BYU-Idaho

Research & Creative Works Conference

Winter Semester
March 29, 2012
The 10th R&CW Research & Creative Works Conference

Thursday, March 29, 2012

Sponsored by

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Student Directed Ballroom Team

Stephen Weatherholtz, Kami Ore

Dance, Dance

Presented by: Stephen Weatherholtz
Mentored by: Shawn Fisher

Starting time: 2:00 PM

Abstract: After taking a class on how to teach social dance, I began to teach on campus. After doing this for a short time I desired a greater challenge. The dancers in the dances had a try out to make it on the team. I selected from those who tried out and decided what would work best for what I wanted in a team. Using many of the teaching styles and techniques learned from the teaching technique class, I taught them different dances intended for different purposes. The pieces are titled “A Fool in Love” “Typical Male” and “Divas and Dorks.”

Collegiate Contemporary Dance Project

Camille Weatherholtz, Kelli Kitchen

Dance, Dance

Presented by: Camille Weatherholtz
Mentored by: Shawn Fisher

Starting time: 2:20 PM

Abstract: As a student director to this collegiate dance team, I was first in charge of holding auditions for a team. After I selected my dancers, I was to organize three dances to perform. I choreographed two of these dances, and had a guest choreographer for the third dance. The first piece I choreographed is titled Winter Song with music by Ingrid Michaelson and Sara Bareilles. I choreographed this piece as an artistic abstraction of the beauty of snow. The second piece I choreographed is titled Coexistence with music by Lamb. I choreographed this piece as a subtly comical piece about the coexistence of ballerinas and the janitors that clean the studio. The third piece choreographed by Kelli Kitchen is titled Zjarka with music by Barrage. This piece was inspired by the works of Paul Taylor, and is meant to be a happy and entertaining reminder of his great choreography.
Birdwatcher: An example of enhanced functionality through VST and AU plugins

Parker Crandall

Music, Music Composition

Presented by: Parker Crandall

Mentored by: Tyler McNiven

Starting time: 4:30 PM

Abstract: Virtual Studio Technology (VST) and Audio Units (AU) are digital protocols, developed by Steinberg Gmbh and Apple Inc. respectively, which integrate third party software synthesizers and audio effects with digital audio workstations (DAW). Using digital signal processing, these audio plugins replace the need for expensive hardware and equipment by simulating their effects through a computer, making them ideal for low-budget home recording studios. Additionally, the introduction of popular freeware DAWs, such as Audacity and GarageBand, has significantly contributed to the recent widespread familiarity and further development of audio plugins. To help illustrate their powerful capabilities, I have recorded an original song entitled Birdwatcher using Apple’s Logic Express 8. The tracks were edited and enhanced by applying multiple built-in AUs that substituted for necessary hardware units such as compressors, noise gates, equalizers, etc. The song was then mastered using Cakewalk’s Sonar X1 Studio and various mastering VSTs. The end result is a final mix that sounds professional and can easily be exported as an MP3 file for sharing.

Theory and Techniques of Electronic Music

Nathan Plowman

Music, Music Education Composite

Presented by: Nathan Plowman

Mentored by: Daniel Kerr

Starting time: 4:45 PM

Abstract: As a music composition student, I decided to invest some time this semester in exploring the techniques of electronic music. I plan to present a finished electronic work that demonstrates several different methods of synthesis and sound design. One possible topic of discussion would be granular synthesis, a process which involves taking a small sample of sound, breaking it into hundreds or thousands of pieces, and randomly reorganizing them to create new and interesting textures. Other techniques would include sample manipulation and synthesizer programming. All of these will be represented in the finished work, and could be demonstrated briefly to interested persons.
Sunrise Etude

Alex Isackson
Music, Piano Performance

Presented by: Alex Isackson
Mentored by: Daniel Kerr

Starting time: 5:00 PM

Abstract: The work is a new composition for solo piano I have called "Sunrise Etude". It features a new twist on the method of musical notation that gives the performer much more freedom and pleasure in learning and performing the piece. Most of the time, music is written out in every detail including the notes, their duration, the tempo, rhythm, dynamics, etc. The "Sunrise Etude" leaves much more freedom of time for the pianist. In writing this piece, I wanted to feature some of the different colors that a piano is capable of. I was also inspired by the idea of the slowly changing colors of sky at dawn or dusk (so slow that the changes are almost imperceptible). This piece sets out to create a similar illusion, slowly shifting through the wide spectrum of color possibilities. I also wanted to make the piece very enjoyable for the performer. Giving them more freedom of time, tempo, and articulation takes an enormous weight off of their shoulders and lets them enjoy the music just as much as the audience. A message to the audience would be to close your eyes and try to "see" all the different colors as the morning sky starts to wake up. Then see if you can hear when the sun finally breaks the horizon.
### Development of an Insitu-Hybridization procedure for identification of cell types producing different gene transcripts (mRNA)

**Jason Hunt, David Mann, Austen Weeks, William Rose**  
Biology, Human Biology  
**Presented by:** David Mann  
**Mentored by:** Jason Hunt, William Rose

**Abstract:** Quantitative polymerase chain reaction (qPCR) for the semi-quantitation of gene expression (ie. level of mRNA expression) and Western Blot Analyses for protein expression are extremely useful tools in molecular biology research. However they are often performed on whole tissue homogenates from different organs and tissues and do reveal the site at which the expression occurs; that is the cell type that expressed the gene and its ultimate protein product. Hence to determine the precise site of gene expression, one needs a tool which will enable the detection of the gene transcript (mRNA) at the site of expression in the intact animal. The use on in situ (i.e. in position) hybridization is such a technique. Thus far our research efforts have determined the level of expression for many genes by the mink uterus. But at present, we only have information on increased or decreased expression in response to various treatments. In this study we begin to develop in situ hybridization procedures that will eventually enable us to identify the cell types that produce such proteins as Glycogen Synthase, Glycogen Phosphorylase and others. Transverse sections (7um) of mink uteri were probed with antibodies generated to recognize and bind to Digoxigenin (DIG)-labelled Glyceroldehye 3 Phosphate dehydrogenase (GAPDH) mRNA. We chose this gene to develop in situ procedures because GAPDH is routinely used as a housekeeping gene to standardize qPCR data. The GAPDH mRNA is labeled with Digoxigenin (DIG) and subsequently antibodies against DIG-labelled GAPDH mRNA are added. The complex is detected by chemiluminescence to visualize the location of the probes in the tissue. Once perfected, this technique will enable us to identify the cell types (Glandular epithelium, muscle, stroma, etc.) that produce the various protein enzymes, hormone receptors and transport proteins in uterine tissues. (Fur Commission USA, & NIH INBRE P20RR16454).

### Tilapia Polycultures: An Economic Alternative in Aquaculture

**Benjamin Davis**  
Biology, Fisheries  
**Presented by:** Benjamin Davis  
**Mentored by:** Rob Coleman

**Abstract:** Aquaculture is the fastest growing sector of the international economy (increasing by over 10% per year). With the annual catch decreasing each year, aquaculture must increase its production to meet current and future demands on fisheries worldwide. The biggest inhibitor to the growth of aquaculture facilities is production costs. Nile tilapia has been used as a cheap, marketable aquaculture product since the Ancient Egypt (over 3,000 years ago) and is the 2nd most widely harvested freshwater fish in the world. Recently, tilapia polycultures (the simultaneous cultivation of several kinds of animals), have been studied in hopes of decreasing production costs while increasing the yield of marketable tilapia. The purpose of this research paper is to examine these polycultures and their economic viability. Being prolific reproducers, tolerant of a wide range of conditions, and possessing an algaevoic diet, tilapia are typically better suited than other freshwater fish species for use in polycultures. Due to tilapia’s heavy reproductive efforts, overcrowding in tilapia culture creates competition for food and decreases the amount of marketable tilapia. Methods used to control tilapia reproduction include growing them in cages suspended in water, sterilization, and introduction of tilapia fry to high concentrations of testosterone so as to turn them all male, but the methods are costly and do not guarantee to inhibit excessive tilapia reproduction. Researchers have studied polycultures of catfish, snakehead, and bass with tilapia as a natural means of reducing tilapia fry while introducing a potential harvestable product that would increase overall net yield. These polycultures will be discussed later including the dietary needs of these fish, the various stocking ratios with tilapia, and overall effect on pond productivity.
The Effects of Prolactin and Estradiol-17beta on uterine glycogen production and expression of the GLUT3 glucose transporter in the mink uterus.

Jason Hunt, Jack Rose, Jorge Antezana, Dallin Sumpter

Biology, Organismic Biology

Presented by: Dallin Sumpter

Mentored by: Jason Hunt, Jack Rose

Abstract: Embryonic survival, development and implantation, prior to formation of the placenta are dependent upon uterine glandular secretions called histotroph that are rich in carbohydrates including glucose and glycogen. In mink, total uterine glycogen reserves are greatest during estrous, and then decline during implantation and pregnancy. Catabolism of glycogen results in glucose-6-phosphate (G-6-P) monomers which are then dephosphorylated to glucose. For glucose to transit the epithelial cell membrane and enter the uterine lumen requires facilitated transporters such as GLUT-3. Although it is known that ovarian estradiol-17beta (E2) stimulates uterine glycogen synthesis during estrous, it is unknown what is responsible for the large mobilization of uterine glycogen reserves between estrous and the peri-implantation period. One major hormonal change that occurs during this time is a rapid increase in circulating prolactin (PRL) levels. We hypothesize that PRL may promote uterine glycogen catabolism and/or enhance transport of glucose from the uterine epithelial cells into the uterine lumen via the GLUT-3 transporter. Glycogen concentrations and GLUT-3 gene expression levels were determined for whole uterine homogenates. Uterine glycogen concentrations were increased by exogenous E2 as expected, whereas HAL-treatment (high PRL levels) had no effect on glycogen levels in control animals. There was a downward trend in glycogen content in mink treated with HAL+E2 when compared to E2 alone, suggesting that PRL might promote glycogen mobilization, but the differences were not significant. Exogenous E2 alone or in combination with HAL had no effect on GLUT3 mRNA expression. Interestingly however, treatment with HAL to increase circulating PRL levels resulted in a significant increase in GLUT3 gene expression. Our data suggest that increasing serum PRL levels during implantation and pregnancy in mink may increase expression of the uterine GLUT3 transporter which would act to increase the supply of glucose to the dormant embr
Effects of estradiol-17beta (E2) and catecholestrogens; 2-hydroxycatecholestradiol (2-OHE2) and 4-hydroxycatecholestradiol (4-OHE2) on prolactin (PRL) and PRL receptor (PRL-R) gene expression in the mink uterus

Jason Hunt, Alyssa Daugherty, Levi Daugherty, Jack Rose
Biology, Wildlife

Presented by: Alyssa Daugherty
Mentored by: Jason Hunt
Starting time: 5:15 PM

Abstract: In mink, following fertilization and development to the blastocyst stage growth ceases, resulting in a state of embryonic diapause. During late March to early April, the blastocysts are reactivated. It is well established that increasing secretion of the pituitary hormone prolactin (PRL) is essential to the termination of embryonic diapause. Moreover, it has been reported that both PRL and PRL-R are expressed by the uterus. This suggests that PRL produced by the uterus may have actions on the organ that is essential to implantation. Recently, we demonstrated that uterine produced metabolites of E2 referred to as catecholestrogens, particularly 4-hydroxycatecholestradiol (4-OHE2) and 2-hydroxycatecholestradiol (2-OHE2) had profound effects in the mink uterus. Many of the effects of the CE’s on the uterus differed from those of E2. We have therefore set out to determine the effects of 4-OHE2 and 2-OHE2 on PRL and PRL-R mRNA expression in the mink uterus. Expression of the PRL gene was suppressed by all three steroids. PRL-R mRNA expression was increased by E2 and 4-OHE2 and decreased by exogenous 2-OHE2 (P<0.05). These data show that ovarian E2 as well as uterine-produced 4-OHE2 and 2-OHE2 decrease mink uterine PRL mRNA expression. While this may seem inhibitory to implantation, it has been clearly demonstrated that hyperprolactinemia contributes to infertility in human females. Thus, while PRL may be essential to reproductive success in mink, a balance between optimal uterine stimulation by PRL and over stimulation must be achieved. The local production of CE’s by the uterus during the implantation window could serve to limit over-stimulation of the uterus as a consequence of the additive effects of pituitary and uterine-produced PRL. Interestingly, the expression of the PRL-R by the mink uterus was increased by E2 and 4-OHE2 but inhibited by 2-OHE2. We view the actions of E2 and 4-OHE2 as a mechanism for increasing the sensitivity of the uterus to PRL. Nevertheless, in a future study we propose to measure the production of 4-OHE2 and 2-OHE2 by the mink uterus during the reproductive cycle. (Funded by Fur Commission USA and NIH INBRE P20RR016454).

