



**UT 2023
FALL
UNDERGRAD
RESEARCH
FORUM**



**THE UNIVERSITY OF TAMPA, 2023 FALL UNDERGRAD
RESEARCH FORUM, 3-5 P.M. WEDNESDAY, DECEMBER 6TH
IN FLETCHER LOUNGE, 1ST FLOOR OF PLANT HALL**

Aiden Howie

Mentor: Dr. Heather Schock

1 Gamifying Learning to Support Phonics Development

This study examines methods a preservice teacher utilized with an English language learner to build foundational phonics skills using activities that included games. Sailer and Homner (2019) maintain that the gamification of learning has significant cognitive, motivational, and behavioral effects. Multiple strategies were implemented throughout the course of a 14-week semester, including a Participation Point Sheet, Letter Recognition Board Game, Uppercase and Lowercase Matching, and Letter Search. Findings suggest that gamification of learning leads to increased engagement with phonics activities, which supports a development of automaticity of letter recognition. This study is imperative to educators because it indicates the value of utilizing activities with games to promote engagement and facilitate phonics development.

Aleksandra Taylor & Shanda Vereen

Mentor: Willie Leung

2 Exploring the Prevalence of Sexual Intercourse Among People with Mobility Disability: A Comprehensive Analysis

The health and behaviors patterns of people with mobility disability is often overlooked, especially in the area of sexual health. Despite conflicting opinions in the progress of recognizing needs of individuals with mobility disability, their sexual prevalence remains a relatively under-researched area. This study aimed to examine the prevalence of sexual intercourse within this population. Utilizing the 2022 Behavioral Risk Factor Surveillance System, 14947 adults with 5.65% of participants with mobility disability were included in analysis. Participants self-reported whether they had sexual intercourse within the past 12 months. Descriptive analyses were used to identify prevalence. Chi-squared analysis and logistic regressions were used to compared sexual intercourse between participants with and without mobility disability. Among participants with mobility disability, 70.86% (95% CI [65.00, 76.71]) reported having sexual intercourse. However, there were higher percentage of people without mobility disability having sexual intercourse ($\chi^2 = 8.37, p = .01$). People with mobility disability were less likely to have sexual intercourse compared to their counterpart (OR = 0.65, 95% CI [0.48, 0.87]). This study contributed valuable insight and progress into sexual activity among individuals with mobility disability. Addressing these issues can contribute to a more comprehensive understanding of sexual health among people with mobility disability, ultimately promoting their overall well-being and quality of life.

Alexandra Dashner, Maya McDaniel, Luke Bishop and Max Candelario

Mentor: Dr. Heather Mason

3 The Presence of *Chilomycterus schoepfi* in Varying Seagrass Species of Tampa Bay

A study was conducted to determine if there was a relationship between species of seagrass and the presence of striped burrfish (*Chilomycterus schoepfi*) in Tampa Bay. As persistence in seagrass environments continues to be a problem in the Tampa Bay area, it is important to understand the relationship between fish populations and seagrass beds when discussing seagrass conservation. Striped burrfish help to keep the gastropod population down through predation and can be a very vital organism for the overall well-being of seagrass environments. The initial hypothesis was that striped burrfish prefer to live in dense *Thalassia* seagrass beds. The seagrass environments that were tested included *Thalassia*, *Syringodium*, a combination of the two, and a sandbar that was used as the control. This experiment was conducted by collecting transects of each seagrass environment using a pull net. The number of striped burrfish present in each of these transects was recorded. After analyzing the data, it was determined that seagrass type does not influence the number of striped burrfish present, but there must be more experimental replication to fully support that conclusion.

Alexandra Larson, Mia Lawrence, Olivia Lex, and Nicholas Lising

Mentor: Heather Mason

4 Hermit Crab (*Pagurus longicarpus*) Preference for Seagrass Type

Hermit crabs (*Pagurus longicarpus*) in Tampa Bay are exposed to several different seagrass species. This study investigated whether hermit crabs exhibit a preference for seagrass type and if their preference is size-dependent. To analyze this, hermit crabs were collected from Tampa Bay and placed in tanks for observation. Three tanks were set up and equipped with equal amounts of two seagrass types and a middle habitat without seagrass (Tall, Long, Short). The experimental design focused solely on seagrass structure with each type providing a different structural component. Twenty six hermit crabs were placed in each tank and observed after 48 hours. The crabs were measured, counted, and rotated after each trial, exposing each cohort to each selection of seagrass. Our results indicated a significant difference in preference between seagrass types in each tank with no differences in crab size per seagrass type. The data shows that the greatest number of hermit crabs selected the tall seagrass. Seagrass provides an environment for a plethora of marine organisms and its absence displaces many organisms, depleting resources and nutrients necessary for their survival. The aim of this study was to demonstrate the importance and benefits of seagrass beds in supporting marine organisms.

Alexandra Skoglund

Mentor: Dr. Heather Schock

5 Improving Letter-Sound Recognition by Incorporating Visuals in Activities

This study examines how a preservice teacher uses data-driven interventions with her below level learner to improve phonological awareness and letter-sound recognition using visuals. Gangwer (2009) researches the impact of visual teaching, explaining that many learners are visual learners, which is the strength behind many students learning, especially in literacy development. Multiple strategies were implemented during a 14-week semester, including Letter Sound Picture Wheels, Picture-To-Letter Matching Games, Trace-A-Letter, and Letter Flash Cards. The findings suggested that the student better understood the letter sounds through instruction that included visuals corresponding to each letter. This study is imperative to educators because it shares the importance of meeting the needs of each learner by using research-based strategies to create individualized activities incorporating visuals to support visual learners.

Alyee Hodges, Blake Berkowitz and Zoey Cooper

Mentor: Heather Mason

6 Analysis of seagrass and species diversity within two recreational parks within north and south Pinellas County

Seagrass is a critical foundation species within the Gulf of Mexico and Tampa Bay. *Thalassia testudinum* (Turtle Grass), *Syringodium filiforme* (Manatee Grass), and *Halodule wrightii* (Shoal Grass) function as essential nursery habitat, a source of food, and protection for other species in the ecosystem. An analysis was conducted between two sites located in the north and south regions of Pinellas County along the Gulf shoreline. The total number of organisms, seagrass species, seagrass percent coverage and coordinates were measured at each site and then tested for similarity. These tests were performed using statistical software, which later determined that there was some significance between the sites, but not within all parameters. There is no significance between diversity by location and percent cover by location, however, there is significance between number of organisms by location. Around 25% of overall diversity can be explained by seagrass percent coverage. All in all, the relationship between each site's overall diversity and seagrass coverage proved some significance, but not enough to further research the two chosen parameters within these sites.

Amelia Farrell

Mentor: Dr. Heather Schock

7 Enhancing Letter-Sound Recognition through Multi-Sensory Techniques in Literacy Intervention

This study investigated how a multi-sensory, data-driven literacy intervention impacted a below-level learner's ability to recognize letters and sounds. Previous research has shown that incorporating a multi-sensory approach in phonics intervention enhances students' literacy skills (Kerins et al., 2010). During a 14-week semester, four strategies were introduced to enhance students' letter recognition and decoding skills: shaving cream letters, play-dough decoding, letter hopscotch, and movement CVC tiles. The results suggest that incorporating multi-sensory activities into literacy intervention programs can help improve students' letter-sound recognition. This study is an important contribution to the field of education, as it highlights the effectiveness of integrating research-based multi-sensory techniques into literacy intervention, ultimately enhancing students' reading abilities.

