcollege.edu/sas) | Free and open to the public.



# Welcome

Dear Symposium Attendee,

Welcome to Randolph College's 10th annual Symposium of Artists and Scholars. We look forward to this annual event highlighting the wide spectrum of liberal arts outcomes and experiences nurtured here at Randolph College.

The presentations, exhibits, posters, and performances featured during this symposium represent the diverse disciplines we offer and exemplify the learning that takes place here every year. Thanks to the dedication of our nationally ranked faculty members, students have opportunities to develop skills through mentorships with faculty as well as often assist their professors with important research.

Randolph College prepares students to engage the world critically and creatively, live and work honorably, and experience life abundantly. Since the College's founding in 1891 as Randolph- Macon Woman's College, this institution has remained dedicated to providing an excellent liberal arts education focused on one student at a time. One hundred and twenty-seven years later, our students continue to inspire their classmates and faculty to stretch boundaries, spread compassion, and become significant contributors to their communities.

I thank the committee who collaborated on organizing this symposium and the faculty-nominated students who agreed to share their projects. We appreciate the dedicated faculty members who consistently venture outside of the classroom to foster and nurture individual scholars and artists. This collegiality is key in making the symposium the outstanding program that it is today.

I hope you enjoy Randolph College's 2018 Symposium of Artists and Scholars.

Vita abundantior,  
Sincerely,

A handwritten signature in black ink that reads "Bradley W. Bateman". The signature is written in a cursive, flowing style.

Bradley W. Bateman  
President

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# SCHEDULE

THURSDAY, April 19, 2018

## ORAL PRESENTATIONS

**Session 0a:** 4:30 p.m.-5:15 p.m.

Nichols Theatre, Student Center

- Tyrah Cobb-Davis and Elizabeth Exline, "Using Artificial Seagrass Beds to Study Restoration"
- Jane Zhou, "A Comparative Analysis of Science Education in National School Systems in China and America: When East Meets West in the Science Classroom"
- Ayla Hagen, "The Story of the Lynchburg Mill"

**Session 0b:** 4:30 p.m.-5:15 p.m.

Quillian Conference Room, Student Center

- Stephanie Quirk, "Freeze before you make that Xerox copy: An Investigation of the Use of iPad Technology as an Instructional Tool"
- Christina Cordell, "Religious Practices at Unity in the Seven Hills"
- Meagan Swithers, "Art Integration in the Classroom: Teach to your Arts' Content"

5:30 p.m.-6:30 p.m.

Wimberly Recital Hall, Presser Hall

### **KEYNOTE: *Hearing Beethoven***

Dr. Daniel Raessler, Charles A. Dana Professor of Music

## ORAL PRESENTATIONS continued

[Ice Cream treats served 7:00 p.m.-8:00 p.m.]

**Session 1a:** 7:15 p.m.-8:30 p.m.

Nichols Theatre, Student Center

- Travis Byram, "Taking Daddy Issues on the Road: Presenting 'Father Figuring It Out' at the Sigma Tau Delta Convention"
- Tia Jones, "Read It and Write It Twice: The Effects of Active Silent Reading Instruction on Middle School Students' Writing"
- Jessica Lunsford, "How Modern Pagans Create Meaning on Tumblr"
- Adair Moore, "'Teaching is easy! As long as you use methods that work!' A Quantitative Study on Differentiated Instruction in Middle and High School Classrooms"
- Evan Sizemore, "Milton's spirit: Our guidance through freedom in Paradise Lost"

**Session 1b:** 7:15 p.m.-8:30 p.m.

Quillian Conference Room, Student Center

- Jamiko Allen-Hercules, "Mind the Gap: How Schools of Innovation are working to close the Achievement Gap"
- Zachary Zylstra, "An Island in an Ocean: Worship at Lynchburg's only Synagogue"

- Britnee Kratochvil, "Voices and Choices: Giving Students Choice in Reading"
- Sarah Grissom, "We're All in This Together: Incorporating Group Work in High School Mathematics"
- Jennifer Sanborn, "Welcome to the World of Writing: Incorporating Language Arts into Morning Meetings"

FRIDAY APRIL 20, 2018

SAS Luncheon (for confirmed guests) 11:50 a.m.-1:00 p.m.

## ORAL PRESENTATIONS

**Session 2a:** 1:15 p.m.-2:30 p.m.

Nichols Theatre, Student Center

- Drucilla Williams, "Antioxidant Analysis of Herbal Teas Using Thin-Layer Chromatography"
- Ryan McDonald, "Inquiry or No Inquiry, That is the Question: An Action Research Study on Guided Inquiry-Based Instruction in Science Classrooms"
- Tristina Balsamo, "Is it Ethical to Change Someone Else's Core Beliefs by Transformative Experience?"
- George Atmore and Dung Nguyen, "Morality and Reach Perception as Bodily Reactions to Pain"
- Anna Smith, "Goodbye Social Media: An Analysis of Online Communication Behaviors"

**Session 2b:** 1:15 p.m.-2:30 p.m.

Quillian Conference Room, Student Center

- Sophia Dill, "Engineering Greek Theatrical Masks"
- Stuart Gossler, "The Future of Learning History"
- Miranda Hudson, "'Orokomono' at the Sigma Tau Delta Convention"
- Evie Goodson, "Scientists' Struggle: A Study on How Perceptions of Scientists Affect Students in the Physics Classroom"
- Lydia Hamd, "Validating the Absurd Transformative Experience"

**BREAK** (15 minutes)

## ORAL PRESENTATIONS continued

**Session 3a:** 2:45 p.m. – 4:00 p.m.

Nichols Theatre, Student Center

- Allison Brooks, "Episodic Rainfall Event Nitrogen Load from the Blackwater Creek Watershed"
- Taylyn Soult, "'Small Talk' to Instant Messaging: The Evolution of Relationship Building in a Digital World"
- Seaver Sterling, "Ku Klux Konquest: The Rise of the Second Ku Klux Klan"
- Tetiana Poliakov, "The Effects of Housing Temperature and a High-Fructose Diet on Metabolic Parameters in Mice"

- Isabella Farias, "Mighty Mouse of Childhood to Rotten Rodent of Adulthood: How the Perception of the Walt Disney Animated Film Franchise Changes with Age"

- Shania Nowlin, "Going Down to New Orleans: Vodou, History and Heritage in the African Diaspora"
- Faith Powell, "Unchosen Transformative Experiences: The Value Behind the Label"
- Abigail Bodnar, "Genre Analysis of Boy Band Fan Art"

**Session 3b:** 2:45 p.m. – 4:00 p.m.

Quillian Conference Room, Student Center

- Molly Williams, "Stand Back, I'm Going to Try Science: Integrating Project-Based Learning into the Elementary Science Classroom"
- Eric Huber, "Felony Physics"

## POSTER/EXHIBIT SESSION AND RECEPTION

4:15 p.m.- 5:15 p.m.

