

# The Honors School

## Fall Research Conference 2010

Wilson Auditorium  
Wednesday, December 15th,  
1:00 p.m. – 6:00 p.m.

It is with great pleasure that the Honors School  
presents its Annual Research Conference

*Student presenters include research in the fields of:*

Accounting    Biochemistry    Biology    Economics  
Education    English    Finance    Math    Psychology    Real Estate

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*1:00 p.m. Welcoming Remarks – Dr. William Mitchell*  
*Dean of The Honors School*

*PRESENTERS*  
(in alphabetical order)

Kaitlyn Bernaski (BUBF)  
Katherine Borsuk (EN/ED)  
Samantha Brown (PY)  
Derek Bruno (BY/EDS)  
Brittini Fink (MA/EDS)  
Ashley Holstein (MA/EDS)  
Megan Jeffers (PY)

Anthony Jennosa (BUBA)  
Gregory Kammerer (BUBF)  
Jamie Kinard (BY/EDS)  
Julia Papetti (BUBR)  
Jared Rosenblum (CEBY)  
Robert Starink (BUBA)  
Ashley Zielinski (BUBA)

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**PRESENTERS**

**Kaitlyn Bernaski**  
**The Effects of Frivolous Malpractice Lawsuits on Physicians and Society in the U.S.**

**Chief Advisor: Prof. Paul Savoth**  
**Second Reader: Dr. Michaeline Skiba**

This project demonstrates that frivolous lawsuits against physicians in the United States creates a significant societal problem. Extensive research and case studies illustrate major issues of concern, including current measures to combat frivolous suits and punish their lawyers. The project describes additional measures to prevent frivolous lawsuits. While some restrictions and legislation are already in place, more work needs to be done to further eliminate frivolous lawsuits and aid America's medical practices, thereby protecting physicians and patients in America.

**Katherine Borsuk**  
**Teaching Shakespeare On Stage and Off: The Benefits of Using the Performance Approach Supplemented with Literary Techniques**

**Chief Advisor: Prof. Nicole Ricciardi**  
**Second Reader: Dr. Lisa Vetere**

This thesis presents the benefits of teaching Shakespeare particularly in the high school English classroom through an approach that combines performance with literary techniques. This blended approach provides students with the benefits of both the theatrical and literary worlds, opening up an emotional understanding and an intellectual appreciation for Shakespeare's works through the performance approach, while still maintaining the literary knowledge that students need to succeed on standardized tests and in future academic career. A four week unit plan is included to illustrate the execution of the blended approach. This plan can be used in all classrooms to teach any Shakespearean play and can be modified for virtually any full length literary work, providing a tool for any teacher wishing to utilize the performance approach while still maintaining a traditional literary background for students.

**Samantha Brown**  
**Effects of Gender on Multitasking Performance and Behavior**

**Chief Advisor: Dr. Lisa Dinella**  
**Second Reader: Dr. David Payne**

This thesis examines sex differences in multitasking performance, behaviors, and attitudes. It was hypothesized that females would perform better on a series of multitasking activities, engage in multitasking behaviors more often, and have more positive attitudes toward multitasking. Research participants completed a multitasking activity series and a survey measuring behaviors and attitudes. Previous research on this topic, a rationale for the proposed hypotheses, and a discussion and interpretation of the experimental results are presented.

**Derek Bruno**  
**Technology as the Solution a Low Educational Performance in Math and Science in The United States: The iPad**

**Chief Advisor: Dr. Dennis Rhoads**  
**Second Reader: Dr. Kathryn Lionetti**

Standardized testing scores in science demonstrate the sub-par performance of American students. These results can be improved through of the incorporation of appropriate technology into the classroom. Technology, the field used to fix every problem and make it better, has never been fully incorporated into the classroom. The Apple iPad provides one such a tool and will allow our nation to reach its educational goals. Gardner's theory of multiple intelligences addresses the differences among individual learners, including the sub-groups of visual spatial, bodily-kinesthetic, musical interpersonal, intrapersonal, linguistic and logical-mathematical learners (Lane). While it is difficult to address so many individual styles of learning in a short class period, the ability to do so is made more realistic with technology. The ability to run over 140,000 customized applications, carry multiple texts and documents, and ten hour battery life makes the iPad a realistic solution to address each learner. It is a new, affordable, advanced technology that allows for self-learning, guided instruction, and even research inside and outside of the classroom.