Amy Hauser

Mentor: Dr. Heather Schock

8 Enhancing Letter and Sound Recognition Through the Integration of Active Learning

This study analyzes active learning techniques a preservice teacher incorporated to impact her Kindergarten student's ability to identify letters and sounds. Research conducted by Rule, Dockstader, and Stewart (2006) found that incorporating hands-on and kinesthetic activities, which fosters engagement throughout the learning process, supports instruction and positively influences students' development of phonological awareness. During the 10-week semester, four strategies were incorporated, including Play-Doh Letters, Alphabet Sound Game board, Magnetic Letters, and Kinetic Sand. The findings displayed a notable improvement in the student's proficiency in letter and sound recognition when engaging activities and games were implemented. This study is significant since it recognizes the importance of incorporating students in the learning experience in order to promote an understanding of phonics.

Anngelyk M. La Luz Maldonado, Campbell Bonner, Jaqueline Wilson, Taylor Cady and Justin Jacobs

Mentor: Dr. Heather Mason

9 Determining the relationship between seagrass abundance and *L. variegatus* presence in Fort De Soto Park, FL.

Seagrasses are ecosystem engineers that create a habitat for different marine species. They provide protection against predators, function as a food source for marine life, and act as an organic carbon sink for the environment. In order to further understand ways to preserve these complex ecosystems, it is vital to determine the effects marine invertebrates have on seagrass abundance. A common species that relies heavily on seagrass beds in Florida are the green sea urchin *Lytechinus variegatus*. Researchers are concerned with the overgrazing of sea urchins on seagrass, as it decreases seagrass density and may reduce production. To conduct research to answer this question we compared two locations: North and East Beach at Fort De Soto, FL to determine whether the presence of sea urchins impacts the abundance of seagrass found. The results demonstrated that there is not a significant difference in seagrass abundance based on the presence of sea urchin. We believe that a larger sample size with additional locations sampled is needed to better understand the effect sea urchins have on seagrasses in Florida.

Anthony Mercure, Sofia Mucci and Madison Klinefelter

Mentor: Dr. Binod Rimal

10 Breast Cancer Detection via Convolutional Neural Network

Breast cancer remains a significant global health concern, leading to high mortality rates amongst women. Timely detection is pivotal in curbing early deaths, and medical imaging, particularly ultrasound scans, plays a crucial role. This research aims to use the convolutional neural network (CNN) architecture to enhance the identification of breast cancer in ultrasound images, specifically categorizing them into normal, benign, or malignant classes. Our goal is to achieve optimal accuracy in classifying ultrasound images, thereby contributing to the early detection of breast cancer. Employing the Breast Ultrasound Images Dataset, comprising 780 images from 600 women aged 25 to 75, we will implement the CNN model with five convolutional layers and three fully connected layers similar to AlexNet architecture. The research methodology involves training the CNN model on the labeled dataset, consisting of normal, benign, and malignant images. The convolutional layers will extract hierarchical features, and the fully connected layers will aid in classification. Our findings will showcase the effectiveness of the CNN architecture in accurately classifying ultrasound images, demonstrating its potential as a valuable tool in early breast cancer detection. This research contributes to the ongoing efforts in utilizing deep learning for medical image analysis, emphasizing the importance of such methodologies in improving healthcare outcomes.

Bianca Flores

Mentor: Dr. Denis Rey

11 Socio-Political Dynamics: Exploring Organized Crime's Role in Shaping Latin American Migration Patterns

This research investigates the influence of organized crime, particularly in the forms of sex, human, and drug trafficking, on immigration patterns in Latin America, with a focus on Mexico, El Salvador, and Colombia. Utilizing a comparative approach, the study examines the correlation between the presence of organized crime, and the displacement of individuals seeking safety and improved opportunities, particularly in the United States. By analyzing crime rates, immigration patterns, and historical trends, the research aims to establish a connection between organized crime activities and the push factors that drive people to emigrate. The research hypotheses show that the presence and activities of organized crime, contribute to higher rates of immigration by creating necessary displacement and insecurity. The study incorporates crime statistics, economic indicators, and qualitative analyses to measure both organized crime and push factors. Control variables, including political stability, and poverty, inequality, and level of democracy, are integrated to ensure the validity of the findings. Through this research, I anticipate gaining insights into the push factors that are driving individuals to seek safety and better opportunities, which ultimately contributes to policy discussions surrounding immigration and organized crime in Latin America.

Brendan McKnight, Hannah Holland and Maria Kershner-Leon

Mentor: Dr. Heather Mason

12 Marine Biodiversity Analysis of Gun Branch Bayou

Gun Branch bayou, a popular fishing spot known for its nursery for juvenile snook, tarpon, manatees and sharks, suggested a promising predatory habitat. The unique habitat boasts one of the only three saltwater canals on the Old Tampa Bay Peninsula. These backwater canals are lined with mangroves and are likely a cove for predatory fish during the winter months and a common feeding site during times of high water movement. Due to the interesting nature of this habitat, an investigation on the biodiversity of the habitat on the inside and outside of the canal was launched. Baited remote underwater video (BRUV) camera setups were used to attract fish and capture their interactions on camera. Lures were used in conjunction with bait bags, along with water samples from each BRUV drop to collect information at each replicate drop. Footage and water quality tests were run to collect data. This data yielded results that showed similarities between both sites with little to no variation between water chemistry. The results concluded that Gun Branch Bayou is likely used episodically by predators, and further research is needed to assess the differences in species diversity between the bay side and mangrove side of the bayou.

Brianna Carter

Mentor: Dr. Heather Schock

13 Enhancing Letter Name Recognition in English Language Learners: A Multi-Sensory Approach for Improved Resilience and Accuracy

This study examines the employment of multi-sensory strategies when instructing English language learners to improve the resilience and accuracy of letter name recognition. Delecki (2007) maintains that deficits in comprehension have a direct correlation to letter recognition skills, and providing multi-sensory experiences can improve students' comprehension ability. Four strategies implemented over a 14-week semester include Shaving Cream Writing, Play-Dough Puzzle, Trace and Compare Letters, and Match As You Sing. Findings suggest that after implementing multi-sensory activities, English Language Learners can improve resilience, accuracy, and confidence when recognizing letter names. This study is essential for educators because it indicates the significance of including multi-sensory strategies when working with English language learners.

Brianna DiCristina

Mentor: Heather Schock

14 Enhancing Letter Sound Recognition: The Influence of Instructional Games on Literacy Skills

This study investigates strategies that a preservice teacher applied using data-informed interventions to enhance letter sound recognition in a kindergarten student. The approach primarily involved using instructional games as a teaching method. Rulyansah (2023) maintains that educational games, including digital activities, inspire students and enhance language acquisition through the development of phonics. Four strategies were implemented throughout 10 weeks during the Fall 2023 semester, including Online Games, Letter/Sound Hopscotch, Letter/Sound Relay Race, and Letter Spin for Sounds. The results indicated that students developed a more profound grasp of essential concepts and remained actively engaged during instruction and interventions by involving themselves in kinesthetic learning, receiving positive reinforcement, and incorporating technology. This study holds significance for educators as it highlights the importance of employing various personalized assessment methods and research-based strategies to effectively utilize instructional games in supporting learners.