Hampson Commons | Enjoy some savory *hors d'oeuvres*

- P01. Marie Abowd, "The Rummage Room: Minimizing Solid Waste by Reusing and Repurposing Residential Items"
- P02. Katherine Biggs, "Avian Population Trends in Lynchburg, VA"
- P03. Katherine Biggs, "Learning Geographic Information Systems (GIS)"
- P04. Amber Darby, "Paint the Music"
- P05. Gavin Cook, "Punkin Chunkin' at Randolph College"
- P06. Kelsey Fastabend, "Effect of Windbreaks on Soil Moisture and Plant Height at Life Monteverde Coffee Farm"
- P07. Kelsey Fastabend, "Restoring Native Pollinators to Randolph College Campus"
- P08. Micahel Gambino, "Coming Home to Mi Tia"
- P09. Shannon Hase, "Let's Get Gritty: Does Student Choice Improve Writing Quality?"
- P10. Katie Jones, "Mathematical Modeling of a Zombie Outbreak"
- P11. Alivia Kilroy, "Italy Renaissance Study Abroad"
- P12. Holly McWane, "Manipulatives Make Math Matter"
- P13. Dung Nguyen and Avisha Shah, "Developing Virtual Reality as a Research Tool"
- P14. Tung Nguyen and Thinkh Pham, "Simulating Directional Perception of Sound"
- P15. Thomas Overgaag, "'You Can't Fire Me... I Quit!' A Look at the Declining Retention Rate in Public Education"
- P16. Desireé Page, "RISE Independent Study in London and Paris, 2018"
- P17. Jared Palmer, "Are you up to Snuff: Do High School Students Need a High Level of Mathematics as a Prerequisite for Physics?"
- P18. Skylar Pippin '19 and Igor Ngabo Rwaka '18, "Teaching Math and Science in a Changing World"
- P19. Taylor Samuels, "Digital Model of First-Year Pre-Scheduling"
- P20. Avisha Shah and Dung Nguyen, "Developing Virtual Reality as an Educational and Research Tool"
- P21. Timothy Songer, "Word Parts, do they Mean Anything?"
- P22. Zoë Upshaw, "Examining Diet-Related Carotenoid Pigmentation in Local Cedar Waxwings"
- P23. Zoë Upshaw, "Botanical Illustrators at Oak Spring Garden Library"
- P24. Reilly Wren, "Evaluating the Effectiveness of Omeprazole at Reducing Cribbing Behavior in Horses"

# PRESENTATIONS

## **Marie Abowd '19**

"The Rummage Room: Minimizing Solid Waste by Reusing and Repurposing Residential Items"

Faculty Mentor: Dr. Sarah Sojka, Environmental Studies and Science; Physics

The Rummage Room is based off a nonprofit business model for a campus "Free Store." This concept reduces student move-out waste and move-in purchasing by collecting usable leftover items from students, faculty, and staff throughout the year. These items are then made available to students for free to encourage reusability and creativity with upcycling habits. The Rummage Room is run by student volunteers and is open every other week. We have an average customer base of 25 students per session. Periodically, items that have not been rehomed at Randolph are donated to local charities and organizations. We have also measured the solid waste that has been diverted from Randolph's regular trash.

## **Jamiko Allen-Hercules '18**

"Mind the Gap: How Schools of Innovation are working to close the Achievement Gap"

Faculty Mentor: Elaine Duke, Education

If you teach, the word innovation is exciting. It conjures images of new ways of thinking, better, more powerful designs, and a vision of the future. With all this vehement fervor for the latest and greatest teaching practices, an educator must ask the question: Do innovative teaching strategies raise test scores? This mixed method study focused on examining a random sample of test scores from middle school students in the 6th, 7th, and 8th grades to determine if an achievement gap exists. This study used a pre-test, post-test format to assess student knowledge base and the effect pioneering teaching techniques have on test scores.

## **George Atmore '18 and Dung Nguyen '18**

"Morality and Reach Perception as Bodily Reactions to Pain"

Faculty Mentor: Dr. Elizabeth Gross, Psychology

The feelings of disgust and pain are the body's reactions to stimuli to protect itself from contaminants (disgust) and threats (pain). Pain has an influence on perception to urge the body toward immediate action. There is also evidence that morality evolves from disgust as a protective mechanism of the body. As a result, when the body is threatened under a painful condition, the perception in reach ability estimation and moral judgment should thus be affected.

## **Tristina Balsamo '18**

"Is it Ethical to Change Someone Else's Core Beliefs by Transformative Experience?"

Faculty Mentor: Dr. Kaija Mortensen, Philosophy

Everyone knows that "one person" who holds a belief so strongly that nothing can change his or her mind. We often find that though we might hope otherwise, facts, science, and personal stories are not enough to convince people to change their minds on deeply held beliefs. Is it impossible to change people's core beliefs? No, it is not impossible; though, I will argue that in order to change one's core belief(s), they must undergo a transformative experience. The process of inducing a transformative experience upon someone will be by the

Libertarian Paternalism notion of nudging him or her into a state of cognitive dissonance, hopefully resulting in the change of his or her initial core belief.

## **Katherine Biggs '18**

"Avian Population Trends in Lynchburg, VA"

Faculty Mentor: Dr. Douglas Shedd, Biology

An analysis of 40 years of Lynchburg Bird Club Breeding data, focusing on species that are of special scientific or conservation significance.

## **Katherine Biggs '18**

"Learning Geographic Information Systems (GIS)"

Faculty Mentor: Dr. Karin Warren, Environmental Studies and Science

Geographic Information Systems (GIS) is the science and art of overlaying data onto maps to convey information. I had the opportunity to learn this skill in an online certification program from Michigan State University using my RISE grant.

## **Abigail Bodnar, '18**

"Genre Analysis of Boy Band Fan Art"

Faculty Mentor: Dr. Janel Jackson-Beckham, Communication Studies

Since the emergence of popular music, boy bands—from the Beatles to One Direction—have played a significant role in the lives of their dedicated fans. The individuals, mostly young women, who constitute these fandoms engage in communication practices that help shape their identities at a formative time in life. The purpose of this study was to investigate how the Internet and specifically the practice of creating and uploading fan art has changed the experience of being part of a boy band fandom. A genre analysis was performed with an original data set consisting of 60 examples of boy band fan art, collected from Tumblr and DeviantArt. Genre analyses reveal patterns in the substance and style of rhetorical responses in a given context, illuminating shared experiences, beliefs, tastes and attitudes among the individuals whose communication participates in a particular genre. By exploring contemporary online boy band fan art, this study sheds light on the unique experience of these particular communities in the 21st Century.