Electron Microscopy on Protein 3D Imaging

Xiaoshen Yan
Biology, Microbiology

Presented by: Xiaoshen Yan
Mentored by: Steve Christenson, Scott Cameron
Starting time: 5:30 PM

Abstract: Proteins play crucial roles in living organisms and most of them have molecular weights below 200 kDa or size less than 10 nm. To understand their functions and mechanisms, elucidating their structures is essential. Structure determination by X-ray crystallography is limited by crystallization while nuclear magnetic resonance (NMR) is limited by the size of proteins. In contrast, electron microscopy (EM), emerged as an alternative approach, is used to determine protein structures without prior required crystals. Since structure determination of small proteins is full of technical challenges by the single-particle EM approach, proteins of molecular weights less than 200 kDa or smaller than 10 nm in size are hard to be visualized or reconstructed. There are only a few structure studies on small proteins that have been reported by electron microscopy. In this presentation, I will introduce new technologies on electron microscopy used in my internship in Lawrence Berkeley National Lab which are used to investigate the protein structures.
Conversion of Estradiol-17beta (E2) to 4-hydroxycatecholestradiol (4-OHE2) is Required for Optimal Uterine Glycogen Synthesis by the Mink Uterus.

Alex Hallam, Jose Alvarez, Jack Rose, Jason Hunt

Biology, Human Biology

Presented by: Alex Hallam
Mentored by: Jason Hunt, Jack Rose

Abstract: Embryonic survival, development and implantation are dependent upon uterine secretions that are rich in glucose and glycogen. In mink, total uterine glycogen reserves are greatest during estrous, then decline rapidly during implantation and pregnancy, presumably as a result of mobilization to meet the energy requirements of the developing embryo. We have shown that estradiol-17beta (E2) as well as 4-Hydroxycatecholestradiol (4-OHE2) a catecholestrogen (CE) metabolite of E2, stimulate uterine glycogen production. It is however, unknown if conversion of E2 to CE’s by the uterus is required for uterine glycogen synthesis or if exogenous CE’s simply have estrogentic actions similar to E2. Thus, a goal of this research was to block the conversion of E2 to 4-OHE2, to determine if optimal uterine glycogen accumulation was due to the cumulative actions of E2 (of ovarian origin) + 4-OHE2 (of uterine origin). Ovariectomized mink were treated with (1): E2, (2): E2 + α-Naphthoflavone (ANF), (3): E2+ANF+4-OHE2, or as (4): Controls. For each uterus, a sample was analyzed for: (a): total glycogen concentration, (b): Glycogen content of uterine glandular and luminal epithelia (GE and LE respectively), and (c): relative gene expression levels for CYP1B1, the enzyme that catalyzes the conversion of E2 to 4-OHE2. Total uterine glycogen concentration as well as GE and LE glycogen content was increased by E2 (P<0.05), and decreased by E2 + ANF when compared to E2 alone (P<0.05), then restored to levels not different from E2 alone when treated with E2 + ANF + 4-OHE2. The expression of CYP1B1 mRNA by the mink uterus was significantly reduced by exogenous E2 (P<0.05). When mink were treated with E2 + ANF, the expression of CYP1B1 mRNA increased to levels not different from Controls. Treatment of mink with E2 + ANF + 4-OHE2 reduced CYP1B1 gene expression to levels not different from mink treated with E2 alone. We conclude that uterine glycogen synthesis in the mink is dependent in part on the metabolism of E2 to 4-OHE2 by the uterus. Moreover, the expression of CYP1B1 mRNA and perhaps enzyme activity, would appear regulated in a negative feedback pattern by 4-OHE2. (Fur Commission USA, & NIH INBRE P20RR16454).
An In-Depth Analysis of Fluorescent Proteins

Kristina Heiney, Jemina Cornejo

Biology, Microbiology

Presented by: Jemina Cornejo
Mentored by: Steven Christenson

Abstract: The experimental objective is to find the optimal time and temperature at which to transform E. coli bacteria with three different plasmids: pGLO (green fluorescent protein gene), pCAG-DsRed plasmid (red fluorescent protein gene), and pSADdeltaG-BFP (blue fluorescent protein gene). Transformation is the process by which foreign DNA is inserted into a host organism. One such application is in the production of the human insulin protein. Furthermore, fluorescent proteins are commonly used in laboratory settings due to their easy identification properties. If the plasmid is successfully transformed, then it can easily be detected by the naked eye under UV light. For instance, Green Fluorescent Protein (GFP), present on the pGLO plasmid, allows for enhanced detection of a gene of interest. This project involves refining this laboratory technique and exploring additional fluorescent proteins. Out of the above mentioned fluorescent proteins, GFP is the most commonly used in the laboratory. In comparison to GFP, red fluorescent protein (RFP) is occasionally used when transforming bacteria. We chose RFP for this project is because it is readily available here at the BYU research laboratories. The blue fluorescent protein (BFP) is commonly used for human tissue tagging; however, we are testing the effectiveness of BFP in E. coli transformation. We hope to compare the effects of each of time and temperature on the various plasmids by using ampicillin as the selection agent. We will be using variations of the procedure outlined in the BioRad handbook for bacterial transformation. We have chosen three different times for hot water baths (40, 50, and 60 seconds) and three temperature settings (40, 42, and 44 °C). The control groups would consist of antibiotic plates lacking their respective activator sugar. Data collection will consist of colony count based on the different variables used. Colony count is dependent on the success of transformation. We hope that our findings will improve transformation techniques for future students studying bacterial transformation.
China’s Cybercrime: Policy Lost in Global Cyberspace

Timothy Ng
International Studies, Political Science

Presented by: Timothy Ng  Starting time: 5:30 PM
Mentored by:

Abstract: The first decade of the 21st century has seen a rapid growth of institutionalized Internet adoption around the globe, especially in the developing areas of South-East Asia and China. In 2008, China surpassed the United States as the world’s largest Internet market reaching 253 million users—a figure which has exponentially grown to over 420 million users in just two years, according to the most recent official figures as released in 2010 (Barboza 2008; CNNIC 2010). With a nationwide online penetration rate of over 31 percent, academics and reporters alike have been busy theorizing, publishing, and speculating about just what this new information source could mean for the socio-political state of the world’s largest communist-governed nation and its people (MacKinnon 2007; Miniwatts 2010). Although such discourse has been of great interest and use in the Western world, global advances in network infrastructure have created a widespread threat that has barely been researched or considered, yet remains a priority for security agencies and policy makers worldwide.

/ / This report reviews and investigates the development of the Internet in China along with its role in Chinese Communist Party (CCP) government policy; it identifies the most significant participants in China’s online network and highlights its varying political controversies, along with the accompanying academic commentaries on the associated subject areas. The significance of this study will reveal a concerning gap in the literature regarding Chinese Internet policy, recommending action for implementation that can benefit both academics and [inter]national security officers. Although the media have begun to cover this issue’s growing importance, I claim specifically that Chinese cybercrime is a dangerously under-studied, under-funded, and under-emphasized domain of Sino web activity and policy—a cause of pressing concern for both the Chinese government, as well as other major state actors within the international community.

Where do the profits come from?

Nick Johnson
Economics, Financial Economics

Presented by: Nick Johnson  Starting time: 5:45 PM
Mentored by: Rick Hirschi

Abstract: In the business world bottom line is everything. If you’re in the black your doing good, if you’re in the red then something needs to change. As we witnessed with the most recent economic down turn it is important to increase your profits. But where do these profits come from? Well, according to the Theory of Profits, there are a few different places where profits are earned; Risk Profits, Frictional Profits, Monopolistic Profits, Innovative Profits, and Managerial Profits. The question is, for most companies where do the get most of their profits from? Well this is what my research was to figure out. I took a cross section of publically traded companies, the Russell 3000 Index, then, using Bloomberg I figured out specific indicators to help identify the different types of profits. From there I used the past ten years of data to find the trend of change in the types of profits. With this information I ran several regressions to look at how the different profits are made and I will be presenting these results.
External Analysis on the Beef Feed and Supplement Industry

Christopher Patterson
Business Management, Supply Chain Management

Presented by: Christopher Patterson
Mentored by: Bruce Kusch

Abstract: Beef producers in America face a particular challenge of providing not only the Beef for the United States, but the world. Raising and growing beef properly and efficiently is a combination of the genetic potential of the animal, nutritionally efficient diets and supplements, and animal husbandry practices. Cattle are fascinating animals, in that their digestive system can utilize practically any feedstuff and forage. The beef animal can turn a pasture of grass into a nutrient rich protein source. To supplement their growth, producers provide a feed concentrate, high in protein concentration as well as essential vitamins and minerals that are essential to the muscular skeletal system growth. This report will examine the animal feed manufacturing industry for beef cattle. This report contains the economic condition of the beef industry, a Porter’s Five Forces model, what the driving forces are in the industry, what the key success factors are, and a strategic group map. The economic conditions section will cover the supply and demand of the beef industry, the rising cost of inputs and the rising cost of the finished product, an explanation of the general financial situation of feedlots and backgrounding operations, and the profitability and growth of the beef industry. The Porter’s Five Forces model will analyze the strengths and weaknesses the suppliers of feed manufactures, threats of new entrants, how strong the buyer is, how strong or weak are substitute goods, and the strength of the competitors within the market place. It will also include a conclusion about the market conditions. The strategic group map will show where some competitors exist in the market place and how they are positioned against each other. There will also be an explanation of the industry’s driving forces and what is causing changes within the industry. At the end of the report, there is a summary of the industry and where a feed company should be positioned to achieve the most success.

United States Postal Service and Privatization

Timothy Lewellen
History, Geography, Political Science, Political Science

Presented by: Timothy Lewellen
Mentored by:

Abstract: One trending topic today is the upcoming financial crisis of the United States Postal Service. In order to save this constitutionally mandated institution that provides a valuable service, serious measures need to be considered for a serious crisis. In this paper, I discuss the reasons for the USPS’ financial crisis and how viable an option privatization is to save the USPS. Ultimately, it is argued that privatization is one of the few remaining options left to be considered.
## The Leaving Months

*Ashley Schellhous*

*Presented by: Ashley Schellhous*

*Starting time: 5:00 PM*

*Mentored by:*

Abstract: The Leaving Months is a short collection of four poems that explore the stages of leaving home for the first time. *Cedar City Coma* illustrates the anxiety and anticipation of the weeks preceding the move. The Leaving Months discusses the move. *Tundra* depicts the foreign land and homesickness. Lastly, *In the Valley of the Nines* embodies the spirit and inevitability of change. I wrote these poems in the hopes of encapsulating the ethereal ambiance of the months surrounding my move from California to Idaho.

## Something to Remember Her By

*Nicole Stefl*

*Presented by: Nicole Stefl*

*Starting time: 5:15 PM*

*Mentored by:*

Abstract: I am a blogger. This piece I would like to present is about my mother's work in the lives of two fraternal twins. I started writing about a gift I received from my grandmother, but then carried my writing to the subject of my mother and the work of all mother's. I share some personal, funny moments from the life of my twin sister and me. I then posted a Mormon messages video from one of Elder Holland's talks. I would like to present this because it is one of the top read posts on my blog; and I only hope, after reading about such personal moments, that many BYU-I students would pay their mother's a call and thank them for all they do.

## Wandering Princess

*Robert Freeborn*

*Presented by: Robert Freeborn*

*Starting time: 5:30 PM*

*Mentored by:*

Abstract: A young Princess refuses to accept her betrothal to a man she doesn’t love. With the help of her best friend, Rupert, she goes on an adventure to find a Prince and get her Happily Ever After. But along the way she discovers that True love can come in many forms, and it may be closer than she ever thought possible.

## Simple Stone

*Anna May*

*Presented by: Anna May*

*Starting time: 5:45 PM*

*Mentored by:*

Abstract: An original Children's fairytale type story, *Simple Stone* is about a young girl who is the village outcast. While the others of her town are born with magical gemstones, Pel is born with a simple, ugly pebble, and is treated badly for it. The village children tease her, and make fun of her, with only one exception. One morning, Pel wakes to find that the people of her village have all fallen very ill, all but her. Now she alone can save her home and family- but to do so means she must believe in herself and in her own small magic. Faced with an impossible quest, Pel must do battle not only with whatever is stealing way the people’s magic but with her own emotions. But how can a simple stone change anything?
Fear

Estefani Parra

English, Creative Writing

Presented by: Estefani Parra
Mentored by: Robert Brown

Starting time: 6:00 PM

Abstract: An awkward moment where everyone in class is staring at you. They look at you with an interrogating eyes and may ask, "What is she saying?" It is a struggle to overcome the fear of stepping up and talk clearly. Now imagine when you don't speak the same language as your audience. I commit myself to it, because I have a special person who helps me through it. This is a creative non-fiction narrative that will draw you into the event and actually feel. Comic thoughts come and go, along with fearness. Everyone has experienced their first time presenting in front of a class. Some students do it for the grade, other students do it for feeling accomplished. I do it because there is someone I need to thank and show how meaningful they are to me. Grades matter, but friendship matters the most.