Carson Aubey, Julia Augustsson, Keegan Klima and Katherine Powell

Mentor: Heather Mason

15 BRUV Analysis of Predators in Tampa Bay Across Three Habitat Structures

Tampa Bay is home to a diverse array of habitat structures and predator species. Through the use of baited remote underwater video (BRUV) devices, predator species density was measured at three different habitat structures in Tampa Bay. The data showed a significant difference between the three habitat types. The most predator density could be seen in the seagrass beds, the least could be seen in the mangroves, and the habitat in the middle was around the Gandy Bridge. The data suggests a potential connection between habitat structure and predator density in the bay. The information this research provides can be used in the fishery management of predator species, and the health of the ecosystems that the organisms inhabit.

Cat Davis

Mentor: Dr. Heather Schock

16 Enhancing Engagement: A Data-Driven Exploration of Letter-Sound Recognition Interventions with Manipulatives

This study examines data-driven interventions promoting struggreaders' engagement through letter-sound recognition activities. Research on the intervention of physical manipulatives explains how objects support language development and provide concrete materials that target specific learning goal(s) (Byrne, Jensen, et al., 2023). Over a fourteen-week semester, four strategies implemented include an alphabet letter tree, letter singing/matching, letter-sound mobile, and Play-Doh letters. Findings suggested that incorporating manipulatives and visual presentations supports the ability to identify letters and corresponding sounds. Encouraging readers to participate in activities with tangible materials positively impacts their engagement. This research is imperative to educators because it reinforces the importance of including opportunities for active learning to enhance phonological awareness and student engagement.

Christina Falletta

Mentor: Dr. Heather Schock

17 Leveling Up Learning: The Impact of Gamification on Students' Sound Recognition Skills

The focus of this research examines techniques employed by a preservice teacher using data-driven interventions with her struggling reader to enhance sound recognition using gamified activities. Research on educational gamification explains that motivation is an internal, personal perception. Thus, the principles and elements from games can improve student outcomes (Chapman & Rich, 2018), especially when applied to phonological awareness. Four strategies were implemented throughout the course of a 14-week semester, including Oreo Scavenger Hunt, Rhyming Fun, Digraph Bingo, and Spin, Name, & Spell. Findings suggested that students developed a deeper understanding of the necessary concepts and could stay engaged throughout instruction when the activities were gamified. Educators should find this study crucial as it underscores the significance of employing individualized assessments and research-based strategies to keep learners engaged, thus resulting in the growth in foundational literacy.

Darri Stuber and Julia Piper

Mentor: Binod Rimal

18 Identifying Friend or Foe in Tampa Snake Species using Convolutional Neural Networks

The fear of snakes is notably one of the most widespread phobias among individuals. While rooted in primal instincts, this fear is further amplified by contemporary cultural beliefs and superstitions. Florida is home to approximately fifty distinct snake species, with six of them presenting venomous threats to humans. In response to this concern, we have developed a Convolutional Neural Network (CNN) model tailored to distinguish between seven prevalent snake species in Tampa, Florida. These seven species comprise five relatively non-threatening snakes—North American Racer, Ringneck snake, Eastern Rat Snake, Banded Water Snake, and Eastern Hognose Snake—and two hazardous pit-vipers, namely the Cottonmouth and Diamondback Rattlesnake. The significance of our model lies in its ability to differentiate visually similar snakes that significantly vary in their potential danger to humans. For example, discerning between the Diamondback Rattlesnake and Eastern Hognose Snake, or the Cottonmouth and Banded Water Snake, can pose a challenge to the untrained eye. Our CNN model holds particular promise as the initial component of a snake identification application, assisting individuals in recognizing encountered snakes and providing them with vital safety information.

Delaney May

Mentor: Dr. Heather Schock

19 Kinesthetic Strategies Boost Letter Recognition and Motivation

This study examines strategies a preservice teacher applied to phonics intervention of a struggling reader to build fundamental literacy skills, like letter names/sounds, with the use of kinesthetic activities. Lindt and Miller (2017) maintain that incorporating movement increases student motivation, engagement, and learning of concepts and skills. Four strategies were implemented throughout the 14-week semester, including Alphabet Eggs, Follow-the-Path Game, Alphabet Ball, and Body Alphabet Song. Findings suggested that students had an increase in recognition when participating in kinesthetic repetitive activities which positively affected students' motivation. This study is imperative to educators because it indicates the importance of incorporating kinesthetic activities to promote motivation and learning in early literacy skills.

Dyamond Dempsey

Mentor: Heather Schock

20 Gamification of Learning and How it Improves Letter-Sound Recognition

This study explores how a preservice teacher integrated gamification into sessions with a struggling first-grade reader to enhance their understanding of the relationship between spoken sounds and written letters, enabling them to learn how to decode words. Research on this topic indicates that effectively employing games and manipulatives holds the potential to not only motivate but also genuinely excite and captivate the interest of young readers (Canny, 1978). Four strategies implemented throughout a 14-week semester included outdoor chalk drawing, board games, CVC word jump, and letter-sound bingo. The findings indicated that the student developed a stronger understanding of phonics while remaining engaged during sessions that incorporated gamified learning activities. This study holds significance for educators because it demonstrates the importance of utilizing research-based activities, that include games, to motivate students and promote letter sound recognition.

Elizabeth Russo

Mentor: Dr. Heather Schock

21 Boosting Phonics Proficiency in English Language Learners

This study examines the methods a preservice teacher utilized to strengthen an English language learner's phonics skills through repetition techniques and basic strategies. Hargin et al. (1988) maintain that repetition improves understanding and retention, with repetition serving as a foundation for most learning strategies. Four strategies were implemented over the course of a 14-week semester, including a Letter Word Hunt, Vowel Stars, Letter Clip Wheel, and a Letter Sound Board Game. Findings suggest that students developed a deeper understanding of the necessary concepts when a variety of activities, all focusing on letter and sound recognition, as well as other phonics skills, were implemented. This study is imperative for educators because it indicates the importance of incorporating activities that involve repetition of phonics skills, thereby helping students progress in their letter and sound recognition.

Ella Gartner

Mentor: Dr. Shock

22 Kinesthetic Strategies for Improved Reading Comprehension in English-language learners

This study examines how a preservice teacher utilized kinesthetic activities to strengthen an English-language learner's reading comprehension. Research on improving comprehension maintains that kinesthetic activities are fun, engaging, and promote critical thinking, resulting in significant development of learners' cognition (Gonzalez-Carriedo et al, 2020). Four strategies were implemented through the course of a 14-week semester, including Comprehension Hopscotch, Sequence the Story Hunt, Spin the Retell Wheel, and Let's Find the Story Elements. Findings suggest incorporating kinesthetic opportunities promote comprehension while increasing engagement. This study is meaningful to educators because it indicates the importance of including movement in reading and writing activities to best support students reading comprehension.

Elliot Daugherty

Mentor: Susannah Lemarquand

23 Brain-Compatible Talk Therapy

A look into how brain-compatible dance education provides a basis for how to administer talk therapy to people.

Emily Burtnieks

Mentor: Dr. Heather Schock

24 Exploring Effective Phonics Intervention: A Hands-On Approach for Struggling Readers

This study examines methods a preservice teacher applied during data-driven interventions with a struggling reader to develop phonics skills while promoting engagement using hands-on activities. Afflerbach and Harrison (2017) maintain that motivation and engagement are foundational elements that boost students' cognitive growth, improve reading skills, and lead to superior retention of content across subject areas. Four strategies were implemented throughout the course of a 14-week semester, including Play-Doh Letters, Reversal Board Game, Onset and Rime Roll-a-Word, and Blends and Digraphs Land. Findings suggested that hands-on activities increase engagement and improve performance in phonics. This study is meaningful to educators because it indicates the importance of engagement and hands-on learning in developing students' phonics skills.