## **Allison Brooks '18**

"Episodic Rainfall Event Nitrogen Load from the Blackwater Creek Watershed"

Faculty Mentor: Dr. Sarah Sojka, Environmental Studies and Science; Physics

Rainfall events enhance nitrogen fluxes into waterways, due to overland runoff. The nature of each rainfall event, as well as the characteristics of the watershed itself, determine the quantity of nitrogen transported from the watershed into waterways. Anthropogenic and natural sources and sinks of nitrogen in the watershed create a pool of nitrogen that is mobilized during rainfall. The Blackwater Creek Watershed nitrogen loading is significantly impacted by an episodic rainfall event. Episodic rainfall events resulting in 1.5 inches of precipitation are common within this region. Increased nitrogen load from these events may not be captured adequately through sporadic sampling. Improving the understanding of nitrogen load from rainfall events will further the scientific understanding of the interactions between rainfall event and

watershed characteristics. Future research should investigate regular sampling through rainfall events. Methods of improving nitrogen retention within the watershed need to be explored.

### **Travis Byram '18**

"Taking Daddy Issues on the Road: Presenting 'Father Figuring It Out' at the Sigma Tau Delta Convention"

Faculty Mentor: Dr. Gary Dop, English

Through the generous support of a RISE Grant, I presented my essay "Father Figuring It Out" in Cincinnati, Ohio, at the Sigma Tau Delta International English Honor Society. This symposium presentation will include a reading of the essay and commentary on the audience's reception to the essay and on how the opportunity to present the work at a major conference shaped the revision of the essay.

### **Tyrrah Cobb-Davis '19 and Elizabeth Exline '19**

"Using Artificial Seagrass Beds to Study Restoration"

Faculty Mentor: Dr. Sarah Sojka, Environmental Studies and Science; Physics

Seagrass populations are declining worldwide and the loss of this ecosystem engineer has implications for everything from fisheries to climate change. Artificial seagrass beds could be a powerful tool in understanding how seagrass ecosystems function and in developing improved methods for restoration. This summer, artificial seagrass beds were constructed to be used for a pilot study to begin research on artificial seagrass. There were two artificial bed prototype methods used, a dowel and double net. Velocity profiles were used to calculate turbulence intensity and roughness height in order to compare the artificial and natural beds. Measurements were taken and analyzed over bare sediment, artificial beds, and a restored seagrass bed. Our research concludes that both of the artificial bed prototypes previously used to study restoration were reasonable mimics of natural seagrass. In particular, the dowel method was used to construct artificial beds on a larger scale because it better reflected the rigidity of natural seagrass.

### **Gavin Cook '18**

"Punkin Chunkin' at Randolph College"

Faculty Mentor: Dr. Sarah Sojka, Environmental Studies and Science; Physics

Pumpkin chucking is a rapidly growing sport that involves hurling a pumpkin for distance solely by mechanical means. Devices used typically draw inspiration from medieval siege engines. The objective of this engineering project was to study various pumpkin chucking devices to attempt to design and build a functional device for Lynchburg's first ever pumpkin chucking contest hosted by Lynchburg Parks and Recreation. The Lynchburg Pumpkin Chuck contest featured unique rules and design constraints that restricted size of devices to a 10 foot cube and prohibited the use of engines, hydraulics, compressed air, motorized winches, etc. This first year's results found that machines that fit under these design constraints are either incapable of generating or incapable of supporting enough force to launch a pumpkin a significant distance.

### **Christina Cordell '19**

"Religious Practices at Unity in the Seven Hills"

Faculty Mentor: Dr. Gordon Steffey, Religion and Philosophy

This work is the culmination of eight months of participant observation at Unity in the Seven Hills church. By attending worship, fellowship and educational events, and through personal interviews with ten congregants, I learned that

Unity is an intentionally diverse and inclusive community that has recently overcome significant adversity to achieve greater cohesion. In this challenging interim between pastors, Unity organized community dialogue and reflection in order both to seek healing of recent wounds and in order to define together and realize a new vision of community in keeping with their shared affirmations and commitments.

### **Amber Darby '18**

"Paint the Music"

Faculty Mentor: Brooke Marcy, Art

This installation is a reflection of my personal experience with chromesthesia. These pieces are the blending of the practice of art with a rare hyper-ability that I was born with. To me, they are two very important elements of expression and of myself. While doing some research, I found myself fascinated that there are well-known people that can naturally associate color with music, such as musicians Duke Ellington and Pharrell Williams; along with visual artist Vincent Van Gogh. I consider this installation a visual representation of how I use this ability and bring it to the people through art. Overall, "Paint the Music" expresses how one can see colorful art in music.

### **Sophia Dill '18**

"Engineering Greek Theatrical Masks"

Faculty Mentor: Dr. Amy Cohen, Classics

Since 2006, full-helmet Greek theatrical masks have been constructed and worn for Randolph's original-practices Greek Play series. This presentation details the most significant experimental developments to the construction process in the last four years. Dill's goal in this project is to codify the most recent engineering developments, specifically an examination of the use of 3D technology. She and other student researchers under the guidance of Dr. Amy R. Cohen have used 3D scanning and printing to increase the effective audibility of the masks, to improve their comfort for the performers, and to approach more closely the best human scale of the masks for the large theatre in which they are used.

### **Isabella Farias '18**

"Mighty Mouse of Childhood to Rotten Rodent of Adulthood: How the Perception of the Walt Disney Animated Film Franchise Changes with Age"

Faculty Mentor: Dr. Janel Jackson-Beckham, Communication Studies

Walt Disney Animation Studios has produced more than 50 feature-length animated films since it released Snow White and the Seven Dwarfs in 1937. These films have grossed millions of dollars, have been widely viewed around the world, and have come to be part of the experience of American childhood. The purpose of this study was to investigate how college students' perceptions of these films have changed since childhood, particularly as they acquire a liberal arts education. A mixed methodology was used to gather and analyze quantitative and qualitative audience data. A survey was used to establish trends in college students' general experiences of and attitudes about Disney animated films, and a focus group was used to explore these themes more deeply. This study hopes to shed light on the ways that young adults' relationships to prominent media franchises evolve as they age.