Finding Home Away From Home

Chelsea Fraser

English, Creative Writing

Presented by: Chelsea Fraser
Mentored by: Robert Brown

Starting time: 6:15 PM

Abstract: I wrote about my experiences leaving my home and country for the first time and saying goodbye to my family. I would be leaving for seven months, the longest amount of time I have ever been away from home. When I came to the United-States, I had no way to pay my tuition or housing and book fees because the school would not accept visa and the other methods of payment were unavailable to me because I was from Canada. I wrote about how homesick I was and how learning to deal with the challenges of living on my own and relying on myself was a huge learning experience for me and helped me grow as a person.
"As Crazy Does" - A 10-minute Play in Response to Dream Analysis

Katherine Haderlie
Theatre, Theatre and Speech Education

Presented by: Katherine Haderlie
Mentored by: Omar Hansen

Abstract: Sigmund Freud, acclaimed psychoanalyst and author of The Interpretation of Dreams, stated the following: “Dreams are often most profound when they seem the most crazy.” While dreams often give us a peek into the mind’s buried treasure, do we sometimes give our dreams more credit than they deserve? In the short comedy “As Crazy Does,” a husband and wife explore the world of dream analysis, illuminating the irrational significance we often give to our subconscious thoughts. As an audience, we are forced to ask ourselves, “What is the real definition of sanity?” Finally, with a comical and unexpected twist, “As Crazy Does” concludes that it is our actions -- not our dreams -- that determine our sanity (or lack thereof).

To Acquire a Husband

Janelle Cross
English, Creative Writing

Presented by: Janelle Cross
Mentored by: Scott Cameron

Abstract: I will be writing a short story in the form of a satirical and allegorical fairytale that discusses what society demands of girls with regards to marriage. From youth, we are told that there is a prince charming out there and the problem is all a matter of finding him. As we get older, our friends tell us how to act, how to dress, and we become products of our society, clinging to things like Facebook and makeup to get “the guy”, ignoring the one thing that will actually get “the guy”: being exactly who we are.

Daddy's Girl

Madison LaFond
English, Creative Writing

Presented by: Madison LaFond
Mentored by: Omar Hansen

Abstract: My piece Daddy’s Girl is a ten minute play about the relationship between parents and children after children have grown up. The situation is that Ed, in sixties, has lost his wife years ago. He has now become reacquainted with an old school friend. They have hit it off beautifully and decided to get married. The problem is that Ed’s daughter, Jill, has recently lost her husband. She feels that by getting re-married her father is not only being disloyal to her mother’s memory but abandoning her in her time of need. She feels she cannot act happy at Ed’s wedding to stranger when she is still nursing her own emotional wounds. Ed insists that Jill has the choice to be happy. But what is happiness? She believes that the shattered way she feels is a tribute to how much she cared about her husband, surely that means her grief is worthwhile rather than wrong. This is a piece about the range of the human experience, how our society tends to focus on the benefits of certain emotions without acknowledging that all emotions come from somewhere deep within us. Emotions are not good or bad, it is out reactions to them that are negative or positive.
"Palace" and "That Was Her Thanks"

LuLu DeHaan
English, Creative Writing

Presented by:  
LuLu DeHaan
Mentored by:  
LuLu DeHaan

Starting time:  
5:15 PM

Abstract: "Palace" is an original poem expressing what happens when someone creates a palace in their mind. This is a technique often used in memorization, but can also be used to store away memories that one does not want to always remember. The poem is a journey through the palace, exploring different rooms that contain different memories. Each room telling its own story, and each item supporting it. "That Was Her Thanks" is also an original poem. It tells the story of a young girl seeing her father for the last time. Her mind is flooded with thoughts of regret and realization at what she did.

Love Like Salt

Bethany Murray
English, Creative Writing

Presented by:  
Bethany Murray
Mentored by:  
Josh Allen

Starting time:  
5:30 PM

Abstract: “Love Like Salt” is a retelling of the Brothers Grimm’s fairytale, “The Goose-Girl at the Well.” This is the story of the maid of a spoiled lord’s daughter, Hedyla. The maid comes to work for the lord when her parents died and she eventually becomes the maid of Hedyla. One day when Hedyla tastes the food in the kitchen she mistakes the salt for sugar. Enraged with the taste, she foolishly throws away the salt, forcing her father to eat a tasteless meal. As punishment, her father casts her and the maid into the world. They find shelter with Hedyla’s godmother, who tolerates Hedyla and loves both Hedyla and the maid.

Of Rivers and Redemption

Arthur Lee
English, Creative Writing

Presented by:  
Arthur Lee
Mentored by:  
Josh Allen

Starting time:  
5:45 PM

Abstract: Langston Hughes has known rivers, small and wide, down which people have sailed into or away from bondage. I too have sailed down such rivers. I've known bondage. I am a man who once struggled for 16 years with addictions of one kind or another. Starting in my early youth, I was every trying, on my own, to beat what I mistakenly believe was mine alone to beat. In the end, I had turn to family and seek their help. I had to, for a small moment, hurt those I loved most in order to help, for eternity, the one person I didn't love--me. It require patience and faith and charity, and, perhaps, most of all, it required sacrifice. In the end, which was just the beginning, I was asked to give up, among other things, creative writing--the one thing I had always turned to in the midst of both struggles and joy. It nearly broke my heart, and yet, looking back, it was an essential turning point in my life. Now, years later, I have been blessed with the opportunity to come back to school to finish the English degree I started at Ricks, and, in so doing, pick up my pen anew. It has been with some trepidation that I have begun to write, but the experience has been rewarding. Inspired by a presentation on Langston Hughes in one of the first classes I took after returning to school, I wrote the first of three poems on redemption. I propose to share them in their entirety, and talk about the power of writing. It is, as Percy Bysshe Shelley put it in his "A Defence of Poetry," "the great moral good." I do believe that a life well lived produces writing that has the power to change lives, foremost among those, the life of its author. Writing used to be my life. It is not my life anymore, but, like the image of trees rolling down the banks of the river, it reflects my life. The three poems to share (in order): Restoration and Windows, Of Rivers and Remption, Black Ink, Arthur T. Lee
The Monster Inside

Noelle Christensen

English, Creative Writing

Presented by: Noelle Christensen
Mentored by: Robert Brown

Starting time: 6:00 PM

Abstract: This is a narrative of how I killed my hamster. Four years ago I woke up to find my hamster had eaten her children. I was torn inside, that hamster was the last present I got from my grandpa who had passed a year earlier. I was so enraged by what she had done that I threw her into a wall. Later in the day I realized that my hamster was paralyzed. A strange happiness took over me, I was ecstatic that she was suffering. However I thought that she should suffer even more than she had, so I stuffed her into a jello box and threw her into a river that flows behind my home. After I had done this I realized that I had just slaughtered my hamster. I felt unclean so I took a shower. While in the shower I was having a battle with myself, whether I was the monster or if she was. After a long time I realized that the only way to let go of what happened was to cry. I cried until my tears were all gone. It was so painful to cry about what I did, I was filled with remorse, but eventually I felt nothing. I didn’t have a single emotion in me. It was the worst feeling in the world. I didn’t have a soul. I didn’t know what to do so I just acted like nothing had happened and played softball.
The Effect of 1960s American Society on Ricks College

**Landon Hawes**  
*History, Geography, Political Science, History*

**Presented by:** Landon Hawes  
**Mentored by:** Eric Walz

**Abstract:** From the years 1964 to 1967, one of the central questions confronting Ricks College students and administration was how Ricks College would respond to a radically shifting American society. Contemporary influences such as the counterculture and anti-war movements loomed like thunderheads on the campus’ horizon. Such iconoclastic movements created worries among students and faculty alike about whether standards of the Church of Jesus Christ of Latter-Day Saints, the parent institution of Ricks College, could be upheld in the midst of such change. While some students campaigned for greater integration with larger American society, most Ricks College students supported administration policies designed to preserve the school’s moral separation from other American colleges; at the same time, the Ricks College administration responded to American society by standing firm in its conservative and religious convictions.

"A Pre-baptism of the Imagination": Teaching the Gospel through Allegory

**Janet Wilcox**  
*English, Creative Writing*

**Presented by:** Janet Wilcox  
**Mentored by:** Rod Keller, Jason Williams

**Abstract:** As Latter-day Saints we have been called to use our skills and talents in building up the kingdom of heaven on the earth. In a fireside address given at Brigham Young University, Elder Packer calls for more inspired works from members. He quotes Elder Orson F. Whitney who said, “In God’s name and by His help we will build up a literature whose tops will touch the heaven.” Allegories are one type of literature that can achieve such great heights as they take abstract truths of the gospel and make them more concrete and understandable through an extended metaphor. C.S. Lewis, though not a member, excelled in writing allegories that “touch the heaven[s],” particularly his story The Lion, the Witch, and the Wardrobe. His life and writing’s aim was “to depict the ‘real potency’ of Christianity” in stories “told to deliver the gospel.” Using the four-fold method of Christian exegesis including the literal (events, actions, and history), belief, moral action, and final goal of analogy to interpret C.S. Lewis’s allegories, Latter-day Saints will be better prepared to answer Elder Packer’s call for more works of literature from members “near scriptural in their power...that would inspire people to worship,” further building the kingdom of heaven on earth.
### The Uncle Remus Effect

*Dennis Cygan*

*English, Literary Studies*

**Presented by:** Dennis Cygan  
**Mentored by:** Rod Keller, Jason Williams  
**Starting time:** 5:00 PM

Abstract: In advertising, African-Americans have traditionally held the role of a servant. Towards the middle of the twentieth century, companies like Aunt Jemima, Cream of Wheat, and Uncle Ben’s have used African-Americans as cover models. These models do not shift away from African-Americans stereotypes. Aunt Jemima is dressed as a slave would dress. Uncle Ben wears a suit similar to a chauffer or a waiter. Rastus, the Cream of Wheat cover model, is a chef. All of these characters are portraying there business as servants, construed as people below White-America. However, there is a shift in this portrayal in twenty-first century advertising. This shift centers on an African-American as a patriarchal figure. Dennis Haysbert of the Allstate commercials illustrates this concept. Haysbert, as a spokesperson for Allstate, is not portrayed as a serving character suggesting the viewer to partake of the product to be sold. Rather, Haysbert has a tone and demeanor which instructs future customer to trust in Allstate and purchase insurance. Haysbert takes on the role of the father rather than servant as mention with the aforementioned African-American spokespeople. This idea of an African-American as a patriarch is rooted in the Uncle Remus tales of Joel Chandler Harris. Uncle Remus characterizes a patriarch as he explains moral to lessons to a white child using the famous “Brer Rabbit and Brer Fox” animal tales. Similarly, Haysbert acts in as patriarch as instructs a majority White-American society to purchase insurance from Allstate.

### Disney Princesses: Are they friend or foe?

*Victoria Loveland*

*Communication, Communication*

**Presented by:** Victoria Loveland  
**Mentored by:** Ronald Bennett, Lee Warnick  
**Starting time:** 5:15 PM

Abstract: Disney Princesses: are they friend or foe? A closer look at the impact of the Disney Princesses on both girls and women. This article is a representative profile examining the effects of the Disney Princess phenomenon on the self-esteem and relationship expectations of girls and women. It features the story of Lori Cardon, a former beauty queen. And contrasts her story with the story of her roommate, who is also a Beauty Pageant winner. It presents research that brings to light the dangers and more alarming aspects of the “Princess Phenomenon”. This article also explores the positive influence that parents can have by utilizing classic children’s literature and offers other possible solutions.
## Breaking Through: The Hallyu Wave and the Hybridity of Rising South Korean Culture

**Amy Conway, Kandyce Cave**

**English, Professional Writing**

**Presented by:** Kandyce Cave  
**Mentored by:** Karen Holt  
**Starting time:** 5:30 PM

Abstract: The Hallyu Wave, or the South Korean Wave, is a growing cultural phenomenon that has expanded to touch many countries worldwide within one decade. This revolutionary event encompasses elements such as Korean Pop, also known as K-Pop, fashion, dancing, and Korean dramas. Although they are different, entertainment industries implement innovative ideas to merge each of the elements so that they complement as well as increase the popularity of the other. Whether it is the presence of family values in Korean dramas, the bright, modern clothing and hairstyles, large talent groups, the Korean lyrics themselves, or even the incorporation of multiple other languages such as English, Chinese, Japanese, French, Tagalog, or even Spanish into their songs, the Hallyu Wave has garnered the attention of thousands of people across the globe. The importance of the Korean Wave stems from the idea of transnationalism and the implications that it holds not only in affecting the entertainment industries of other countries, but also in its ability to connect people together. Through its use of creativity and ideas, South Korea has shown its ability to keep up with the rapidly changing global entertainment market and has already placed its two feet through the door. Despite this, their success is still uncertain. Many South Korean idols wish to debut in America, the place of dreams and huge worldwide fame; however, there are many cultural differences that exist between South Koreans and Americans. This difference in culture has caused K-Pop artists who have debuted in America to return to South Korea due to their inability to garner mainstream popularity. South Korean entertainment managers have tried to combat this by changing the images of the K-Pop idols to make them more appealing to the American public but, as of yet, have met with limited success. Nevertheless, it is predicted by many that the advent of mainstream Korean pop culture is coming soon to America.

## “Gender Games”: Exploitation of the female body in the art of Magic: the Gathering

**Matthew Watkins**  
**English, English Education**

**Presented by:** Matthew Watkins  
**Mentored by:** Rod Keller, Jason Williams  
**Starting time:** 5:45 PM

Abstract: Magic: the Gathering, like most products based on fantasy art and literature, has a long history of exploiting the female body for commercial gain. These artistic depictions portray “the image of woman as (passive) raw material for the active gaze of man” (Mulvey 843) and have been shown to “reduce support for gender equality among both men and women” (Jones 31). Partly due to this practice, Magic has developed a culture of exclusion towards women. In recent years, the art directors of Magic have attempted to create art that appeals to female consumers, especially in the creation of several female protagonists. While Magic’s efforts to expand its art to a female base of consumers is remarkable compared to trends in the industry, the actual art fails to change anything. These images do not connect with potential female customers, degrade the sexual identity of many current female customers, and aggravate the aggressive misogynistic culture of many male Magic players, because they are largely characterized by internal inconsistencies with biased treatment of male and female bodies, inexplicable anatomical mistakes, and performance for a male gaze.
How do members of the Church of Jesus Christ of Latter-Day Saints attending BYU-Idaho view the Islamic world community?