Emily Mitchell and Kellen Hoke

Mentor: Heather Mason

25 Assessing the biological vulnerability of north and south Sweetings Pond, Bahamas to evaluate potential development locations of Seahorse National Park

Sweetings Pond is an anchialine pond in Eleuthera, Bahamas that has recently been declared Seahorse National Park for its unique population of seahorses. The Bahamas National Trust is currently assessing possible sites for the development of park recreational areas such as roads, parking lots, and facilities. To evaluate possible locations in relation to ecosystem health metrics, we evaluated available data on biotic and abiotic factors between the north and south areas of the pond. This includes the morphological diversity and population dynamic differences of *Hippocampus erectus* between locations, the effect of human interaction on seahorse stress, and abiotic factors such as the flow of nutrients to the pond from runoff. When using data from Sweetings Pond, we were able to conclude the northern pond location is more vulnerable to the negative effects of human disturbance on ecosystem health because of high levels of biodiversity.

Hannah Greenblott

Mentor: Jeffrey Grim

26 Chytridiomycosis on Frog Metabolism and Jumping Performance

Chytrid fungus (*Batrachochytrium dendrobatidis* - Bd) disrupts the structural integrity and long-term electrolyte transport of amphibian skin, thus hindering osmotic regulation and metabolic homeostasis. Inhibition of sodium channels reduces neural excitability, resulting in cardiac arrest and ultimately death. Chytridiomycosis, the disease caused by Bd, is linked to the decline of more than 500 amphibian species, posing a crucial threat to biodiversity. To our knowledge, no one has examined how or if metabolic rates and/or jumping performance changes over the course of a Bd infection. We infected adult Cuban tree frogs (*Osteopilus septentrionalis*) with Bd, and as the disease progressed over the course of six weeks, metabolic rates significantly and rapidly decreased. Additionally, our data provided possible evidence of changes to host stress response. To explore this further, we quantified metrics of jumping performance during infection and observed a significant decrease in the maximum jumping height of Bd-infected frogs relative to the control on Day 12. The early decrease in metabolic rate reveals impacts on host physiology may occur prior to onset of cardiac effects. The resulting disrupted energy budget may leave infected amphibians susceptible as both diminished predators and increasingly susceptible prey.

Gab Downey

Mentor: Dr. Heather Schock

27 Tune into Learning: Gamification and Music Strategies for Effective Phonics Instruction

This study examines the data-driven strategies, specifically incorporating games and music, a preservice teacher utilized with her English language learner to promote letter-sound recognition. Yacob et al argue that “game-based learning helps to improve students’ learning by enhancing contextual understanding and thinking processes” (2022, p. 180). Multiple strategies were implemented throughout the course of a 14-week semester, including Clip-a-letter, Identify & Cover, Musical Letter Exploration, and Name that Letter. Findings indicate that implementing gamification and music fosters stronger connections among students, leading to deeper understanding. This study is imperative to educators because it indicates the importance of tailoring teaching methods to meet the unique learning styles of each student.

Gianna Fiore and Christian Farrell

Mentor: Willie Leung

28 Let's Dance! Preliminary Meta-Analysis on Energy Expenditure during Dance Exergames

Dancing exergames, integrating physical activity and video games, offer an engaging exercise experience. While prior studies explored their potential in promoting physical activity, a comprehensive analysis of energy expenditure during gameplay is lacking. This meta-analysis aims to synthesize existing literature on energy expenditure in dance exergames. Four databases were searched, yielding 1734 articles, with 15 meeting the inclusion criteria. The studies included Dance Dance Revolution, Just Dance, and Dance Central, with sample sizes ranging from seven to 253. Under the fixed effect model, there was indication that playing dance exergames significantly increased energy expenditure (standard difference in mean = 0.30, $p < .01$; Hedge's $g = 0.30$, $p < .01$, $k = 15$). Moderator analysis revealed no age or multiple-game playing has effects on the relationship between energy expenditure and dance exergames. This supports previous findings, suggesting that individuals of all ages should be encouraged to engage in dance exergames for physical activity promotion and increased energy expenditure, given the inherent enjoyment of playing dance exergames.

Gracie Prather, Emma Robbins, Madison Gerych, Nicole Francis and Taylor Stevenson

Mentor: Heather Mason

29 Comparative Analysis of Species Abundance/Diversity and Water Quality between Gandy Bridge and Skyway Bridge in Tampa Bay, FL

The present research study experimentally compares the differences in species abundance/diversity and water quality between two Tampa Bay sites: Gandy bridge and Skyway bridge. Five different Baited Remote Underwater Video (BRUV) units were deployed at each bridge site with cameras and bait bags to attract various species. Along with the BRUVs, water samples were taken at each different deployment site to test turbidity, salinity, pH, phosphate, and nitrite. Once data were collected, data were statistically analyzed to identify patterns between the two sites. The two sites showed no statistical differences between species diversity and abundance. However, from species identification, there was little overlap of the species observed at the two sites. From the water quality data, the phosphate levels of the two sites were significantly different, but the other water quality characteristics showed no differences. Further replication of data gathering from bridges in the Tampa Bay area should be considered in the future to observe other differences in species diversity/abundance and water quality.

Emma Robbins, Latyr McQuarters and Cory Ryder

Mentor: Heather Mason

30 Assessing food web dynamics in Tampa Bay using primary production and baited remote underwater video

Marine food web dynamics have long been a source of interest due to economic and ecosystem value. Most assessment tools in marine foodwebs are invasive; a more sustainable method to sample species abundance are baited remote underwater video systems (BRUVS) which observe marine life noninvasively. Phytoplankton, the primary producers, are commonly considered the foundation of the food web and are measured by abstracting chlorophyll a from the water column. The relationship between chlorophyll a concentration, fish abundance and diversity were investigated across a range of shallow water habitats in Tampa Bay. In the first phase of this study chlorophyll a was isolated from water samples from benthic habitats including sand, seagrass and mangrove. BRUVS were used to identify and quantify fish species observed in the sampling locations. There were no significant differences found between chlorophyll a and habitat but the experiment is on going and further replicates will be collected throughout the year. Chlorophyll a was also not significantly correlated with fish abundance or diversity, but future investigation in the larger data set will break fish into functional groups by feeding type to determine if phytoplankton presence relates to planktivores in the water column

Jessica Hubbs

Mentor: Dr. Mary Martinasek

31 Attitudes and perceptions of vaping at the University of Tampa

Vaping, defined as the use of electronic cigarettes, has become the dominant form of tobacco use in young adults. Previous research suggests that up to 40% of college students are reporting current or previous use of electronic cigarettes, and 60% of college students have reported being offered an electronic cigarette. This qualitative study is intended to explore attitudes and perceptions of vaping in college students. Three field observations were conducted to inform methodology. A total of eighteen University of Tampa students were selected as participants (N=18). Qualitative data was collected through ten interviews with vapers and non-vapers and a focus group composed of eight vapers. Two participants from the focus group were selected to conduct photovoice. Data was coded and analyzed for emerging themes. Several emerging themes were identified. The high accessibility of vapes was commonly associated with students' perceptions of vaping influences and barriers to cessation. Additionally, vaping was perceived as a social norm amongst most students, increasing their likelihood to vape. To plan for and improve current vaping cessation interventions in the college student population, there is an urgent need to address the accessibility of vapes and social norms in students.

Jillian Arzoumanian

Mentor: Jeff Grim

32 The Benefits of Collaborative Group Exams Transcend Specific Modes of Implementation

Collaborative group testing is a pedagogical tool that involves students working together in collective groups to complete the same (or similar) assessment after first attempting the assessment individually. The adoption of collaborative group exams (CGEs) appears to yield universal learning and performance benefits, regardless of institution, department, and course.