### **Kelsey Fastabend '18**

"Effect of Windbreaks on Soil Moisture and Plant Height at Life Monteverde Coffee Farm"

Faculty Mentor: Dr. Karin Warren, Environmental Studies and Science

Soil moisture plays a significant role in promoting plant and ecosystem health. Measuring soil moisture allows farmers and researchers to understand the role that varying factors have in crop productivity. Windbreaks can increase soil moisture content and prevent soil erosion, therefore helping to stabilize or even increase agricultural yields. In June 2017, six plots on a coffee farm in Monteverde, Costa Rica were examined for soil moisture and plant height at two locations within each plot. Southwest wind direction and potential rainfall were taken into consideration. The gravimetric method was used to measure soil moisture content. Soil moisture content increased closer to the windbreak, where coffee plants had increased height. These findings stress the significance of windbreaks on coffee productivity, while considering the potential benefit of soil health on plant growth.

### **Kelsey Fastabend '18**

"Restoring Native Pollinators to Randolph College Campus"

Mentor: Emily Smith, Coordinator Natural History and Archaeology Collections

Randolph College became Virginia's first Bee Campus in 2016 and was recently recertified in February 2018. As part of the recertification process, the College is required to establish and expand habitats for pollinators. Herbarium collections can provide valuable information about plant distribution and ecosystem diversity and the specimens in the Randolph College Herbarium were crucial resources to determine which plants would best serve pollinators on our campus. This project examined plant species collected on Randolph College's campus and in surrounding neighborhoods over the past 100 years. Many of these native plants support pollinator species and reestablishing them on campus would boost pollinator relationships with plants in the area; this research allows for informed decisions regarding which species to reintroduce in a variety of areas on campus.

### **Micahel Gambino '19**

"Coming Home to Mi Tia"

Mentor: Dr. Andria Smythe, Economics

I am so proud of my Puerto Rican heritage that I sometimes forget that I am also Italian and Mexican. My mother is a "New YoRican" and raised me to be proud of our heritage. The Cuban and Puerto Rican flags are mirror images but with reversed colors, symbolizing how Puerto Rico and Cuba are interconnected. These sister countries have shared supplies and military aid throughout their efforts toward independence, which motivated the United States to annex Puerto Rico and prevent it from joining with Cuba. I will demonstrate why the historical and cultural connections between the two islands remains strong to this day.

### **Evie Goodson M.A.T. '18**

"Scientists' Struggle: A Study on How Perceptions of Scientists Affect Students in the Physics Classroom"

Faculty Mentor: Elaine Duke, Education

The need for qualified applicants for jobs in science, technology, engineering and math (STEM) is growing but interest in those jobs not rising to the need. High school physics students across this country struggle not only with the concepts but also with seeing themselves as scientists. This research looks at how exposing students to the stories of well known scientists and their struggles will affect their behavior and grades in the classroom in hopes that this exposure will raise their interest in STEM careers. Students were exposed to a scientist by reading a one-page summary about either their achievements, or

their struggles in life and science. The results of that study are discussed.

### **Stuart Gossler M.A.T. '18**

"The Future of Learning History"

Faculty Mentor: Roberta Parker, Education

Whether you are walking through the grocery store, relaxing with your friends in the living room, or even sitting in traffic, all around you people are interacting with modern technology. Americans love their electronics, and these innovations are implemented everywhere from the workplace to the classroom. Contemporary technology is all the rage in our rapidly advancing educational system. Nowadays, students can just about teach themselves with applications on their laptops or tablets. Not all adolescents in the United States have access to this necessary technology or instruction on how to properly use it for learning. This action research study focused on how assisted guidance in electronic learning impacted student achievement and self-efficacy. This was made possible with electronic learning environments and online research inquiry.

### **Sarah Grissom M.A.T. '18**

"We're All in This Together: Incorporating Group Work in High School Mathematics"

Faculty Mentor: Dr. Peggy Schimmoeller, Education

Many people remember their high school Algebra 2 classes with disdain - the class was boring, they did not understand what was happening, and by golly, it was lecture followed by independent work. After observing Algebra 2 students struggle silently and alone with the work, I decided to try and incorporate group work during class time. The goal of this action research project was to increase achievement by giving small groups specific assignments. These assignments are meant to give them confidence and increase their skill with collaboration. Research suggests that not only does such a collaborative structure increase student engagement with the content, but also increases student achievement. There are few contemporary studies on the implementation of group work in high school math classes, in comparison to science classes. Students enrolled in a high school algebra class participated in small group instruction over 2 weeks. Achievement was measured to determine if group work improved students' quiz and test grades.

### **Ayla Hagen '18**

"The Story of the Lynchburg Mill"

Faculty Mentor: Dr. Gerry Sherayko

In 1888, a group of influential local businessmen opened a mill in Lynchburg, Virginia, which would be known simply as Lynchburg Cotton Mill (LCM). It was Lynchburg's third venture into the cotton textile industry, and the first to successfully capitalize on the cheap labor and transportation hub of the area. The mill remained operational until 1957 when it closed, divorcing five hundred fifty people from their jobs and in some cases from their homes. Very little is recorded about LCM, and most of the business records are sealed for seventy-two years from the mill's closing date. In my research of the mill, I compiled the available sources of information, and created a foundational history of LCM for future research.

### **Lydia Hamd '18**

"Validating the Absurd Transformative Experience"

Faculty Mentor: Dr. Kaija Mortensen, Philosophy



Philosophers L.A. Paul and Ryan Kemp frame transformative experiences under the normative guidelines of rationality. This issue that arise for them is when transformative experiences infringe upon rationality, either when the outcomes are unknown or the agent has contradictory preferences. However, this narrow outlook on transformative experiences does not cover all experiences as it leaves out that of the absurd, exemplified in Soren Kierkegaard's analysis of Abraham in "Fear and Trembling". I will show how Abraham's experience is transformative, and prove that neither Paul nor Kemp have the resources in their theories to encompass Abraham's situation, thus concluding in the need for a new theory, one that validates the absurd transformative experience.

#### **Shannon Hase M.A.T. '18**

"Let's Get Gritty: Does Student Choice Improve Writing Quality?"

Faculty Mentor: Elaine Duke, Education

Some middle school students are already thinking about applying to four-year colleges. In order to introduce the independent thinking required in college, I implemented an intervention that encouraged independent research on the students' behalf and studied the result. As classwork, we researched the gothic literary genre together, read several short stories in the genre, and then the students each wrote their own short story in the gothic genre. I had them complete the same three actions as homework assignments and I planned strategic deadlines in order to establish a sense of self-efficacy. The students' GRIT test results were compared to the completion status of their project.

#### **Eric Huber '18**

"Felony Physics"

Faculty Mentor: Dr. Sarah Sojka, Environmental Studies and Science; Physics

Introductory physics texts have remained relatively unchanged since 1960, largely due to the fact that the introductory material to be learned has remained unchanged. However, the material is not the only important aspect of a text. Lessons that better capture student interest have been shown to improve learning, and so this project has aimed to explore a method of increasing student interest in the standard physics texts. This research project looked at connecting physics explanations and examples to non-violent crime to better capture students' attention than the more mundane examples that are typically used in the standard physics text.