Dominic Scott

History, Geography, Political Science, History

Presented by: Dominic Scott
Mentored by: David Peck

Starting time: 6:00 PM

Abstract: Despite the ever-increasing population of members of the Church of Latter-Day Saints, the community arguably remains very insular from the global community. In a recent survey of 200 BYU-I students, participants revealed that they have very little knowledge of Islamic beliefs and practices, are misinformed on the nature of the Palestinian-Israeli Conflict, and have doubt over whether the Islamic world is accepting of other religions. The study also shows that there is a significant population among BYUI students that don’t understand what their own religion believes in regards to tolerance of other religions, including Islam. This was determined by participants being provided with quotes from the First Presidency about Islam – approximately 35% disagreed with them. This shows that while students tend to think themselves as knowledgeable about their own religion, the results reveal this is not the case. The study also found that students who are fluent in another language and have external experiences with other cultures are statistically more likely to be tolerant towards other religions. Students who have external experiences with members of other religions also display tolerance religiously towards Islam. This study adds nuance to the importance of education in a foreign language and providing opportunities for diversity at our school to promote understanding and tolerance.
Giving The Giver a Chance

Hannah Cheatham

English, English Education

Presented by: Hannah Cheatham                 Starting time: 4:30 PM
Mentored by: Jason Williams

Abstract: Lois Lowry’s book The Giver is frequently used even in 3rd or 4th grade classes; however, this paper will show why this book should actually be used in high school senior English classes for both advanced and remedial courses. The use of young adult literature in the classroom has been contested for several decades now, but in the long run, it is becoming increasingly accepted. Studies have shown that students who read young adult literature are more likely to become life-long readers versus students who just do assigned readings of classics. The Giver (winner of the Newbery Honor Award) could be paired with more difficult readings for struggling readers. This would allow students to discuss themes similar to themes from more difficult books. At the same time, students of advanced courses could also use this book to identify with as they write their own pieces. Current research has shown that advanced students tend to read without connecting to the situations and characters. Young adult literature could help those students to grow emotionally, and The Giver is a prime example of a young adult book. Teachers are continually changing their tactics in today’s world because almost every method of traditional teaching has been proven to be less effective. Although all teachers may not be convinced of the value of young adult literature in the classroom, this paper will provide insight into why and how young adult literature can be affective.


Zachary Atherton, Stewart Taylor

English, Professional Writing

Presented by: Zachary Atherton                 Starting time: 4:45 PM
Mentored by: Rodney Keller

Abstract: The purpose of this essay is to disprove the belief that English majors should not have “high expectations” in the work force (Ma 186-187). I have come to the conclusion that the skills English majors possess are extremely valuable in the work force and, for the purpose of our focus, the field of law. We will prove through the accounts of successful professionals in law and various credible sources that the skills gained by those studying the field of law are well equipped, if not more equipped than their competitors, to succeed in law school and then the practice of law. “Other law schools across the country are alarmed by the fact that a great percentage of their entering students demonstrate paucity in writing skills during their first year studies and examinations” (Stone 315). This essay is significant for English majors pursuing a career in law and will provide clear and concise arguments to those who question an English major’s worth and potential in the field of law.
# Oral Presentation

## Education and English Education

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## The Power of Historical Simulation: Using Theory, Evaluation, and Simulation to Stimulate Learning in Scholarly Courses

**Daniel Johnsen**  
History, Geography, Political Science, History  
Presented by: Daniel Johnsen  
Mentored by: David Peck

Abstract: Those who cannot remember the past are condemned to repeat it. George Santayana (The Life of Reason) How can we best learn from the past? History majors make up less than two percent of the overall enrollment at BYU-Idaho. Despite the all-embracing nature of history, it remains misunderstood and under-appreciated. To a large degree, the lack of interest for history can be attributed to the separation between the students’ lives and the topics they are exploring. Because the past is remote, it is elusive; especially since our approach to the study of history is static and unchanging. For those wishing to teach history, or other comparable scholastic topics, the question has become: How do I help my students connect with the material so they see the application of what I am teaching? The use of simulations, specifically virtual simulations, can enhance the application of ideas garnered from the past, and allow students to actively participate in an otherwise strictly academic subject. In short, it gives the student an opportunity to experiment with history. This presentation’s author and Dr. David Peck co-created an experimental history seminar course, History 497R-Impressionism, with the specific purpose of testing the applicability of simulations in academic studies. The chosen simulation, Imperialism produced by Strategic Simulations Inc., was used to supplement the traditional teaching style of upper division history courses, and stimulate new awareness and learning among the course’s enrolled students. The class focused on investigating the hypothetical, yet relevant, question: Was World War One avoidable? Preliminary observations suggest that students, who use the simulation as a laboratory to explore the theory discussed in class, understand the historical material better than students in traditionally structured classes.

## Useless Education?: The Value of an English Major

**Symone Kennedy**  
English, Professional Writing  
Presented by: Symone Kennedy  
Mentored by: Rod Keller, Jason Williams

Abstract: As the economy gets progressively worse, college students become more likely to choose a business, accounting, or science major. According to New York Times columnist David Brooks, students believe that they cannot “indulge in an English or a history major” and that the humanities have no practical application. This idea is supported by people like Stanley Fish, who argues that the humanities “don’t do anything, if by ‘do’ is meant bring about effects in the world.” He continues on, saying that the humanities have no practical use whatsoever and “nobody really buys that argument” that humanities training leads to better workplace skills. Ironically, this is happening in a time when many employers are starting to see the “practical value” of training in the humanities. The dean of Toronto’s Rotman School of Management says that business school deans are recognizing that “learning to think critically—how to imaginatively frame questions and consider multiple perspectives—has historically been associated with a liberal arts education, not a business school curriculum.” Humanities and liberal arts educations promote critical thinking and the ability to put yourself in someone else’s shoes, essentially. People with humanities training are “more well-rounded workers,” and according to Professors Paul Jay and Gerald Graff, “many heads of philanthropic foundations, nonprofits, and corporate CEOs” are recognizing this and actively seeking people with these skills. It is my intention to show how the critical thinking and analysis skills developed while obtaining an English degree can be successfully applied to a profession outside of academia and publishing.
The Art of Ad Copy

Katie Nielsen
English, Professional Writing

Presented by: Katie Nielsen
Mentored by: Jason Williams
Starting time: 5:30 PM

Abstract: The current advertising climate is a difficult one, as consumers are constantly inundated with commercials and advertisements everywhere they go. According to a recent article, “[advertisers are] competing with the 50,000 packaged-good brands on the shelves at the grocery store, as well as every other product and service and logo in the country” (Sullivan 27). To combat this environment, ad copywriters must remember the following: that the ultimate goal in writing ad copy is to sell products, rather than simply to entertain, that writers must be aware of and effectively use the rhetorical appeals of ethos, pathos, and logos, and finally, that copywriters should realize that one of the strongest persuasive techniques in their arsenal is the ability to emphasize product benefits, rather than features. These principles are explored in depth throughout this paper, including several actual advertisements to illustrate each point. Imagine that you are one of those brands and you have to somehow compete with 49,999 other companies. Obviously, you must advertise your products to put them in the public eye. Unfortunately, many companies underestimate the difficulty of creating good advertising campaigns. Effective advertising is almost purely based on two things: ad copy and image design. However, even an advertisement with beautiful artistry will fail if the ad copy does not communicate pertinent brand and product information to the consumer. To demonstrate effective advertising principles, the bulk of my paper will focus on the development of ad copy, and specifically that found in print advertisements for Reader’s Digest magazine (though these principles could be applied in almost any print advertisement setting).

Google It: A Corporate Solution

Skyler Meeks
Teacher Education, Elementary Education

Presented by: Skyler Meeks
Mentored by:
Starting time: 5:45 PM

Abstract: For a typical student, the coursework for 12 years is laced with structure, syllabuses, and lesson plans. While this arrangement has supplied many youth with an education for years, it also students aren’t reaching their potential. The current program creates a monotonous education and deadens students. This essay explores the benefits of the innovative model that Google is famous for, how it can be adapted to education, and why its use will allow the current education system to become fresh, dynamic, and organic once again. Due to its pivotal role in developing the future workforce, a function education system leads to advancements in discoveries across a variety of fields. However, the current education system isn’t functional; it is a wounded and broken ideology that needs a surge of outside creativity in order to adapt it to modern day strictures. Because of the structure, we are educating kids into stagnation. In an effort to diversify schooling, we’ve developed a system of conformity. The problem with this model is that everyone gets the same dosage of the same subjects despite having incredibly diverse aptitudes. Aside from its structure, the purpose of education hinders children too. The goal of the educational system is too narrow; we are producing limited skillsets to handle an infinitely changing world with infinitely changing problems. The alternative application of this program isn’t without questions though; for instance, some may question a child’s ability to handle self-directed learning. One could also argue that students lack the motivation necessary to take advantage of self-directed learning. However, recent research suggests that children not only have the capacity for self-directed learning, but thrive on it as well. If we hope to restore education, adapting the 20% program is the way to do so. By implementing the “time-off” strategy into classrooms, students are given a chance to rekindle their passions and desires for knowledge. Ideas that have kept corporations innovative and productive for years are the same ideas that have the ability to rescue a education system that has left the youth of this nation.
Applying Gardner’s MI Theory In the Classroom

Gabrielle Luebke

Teacher Education,

Presented by: Gabrielle Luebke
Mentored by: Marcia McManus

Starting time: 6:00 PM

Abstract: In pursuit of the acknowledgement of individual strengths and intelligence, Howard Gardner, renowned psychologist, educator, and theorist, developed the theory of Nine Multiple Intelligences. Dismissing the pervasive belief in a fixed IQ and the standardized measurements for determining the amount of intelligence per individual, Gardner challenges this notion with a belief that human capacity includes several intelligences, and each individual host the seeds of all intelligences. Strengths and weaknesses are portrayed in a variety of combinations. Gardner (Gardner, 1993) defines intelligence as “...the ability to solve problems, or to fashion products, that are valued in one or more cultural or community settings”. Gardner’s MI Theory surfaces numerous educational implications that aid the development of my own pedagogical practices. Gardner helps with gospel concepts of learning and teaching such as this: our Heavenly Father knows our strengths and weaknesses and teaches us on an individual basis accordingly. This implies that educators must know the weaknesses and strengths of each student and teach them accordingly. Unlike an IQ test, the Nine Multiple Intelligences can exploit weaknesses and strengths by assessing competency in Interpersonal, Intrapersonal, Musical, Linguistic, Logical-Mathematical, Bodily-Kinesthetic, Spatial, Naturalistic, and Existential Intelligence. What then, would a classroom look like if it were to operate under the premise that each student has a combination of intelligences that define the way they learn? Effective educators allow students to learn material by giving them the creative liberty to construct knowledge through their varied intelligences. In this presentation, Vector Applications will be an example of teaching a concept in the content area of Mathematics wherein students will learn through the 9 Multiple Intelligences. Providing experiences that appeal to all nine intelligences will allow students to make personal connections with content. Students will be more aware of how they can use their strengths to solve problems and positively contribute to society as materials presented in ways that are relatable to the intelligence of students.
**Fatigue Testing of Novel Magnetic Fasteners for Anatomy Models**  
*Kenneth Aycock*  
*Mechanical Engineering, Mechanical Engineering*

**Presented by:** Kenneth Aycock  
**Mentored by:** Greg Roach, Jason Shaw  
**Starting time:** 4:30 PM

**Abstract:** The BYU-Idaho Department of Biology has met difficulties with their muscle anatomy models since they were purchased. Fasteners used in attaching the muscles to the main body of the models usually fail within their first year of use. A new method of fastening these muscle units using neodymium magnets was proposed December, 2010. In 2011, new fasteners were installed in approximately forty different arm and leg muscle models. Data regarding the expected lifetime of these fasteners was then desired. A device was manufactured to test the new fasteners via cyclic loading at about 3Hz. Initial results using the same adhesive used in the installed fasteners yielded a lifetime of over 500,000 cycles, which correlates to about 300 years at the current estimated usage of 1,500 cycles per year. However, if the adhesive was mixed, but not used for greater than four minutes prior to installing the fasteners, the lifetime dropped to just over 3,000 cycles. It is therefore recommended that the adhesive be used immediately after preparation when installing these fasteners.