Much effort has been devoted to exploring barriers to faculty buy-in for pedagogical changes like CGEs. Encouraging increased autonomy can promote buy-in; however, it is uncertain whether altering implementation will result in reduced student benefits.

This study aimed to determine whether varying modes of CGE implementation led to different student outcomes in biology courses. Thirteen instructors personalized the implementation of CGEs across fifteen courses. The two commonalities were that CGEs were administered in a two-stage design, and grading parameters were consistent for all courses. Surveys were conducted after each CGE to evaluate students' perceptions and experiences. Additionally, students' exam scores on individual and CGEs were used to estimate and compare student performance gains across the academic semester.

Our data indicate that regardless of how faculty administered CGEs in their course(s), students benefited through improved exam performance, positive group dynamics and experiences, enhanced perceived learning, and decreased exam anxiety.

J. Conor Deneault

Mentor: Dr. Logsdon

33 Isolation, Characterization, and Analysis of an Antibiotic Producing Bacteria in Store-Bought Kombucha Tea

The antibiotic capabilities of the fermented tea product (kombucha) has been well characterized in the literature, but many of the mechanisms of the antimicrobial activities are not well elucidated. Many fungi and bacteria are known to synthesize their own antimicrobial compounds during the stationary growth phase to inhibit the growth of their competitors. To determine if any bacteria or fungi present in a store-bought sample of kombucha has signs of antibiotic production, individual microbial substituents were isolated from the kombucha. An isolated fungal and a Gram positive and rod-shaped bacterial isolate were tested against *Bacillus subtilis*, *Staphylococcus epidermidis*, and *Escherichia coli*, to determine if the substituents inhibit the growth of any of the three bacteria. The bacterial isolate inhibited the growth of *B. subtilis*, indicating that the bacterial isolate we tested can inhibit bacteria of the same morphology, Gram positive and rod-shaped. After determining the antibacterial ability of the bacterial isolate, we then characterized the isolate through differential plating and biochemical tests.

Jonah Jimmerson

Mentor: Rebecca Waggett

34 Analyzing distributions and biodiversity of zooplankton in Tampa Bay

As primary consumers in the trophic web of Tampa Bay's estuarine ecosystem, zooplankton comprise a key step in the food chain between photosynthesizing phytoplankton and larger carnivores. Therefore, monitoring the health and diversity of zooplankton taxa can serve as an analogous indicator for the health of the ecosystem as a whole. For this study, a catalogue of collected and preserved zooplankton samples has been built between 2022-2023. We have since filtered, diluted, and manually counted these samples for all major zooplankton taxa observed. With a comprehensive data set of all zooplankton groups present standardized by the total volume of sampling, thorough statistical analyses were then performed. By running a range of different statistical tests – both parametric and non-parametric – we have found significant patterns across time and space for many different taxonomic groups. This includes an abnormally large number of crab zoea observed in the summer months of 2023, which became a specialized area of interest over the course of the analysis. Such a high presence of these early life stages would suggest that mass reproductive events of these crab genera had occurred at the location of the samples, which inspired a geospatial analysis of their distribution over time.

Kathryn Lawler

Mentor: Mary Martinasek

35 A Cross-Sectional Pilot Study of Physician Assistant Students and Alumni' Attitudes, Knowledge, and Perceptions surrounding Medical and Recreational Marijuana .

A Cross-Sectional Pilot Study of Physician Assistant Students and Alumni' Attitudes, Knowledge, and Perceptions surrounding Medical and Recreational Marijuana Purpose: Statewide policy changes in recreational and medical marijuana laws affecting clinical medicine prompt educational programs to ensure students with the changing landscape. This study aimed to explore current and past physician assistant students' attitudes, knowledge, and perceptions towards recreational and medical marijuana. Methods: A cross-sectional study was conducted with Physician Assistant (PA) students and alumni (n=62) from a mid-sized university in Southeast U.S. The study consisted of an online survey of 40 questions pertaining to both medical and recreational marijuana administered through Qualtrics™. Both descriptive and analytical statistics were conducted using SPSS version 27. Results: When asked about counseling patients on medical marijuana only 50.8% felt comfortable. However, they were less comfortable with discussing drug interactions. (39%). The participants felt that edibles were the safest route of administration (46.8%). The majority felt it should be incorporated into the curricula of health sciences courses (79.7%). There was a statistically significant association between their knowledge and comfort in answering questions about the efficacy ($p < 0.001$). There was a statistically significant association between knowledge and drug interactions ($p = 0.005$). Conclusion: The results of this study are concurrent with previous research, concluding that medical marijuana education should be further incorporated into healthcare curricula. This research is the first to assess PA student knowledge, attitudes, and perceptions surrounding medical and recreational marijuana. Future studies should

include other healthcare students who may counsel and educate patients on medical and recreational marijuana in their future careers.

Kayla Allison

Mentor: Dr. Mary Martinasek

36 Effects of Vaping on College Students who attend The University of Tampa and University of South Florida

Vaping is a largely acceptable habit that many college students partake in. Recent studies have revealed the many negative consequences of vaping. Vaping is often viewed as a healthy alternative to smoking cigarettes. However, vaping is a habit that is worse or just as bad as smoking. According to a Healthy Minds Survey completed by students in 36 American universities, 14% of students in the sample reported psychotic experiences over the past year, and around 14-15% of students reported vaping over the past month (Dobbs, Clawson, Gowin, & Cheney, 2020). This study uncovers many of the negative side effects, behavioral effects, and social factors of vaping. It also examines the attitudes and beliefs of vapers through several qualitative study methods. Ten interviews were conducted with college students who vape. All interviewees attend The University of Tampa or The University of South Florida. An hour-long focus group was conducted to gain detailed opinions on vaping among an additional group of college students from both universities. Another important method utilized was photovoice to expose the promotion of vaping near college campuses as well as the existing social and contextual factors that enable vaping behaviors among college students. Common themes that were found during data collection showed possible reasons why college students vape and why they feel it is difficult to stop vaping.

Kayla Dailey

Mentor: Emily Durkin

37 A Visual Survey of how Water Quality Affects the Presence on Metacercaria Cysts in Freshwater Fish Species

This research conducted, examined the effect that differing water quality had on the prevalence of metacercaria cysts attached to freshwater fish in the Hillsborough River. Freshwater fish were trapped and examined for ectoparasites throughout their body at two different locations of the Hillsborough River with differing water qualities. The dissolved oxygen content, pH levels, and salinity concentration of waters at both locations were measured and the metacercaria cyst prevalence in the trapped fish of each location was calculated and compared. Based on previous experiments performed, it was determined that the lower the dissolved oxygen content, pH levels, and salinity concentration the more polluted the water is or worse the water quality is overall. Metacercaria is an encysted form of the cercaria life stage of parasites in the Class Trematode. The fish examined at the location in the Hillsborough River with more polluted water or worse water quality, were found to have a higher metacercaria cyst prevalence.

Kiley Rufo

Mentor: Dr. Heather Schock

38 Boosting Vocabulary Skills through Gamification

This study examines the strategies a preservice teacher applied to increase an English language learner's vocabulary skills. The study focuses on the benefits of incorporating games into instruction. Games are effective when trying to build a student's vocabulary and motivation to learn (Huyen, 2003). Four strategies were implemented throughout the course of a 14-week semester including, matching synonyms and antonyms, rolling a prefix and suffix, matching the word to the definition, and differentiating between homophones. Findings suggest that the student was more willing to take risks within their learning when games were involved. This study is beneficial to teachers because it indicates the importance of using gamification in instruction to keep students engaged and motivated for challenges.