#### **Miranda Hudson '18**

"'Orokomono' at the Sigma Tau Delta Convention"

Faculty Mentor: Dr. Gary Dop, English

This presentation, titled "Orokomono," will discuss my presentation at the Sigma Tau Delta International English Honor Society in Cincinnati, Ohio (this presentation was made possible by a RISE grant). Excerpts from the revised version of my personal essay, also titled "Orokomono," edited for the convention and inclusion in a senior paper, will also be shared during this presentation.

#### **Katie Jones '19**

"Mathematical Modeling of a Zombie Outbreak"

Faculty Mentor: Dr. Michael Penn, Mathematics

I will report results on the process of mathematically modeling infectious diseases based on factors including susceptibility, infection rate, and recovery probability.

#### **Tia Jones M.A.T. '18**

"Read It and Write It Twice: The Effects of Active Silent Reading Instruction on

Middle School Students' Writing"

Faculty Mentor: Elaine Duke, Education

Why do some middle school age students not enjoy reading? In middle school, active silent reading is often dismissed and in recent years we have seen student's writing and reading ability decrease. This action research project studied the effect of active silent reading strategies on middle school student's writing. The study was conducted in a rural school in Central Virginia. Each day for twenty minutes the students silently read a book of their choice. While silent reading the students were expected to keep a reading log, set a goal for reading each week, and note challenging words while reading. At the end of each week, the students discussed the books they were reading with their peers. Open-ended writing prompts were administered to assess students' before and after the silent reading intervention. Students writing was assessed for their use of style and vocabulary.

#### **Alivia Kilroy '18**

"Italy Renaissance Study Abroad"

Faculty Mentor: Dr. Andrea Campbell, Art History; Museum and Heritage Studies

My study abroad experience began on home campus in the classroom, with a course on the art and culture of the Italian Renaissance. What we learned allowed us to understand and appreciate the painting, sculpture, and architecture we experienced on our two-week study tour in Italy. Our trip included several cities, each with a distinctive artistic culture: Florence, Siena, Venice, and Rome. We also learned some Italian as part of the course which helped me engage with the culture directly. My poster demonstrates the research I did on Titian's *Pesaro Madonna*, features examples of the art we saw, and shows the group participating in Italian customs.

#### **Britnee Kratochvil M.A.T. '18**

"Voices and Choices: Giving Students Choice in Reading"

Faculty Mentor: Roberta Parker, Education

What do you remember about reading in elementary school? Did your teacher choose all of the books you read or were you allowed to choose your own? Do you wish you could have read books about dogs or trucks or science fiction instead of the same books everyone was required to read? This research sought to determine if students are more motivated to read when they have choice in what they read and therefore would perform better on comprehension assessments. During the four-week intervention, students were allowed to choose books from a limited pool of appropriately leveled books. The results may serve to change the way we teach reading!

#### **Jessica Lunsford '18**

"How Modern Pagans Create Meaning on Tumblr"

Faculty Mentor: Dr. Janel Jackson-Beckham, Communication Studies

In the last decade, Pagan groups have formed vibrant communities on Tumblr. This study proposed that Tumblr Pagans compose their own subculture, which relies on computer-mediated communication. An ideological criticism was performed on the top four Pagan blogs on Tumblr in order to investigate how Tumblr Pagans negotiate meaning as a community. Though this study only examined a small sample of Pagan communication on Tumblr, the results could help illuminate modern Pagan groups in general, as well other microblogging subcultures.

**Ryan McDonald M.A.T. '18**

"Inquiry or No Inquiry, That is the Question: An Action Research Study on Guided Inquiry-Based Instruction in Science Classrooms"

Faculty Mentor: Dr. Peggy Schimmoeller, Education

Many students struggle academically to understand science concepts and terminology through direct instruction practices. Recent research has shown that inquiry-based instruction can be more effective in terms of academic achievement of students studying science. I hypothesized: if guided inquiry-based instructional strategies were implemented into a science classroom, then there would be an increase in academic achievement. My research focused on structuring guided inquiry-based instructional strategies into lab activities. Academic achievement was measured between classes that had activities with guided inquiry based instruction and those that did not. A paired one tail t-test was used to compare achievement using direct instruction compared versus achievement using direct instruction.

**Holly McWane M.A.T. '18**

"Manipulatives Make Math Matter"

Faculty Mentor: Roberta Parker, Education

Teachers often face the burden of meeting student needs in the classroom while trying to make learning fun. How do teachers make mathematics learning fun? State testing and standards result in high pressure situations and high-performance expectations. Many students fail to meet these standards, and as a result, continue to fall behind in mathematics. Elementary school students with learning and intellectual disabilities may struggle to firmly grasp necessary mathematics concepts. Manipulatives including but are not limited to: pattern blocks, base-ten blocks, attribute blocks, unifix cubes, fraction tiles, and counters provide opportunities for students to use concrete thinking to build a deeper, abstract level of thinking. This research study focused on understanding how using concrete manipulatives provide engaging and hands on learning opportunities for students in the classroom.

**Adair Moore M.A.T '18**

"Teaching is easy! As long as you use methods that work!" A Quantitative Study on Differentiated Instruction in Middle and High School Classrooms"

Faculty Mentor: Roberta Parker, Education

The first year of teaching is difficult. For most new teachers, the job does not get easier until after the third year. As a new teacher, you worry about planning lessons, behavior and classroom management, and student achievement. This study focused on using differentiated instruction to alleviate these concerns. Differentiation is when teachers alter their teaching style to accommodate for student learning needs. Within this study, the researcher gave the students choice in the homework they completed and allowed them to work in small groups of peers. Come find out if implementing differentiated instruction made the first year of teaching less stressful for this first-year teacher.

**Dung Nguyen '18**

"Developing Virtual Reality as a Research Tool"

Faculty Mentor: Dr. Elizabeth Gross, Psychology

Research in perception shows that when we are exhausted, we see walkable distances as much longer, or hills as steeper. Recent developments in virtual reality allow researchers to create more realistic and ecologically valid setup for such studies. Last summer, we started learning and programming an outdoor virtual space with an interactive measure tool in Oculus. We modeled

a hill with the same inclination from all viewpoint and placed the model in the environment, in which participants will use the virtual measure tool to estimate the slant of the model. We also worked on a simulation for some concepts in special relativity for future development at Randolph College.