**Bluetooth Fencing Solution**  
*Cameron Lyon*  
*Computer Science and Electrical Engineering, Computer Engineering*

**Presented by:** Cameron Lyon  
**Mentored by:** Richard Grimmett  
**Starting time:** 4:45 PM

**Abstract:** The sport of fencing is a fast moving sport that is incredibly difficult to referee without the help of an electric system. Electric systems were first developed in the early 1900’s, but weren’t adopted until the 1950’s. Currently, the prevalent electric fencing systems in most clubs are done by having a reel attached to the fencer which has a wire that connects to the fencer. The major problem that comes with this is price; to get a full set of wires, reels, and the scoring box, the club can expect to pay more than $1000. Recently there have been innovations using wireless technology driving the price down. The most current wireless device designed for club usage costs around $300. This system is simply a box that attaches to each fencer, and the judge has a transceiver, in order to see who scored first. This solution is estimated to cost approximately $125 to build. Also, modern fencing has been willing to adapt to technology, a large amount of referees use smartphones to keep score and time, but still rely on the reel and box system or an additional device in order to see the hits on the fencers. With all of this in mind, the question is asked, why is it necessary to have an additional device besides a smartphone? With this project, we will be able to eliminate the need of the additional devices, and be able to save money for the clubs.
Automating the functionality of a formerly radio controlled car

Jonathan Clark, Chris Hunt

Computer Science and Electrical Engineering, Computer Engineering

Presented by: Jonathan Clark
Mentored by: Richard Grimmett

Abstract: Objectives: The goal of this project is to modify a radio controlled cars’ hardware configuration so that it can be controlled by an onboard embedded microcontroller. The microcontroller will take input from a series of six infrared distance sensors. Based on this input it will determine what the best course of action is to avoid obstacles. Methods: The car is to use a set of two embedded microcontrollers; one will act as a slave interpreting data from the three front IR sensors and passing that to the master microcontroller. The master microcontroller will use the signals from the slave as hardware interrupts that will allow it to take immediate action when the sensors detect something in front of it. The master microcontroller will also read data directly from three other sensors. These sensors will detect objects that are within close proximity on the left, right and rear. The microcontroller family selected for the task is the Texas Instruments MSP430 series. The MSP430 offers a variety of features that are critical for a device of this type including: 1. Built in multi-channel analog to digital converter (to be used for interpreting data from the sensors). 2. Relatively high processor speed for quickly handling events (16MHz core clock, 15Khz port speed) 3. Very low power consumption (125 micro amp draw) 4. Low cost ($1.00 - $2.00 a chip) Things we learned Implementing this system has posed a variety of challenges that we have needed to overcome including: 1. False sensor triggering (handled with trigger density computations) 2. Incorrect microcontroller operation when the battery level goes below a threshold of 8 volts (handled by using two voltage sources; one for the microcontroller and one for the car) 3. Car speed too high (handled by sending pulses to the motor instead of a constant voltage) 4. Terminating cars forward momentum (handled by shutting down the motors at a greater distance from the wall). In addition to this it was necessary to use a different way of debugging than is provided by TI. Using a series of LED’s to test out the sensor detection capabilities as well as ensuring that the motor control functions were operating correctly and safely.
### Hybrid Electric Vehicles vs. Internal Combustion Engine

*Keith Rose*

**Automotive Technology, Automotive Technology Management**

**Presented by:** Keith Rose  
**Mentored by:** Troy Spratling

**Abstract:** There is a lot to know and understand about today’s advanced vehicles. Electric vehicles use only electronic components such as batteries and motors and do not use conventional internal combustion engines. Increased efforts to reduce and eliminate exhaust emissions have made electric vehicles a benefit. However, increased initial vehicle costs and short battery range has put up a fight against the popularity of electric vehicles. Electric Vehicles are not advancing fast enough to stop production of the internal combustion engine (ICE) because of high priced initial costs, limited range, slow charging, and modern advances in the ICE. The purpose of this study is to examine the usefulness of electric vehicles and to determine their future impact on society. Internal combustion engines have been around for years—even lifetimes! Internal combustion engines power millions of vehicles and other machinery. However, as we flourish in the advancement of this technology, Hybrid vehicles are becoming more and more popular. This research paper will show that internal combustion engines are going to be around for a while and will not phase out any time soon. The results of many studies determine that electric vehicles are advanced machines but they are not advanced enough for consumer confidence. Electric Vehicles, or Evs, are vehicles that are powered by electrochemical batteries and electric motors. Evs have been around since the automobile was first invented. After leaving the market for many years, Evs are back in hopes of fighting the war against pollution and fuel efficiency. The word “Hybrid” in the automotive industry means there is more than one way to propel a passenger vehicle. Hybrids have electric motors and internal combustion engines (ICE). The race has already begun for alternative sources of fuel or propulsion of modern automobiles.

Jared Anderson

English, Literary Studies

Presented by: Jared Anderson Starting time: 4:30 PM

Mentored by: 

Abstract: Critics have debated Flannery O’Connor’s use of grace within her stories for decades. O’Connor’s definition and understanding of grace has come under equal fire. Some say her characters receive grace, while others claim that they do not. However, whether one likes or dislikes O’Connor’s view of grace, the fact that grace takes its place among the most often used motifs in her writing cannot be ignored. Throughout her stories, tensions rise until the characters experience what O’Connor refers to as a “moment of grace” (Dowell 236). This moment of grace has been scrutinized by scholars due to the sinful characters that receive the grace. While the old saying “no one is perfect” is regarded as true by most, critics have still expressed concern over the flawed characters O’Connor chooses to receive grace. In O’Connor’s stories, not only the imperfect receive grace, but the downright rotten share in that divine providence as well. Writing about O’Connor’s characters receiving grace, Mary Shaw sees O’Connor’s point when she says, “Humankind responds to God with varying degrees of doubt” (472). These intensely flawed characters doubt in different amounts, but there comes a time when they must choose their path—the moment of grace. O’Connor explains how our doubt and reception of God’s grace are connected, “Cutting yourself off from Grace is a very decided matter, requiring a real choice, act of will, and affecting the very ground of the soul” (Shaw 474). The situations the characters find themselves in often involve an encounter with someone or something, and that encounter forces them to choose grace or the rejection of grace. These situations act as “visible signs of an invisible grace” (Mayer 118). By examining “A Good Man Is Hard to Find,” I will explain that Flannery O’Connor creates characters with varying degrees of sinfulness that get to experience grace and forgiveness. Her stories show that even those that are dreadfully sinful can still fall within the reach of God’s grace.

Realism in Life, Romanticism in Death: Cather’s Rhetoric in Death Comes for the Archbishop

William Gibbs

English, Literary Studies

Presented by: William Gibbs Starting time: 4:45 PM

Mentored by: Elaine Hawker, Tracy Willburn

Abstract: This paper explores how Cather utilizes romanticism to facilitate her ethical rhetoric. Most criticisms explore how Cather fictionalized the characters in Death Comes for the Archbishop or how she created symbols; Merrill Maguire Skaggs even goes so far as to say it was “built as carefully as a cathedral” in its use of symbolism, especially in the descriptions of the landscape (406). However, these critiques do not explore how she romanticized her characters, or how her use of symbolism affects them. Most of the character’s lives are presented realistically; however, Cather rhetorically applies romanticism to her character’s deaths, facilitating her social commentary and creating a mythic, legendary text. For example, because of the way he lived his life, Father Lucero is doomed for a retributive death. This moral lesson is strengthened by romantic rhetoric—his sudden, other worldly visions that become fodder for village legends. By romanticizing their deaths, Cather’s characters become rich types of virtue or vice as opposed to shallow symbols. In particular, she contrasts the realistic lives and deaths of Fathers Lucero and Father Latour to show that how a life is lived determines how it ends.
Comic Kryptonite: Characters vs Characterization in Superman Comics in the 21st Century

Jared Loper

English, English Education

Presented by: Jared Loper
Mentored by: Jason Williams
Starting time: 5:00 PM

Abstract: Originally geared more towards children, Superman comic books began to turn more towards a young adult and mature reader audience in the 1960s and 1970s. Although they are largely considered escapist material, they have not always been so. There was a time when Superman was a character that readers knew, understood, and related to. Superman, as an icon, has been a major piece of pop culture for many years. In the recent decades, however, the role of Superman comic books has diminished largely. One of the contributing problems to this is the industry’s inability to define their audience effectively. Today, comic books sales seem to be mainly limited to a very few devoted fans of the series, and only because it was one that they were first exposed to. New customers are nearly nonexistent, and even long-time readers are leaving. To discover why this phenomenon occurs, it’s important to see what comic books consist of today. Superman, being the icon that he is, fails to grab reader’s attention. The failure comes, not because the idea of Superman is weak, but because the character of Superman is weak. The Superman character is written as a collection of characteristics, which falls incredibly short of any sort of relatable character. In order for Superman comics to gain any sort of credibility in the modern world, the focus in the writing of his character needs to shift. Other comic book characters succeed because readers, despite not sharing superpowers with the characters, can relate to their stories. The relation comes through life-like experiences the characters endure that readers find familiar. Superman needs to be a character again; not a series of unrelated attributes.

A Reflection of Excellence: An Analysis of Willa Cather's Pioneer Trilogy

Sarah Ann Ewell

English, Professional Writing

Presented by: Sarah Ann Ewell
Mentored by: Jason Williams
Starting time: 5:15 PM

Abstract: A Reflection of Excellence: A Literary Analysis of Willa Cather and Her Pioneer Trilogy  “I only want impossible things,” explains the young and ambitious Thea Kronburg, “the others don’t interest me” (Cather 505). Known as “perhaps her most autobiographical work . . . highlighting the richness of her characters’ inner landscape against the potential wealth of their surroundings,” The Song of the Lark is as much an insight into the life of fictitious Thea Kronburg as it is of author Willa Cather (Merriman). Along with O Pioneers! and My Antonia, The Song of the Lark provides a foundation of highly esteemed frontier values and characteristics, evidenced by strong and independent women of the period, illustrating a literary portrait of author Willa Cather. With insight from the principles of ethical criticism, author Willa Cather is obviously reflected in her texts. Each female protagonist realizes a fulfilling life through her goals and dreams vary in scope and purpose. The good, the true, and the beautiful reflected in these novels is reflected in Cather’s life. During Thea’s discussion with Dr. Archie, she resolutely declares: “It’s easy to fail . . . and if I fail, you’d better forget about me, for I’ll be one of the worst women that ever lived. I’ll be an awful woman!” (Cather 505–506). Young desire and dedication as expressed through these novels, coupled with an unusual commitment to excellence, illustrate the life of Willa Cather’s as fulfilling. Works Cited : Cather, Willa. The Song of the Lark. Willa Cather: Novels and Stories, 1905-1918. Ed. Sharon O’Brien. NY: The Library of America, 1999. 285-706. Print.
Teaching the Screenplay as Literature

Mason Stoddard

English, Literary Studies

Presented by:    Mason Stoddard
Mentored by:    Rod Keller

Starting time:    5:30 PM

Abstract: BYU—Idaho’s English department currently uses fiction, poetry, creative nonfiction, and drama as texts in literature courses. These genres are generally defined as literature. I argue, however, that if the screenplay is literature then BYU—Idaho ought to teach it in literature courses. The university already teaches screenwriting as a creative writing course alongside poetry, fiction, playwriting, and creative nonfiction. It seems that they see the screenplay as a legitimate writing field but not a suitable for literary analysis. I do not argue that literature courses should screen films but instead read screenplays; these courses rarely view produced plays but instead read the scripts of such greats as Shakespeare or Miller. Similarly, I propose that the department pick a few scripts to read and analyze as literature. I use the Cast Away script by William Broyles Jr. as a prime example of a screenplay that contains just as much literary merit as most plays. This script raises questions of existentialism and isolation. Can one maintain identity without contact with any other humans? Though screenplays often describe visuals elements more than plays these images can be interpreted as having extremely deep meaning and implications.

The Worth of Imagined Souls: An Analysis of the Creation of Characters in Literature

Rachel LeFoll

English, Creative Writing

Presented by:    Rachel LeFoll
Mentored by:    Jason Williams

Starting time:    5:45 PM

Abstract: For the budding creative writer, one of the biggest challenges to overcome is the development of realistic characters that will successfully move a story along, and that will be accepted as believable by your audience. Janet Burroway, author of the text Imaginative Writing, states, “A character’s voice is a chosen mimicry and is one of the most rewarding devices of imaginative writing.” (Burroway 53). While there is some slight speculation on this subject by other authors, I feel that it needs to be further scrutinized. In looking at some of today’s most popular novels of fiction the entire process of character creation seem to follow a specific pattern. This is true especially in works that depend on characters to drive the plot. Upon a closer examination, it is apparent that there are clear ties between the creative process of character development and the literal creation of the monster in Mary Shelley’s Frankenstein. This can be seen when reading the contemporary novels, The Guernsey, Literary, and Potato Peel Pie Society by Mary Anne Shaffer and Annie Barrows, and The Help by Katherine Stockett. As the wide array of characters develops in these novels, it can be hypothesized that the authors, even subconsciously, have followed this set pattern. They include the physical piecing together of the character, the act of giving the character a purpose, the actual giving of life, and the sacrifice of the creator. In the end, as seen with both Dr. Frankenstein and the authors of these novels, there is an ultimate goal that accompanies the creation of characters; that is to become god-like. Understanding this concept is essential to writers and readers alike so that we may understand why we create, what goes into the creation of characters, and how they become so realistic to us.
Hawthorne's Heroes: Journeys, Failures, and Ideology

** Eric Stephens  
*English, Literary Studies*  
**Presented by:** Eric Stephens  
**Mentored by:** Dan Pearce  
**Starting time:** 6:00 PM  

Abstract: In my analysis of two short stories by Nathaniel Hawthorne—“Young Goodman Brown” and “The Birthmark”—I hope not so much to stray from the path of the psychological allegory approach, but expand it. First, I will use Joseph Campbell’s work, The Hero with a Thousand Faces, as a frame to investigate how both characters assume the role of hero and enter on his own heroic journey: “A hero ventures forth from the world of common day into a region of supernatural wonder; fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man” (30). This Campbellian scaffolding, coupled with a clear distinction between psychology and ideology, enables the interpretation that these heroes are not driven by the “need to know the Other,” but to establish dominion over the Other: his female counterpart. Then, with Campbell’s heroic journey as framework, I will show how each hero spectacularly fails as a result of his dominant ideology manifested through classic Freudian defense mechanisms. In short, Goodman Brown and Aylmer both follow this pattern of the heroic journey and leave the ordinary realm by crossing the threshold into supernatural wonder where they do not win the decisive victory but lose it because they fail to see the flaw of their own ideology, which manifests itself through projection and intellectualization; each hero fails to return to society enlightened, unable to share the common truth that the woman he tries to save needs no saving.