**Brittini Fink**  
**Applied Principal Component Analysis**

**Chief Advisor: Dr. Richard Bastian**  
**Second Reader: Prof. Jack Azarch**

This study focuses on the statistical technique known as Principal Component Analysis, PCA, and its real world applications. This method of analysis is used to organize and analyze large amounts of data usually collected through surveys and questionnaires filled out by participants in several different fields of study, such as education. This particular research project analyzes a longitudinal study about student achievement from the eighth grade until several years out of high school, collected through the distribution of four separate questionnaires. Running a principal component analysis on the data exposes an underlying structure that allows for further statistical analysis. The data set of the original fifty variables can be reduced to a structure including only seven principal components. An application of the principal components would be to predict students' scores on each component.

**PRESENTERS (cont.)**

**Ashley Holstein**  
**Understanding Statistical Fallacies**

**Chief Advisor: Dr. Richard Bastian**  
**Second Reader: Dr. Christine Severson**

Statistics are a crucial component of everyday life, found in areas as diverse as policy and advertisements. However, despite their ubiquity, statistics are often intentionally or inadvertently misused. This thesis identifies statistical fallacies that affect people on a daily basis. Although a common occurrence, statistical fallacies are not often recognized because the general population does not have the mathematical background necessary to identify them. Several real life examples are explained to assist people in recognizing statistical fallacies. Besides pointing out the warning signs of a statistical fallacy, this thesis also aims to help statisticians run valid tests. An example of a well run versus a poorly run statistical analysis will be presented using high school math achievement scores.

**Megan Jeffers**  
**Psycho-educational Training in Mood Regulation Using Music**  
**Among College Students**

**Chief Advisor: Dr. Janice Stapley**  
**Second Reader: Prof. Doris Hiatt**

Teaching young people to create playlists fostering, addressing, and modifying their individual moods may help them have a higher self-efficacy for emotion regulation. This project explores an area of mood modification that had not been previously explored: using self-created, musical playlists. Seven participants in this study filled out questionnaires before taking part in a five week period during which they created three playlists (happy, sad, and angry/frustrated) and answered daily email prompts asking them about their experiences listening to the playlists. Following the conclusion of the five week period, the participants filled out post-test questionnaires. The analyses reveal preliminary support for this pilot program, with participants' average emotion regulation increasing across the period ( $p=.09$ )

**Anthony Jennosa**  
**The Moving Target of the Estate Tax**

**Chief Advisor: Prof. Douglas Stives**  
**Second Reader: Prof. Paul Savoth**

A never ending goal in this country is to minimize taxes as much as possible. This way people will be able to preserve wealth for themselves and their loved ones. For 2010 there is no Federal Estate Tax. This is due to the language of the 2001 tax act that was established under the Bush administration. Not having an estate tax in 2010 has created many problems. These problems have lead to questions asking if no estate tax is really beneficial at all to the United States economy. Should Congress be seeking to make the repeal a permanent one? Should hard working people who have become successful be punished for what they have worked so hard for? There are two main factors that can be attributed to the changes in the exemption amounts and tax rates related to the Federal Estate Tax. The first factor is the different Presidential views that have changed the exemption amounts and tax rates of the Federal Estate Tax throughout the years. The second factor is the relation between different economic times and the changes in the structure of the Federal Estate tax.

**Gregory Kammerer**  
**Revising Copyright Law for the Digital Age and the Future**

**Chief Advisor: Dr. Gwendolyn Alexis**  
**Second Reader: Dr. Joseph Patten**

The desire to encourage and protect those creating original works was deemed so important that America's founding fathers included protection of intellectual property in the U.S. Constitution. In short, the objective was to encourage innovation. However, in a Digital Age, burgeoning technologies have made it apparent that at least one area — copyright law — the goal of encouraging innovation is being frustrated by intellectual property laws that are rooted in outdated notions of creativity and value added. Technological change is too rapid and too dynamic to fit into the mold of current copyright law. The author proposes that the copyright law is no longer robust enough to accommodate the demands of a Digital Age; and that, ultimately, what is needed is for the United States to enact a new copyright law to ensure that there are appropriate incentives for creativity.

**Jamie Kinard**  
**Eye Lens Proteins of Various Marine and Freshwater Fish**

**Chief Advisor: Dr. Donald Dorfman**  
**Second Reader: Dr. Ellen Doss-Pepe**

The purpose of this experiment was to determine any correlation between the *Fundulus heteroclitus* and *Fundulus* species, and between salt and freshwater fish in terms of eye lens protein patterns and concentrations. This experiment was conducted over the summer of 2010. The *Fundulus heteroclitus* and *Fundulus diaphanous* species were caught via seining methods from Deal Lake. All other species were bought from a store. The eye lens were removed, and then run on a gel electrophoresis. All fish species showed an individual and distinct banding pattern. The similarities and differences between the species are analyzed in this thesis.