**Shania Nowlin '18**

"Going Down to New Orleans: Vodou, History and Heritage in the African Diaspora"

Faculty Mentor: Dr. Kelley Deetz, Sociology

This project is a reflection of summer research I conducted in New Orleans Louisiana. Inspired by Dr. Kelley Deetz's class on West African religion, I wanted to learn more about the African Diaspora and the similarities between Vodou and Hoodoo. Vodou is an ancient West African Religion, which made its way to New Orleans via Haiti during the Colonial era. Hoodoo is an African American religion inspired by Vodou and was formed by enslaved African Americans for protection and to seek vengeance for unfair treatment and betrayal. This religion contains spiritual and ancestral worshiping like Vodou, was practiced by many slaves in the Mid-Atlantic area, and is currently practiced by many of their descendants. This presentation explains why I picked this topic, my findings, and what it means for other African Americans and their journey connecting back with "the ancestors"!

**Thomas Overgaag M.A.T. '18**

"You Can't Fire Me... I Quit!" A Look at the Declining Retention Rate in Public Education"

Faculty Mentor: Roberta Parker, Education

Back when you were in school did you ever have that one teacher that you just thought "Man! I dislike that teacher so much!" Looking back, however, that teacher probably did like you and the rest the students, but the teacher was misplacing stress from other aspects of their job on us. The teaching profession is quite complex and teachers are never dealing with just one issue at a time. Whether it is larger class sizes, benchmark test score cutoffs, or a lack of support in the classroom, teachers juggle complex matters besides teaching students. My research sought to understand how teachers deal with stress in the teaching profession. Using an interview process, I sought to understand the external pressures that are causing teachers to depart from the teaching profession.

**Desirée Page '18**

"RISE Independent Study in London and Paris, 2018"

Faculty Mentor: Dr. Lesley Shipley, Art History

This poster represents the independent study I undertook to better understand my senior paper topic titled Freeing Proserpine: Demythologizing Jane Morris in the works of Dante Gabriel Rossetti. I was able to explore many different European museums and observe their various approaches to displaying and disseminating their collections. I was able to attend the London National Gallery Exhibition Reflections: Van Eyck and the Pre-Raphaelites which imparted valuable information regarding the Pre-Raphaelite movement, and inspirations and impetus in the works of Rossetti, William and Jane Morris who are the subjects of my senior paper. I was also able to visit Tate Britain, and view Rossetti's painting Proserpine which is the main painting I discuss in my thesis statement.

**Jared Palmer M.A.T. '18**

"Are you up to Snuff: Do High School Students Need a High Level of Mathematics as a Prerequisite for Physics?"

Faculty Mentor: Dr. Peggy Schimmoeller, Education

There is a question in physics education as to whether or not students should have a firm grasp of the underlying mathematics before undertaking a high school physics course. Many physics teachers today would contend that a correlation exists between mathematical ability and physics course performance. This empirical study examined such a relationship by administering a physics assessment to a group of physics students and running a Pearson product moment correlation on physics assessment scores and students' Algebra II SOL scores. The results from that statistical analysis indicated a weak correlation between those two variables.

### **Skylar Pippin '19 and Igor Ngabo Rwaka '18**

"Teaching Math and Science in a Changing World"

Faculty Mentor: Dr. Amanda Rumore, Biology; Dr. Peter Sheldon, Physics; Dr. Peggy Schimmoeller, Education

This research project was a continuation of the Randolph College Science and Mathematics Institute for 3-9th grade teachers. The goal is to increase teachers' science and math content knowledge, promote inquiry-based pedagogy, and improve science and mathematics achievement, narrowing the achievement gap of 9th grade Earth Science and 3rd – 8th grade science and math students. Surveys were given to teachers and their students before, during, and after the summer institute. Classroom observations, using the Reformed Teacher Observation Protocol, were conducted in the fall following the institute. Students' perceptions of a scientist did change following use of inquiry science during the summer institute. Teachers who attended the Institute more than once were more likely to implement inquiry methods into their lessons on a regular basis. We will discuss our methods and details of these results.

### **Tetiana Poliakova '18**

"The Effects of Housing Temperature and a High-Fructose Diet on Metabolic Parameters in Mice"

Faculty Mentor: Dr. Amanda Rumore, Biology

Mouse models are frequently used to investigate the effects of specific compounds on metabolism and how those effects apply to human models of disease. There is currently conflicting evidence regarding effects of high-fructose corn syrup (HFCS) on metabolic parameters in mice. Recent studies suggest housing temperature may affect the outcome of metabolic studies using mice. Mice are not often housed at thermoneutrality, which affects their overall metabolism and how they may respond to certain dietary components. My honors project investigates the effects of a high-fructose diet on weight gain and circulating glucose level in mice housed at thermoneutrality (30°C) and at standard temperature (23°C). Leptin resistance and levels of ghrelin hormones were also measured. These results will allow creating recommendations for housing temperature for mice in future fructose diet research.

### **Faith Powell '18**

"Unchosen Transformative Experiences: The Value Behind the Label"

Faculty Mentor: Dr. Kaija Mortensen, Philosophy

Everyone goes through experiences that they did not choose to go through. Whether it be losing a loved one or getting fired from a job, life throws significant curve balls at everyone. Is there value in labeling these "unchosen experiences"? Can people grow and mature by going through this labeling process of transformative experiences? In my senior paper, I argue that there is substantial value in labeling such experiences as transformative.

### **Stephanie Quirk '18**

"Freeze before you make that Xerox copy: An Investigation of the Use of iPad Technology as an Instructional Tool"

Faculty Mentor: Elaine Duke, Education

In school, how many times were you given worksheets to complete or to fill the time? 21st-century elementary students use technology in their daily lives. Imagine instead of completing worksheets, students are afforded the opportunity to use iPads as instructional tools. Watching videos, playing educational games, and interacting with their classmates through competitive quiz games are ways teachers can integrate technology with student learning objectives. The possibilities for engaging students through the use of technology are endless. The goal of this action research study was to investigate if students demonstrated increased understanding of content material presented and engagement in the class after using iPad programs as supplementary instructional resources.

### **Taylor Samuels '18**

"Digital Model of First-Year Pre-Scheduling"

Faculty Mentor: Dr. Jia Wan, Mathematics

Every summer, the first-year students at Randolph College fill in survey forms to show their preference in courses and housing. Pre-scheduling the first-year students' classes has been a time-consuming manual task, and it takes some complex considerations even for experienced advisors. It is our goal to develop software helping staff and advisors to optimize the pre-scheduling process. The first phase of this program is to automatically assign First Year Seminar (FYS) sections to students and meet their highest overall satisfaction expectation. The second phase of the project will produce a user interface where pre-scheduling advisors can interact with the software and pick courses for first-year students. In the second phase, the program will help the advisors to check class time-conflicts, control total credit hours, spread out courses across disciplines, and verify prerequisite and placement requirements automatically.