Identity’s New Frontier in Jhumpa Lahiri’s “This Blessed House”

** Lyndee Gardner  
*English, Literary Studies*  
**Presented by:** Lyndee Gardner  
**Mentored by:** Janet Christensen  
**Starting time:** 6:15 PM  

Abstract: Jhumpa Lahiri’s short story, “This Blessed House,” tells of a young American-Indian couple who move into a house peppered with evidence of previous Christian occupants. Reading this story through a post-colonial lens, the house becomes a metaphor for the couple’s diasporic life together in America. They struggle to adjust to both their own culture and the culture that is presented to them. Both the husband and the wife’s identities change upon encountering the Christian paraphernalia. Exploring the problems involved in coming to find new identities through the Self/Other confrontation which takes place while identity is being formed, identity becomes a fluid, ever-changing construct created by the culture in which these characters live.
Effects of Including Parity Distribution on Neutron Induced Cross Sections

Bryce Murray

Physics, Physics

Presented by: Bryce Murray
Mentored by: Kevin Kelley

Starting time: 4:30 PM

Abstract: Nuclear cross sections and reaction rates used in astrophysics and radiochemistry are predicted using a statistical model. The radiochemistry team at Lawrence Livermore National Laboratory is interested in improving their database of cross sections. One common assumption in level density routines that are used in conjunction with the statistical model is that energy states are distributed evenly between positive and negative parity for all excitation energies. While this is true at high energies, it is manifestly not true at low energies. An existing nuclear reaction code (Talys) modified to take uneven parity distribution into account. We found that this change affected some cross sections by as much as a factor of two or three, while others showed little appreciable change. Further research is needed to determine if the new cross sections are more accurate than the old. To document which reactions are affected by the upgraded code, around 2700 cross sections were generated using both the modified and the unmodified routine. The average factor difference is computed for the respective data sets and plotted against charge and neutron number. For the \((n, \gamma)\) reaction, most cross sections were changed by a factor of 1.2 / 1.5. In some regions of isotopes, the nearly every reaction is altered, in others, none or few. For the \((n, 2n)\) reaction, most differences close than 10%.

Geologic Analysis of Hydrocarbon Potential, Abenaki Sub-basin, Nova Scotia

Joseph Grigg, Tyson Cook, Dan Hill, Stephen Hulbert, Zach Bogle

Geology, Geology

Presented by: Joseph Grigg
Mentored by: Mark Lovell

Starting time: 4:45 PM

Abstract: In conjunction with the Imperial Barrel Award competition sponsored by the American Association of Petroleum Geologists a data-set was received for evaluation of hydrocarbon potential in a portion of the Abenaki sub-basin offshore Nova Scotia just northwest of Sable Island. The data include an 89 km2 3D seismic survey, several 2D seismic lines, and 2 well logs from drilling sites within the area of interest. No additional data could be gathered within the 606 km2 study area. The process of finding a viable prospect for hydrocarbon reservoirs begins with a sound understanding of the regional geologic history of the area. Research of the paleogeography, geodynamics, basin structure, stratigraphy, as well as analogous studies from nearby areas led to the identification of several hydrocarbon prospects in the Early Cretaceous Missasagua formation and the Baccaro Formation of the Late Jurassic. Peak hydrocarbon generation has been shown to be within these time periods. A calculated risk analysis based on the presence and quality of a reservoir, source, and seal, source rock maturity, migration route, was performed to create a prospect chance for each identified play. Using seismic data to identify traps and calculate volumes, along with porosity and permeability data, an economic analysis was performed to analyze the feasibility of drilling.
Increasing Vehicle Fuel Efficiency Through Higher Engine Throttling

John Barrett, Jedi Knight

Physics, Physics

Presented by: John Barrett  Starting time: 5:00 PM
Mentored by: David Oliphant, Evan Hansen

Abstract: Energy prices continue to sky rocket, intensifying the need to improve fuel efficiency world-wide. This research project presents and tests the theory cars use fuel more efficiently when operated at higher throttle conditions. The validity of this theory would have significant repercussions on the driving style drivers should use for max fuel efficiency; even more importantly, it would suggest a method for which car computers could be reprogrammed to improve fuel efficiency in cars without losing power. The theory is presented by first analyzing the mechanics of car engines, and identifying two significant energy losses—pumping losses, and compression ratios—that are caused by partial throttling of the engine. A computational model of pumping losses in an engine at different speeds and throttle conditions is developed to estimate the amount of energy lost due to partial throttling vs. using higher throttle positions. A physical experiment is conducted to test for theorized results. A small four-cylinder car is accelerated with a set high throttle position, to a set top speed, and then driven a set distance. During the experimentation, a scan tool is used to read various sensors built into the car: mass air flow, rpm, speed, oxygen sensor, fuel injector width, Air Fuel Ratio. The same car is than accelerated using a lower throttle to the same top speed, and driven to the same distance. The process is repeated several times. The data is used to calculate the amount of fuel used in high throttle runs vs low throttle runs. A statistical analysis is performed to identify the significance of the results. And the computational results are compared to the experimental results. Information about how this theory could be used to improve fuel efficiency in cars world-wide is included in two parts. First how drivers can change driving styles to save gas—especially while accelerating their vehicles. And second how car manufacturers could easily reprogram their cars to drive more efficiently in low power situations.

Detection of Transiting Exoplanets Using BYU-Idaho's 250mm f/4 Maksutov-Newtonian Telescope

Kayla Cameron

Physics, Physics

Presented by: Kayla Cameron  Starting time: 5:15 PM
Mentored by: Stephen McNeil

Abstract: Exoplanets, planets around other stars, can be detected using a number of different methods, including the transiting method. This method works by monitoring the magnitude, or brightness, of a star over a period of time and looking for dips in the light curve. Research was done to determine whether BYU-Idaho’s 250mm f/4 Maksutov-Newtonian telescope is capable of detecting transiting planets by monitoring the magnitude of a star. The measured magnitude for the star studied, HD 189733, was 7.65 ±0.03. This data was collected between July 29th and September 1st, 2011. Based on calculations on the change in flux for a number of known stars with exoplanets, it was determined that with the current equipment and weather conditions, exoplanets cannot be detected. Improvements on the procedure of this research might yield results in the future. These improvements include taking more data, calculating when transits occur and only measuring during a transit, and using an auto-focuser on the telescope.
Pencils and Black Light: Photopatterned Reduced Graphene Oxide

Cody Cushman
Chemistry, Chemistry

Presented by: Cody Cushman
Mentored by: Les Manner

Abstract: Graphene, a monolayer graphite material material, remains an important topic of research because of its impressive physical and electronic properties. Reduced graphene oxide (RGO) retains many of the desirable properties of graphene and is easier to process or scale. We prepared thin films of graphene oxide (GO) and octadecylamine functionalized GO (ODA-GO) with and without photocatalyst particles. We prepared photopatterned RGO on these films by reduction with ultraviolet light. Their oxidation and reduction was characterized through Fourier Transform Infrared Spectroscopy. The photopatterning of the films with and without photocatalyst was compared.

Synthesis of 5,5′-Bis(4-butoxyphenyl)-2,2′-bithiophene and its uses as an organic semiconductor.

Lindsey Pruden, Daniel Fry
Chemistry, Chemistry

Presented by: Daniel Fry Lindsey Pruden
Mentored by: Mark Pugh, Hector Becerril

Abstract: Organic semiconductors have been used in processing electronics. The properties of these semiconductors help to make devices that are flexible, transparent, and cheap. One such organic semiconductor is 5,5′-Bis(4-butoxyphenyl)-2,2′-bithiophene. In the synthesis, of the aforementioned organic molecule, one must create an oxygen free environment. This is necessary due to the decomposing properties of the catalyst, tetrakis(triphenylphosphine)palladium(0). Once this compound is synthesized, it can be used in the development of thin-transistors.
Understanding the Effect of Solvents on the Electronic Transitions of 1-(p-dimethylaminophenyl)-2-nitroethylene

Kathleen Gienger, Shawn Burton
Chemistry, Chemistry
Presented by: Shawn Burton Kathleen Gienger Starting time: 4:30 PM
Mentored by: Hector Becerril-Garcia
Abstract: Solvatochromic solutions provide an intriguing model to analyze the how electronic transitions between the HOMO and the LUMO levels of a molecule are influenced by the chemical environment of the solvent. DAPNE, or 1-(p-Dimethylaminophenyl)-2-nitroethylene is a common solvatochromic dye which changes colors in different solvents. In this project we will synthesize DAPNE from nitromethane, p-dimethylaminobenzaldehyde and use emission and excitation spectroscopic data to study how π electron system of DAPNE is affected by water, acetone, hexane, toluene, and ethanol. We will also perform semiempirical quantum calculations to further elucidate the effects of the different solvents on DAPNE. We will present the results of our research at the conference.

GC-MS Analysis of Butylated Hydroxytoluene in Shortening

Jason LaFlamme, Spencer Thomas
Chemistry, Chemistry
Presented by: Jason LaFlamme Starting time: 4:45 PM
Mentored by: Hector Becerril
Abstract: Butylated hydroxytoluene (BHT), also known as butylhydroxytoluene, is a lipophilic organic compound commonly used as an antioxidant in various foods as well as cosmetics, pharmaceuticals, jet fuels, rubber, petroleum products, electrical transformer oil and embalming fluid. BHT functions to prevent rancidity of fats and oils in food by inhibiting lipid oxidation. Although BHT is not toxic itself, it has been linked to cancer, adverse developmental effects, allergies, detrimental neurological conditions and more. BHT is already banned in many countries including Japan, Sweden, Australia, and Romania because of its potentially hazardous effects. In the United States, BHT is not allowed in baby foods, but is otherwise not regulated. Our objective is to quantitatively determine the amount of BHT contained in different brands of store-bought shortening. As this food is a common ingredient in a number of every-day recipes. Accurately determining the amount of BHT in a sample of margarine will benefit society as a whole to make healthier diet decisions.

Analysis of Mineral Content in Supplemental Vitamins

Peter Stevenson, Mike Epperson
Chemistry, Chemistry
Presented by: Peter Stevenson Starting time: 5:00 PM
Mentored by: Hector Becerril, Mark Lovell
Abstract: Multivitamins are widely used in the United States as dietary supplements. While the Food and Drug Administration (FDA) does not regulate the concentration of vitamin microcomponents, multivitamin manufacturers may voluntarily comply with the United States Pharmacopeia’s (USP) standards for vitamin and mineral concentration. Supplements that comply with the USP standards receive an official USP stamp of verification. This scenario suggests there might be discrepancies in the concentration of supplement microcomponents found in USP-verified and non-verified brands. In this experiment, we use wet chemistry and ion chromatography to measure the concentration of magnesium and calcium in a USP-verified and in a non-verified dietary supplement. We will report the results of this analysis at the conference.
### French Fries: It’s Not the Trans Fats We Should Worry About

**Robby Sterling, Bret Dunlap**  
Chemistry, Chemistry  
**Presented by:** Robby Sterling, Bret Dunlap  
**Mentored by:** Hector Becerril  
**Starting time:** 5:15 PM

**Abstract:** Acrylamide is known by the state of California to be carcinogenic. This compound is produced in carbohydrate-rich foods, such as French fries, upon cooking at high temperatures. Previous studies indicate that acrylamide levels 900 times the average daily intake led to cancerous tumors in rodents. The question as to whether the presence of acrylamide in fried potatoes is a significant health risk is a matter of debate. Here gas chromatography-mass spectrometry (GC/MS) is used to quantify acrylamide in multiple samples of French fries. The data collected provides insight regarding the cancer risk of consuming fried potatoes.

### Analysis of Cold-Start Versus Warm-Engine Gas Emissions via IR Spectroscopy

**Kyle Lombardo, Skyler Hebdon**  
Chemistry, Chemistry  
**Presented by:** Kyle Lombardo  
**Mentored by:** Hector Becerril-Garcia  
**Starting time:** 5:30 PM

**Abstract:** The United States Environmental Protection Agency (EPA) regulates car exhaust emissions and places limits on the allowed grams of specific pollutants per mile traveled. Catalytic converters used to reduce the concentration of exhaust pollutants are generally less efficient when cold. In this study we use IR spectroscopy to quantify the difference in concentration of CO, methane and other hydrocarbons in the exhaust of cold-start versus warm-engine conditions. We anticipate significantly higher concentrations for the cold-start cases. We will report the results of our measurements at the conference.