Kim Vo, Gracie Bent and Rachel Frias

Mentor: Willie Leung

39 Differences in Treatment Types Among Male and Female Children with Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is a disorder characterized by difficulty with social and communication skills. However, ASD presents differently among males and females, which could lead to different treatments. Currently, there is limited research examining the associations between treatment types prescribed and sex among children with ASD. Therefore, the purpose of this secondary data analysis is to determine the associations between sex and treatment types among children with ASD. This secondary data analysis used data from the 2022 National Survey of Children's Health with a total sample size of 1719 children with ASD (23.7% female). Multiple and separate unadjusted and adjusted logistic regression was performed to examine the association between sex and treatment types (medication, behavioral treatment, and both medication and behavioral treatment). The results found males were more likely to receive behavioral treatment than females (OR=1.37, $p=.006$). The adjusted logistic regression found males were more likely to receive medication than females (aOR= 1.34, $p=.048$). Acknowledging differences between treatment types for children with ASD of different sex can help healthcare professionals be more cognizant of the treatments prescribed. Healthcare professionals should be educated on the differences between male and female children with ASD so that they can provide appropriate treatment.

Lauren Thull and Josie Nelson

Mentor: Leslie Jones

40 Lost and Hungry in One of Europe's Largest Cities? Let Us Recommend the Perfect Restaurant for You!

Finding a restaurant that aligns with one's taste preferences, particularly in unfamiliar cities, poses a challenging task for travelers. This study addresses a persistent query that confronts travelers exploring new destinations: where should we dine? Leveraging data from TripAdvisor and incorporating information from restaurants in 31 of Europe's largest cities, our system is designed to simplify the restaurant selection process for tourists. Our recommender system is intricately developed, taking into account pivotal factors such as cuisine type, location, price range, and rating. This approach ensures the provision of personalized restaurant recommendations tailored to the specific preferences of individual travelers. Conducting a thorough comparative analysis of collaborative filtering, content-based filtering, and hybrid models, we finalized our recommender system through a comprehensive evaluation. This ensures its capability to suggest the perfect restaurant based on the nuanced preferences of travelers. In essence, this research not only alleviates a significant pain point for tourists but also contributes a valuable tool to enhance their overall travel experience in European cities.

Luisa Januario

Mentor: Dr. Benjamin Marsh

41 Exploring the Interaction Between the Cross-Race Effect and Political Ideology

This research proposal explores the intersection of the cross-race effect (CRE), political ideology, and emotional memory enhancement. The CRE, wherein individuals recognize faces of their own race more accurately, remains incompletely understood. This study investigates whether shared political ideology or subtle annoyance from a political position moderates the CRE. Involving 64 college-aged White participants categorized by political leanings faces from diverse racial backgrounds were paired with politically right-wing, left-wing, or non-political messages. Preliminary analysis reveals a significant interplay between face race, political message leaning, and participants' ideology. The CRE is most pronounced when comparing White and Asian faces with right-wing messages. Interestingly, the CRE diminishes when comparing White and Black faces with right-wing messages, contrasting with left-wing messages. Politically left-leaning participants exhibit more accurate memory of Black faces than their right-leaning counterparts, likely tied to perceived political similarity to Black Americans. This research advances our understanding of the CRE and its connections to political ideology and emotional memory processes. Findings may inform discussions on racial bias, political polarization, and memory dynamics, offering insights into how these factors intersect and influence cognitive processes.

Lydia Francis

Mentor: Michelle Osovitz

42 Sea Urchins as Indicators of Environmental Stress

Lytechinus variegatus inhabits the sea grass and unvegetated benthos in and surrounding Tampa Bay. Seasonal fluctuations in this region include temperature, salinity, nutrients, and sea grass density. These fluctuations can introduce stress into the urchins' habitat, potentially affecting the health and reproductive potential of the population (Mantranga et al., 2005, Brothers 2016). Urchins serve an important ecological role in the benthos, contributing significantly to the food web via nutrient recycling and promotion of growth through grazing in protected sea grass beds (Eklof et al., 2008). The study presented here aims to test if *L. variegatus* can be used as an indicator species for the health of Tampa Bay benthic habitats and the reproductive success of the residing urchin populations during seasonal fluctuations. To do this, we took advantage of the well-studied immune coelomocyte population of the urchins to assess responses to seasonal stressors at two distinct ecological sites in Tampa Bay. Urchins were sampled weekly over 3 months (June-July-August) and diversity within the coelomocyte populations was determined by morphology (vibratile, red amebocytes, white amebocytes and phagocytes) and compared to echinochrome-A levels, gonadal/somatic index and egesta contents. We applied principal component analysis and regression modeling to assess the relationship between environmental fluctuation and innate immune response to predict reproductive success and health of the urchin populations living in sea grass and unvegetated habitats.

Madison McElhone

Mentor: Heather Schock

43 Gamifying Literacy: Unveiling the Educational Impact of Game-Based Approaches on Learners' Literacy Skills

This study examines the different methods and assessments that a preservice teacher incorporates into literacy practices to increase literacy skills in a below-level reader. Research on a game-based literacy approach explains that students have a natural desire to play and interact with materials that can increase their learning. Games offer the potential to shape students into critical thinkers who are willing to take risks, show compassion for their teammates, and see the value of teamwork and tolerance (Quy, P. H. P., 2019). A variety of remediation strategies were provided throughout the ten meeting times during the Fall 2023 semester. These strategies included Roll the die games, Mystery sound bags, Magnetic Slip and Slide, and Matching games. These findings help support the research that students develop a more profound understanding of concepts and remain engaged for longer durations of time while participating in game-based learning activities. This study informs educators on the importance of using games to help increase student literacy skills, as well as using ongoing forms of assessment to help drive new instruction and adopt new applications.

Mary Corts

Mentor: Nathan Connealy

44 What Makes Risky Facilities Criminogenic?

An Examination of Environmental Disorder and Crime Trends at Alcohol Facilities

McKenzie Clough

Mentor: Willie Leung

45 The Prevalence of Muscle Strengthening Activity Among Individuals with Mobility Disability

There are limited studies examining muscle strengthening activity engagement among individuals with mobility disability. The purpose of this study was to examine the prevalence of muscle strengthening activity engagement among individuals with mobility disabilities and compared their engagement to individuals without mobility disabilities. Muscle strengthening activity engagement data from the 2019 Behavioral Risk Factor Surveillance System were examined. Descriptive analysis was performed to identify the percentage of individuals with mobility disability engaging in muscle strengthening activities. Unadjusted and adjusted linear regressions and logistic regressions were performed to compared muscle strengthening activity engagement between mobility disability status. A total of 212718 participants were included in the analysis with 8.54% of individuals with mobility disability. The average frequency of muscle strengthening activities per week was 1.93 (95% [1.91, 1.96]) among individuals with mobility disabilities. Individuals with mobility disability engaged in less muscle strengthening activities than their counterparts ($\beta = -0.15$, $p, .01$) and less likely to meet the muscle strengthening activity guidelines (OR = 0.74, 95% CI [0.70, 0.79]). There is a need for targeted muscle strengthening activity interventions for individuals with mobility disability.

Meagan Gonzalez, Allison Berkley, Sarah Monarca and Olivia Salerno

Mentor: Dr. Heather Mason

46 Color Variation Between *Hippocampus erectus*. Living in Quarries vs. Caves in Sweetings Pond Located in Eleuthera Island, Bahamas.