### **Jennifer Sanborn M.A.T. '18**

"Welcome to the World of Writing: Incorporating Language Arts into Morning Meetings"

Faculty Mentor: Elaine Duke, Education

In a classroom where Morning Meetings start the day, this quantitative action research investigated the question: does incorporating Language Arts into Morning Meetings affect students' writing syntax, grammar, and written expression? Teachers gather students to a structured "Morning Meeting" to start the day in a positive learning community. Meetings include four parts: the greeting, the morning message, sharing, and a group activity. This action research investigation modified the "Morning Meeting protocol which combined Morning Message and Share with language arts. I hypothesized, if writing practice is incorporated into Morning Meetings students' writing conventions, descriptiveness, and sentence structure will improve. A paired one-tailed T test was used to examine pre- and post-test scores from a rubric.

### **Avisha Shah '18**

"Developing Virtual Reality as an Educational and Research Tool"

Faculty Mentor: Dr. Elizabeth Gross, Psychology

Recent developments have made virtual reality an accessible and affordable technology for the average consumer, especially students who would want to improve learning with accessible educational applications. The current

study examined potential benefits of using immersive learning environments in learning concepts in human anatomy and GRE vocabulary. Study results support that virtual reality improves learning outcomes in human anatomy. Participants reported to feel more in control, more aroused, and more engaged while learning in the immersive environment. Virtual reality did not improve learning abstract materials, such as vocabulary words. Together, these findings suggest that virtual reality may improve efficiency in encoding information, thus benefiting student learning outcomes.

### **Evan Sizemore '18**

"Milton's spirit: Our guidance through freedom in Paradise Lost"

Faculty Mentor: Dr. Mara Amster, English

Milton calls to his Muse, the Holy Spirit, in the first lines of Paradise Lost. He attributes his ability as a poet and the source of his legitimacy as a speaker to inspiration by the "spirit." This spirit-- how it works, where it comes from, and above all how to help humanity keep it-- is a main investigation in his poetry and prose. When he expresses how we as readers are tied to the spiritual world, he builds a ladder from the lowest earthly beings all the way up to God himself and suggests movement up and down the ladder is possible; in other words, he suggests redemption is possible, and that his readers as free beings can seek it. Why Milton chose this relationship between heaven and earth, and what exactly the spirit is for him, are the questions I hope to explore.

### **Anna Smith '18**

"Goodbye Social Media: An Analysis of Online Communication Behaviors"

Faculty Mentor: Dr. Janel Jackson-Beckham, Communication Studies

For many college-aged students, Social media have been a part of their lives since the very beginning. And while there is substantial research on uses of social media, there is little that investigates how deeply integrated college-age students' communication is with their use of social media. The purpose of this study is to examine how college students' communication behaviors change when they are completely removed from social media. This study uses a two-stage design. In the first stage, a survey of 18-24 year old Randolph College students was used to collect quantitative data about social media usage. In the second stage, a small group of Randolph College students agreed to refrain from using social media for five consecutive days. Journals kept by these participants during the social media "black out" were analyzed using a qualitative textual analysis. The results of this study may contribute to our general understanding of how "digital natives" use social media for everyday communication interactions.

### **Timothy Songer M.A.T. '18**

"Word Parts, do they Mean Anything?"

Faculty Mentor: Dr. Peggy Schimmoeller, Education

Students taking high school biology have a difficult task at hand. They are required to learn a multitude of Tier 3 (content related) vocabulary words on top of understanding biology content. With limited time available, the best way to increase comprehension of vocabulary is by teaching the benefits of morphology: the study of word parts. This action research study examined an approach where students were taught word meaning using morphology to optimize time studying biology vocabulary to improve reading comprehension, increase word recognition skills, and, ultimately, increase overall understanding of biological concepts.

### **Taylyn Soult '18**

"'Small Talk' to Instant Messaging: The Evolution of Relationship Building in a Digital World"

Faculty Mentor: Dr. Janel Jackson-Beckham, Communication Studies

Nonverbal social cues have long been identified by Communication researchers as critical to relationship building in face-to-face contexts. However, more and more people are forming and maintaining relationships entirely online. The purpose of this study was to determine 1) if common online communication practices might constitute a set of "digital social cues", 2) how those who form and maintain interpersonal relationships online use digital social cues, and 3) if the tenants of Joseph Walther's social Information Processing Theory continue to hold true in 21st century mediated environments. Data were collected via an online survey and collected basic demographic information and information about online relationship formation experiences and behaviors. The results of this study contribute to a growing, but still largely incomplete, body of research about relationship formation and interpersonal communication online.

### **Seaver Sterling '18**

"Ku Klux Konquest: The Rise of the Second Ku Klux Klan"

Faculty Mentor: Dr. John D'Entremont, History

For my senior capstone project, I have done an extensive amount of research into the Ku Klux Klan of the 1920's. The Second Ku Klux Klan was simultaneously different from and similar to the first Klan of the Reconstruction period, sharing similar racist rhetoric but an entirely different methodology. Taking its message nationwide through the burgeoning field of mass media, the second Ku Klux Klan gained millions of members by 1923. My paper explores what made the Klan appealing to so many Americans. My paper argues that the Second Klan's defense of White Protestant political dominance was a campaign against the rapidly modernizing world of the 1920's.

### **Meagan Swithers '18**

"Art Integration in the Classroom: Teach to your Arts' Content"

Faculty Mentor: Elaine Duke, Education

Thinking back to our elementary school days, how many of us enjoyed listening to lectures, filling out activity pages, and spending time memorizing material for class? What if teachers were more creative with their lessons? Wouldn't you love to write a song and make a music video about mitochondria? Does creating a dance about metamorphosis excite you? Today, teachers who integrate art into their lessons allow for more meaningful discussions, deeper connection and understanding of the material, and welcome positive student engagement into their classroom. The purpose of my quantitative research was to determine if fine arts integration yields higher student engagement.

### **Zoë Upshaw '18**

"Examining Diet-Related Carotenoid Pigmentation in Local Cedar Waxwings"

Faculty Mentor: Dr. Sarah Sojka, Environmental Studies and Science; Physics

Brightly colored carotenoid pigments observed in the plumage of many species of birds result from the consumption and metabolism of organisms that contain carotenoids. *Bombicilla cedrorum*, commonly known as the cedar waxwing, is well known for having unusual waxy wing tips. One less conspicuous but equally noteworthy feature is its tail tip color, which is ordinarily yellow but may range between yellow and a reddish orange depending on diet; the phenomenon is especially noticeable in juveniles. In this study, I examined the coloration of several locally recovered cedar waxwings in the Randolph

College Natural History & Archeology Collection, and evaluated specimen data and a survey of scholarly research to complete a modest assessment of species feeding and migratory behavior at the time of collection.