### Determination of Nitrite Content in Varying Qualities of Pastrami

**Daniel Butler, Jonathan Leemhuis**  
Chemistry, Chemistry  
**Presented by:** Daniel Jon  
**Mentored by:** Hector Becerril  
**Starting time:** 5:45 PM

**Abstract:** Nitrite salts of either potassium or sodium are commonly used for the curing and preserving lunch meats because they inhibit the growth of anaerobic bacteria like clostridium botulinum, which causes botulism. Unfortunately chronic exposure to nitrite salts has both mutagenic and teratogenic effects, while acute exposures to 20 mg nitrite/kg body mas/day can transform hemoglobin to methemoglobin causing unconsciousness and/or death. In this study we analyze the nitrite content of three types of pastrami lunchmeat: inexpensive smoked, chopped, and pressed pastrami lunchmeat; deli-sliced pre-packaged pastrami; and newly-sliced pastrami from a local deli. We will determine nitrites by lixiviation of the pastrami to liberate aqueous nitrite ions, converting these into an azo dye and using UV-Vis spectrophotometry to determine the concentration of the dye using Beer-Lambert’s law on a standard addition scheme. We will report the results of our study at the conference.
BYU-I Facebook Use
Laura Christian, Kioa de los Reyes, Sarah Eyring, Tanea Clayson, Matt Kolar
Communication, Communication
Presented by: Laura Christian
Mentored by: Lane Williams
Starting time: 4:30 PM
Abstract: We have observed that on the BYU-Idaho campus many students use Facebook. We want to research the affects it may have on their academic performance. We plan to conduct various research methods to find out. Because of Facebook’s widespread use by college students, there is a great deal of interest in how its use is related to academic performance. We want to know how involved BYU-Idaho students are with this popular social networking site. We want to determine how the frequency of use correlates personal performance and schedule. Our meta-question: Is Facebook use inhibiting the academic performance of BYU-Idaho students? Some specific questions that we will be asking in order to reach a conclusion include the following: 1. On average, how often do you sign onto Facebook? 2. On average, how long do you spend once signed on to Facebook? 3. How many credits are you currently taking? 4. On average, how many hours do you spend a week at a job or internship? 5. One average, how many hours do you spend doing homework outside of class each day? 6. On average, how long do you sleep each night? 7. What is your current GPA? Questions 8-13 Select: likert scale from strongly agree to strongly disagree 8. I feel that Facebook negatively affects my grades. 9. I have used Facebook when I should be doing homework. 10. Facebook enhances my academic ability. 11. I have used Facebook during class (outside of classroom assignments). 12. Facebook has improved my relationships. 13. Facebook has hindered my relationships. We are confident that with the results to our survey questions, we will be able to draw some clear conclusions regarding Facebook use on our university’s campus.

TEACH Program for Children Raised in Orphanages
Carolina Albizu
Psychology, Psychology
Presented by: Carolina Albizu
Mentored by: Robert Brown
Starting time: 4:45 PM
Abstract: Abstract / In the 90’s, psychologists believed autism could be caused from putting children in an institution, specifically an orphanage, during the first five years of life. When compared, there was a strong correlation between their brain development and behavior. There was no causal relationship found, but parallel patterns of brain development and behavior between autistic and orphaned children are still valid. Parents who have adopted children from orphanages often seek professional help to correct their behavior. Unfortunately, professionals diagnose once-institutionalized children with attachment disorders, specifically Reactive Attachment Disorder (RAD) and Post Traumatic Disorder (PTSD). The diagnostic criteria for both disorders are vague, which can lead to inaccurate and ineffective therapy. Adopted orphaned children should be treated with TEACH, a treatment for autistic children. It offers a gradual stimulation of specific parts of the brain, parental professional collaboration, and acceptance of the child’s deficits.
Scholarship Research Advisors

*Nick Hicken, Charles Vesleka, Brennan Ackerman*

**Sociology and Social Work, Social Work**

Presented by: *Nick Hicken*  
Mentored by:  

Abstract: “According to the College Board, graduate and undergraduate students received more than $168 billion in aid during the 2008-09 academic year; more than $109 billion came from the federal government alone.” With all of the financial aid offered by programs and donors throughout the world, we believe it is possible for every BYU-Idaho student to obtain scholarships and grants to help pay for their education. According to Forbes Magazine, in 2008, of the 15,000 students enrolled at BYU-Idaho, 74% of those students received some sort of financial aid. We asked ourselves why 26% of students here did not receive the financial aid available to them. We found that two of the most common reasons why they had not yet received any financial aid were because they believed they weren’t qualified to receive any financial aid or because they didn’t know where or how they could find it. We feel a great solution to these two problems would be for the administration of BYU-Idaho to provide an additional service to the financial aid center that specifically focuses on helping students find and apply for scholarships and grants outside the university. We recommend that this service employ two students with experience in obtaining scholarships and grants outside the university, to act as scholarship research advisors for the students. We feel this is a simple but highly effective solution to help all students at BYU-Idaho receive financial aid. We believe this service would greatly contribute to President Clark’s three initiatives to lower the cost of education, improve the students’ experience, and allow more students to come to BYU-Idaho.

Candy Bar Market Research

*Abbie Horrocks, Karl Hansen, Megan Price, Justin Wilcox*

**Communication, Communication**

Presented by: *Abbie Horrocks*  
Mentored by: *Lane Williams*  

Abstract: The purpose of our research is to discover what qualities and traits of an advertisement to determine the purchasing pattern of an individual. Advertisements drive the motive for a consumer to purchase a product, and if an advertisement has good wording and visuals, it can create the overall persuasive method for the reason why a consumer chooses a product over others. How our group is going about using the effects of an advertisement on a consumer is being experimented by using the advertisements for a candy bar. Most candy bars are a generic purchase—most consumers either chose to buy it or not. It’s not a necessity product. To convince a consumer to purchase the product, the candy bar needs to look as appealing as possible. How is this done? By a great visual and an excellent rhetorical description. For this experiment, we are using two print advertisements—one that is worded to give the best and most delicious description of the product, and one that describes the product without the descriptive words and hype. From there, we are creating two separate surveys. Each survey has an audience of 200 random individuals invited to complete the survey, and the random sampling is unaware that both advertisements exist, only the one that they receive. From there, each group takes a list of questions asking about their background purchasing history of candy bar products, their preference of what kinds of candy, how often, and would they choose to buy this candy bar, named Swirl, based off the ad alone. The outcome of the surveys that are expected is to see if the writing of the advertisement does or does not persuade an individual in buying our candy bar. One important aspect of this survey is to make sure we have an equal amount of both men and women to ensure that there is equality in the possibility for results, because the purchasing power of a woman is different of that of a man. Because the audience, even with random sampling, is going to be similar, because all that are being surveyed are college students, this is really the main way to create diversity but unity within responses.
Modern Myth and Societal Change: An Experiment on the Power of Stories and Interdisciplinary Studies

Daniel Johnsen
Sociology and Social Work, Sociology

Presented by: Daniel Johnsen
Mentored by: Stephen Smith

Abstract: This is how deeply rooted stories are, folks. We crave them before we can walk, and we start telling them before we can talk. ~ Patrick Rothfuss Stories are powerful teaching tools. We learn about our roles, and responsibilities; we develop our dreams and desires; we discover who we are, and who we are to become, through stories. Stories connect us to, and shape, the world we experience. They destroy the barriers of understanding. Some of the best teachers in world history, including Jesus and Buddha, have used stories to teach fundamental truths to those who would listen. Stories connect people, places, and most importantly ideas. Because of their connective nature they are especially useful when discussing cross-disciplinary subjects. Interdisciplinary studies, while not well researched, seem to provide students with valuable foundational understanding and opportunities for critical analysis. To test this hypothesis, this presentation’s author has developed the curriculum for and taught for multiple semesters a course using mythology as a medium for understanding sociology. The class, Modern Myth and Societal Change, has drawn in students from other fields of study in an effort to provide information and critical thinking skills through an interdisciplinary approach. Observations and research suggest that the class is accomplishing these goals. This presentation will cover the scope of the class, reasons for its development and success, and review of evaluations and applicability to other fields of study.

The Effectiveness of Online Treatments For Depression: a Meta-Analysis

Alex North, Matthew Nearents
Psychology, Psychology

Presented by: Alex North
Mentored by: Eric Gee

Abstract: Rising costs of and decreased access to mental health care motivates research that aims to evaluate the feasibility of alternative forms of therapy. Depression in particular plagues many people who cannot utilize traditional health care systems. Of particular interest are Internet-based, self-help therapies. The attractiveness of such therapies lies in their accessibility, self-guided nature, and, according to previous research, effectiveness in reducing symptoms of various mental health conditions. The current meta-analysis attempted to summarize previous research on Internet-based therapy for depression. We calculated effect sizes (Cohen’s D) for online vs traditional therapy and online vs control (no therapy). To do this we extracted post-treatment assessment scores pertaining to depression. We subtracted the experimental mean from the control mean and divided by the control standard deviation. We also looked at different characteristics of the studies such as level of support, longitudinal measures and age of participants in order to determine whether these variables influenced therapy outcomes. In total, our analysis included 21 studies published after 2008. Each study utilized random assignment and a no-treatment vs online therapy or face-to-face vs online therapy design.Confirming previous research, online therapy for depression proved to be more effective than receiving no treatment. Our study provides evidence that online therapy can serve as a feasible alternative when traditional face-to-face therapy is overly expensive or inaccessible. More research is needed to understand whether online therapy is as effective as face-to-face therapy with a trained clinician.
Introduction to Spectroscopy
Zach Baxter, Eric Bennett
Biology, Biotechnology
Presented by: Zach Baxter                  Starting time: 4:30 PM
Mentored by: Steven Christenson
Abstract: The purpose of our video presentation is to make students familiar with an instrument called a spectrophotometer. The video shows how to turn on, operate, and efficiently use a spectrophotometer. We also show how to understand Beer’s law. To allow people to understand how the machine works, a model spectrophotometer was built with supplies from the physics lab.

Attitudes, Reasoning, and Learning in Introductory Physics I
Diana Cole
Physics, Physics Education
Presented by: Diana Cole                  Starting time: 4:45 PM
Mentored by: Brian Pyper
Abstract: The students in several of the mechanics/kinematics classes at BYU-Idaho were given an exam at the beginning of the semester. This exam tested their attitudes about science, their reasoning ability, and their conceptual understanding. I analyzed the results of this test and discovered a few interesting trends in the results, including a difference between male and female test scores as well as a correlation between the scores of the three parts of the test. These results, when combined with the upcoming post-test data and results from previous semesters, will advance our understanding of teaching and learning in introductory physics.

Attitudes, Reasoning, and Learning in Introductory Physics II
Dennis Pedersen
Physics, Physics Education
Presented by: Dennis Pedersen                  Starting time: 5:00 PM
Mentored by: Dennis Pedersen
Abstract: Research in Physics Education is shedding new light on the relationship between scientific reasoning ability, epistemological beliefs, and conceptual change in Introductory Physics. This talk will present data acquired from the Physics 123 course at BYU-Idaho in an ongoing effort to improve conceptual understanding among introductory Physics and Physical Science students.

Attitudes, Reasoning, and Learning in Introductory Physics III
Adam Roll
Physics, Physics Education
Presented by: Adam Roll                  Starting time: 5:15 PM
Mentored by: Brian Pyper
Abstract: Physics is generally considered to be a difficult subject to truly understand. Our group is investigating how students best learn so that teachers can help students to understand physics better. With the data from a class of Physics 220-Electromagnetism students I am trying to find any statistically meaningful correlations between students’ backgrounds, their pre-course attitudes about science, their reasoning ability, and their conceptual understanding. This data will eventually be compared with post-course data for the same students and as well as data from other courses.
What's really in a chemistry grade? The mysteries of Chemistry classes revealed.

Tara Fife

Chemistry, Chemistry Education

Tara Fife

Mentored by: Hector Becerril, Shane Ruebush, Les Manner

Abstract: The grade earned in a course is a composite of formative, summative, and experiential learning assessments. The tacit assumption being that all such elements reinforce each other and promote learning. We tested this assumption by comparing the correlation between different types of assignments with each other and with the course grade. Our test set consisted of three Chemistry 105 classes taught by different faculty, using varying methods. Our analysis reveals aspects that can be fine tuned to increase learning while reducing assignments that may not be as effective in promoting learning. This information will be useful in modifying learning and assessment activities in future iterations of Chem 105 classes.
Automated Percolation Analyzer (APA)

Ruben Kackstaetter  
Computer Science and Electrical Engineering, Electrical Engineering

Presented by: Ruben Kackstaetter  
Mentored by: Richard Grimmett  
Starting time: 3:00 PM

Abstract: The automated percolation analyzer is an inexpensive scientific instrument designed primarily for taking accurate measurements of water percolation. It can easily be adapted for other uses that would use a programmable ultrasonic distance sensor, and/or a control valve for water. A percolation test is a test to determine the absorption rate of soil for a septic drain field or "leach field". The results of a percolation test are required to properly design a septic system. The APA will provide a low cost and accurate percolation tester that will alleviate the tedious task of performing a percolation test.