In a landlocked lagoon in Eleuthera, Bahamas, an analysis of *Hippocampus erectus* was done by comparing different locations, coloration, and sex, in order to determine the relative levels of reproductive success. The specific tests analyzed the relationship between color morphs and location, as well as between males and females. These tests were done under the assumption that the ability to camouflage correlates to higher reproductive rates and longer life history cycles. Using ImageJ, the coloration of each individual seahorse was identified, using males and females. The sex was determined

using visual indicators, such as brood pouches on males. The results presented no difference between males in the quarry versus caves whereas females were lighter in quarries than they were in caves. This research is important to conduct in a pristine area, such as Sweetings Pond, because the lined seahorse is vulnerable worldwide and serves as an important indicator species for the overall health of ecosystem.

Sydney Shields

Mentor: Dr. Heather Schock

47 Enhancing Literacy Skills: The Impact of Student Choice and Game-Based Strategies in Reading Remediation

This study examines the assessment process and remediation strategies implemented by a preservice teacher with a below-level learner in order to develop intermediate-level reading skills with a focus on fluency and phonemic awareness. The research supports the idea that student choice and the incorporation of games are beneficial in developing literacy skills in our learners, which also allows flexibility and differentiation within the six pillars of reading (Snyder, 2023). A variety of remediation strategies were applied throughout the 10 meetings times in the Fall 2023 semester. These strategies include Echo Reading, Syllable Puzzles, a Syllable Game, and an Alphabats digital game. The findings help to emphasize the fact that student choice and the incorporation of games in literacy intervention had a profound, positive impact on the reading skills of students. The study and research inform educators of the importance of ongoing assessment and individualized, research-based strategies during the reading remediation process. It is apparent that this careful consideration from educators can make a profound impact on the learning of reading in our students.

Melanie Varon Golden, Liliana Benavente, Ethan Rost and William Forrest

Mentor: Dr. Emily Durkin

48 Prevalence of Parasites in Male and Female Feces of *Anolis sagrei*

The objective of this project was to compare the parasite prevalence and diversity between male and female *Anolis sagrei* (Brown anoles). We collected a total of 21 fecal samples from male (n=10) and female (n=11) brown anoles in the Tampa bay region. The fecal matter was analyzed using the fecal-float technique. The individual anoles were labeled as infected or uninfected; and their parasites were identified to major taxonomic clades. We found that females had a higher parasite prevalence in comparison to males (females= 45%; male=40%). In the observed feces, both male and female had protozoa and nematode parasites.

Mia Robert

Mentor: Dr. Heather Schock

49 Using Interactive and Hands-On Activities to Facilitate Academic Development

This study examines various techniques a preservice teacher utilized with her struggling reader to build foundational literacy to improve phonics and comprehension by using hands-on activities to promote learning. Research from Daniels (2006), supports the idea that using manipulatives hands-on activities are extremely effective to help students grasp concepts and skills that are necessary for literacy success. Four research strategies were implemented throughout the course of a 14-week semester, including scratch-off elkonin boxes with images, phonics headbands game, drawing images to retell important elements of a story, and I-spy with magnetic alphabet letters. The findings suggested that students build a deeper understanding of reading concepts and general instruction in when they are engaged in fun and interactive activities. This study is imperative to educators because it indicates the importance of using research-based activities that are hands-on and interactive to support students who struggle academically with literacy.

Molly King

Mentor: Dr. Heather Schock

50 Enhancing Learning: Impact of Hands-On Activities on Engagement and Comprehension

This study examines the impact of incorporating hands-on activities to enhance learner engagement and comprehension of textual content. The inquiry arises from a curiosity about the potential benefits of interactive and tactile learning approaches in fostering a deeper understanding of text. Research supporting the integration of hands-on activities underscores the significance of multi-sensory experiences in educational settings (Garea and Guo, 2009). Four strategies were implemented over a 14-week semester — roll and retell, chunking text, matching games, and board games—reveal a significant positive influence on student engagement and comprehension. Findings suggested that these interactive experiences not only captured interest but also deepened the understanding of key concepts, ensuring sustained focus throughout the learning process. This study is vital for educators, emphasizing the importance of employing diverse assessment methods and research-based strategies for driving multi-sensory instruction. By specifically examining how hands-on activities enhance engagement and comprehension, the findings offer essential guidance for educators aiming to create effective, tailored learning experiences.

Olivia Briggs

Mentor: Dr. Heather Schock

51 Igniting Comprehension Through Student-Driven Interests

This study examines methods of a preservice teacher utilizing data-driven interventions with her struggling reader to build proficiency in literacy, specifically on decoding diphthongs and diagraphs using activities aligning with their interests. Powel, McIntyre, and Rightmeyer's (2006) findings, emphasize the significance of creating open and dynamic learning environments to mitigate off-task behavior and enhance student engagement. Four strategies were implemented throughout a 14-week semester, including Word Spinners, Silent "e" Word Strips, Diagraph Bingo, and Spell Dunk. Findings suggested that student engagement and enjoyment increased throughout instruction and interventions when participating in activities aligning with their interests. This study is imperative to educators because it spotlights the importance of a personalized approach, and student-aligned activities to promote literacy proficiency and a greater enjoyment of reading.

Olivia Mayfield

Mentor: Dr. Heather Schock

52 The Role of Confidence in Reading

This study examines data from a preservice teacher who provided positive reinforcement during a variety of reading activities to improve the confidence of an English language learner. Research indicates a correlation between confidence and reading skills, emphasizing the priority for educators to foster confidence among their students (McGeown, 2015). Four strategies were implemented over a 14-week semester, including Sight Word - Word Search, Word Ladder Rhyming, Segmenting Syllables Match, and Digraph Sort. The findings suggest that consistent use of positive reinforcement throughout the weeks offered an opportunity for confidence-building. This study is crucial for educators as it explores how students' confidence is influenced by positive reinforcement leading to the development of effective reading skills.

Rachel Hart

Mentor: Dr. Heather Schock

53 Drawing for Comprehension

This study examines strategies a preservice teacher applied to an English Language Learner to promote comprehension skills. Leopold and Leutner (2012) maintain that including opportunities to draw or sketch in reading and writing activities enhances students' reading comprehension. Multiple strategies were implemented throughout the course of a 14-week semester, including Chunk and Sketch, Read, Draw, and Retell, Draw 1-2-3, and Mapmaking. Findings suggest that integrating drawing and sketching in reading and writing activities promotes students comprehension. This study is imperative to educators because it indicates the importance of including opportunities for drawing or sketching to enhance students' comprehension skills.

Rachel Ryweck

Mentor: Jacob LaFond

54 Identifying a Cryptic, Invasive Species of Toad Under the Genus *Rhinella*

My project aims to determine which cryptic species of cane toad of the genus *Rhinella* has become established as an invasive species in Florida. A cryptic species complex occurs when there is more than one species that appear identical but are actually two genetically-distinct species. I set out to 1) Determine which *Rhinella* species has become established in Florida and 2) Determine the likely geographical origin of founding population(s). I extracted DNA from the livers of over 144 toads, developed and conducted polymerase chain (PCR) reaction protocols to amplify ~400 bp of the cytochrome b (cytb) locus, and completed DNA sequencing of PCR products. Subsequently, I compared recovered sequences with previously published *Rhinella* cytb sequences to determine the geographical origin and species of recovered cytb sequences. By determining what invasive *Rhinella* species is present in Florida, we hope to gain insight into their invasion history, provide information to inform best practices to avoid future invasion events, and determine possible impacts this species is having on Florida ecosystems.