### **Zoë Upshaw '18**

"Botanical Illustrators at Oak Spring Garden Library"

Mentor: Emily Smith, Coordinator Natural History and Archaeology Collections

Botanical illustrations are used to depict distinguishing features of plants and plant matter in nature or in natural history collections. The significant contribution to a variety of subjects by botanical illustrators is evident in the use of their work in contemporary studies. Sydney Parkinson is renowned for having completed hundreds of paintings, sketches, and prints of the flora, fauna, and culture of the islands he encountered aboard the 1768 Endeavour expedition to the Pacific. This study aims to explore the working methods of Parkinson and other 18th century botanical illustrators, examining the degree to which standards of method and style of illustration were modified by individual artists, as observed in illustrations at the Oak Spring Garden Library. This study will also incorporate material from the January exhibition and workshop, "Painting 'Perfect Nature': Sydney Parkinson, Scientific Illustration, and the Age of Discovery."

### **Drucilla Williams '18**

"Antioxidant Analysis of Herbal Teas Using Thin-Layer Chromatography"

Faculty Mentor: Dr. Ann Fabirkiewicz, Chemistry

Reactive oxygen species (ROS) and reactive nitrogen species (RNS) are the major free radicals in the body. Free radicals have been known to cause oxidative damage to core molecules in cells such as DNA, protein and lipid molecules, and can compromise the body's functioning. They have been linked to many diseases such as cancer and others involving blood flow and supply such as ischemia and atherogenesis. Enzymes such as superoxide dismutase and Vitamins C and E act as antioxidants in the body. However, beverages like tea have also been shown to have high antioxidant capacity due to the presence of polyphenols and have been linked to the prevention of many diseases such as cancer. Typically, the antioxidant capacity of tea samples is measured spectroscopically. However, using thin layer chromatography (TLC) coupled with DPPH (2,2-diphenyl-1-picrylhydrazyl) stain, the antioxidant capacity of various tea samples can be measured. The various phenols can also be detected using p-anisaldehyde stain. This research focuses on this new convention.

### **Molly Williams M.A.T. '18**

"Stand Back, I'm Going to Try Science: Integrating Project-Based Learning into the Elementary Science Classroom"

Faculty Mentor: Elaine Duke, Education

Science education is becoming increasingly important for students growing up in a world full of STEM-based career opportunities. This research investigates the question: Does incorporating project-based learning into elementary science lessons increase students' overall understanding of the topic at hand? Project-based learning works as an active teaching method which allows students to learn content in a specific subject area by working for an extended period of time on a complex question, problem, or idea. This investigation implemented project-based learning instruction in place of a direct teaching model. I hypothesized that if project-based learning was implemented in place of direct instruction during elementary science lessons, students' overall understanding of the topic being covered would increase. A paired one-tailed T test was used

to examine the data collected from this quantitative action research in a fifth-grade classroom in a rural, central Virginia school.

### **Reilly Wren '19**

"Evaluating the Effectiveness of Omeprazole at Reducing Cribbing Behavior in Horses"

Faculty Mentor: Dr. Amanda Rumore, Biology

My presentation will explain the research that is the basis of my honors project. Cribbing in horses is defined as the grasping of a fixed object followed by engagement of the lower neck muscles to retract the larynx. Cribbing has been linked to gastric ulcers and inflammation. Omeprazole is a chemical used to reduce gastric ulcers in horses by inhibiting the H<sup>+</sup>/K<sup>+</sup> ATPase pumps that actively transports H<sup>+</sup> into the lumen of the stomach. According to a pilot study by researchers in New Zealand, orally administered omeprazole is effective at increasing gastric pH. Therefore, omeprazole may be a faster, more effective way to reduce stomach pH and potentially reduce cribbing behavior in horses.

### **Jane Zhou '18**

"A Comparative Analysis of Science Education in National School Systems in China and America: When East Meets West in the Science Classroom"

Faculty Mentor: Elaine Duke, Education

Internationally, there are many differences and similarities in the way students are educated. This study sought to identify the unique ways Chinese and American schools approach teaching science. To begin, the establishing of the foundational differences in the logistics of the educational systems is key by looking into the functioning within China and America. To do so is essential to the overall comprehension of this topic. This comparative research focused on how the curriculum, core standards, and teaching methods of science education are effective in China and America each has plenty to learn from one another. The analysis included understanding the importance of the integration of science in schools across the continents and the success of their students when furthering their academic pursuits. The concept of innovative science teaching was reviewed to see if science education in either country challenges their students to better learners.

### **Zachary Zylstra '18**

"An Island in an Ocean: Worship at Lynchburg's only Synagogue"

Faculty Mentor: Dr. Gordon Steffey, Religion and Philosophy

During the 2017-2018 academic year, I was a participant observer at Agudath Sholom synagogue in Lynchburg, Virginia. Through attendance at Shabbat and other festival services, Torah study, and personal interviews, I learned of the challenges to the practice of Judaism for a small, exceptionally diverse group of Jews in a small southern city. In responding to those challenges, Agudath Shalom operationalizes the "denominational" and broad cultural differences of its members to drive greater Jewish learning and to render difference as an occasion for group cohesion rather than dissension or recrimination.

### **Tung Nguyen '19 and Thinh Pham '20**

"Simulating Directional Perception of Sound"

Faculty Mentor: Dr. Peter Sheldon, Physics

We recreate the real listening experience in a digital simulation to make the listener feel like they are present at the original event by making the sound directional, and making it vary as the listener turns in different directions. We digitize sound from different directions and synchronize the sound that represents the listener's orientation with a gyroscope that is attached to headphones.



Dan Raessler, who became a member of the music faculty at Randolph-Macon Woman's College in 1974, teaches music history, piano, and music theory. His presentations at professional meetings and publications reveal his affinity for mostly unknown composers and arcane topics: Jane Mary Guest, La Princesse de Lamballe, Charles Furtado, Daniel Gottlob Türk, Ferruccio Busoni, T-Model Ford, Lafayette Leake, Theodore Presser, humor and religion in hillbilly music, cowboy songs as art songs, keyboard touch and articulation, pedaling in piano music and, of more personal interest, disability studies. He enjoys spending time with his family as well as baking, woodworking, and vintage sports cars.

The Symposium of Artists and Scholars is coordinated by the Center for Student Research

## ***Special Thanks***

Dr. Daniel Raessler, Charles A. Dana Professor of Music

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Printworks

### **It is respectful to:**

- stay for all the presentations in a block
- enter seminar rooms *between presentations*, not during
- silence cell phones