**PRESENTERS (cont.)**

**Julia Papetti**  
**Starting a Montessori Preschool in New Jersey**

**Chief Advisor: Dr. Harvey R. Allen**  
**Second Reader: Prof. John Buzza**

This thesis was broken into two parts: analyzing the Montessori Method and philosophy found in schools in Monmouth County and creating a business plan for opening a Montessori preschool. The educational philosophies and curricula analyzed are all in the area of direct competition to the chosen site of the prospective school. They include the Goddard School, Holmdel Preschool, and St. Catharine's Preschool. The business plan for the new school details start-up costs, other expenses, tuition, etc. projected five years into the future.

**Jared Rosenblum**  
**Biochemical Synthesis Of A Potential Antibacterial Agent For Gram-Positive And Gram-Negative Level II Resistant Bacteria**

**Chief Advisor: Dr. James Mack**  
**Second Reader: Dr. Dennis Rhoads**

Background: Evaluation of the effects of citral on catalase enzyme activity would help to clarify the combination of functional groups from the essential oil components (Rosenblum et al, NJAS, 2010), methyl salicylate and citral, to create a compound with molecular features of both the highly-reactive and stable compounds: potentially effective against both gram-negative and gram-positive resistant bacteria. Methods: Geraniol and citral are tested as potential substrates for catalase using a phase transfer catalyst, aliquot 336, in an indicator assay, based on the absorbance (500 nm) of hydrogen peroxide against true time zero points without hydrogen peroxide degradation. Chemical synthesis via a directed aldol condensation of methyl-5-acetylsalicylate with 6-methyl-5-hepten-2-one using lithium diisopropylamide (LDA), followed by dehydration, was performed. Results: No significant change was observed in catalase activity in the presence of citral, indicating that an antibacterial effective on gram-positive and gram-negative bacteria would possess functional groups with varying stability, thus warranting synthesis. Synthesis and analysis demonstrated a failed phenol protection reaction. The aldol condensation was run directly on the starting compound using two equivalents of LDA. This yielded a mixture of products. Dehydration is expected to give the desired new compound with potential antibacterial activity. Conclusion: The molecular features of citral and methyl salicylate, when combined, appear to gain added stability and reactivity due to resonance stabilization. The synthesis of a new compound combining structural features of citral and methyl salicylate may confirm a new approach for finding potential antibacterial agents with greater efficacy and stability than the starting materials.

**Robert Starink**  
**Ethics in Accounting**

**Chief Advisor: Prof. Douglas Stives**  
**Second Reader: Prof. Paul Savoth**

The need for ethics has become essential for the field of accounting. The business world has been shook after corporate scandals such as Enron and WorldCom took place. Accounting is a profession that relies on accurate data and the monitoring of that data through auditing firms both large and small. Without proper regulations and an emphasis on ethical behavior by accountants the business world will continue to struggle. This new aspect of accounting has lead to much discussion on who should bear the burden to teach ethics to new CPA and accountants. Universities and companies are the two places where ethics can be taught to new employees, it is an ongoing argument who should be responsible for this essential task.

**Ashley Zielinski**  
**A Comparison of the Video Interview Process with Traditional Employee Selection Methods**

**Chief Advisor: Dr. Alan Fazarri**  
**Second Reader: Prof Maureen Dorment**

Recruiters continue to face the pressure of quickly finding the right individual with the needed competencies that will fit appropriately within an organization. Employees are considered key sources of competitive advantage. This makes the search and screening practice more critical and competitive in the overall hiring process. A survey was conducted to identify the types of recruitment practices being utilized within organizations in two counties in New Jersey. It was asked if they would consider broadening these processes to include the use of video, web cams, or other modern technology based methods while screening potential employees. Results indicate that half of the companies surveyed would consider the use of technology when screening candidates. Respondents were concerned with the cost of implementing technology into their recruiting process. However, research is showing that organizations can inexpensively integrate these new methods in a variety of ways. Ultimately, it is proposed that technology can be a more effective and cost efficient way to screen candidates during the interviewing process.

*Save the Date:*

*Honors School Spring Research Conference*

*Saturday, April 23, 2011*

**MONMOUTH UNIVERSITY**  
 WHERE LEADERS LOOK *forward*