Raymond Liciaga and Emma Ladnier

Mentor: Heather Mason

55 Abundance of gastropods in varying depth environments of Cypress Point Park, Tampa Bay, FL

Gastropods are known to inhabit an assortment of non-uniform environments across a depth gradient. The purpose of this research project is to observe differences in gastropod species complex of abundance and diversity at different depths in a mixed mangrove sandy bay environment. To address this question we sampled at 4 different habitats; a tide pool and a rocky intertidal zone that requires only picking up of organisms on the substrate, and a shallow bay and open water environment with species in the substrate that needs digging and sifting. There was a noticeable and significant difference in not only the total abundance of species at each location but also the diversity. This data helps us better understand the behavior, distributions, and adaptations of gastropod species in Tampa Bay waters.

Reagan McGovern

Mentor: Dr. Heather Schock

56 The Impact of Using Games to Decode Words

This study examines how the incorporation of games and activities can improve a struggling reader's ability to decode words. Sarmanho (2016) maintains that students are more interested in educational games when learning, rather than conventional methods of instruction. Four strategies were implemented throughout the course of a 14-week semester, including Digraph Bingo, Bossy "E" Spin, Wild Word Dominoes, and Digraph Roll-A-Word. Findings suggested that the student improved on their ability to decode words and stay engaged through instruction when participating in games or activities. This study is important to educators because it shows the importance of using individualized assessments and research-based strategies to student-center activities to support learners best.

Reilly Sargolini

Mentor: Dr. Heather Schock

57 Developing Phonics and Fluency Skills for Readers with Visual Impairments

This study explored how utilizing data-driven interventions with a struggling reader with visual impairments promoted the development of phonics and fluency skills. Farmer and Morse (2007) emphasize the importance of knowing and applying best practices when teaching students with low vision and indicate that the reading rates of students with low vision tend to be much slower than those of their classmates. Four strategies implemented throughout the course of a 14-week semester included keeping the reader's eyes on words, varying print size, allowing for flexible seating, and encouraging the use of available tools. Findings suggest that students can improve their decoding abilities and increase automaticity while reading when activities and instruction accommodate their visual impairment. This study is crucial for educators as they will have students in their classrooms with visual impairments ranging from moderate to severe, and these students need to be supported so that they are successful in school and life in general.

Sabrina Abbott

Mentor: Dr. Heather Schock

58 Enhancing Vocabulary and Comprehension Through Kinesthetic Activities and Application

This study explores how including kinesthetic activities impacted an English Language Learner's understanding of vocabulary and comprehension of text. Research maintains that chunking unknown words into syllables promotes students' understanding of how to correctly decode words (Bhattacharya, 2006; Bhattacharya & Ehri, 2004; Knight-McKenna, 2008). Strategies implemented include discussing how affixes change the meaning of words, the distinction of homophones, creating words with visually appealing word chunks, and using the strategies taught in their reading and writing. Findings demonstrate that incorporating kinesthetic opportunities, advanced vocabulary skills, and ultimately comprehension when students were engaging with visually appealing words. Additionally, when new strategies were applied to sentences they created, comprehension improved. This study is beneficial to all educators because it shows that including kinesthetic activities improves English Language Learners' vocabulary and comprehension.

Sarah Harrington, Lillian Pavlik and Amry Gilkey

Mentor: Heather Mason

59 Effects of Both Abiotic and Biotic Factors on Species Diversity in Tampa Bay Seagrass Beds.

Seagrass beds serve as a multifunctional resource for a wide variety of marine species. To determine what factors have an influence on the species diversity in Tampa Bay seagrass beds, data monitoring temperature, blade count, and species diversity during dry seasons from 2005-2022 (excluding 2006, 2009, 2010, 2016, and 2021) was used to construct a statistical analysis to depict if these factors have demonstrated a significant influence on the diversity of bed inhabitants. Data collection took place at two locations in Tampa Bay, Fort DeSoto and seagrass beds off the Gandy Bridge. The percent coverage, a push net survey, and water chemistry tests were done at both locations. A series of statistical tests were performed on the data collected over the years to determine the influence the factors have on species diversity. With the rapid progression of climate change, it is important to determine how these factors may have an effect on species diversity in seagrass beds to increase understanding on potential species resistance to these conditions, and continue to monitor and predict how productivity, resource use, and ecosystem stability may be changing or be maintained.

Sebastian Tardieu and Shane Fabbri

Mentor: Binod Rimal

60 Forecasting COVID-19 Deaths using Machine Learning Models

In the landscape of healthcare, data science is imperative in guiding pivotal public health decisions, optimizing resource allocation, and establishing tangible avenues. This project aims to contribute to these objectives by embarking on a comprehensive exploration of a dataset through data cleaning, preprocessing, and compelling visualizations. Following this initial step, the project delves into the realm of machine learning to predict COVID-19 deaths, employing a spectrum of models ranging from classic linear regression to advanced deep learning models such as LSTM (Long Short-Term Memory) and GRU (Gated Recurrent Unit). To assess the efficacy of the models, a comprehensive set of metrics, including RMSE (Root Mean Squared Error), MAPE (Mean Absolute Percentage Error), and R^2 (Variance), is employed. This approach facilitates a thorough comparison of model quality, allowing for informed insights into the predictive capabilities of each model. The outcomes of this research contribute to the broader understanding of the applicability of data science in healthcare, especially in the context of forecasting and managing the dynamics of a complex public health crisis like COVID-19.

Mekenzie Dahlin and Tara O'Connor

Mentor: Dr. Mary Martinasek

61 A Systematic Review of the Respiratory Effects of Red Tide

Background: Algal blooms of *Karenia Brevis* produce brevetoxins that lead to the natural phenomenon of red tide. Beyond monitoring red tide concentration and forecasting future outbreaks, uncertainty exists in the field when examining these toxins in relation to physiological aspects of humans. Contaminated air quality resulting from outbreaks of *Karenia Brevis* leads to inhalation of aerosolized brevetoxins, directly impacting the human respiratory system.

Methods: This systematic review focused on the respiratory effects of red tide was conducted using a comparative method between two researchers. Relevant abstracts were collected, and full texted articles were reviewed with the use of PubMed, Science Direct, Cinahl Complete, and BioMed Central.

Results: Thirty manuscripts were included in the final analysis and categorized by study design, location, number and age of participants, and respiratory effects. The research indicates respiratory health issues related to red tide, specifically when noting upper respiratory symptoms. Both symptomatic issues and pulmonary function tests were of concern when individuals were subjected to brevetoxin exposure.

Conclusion: Red tide is of concern, particularly, with individuals with underlying respiratory compromise. Reviewing this comprehensive review of the literature will be valuable for health care providers when advising pulmonary patients and for individuals who suffer from respiratory diseases.

Tara O'Connor, Bianca Scottino, Megan Hessel and Megan Montalvo

Mentor: Mary Martinasek

62 A comprehensive review of vaping interventions using the social-ecological model

Vaping continues to be a public health threat in the United States. This novel behavior is most common among youth and young adults. Vaping can lead to impaired respiratory function and cognitive issues in youth and young adults. The addictive nature of vape devices is increasing as the products produce very high levels of nicotine. Schools and communities are struggling with how to approach this epidemic. This research project is focused on a comprehensive literature review of interventions that have been proposed and/or implemented throughout the US. Additionally, the researchers have categorized the interventions based on the social-ecological model which encompasses the individual to policy.