Smart Door

Justin Schenk, Kevin Smith

Computer Science and Electrical Engineering, Computer Engineering

Presented by: Justin Schenk  
Mentored by: Brother Grimmett  
Starting time: 3:00 PM

Abstract: With the rising demand and popularity of home automation systems, we have decided to design and build a smart door. The door is designed to be locked or unlocked via Smartphone or internet access. Commercial products exist that have the same functionality as our smart door, but they are normally part of a security or home automation service with a monthly fee. Our goal is to create a system that is significantly cheaper than a commercial product, does not require a monthly fee, and has the same functionality and reliability as a commercial product. The smart door we will build will recognize that someone is at the door and send a notification to the user via email. The user will then have the choice to lock or unlock the door using their Smartphone. The system may also incorporate a camera to allow the user to see a picture of the person at the door. This smart door could also be expanded into an entire home automation system.

Arduino and RTC driven Hard Drive Clock

Tyson Steenstra, Nick Klingler, Lance Rubio

Computer Science and Electrical Engineering, Electrical Engineering

Presented by: Tyson Steenstra  
Mentored by: Richard Grimmett  
Starting time: 3:00 PM

Abstract: The rising ease of access to open source development boards gives everyone the ability to create their own embedded systems. With surprisingly few bounds given their relative size, we are able to gather or write our own instructions to make these tiny computers do just about anything we’d like. Relying on the Arduino Uno, we have created a virtual analog clock using old Hard Disk Drives and RGB LED’s for a backlit display. We incorporate the Uno’s onboard clock in one model, and bring in an auxiliary real-time clock for another, to be the signal we translate into a certain portion of the display being lit. We investigated the timing, hardware, and data transfer methods necessary to be able to convert a digital signal into the moving hands of an analog clock and coming up with some very flashy results. Since the LED’s flash at approximately 16.35ms and our eyes can discern changes at about 41ms, our eye’s persistence of vision steadies the display.
Blind Aerophobia Dog

*Austin Tucker, James Kelley*

Computer Science and Electrical Engineering, Computer Engineering

**Abstract:** A robotic dog will be created that will walk until it detects an edge, then see if it is able to walk off to a lower level. If possible, it will. If not, it will search for another edge.

Facial Recognition using Principal Component Analysis and Wavelet Transforms

*Dominique Almer*

Mathematics, Applied Mathematics

**Abstract:** A facial recognition system allows automatic recognition of digital images of human faces by comparing a given image to a database of images. Such a system has applications within security and law enforcement areas as it can help identify a person in much the same way as can a fingerprint or an eye iris scan. A number of techniques currently exist for implementing such a system. This project explains the underlying mathematics of one such method, namely Principal Component Analysis using eigenfaces. This method seeks a match by projecting a given image onto a low dimensional subspace that is defined by the significant variations among the known images. To speed up computations, discrete Daubechies 2D wavelet transforms were used to compress the image data. Experiments using images from the AT&T Laboratories’ Cambridge Face database show excellent results matching those found in the literature.

Image Processing Biped

*Thomas May, Joseph De La Cerda*

Computer Science and Electrical Engineering, Computer Engineering

**Abstract:** We are designing a biped with image processing capabilities. A Microcontroller in our system will read-in a webcam and use multiple algorithms to find if a ball is visible. If the controller finds a ball, it will then use the ball’s position to determine how it must move to get closer to the ball and eventually kick the ball.
Are Students Using Their Smartphones to Get Smarter?

Herbert Nagamatsu
Art, Graphic Design

Presented by: Herbert Nagamatsu  Starting time: 3:00 PM
Mentored by: Shawn Randall

Abstract: Herbert Nagamatsu, a student majoring in Communication at Brigham Young University–Idaho, illustrates how students are currently using their smartphones during their studies and what impact those activities are having on their educational experience. Combining data from nationwide studies with first-hand insights and data from BYU–Idaho—including student questionnaires, faculty interviews, and empathic studies—the author has observed several trends in smartphone usage among college students which were subsequently divided into three organizational groups. The first group of trends identifies the general demographics and background necessary to understand the overall topic of college student smartphone usage. The second group of trends identifies specific problematic elements associated with how students are using their smartphones in the educational process, including the distractive nature of texting, social networking, and games. The third group of trends identifies specific ways that smartphones are having a positive impact on the educational process and concluded that those simple methods can help college students use their smartphones to further enhance their college education. The findings of this research have been designed into a large information- graphic that is presented on a large, freestanding display, making the data and conclusions easily accessible to college students and professors that view the research exhibit. The display also includes a Quick Response Code (QR code) that allows viewers to access the information graphic online using their smartphones or other hand-held electronic devices.

How texting develops and destroys relationships

Alyson Wallace
Art, Graphic Design

Presented by: Alyson Wallace  Starting time: 3:00 PM
Mentored by: Shawn Randall

Abstract: There are two sides to every story. This is also true for a text message. One being, what the sender meant, and two, what the reader interpreted. I have been researching through questionnaires, interviews, the internet, etc. to figure out if texting is overall more helpful or damaging to a relationship. I believe that there are two sides to this as well. In some aspects, it can help a relationship start. In others, it can destroy by subtle misunderstandings. I want to figure out why we let this happen. Also our dependency on technology and how that affects our relationships with others.
Multiple Intelligences and Technology

**Brant Day**

Art, Graphic Design

Presented by: Brant Day

Mentored by: Shawn Randall

**Abstract:** The world of today is much different than the world of yesterday. Though most all will agree with the before mentioned statement, we still find that many things we do today could be considered outdated. There are those who disagree and fight against change and the advances in technology. In the field of education the fight could be considered more debated and heated than in many other fields. Though I do not intend to explore the field of education and the needs that are contained therein, my question was focused on technology itself and how new technology stacks up against modern needs. The question I am asking is “What needs can technology fill and where does it fall short as pertaining to education?” With this question I began exploring the various methods that education uses to measure success and failure in the system. Having found Howard Gardner’s theory of Multiple Intelligence and delving further into his ideas it was decided that his theory would be a good foundation for further research. The question then evolved into, “How does technology fill the needs of the various forms of intelligence?” The various forms of intelligences having been initially created by Howard Gardner but further expounded upon by other sources and material. The final product is presented in three main parts. The largest part deals with the ideas presented by Howard Gardner and other contemporaries and their meaning, roles, definitions, and strengths. The other two pieces will be equal to each other but subordinate to the first. These two pieces will deal with the strengths and weakness’s of technology when compared to the theory of Multiple Intelligence. The three will be presented together thus allowing viewers to understand and digest the information is more manageable pieces.

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The Dating Guide: Why & How You Date the Way You Do

**Stephanie Tingey**

Art, Graphic Design

Presented by: Stephanie Tingey

Mentored by: Shawn Randall

**Abstract:** The rules and permissions regarding when, with whom and how we date are examples of the influence of culture. Culture is all the behaviors and artifacts we have of getting along with each other, it is the lens in which we see the world. Knowing about one's own culture can give one understanding and self-realization--The ability of being aware of why and what are the meanings of one's interactions. Different cultures see dating and relationships differently. For example, in Asian culture first dates are to be seen as “friendly” with a group of friends present and is too early for any hand holding or kissing. Asian women are also expected to “play hard to get” and this stage could last for many years. When an official relationship is started, it is the male’s responsibility to introduce him to her family. The “BYU-Idaho culture” affects the way BYU-Idaho students view dating and relationships. Physical looks were found to be more important to men than women, and manners were more important to women than men. In women, the top 3 reasons for attraction were: personality, manners and physical looks of their date. In men, the top 3 reasons for attraction were: personality, physical looks and humor. Women were found to use physical touch when interested in their date while men were found more likely to “lie about little things to have more in common with their date.” Women were also found more likely to flirt with their date, even when they were not romantically interested in them. Men were more likely to feel that kissing was a way to show attraction/affection while women were more likely to feel that kissing meant commitment/relationship. Men were more likely to feel that lack of good conversation, attention and appreciation made a “bad date,” while women felt that lack of manners, good conversation and a plan made a “bad date.” When it comes to sending signals when romantically interested in a date, men were more likely to show through body language (eye contact and smiling) while women were more likely to show through flirting/physical touch.
### The Barbie Effect

*Ruby Parra*

Art, Graphic Design  
**Presented by:** Ruby Parra  
**Mentored by:** Shawn Randall  
**Starting time:** 3:00 PM  

Abstract: I am doing my research on the effect that barbies have on little girls and whether that effect carries on through womanhood. Some of the effects are negative body self image, low self esteem which can contribute to eating disorders and excessive plastic surgery.

### Hear, See, Speak

*Chellie Dazey*

Art, Graphic Design  
**Presented by:** Chellie Dazey  
**Mentored by:** Shawn Randall  
**Starting time:** 3:00 PM  

Abstract: For my project, I explore a set of three types of Parenting Styles: Authoritarian, Authoritative and Permissive. My goal is to better inform newlyweds and young parents of parenting options. I want to show which methods will be successful in creating a happy, stable and properly developed child. I will give a description of each parenting style, the pros and cons of utilizing each method of parenting, the effects each style has on children and the types of child personalities that benefit from each style. My research includes various sources of secondary research as well as primary research I have personally collected. I conducted a survey to assess parent-child relationships amongst participants, collecting data on various aspects of the relationships between people and their mothers and fathers. I interviewed a Child Development professor to gain further insight on the parenting styles and the effects thereof on children and their children's children. I fashioned character profiles, allowing for an example of the dispositions of the parents who would typically embody each of the aforementioned styles. I have learned a great deal about the Authoritarian, Authoritative, and Permissive styles, the do’s and dont’s, and how to better empathize with parents and children.

### Your Breath Stinks!

*Amber Shoemaker*

Art, Graphic Design  
**Presented by:** Amber Shoemaker  
**Mentored by:** Shawn Randall  
**Starting time:** 3:00 PM  

Abstract: The purpose of my project is to talk about the different aspects of bad breath, including: health risks, social experiences, self-esteem, causes, cures, and how much money is spent on freshening products. I would like to bring to light each of these different pieces so that people can better understand bad breath and how it affects so many different aspects of our lives.
Hazard to Heresy – The Scale of Depression Treatments in America.

Dustin Landon
Art, Graphic Design
Presented by: Dustin Landon
Mentored by: Shawn Randall
Starting time: 3:00 PM

Abstract: Depression is a chronic illness that exacts a significant toll on America’s health and productivity. It affects more than 21 million American children and adults annually and is the leading cause of disability in the United States for individuals ages 15 to 44. Lost productive time among U.S. workers due to depression is estimated to be in excess of $31 billion per year. Depression frequently co-occurs with a variety of medical illnesses such as heart disease, cancer, and chronic pain and is associated with poorer health status and prognosis. It is also the principal cause of the 30,000 suicides in the U.S. each year. In 2004, suicide was the 11th leading cause of death in the United States, third among individuals 15-24. More and more Americans suffer from depression each year, and as a result Prescription manufactures pump out Anti-depressants as Americans hope for a quick fix. To the point that nearly 10% of Americans are on Anti-depressants, but as the years have marched on doctors and scientist are starting to notice that anti-depressants aren’t helping as much as we had thought and are now starting to discuss how to really combat depression in a way that will help the sufferer live a happy full life. In this research piece we will probe people’s perceptions of depression and its cures, (if it’s even a curable disease) as well as what doctors and people alike are starting to find what really seems to help, as we probe this topic we will see the extremes in treatment from a medicine cabinet full of pills and there potential hazards, to the other side where a holistic and spiritual belief will hold people from getting the help they really need. In the end the data points to the long known fact that extremes are dangerous and the really path is found in a personalized mix of treatments to help the individual. Hoping to disperse the clouds of confusion surrounding the issues and helping people see a path to help (either themselves or others they know) with the confusing state of depression.

Are you afraid?

Justin Reyes
Art, Graphic Design
Presented by: Justin Reyes
Mentored by: Shawn Randall
Starting time: 3:00 PM

Abstract: Through information design I will inform the viewer about the crippling effects of phobias. The relationship between fear and phobia is intricate and important. Through interaction, people will have the choice to face the object of different phobias in order to learn more about them.
We Became Friends

Mike Commons

Art, Graphic Design

Presented by: Mike Commons  
Mentored by: Scott Franson

Starting time: 3:00 PM

Abstract: “We Became Friends” is an interactive exhibit used to promote social development by incorporating a necessary “icebreaker.” Environmental design has a psychological effect upon its inhabitants whether it is subconscious or recognized. Research was gathered in a control test of 5 local restaurants in Rexburg; Sammys, Twizzleberry, Kiwi-Loco, Nielsens Frozen Custard and BRC’s Frozen Custard. Each environment was extremely different however each environment shared a concept that was coined the “icebreaker.” The icebreaker is a focal point in each environment that provides something in common for people to relate to. These can be anything from televisions, live bands, the radio, and an Xbox Kinect. Each icebreaker was different in form, but similar in function. “We Became Friends,” was created as an icebreaker for students in an environment that didn’t have a prominent object for people to relate with. This became the focal point for strangers to meet new people and become friends through an interactive cube that was used as the vehicle to create new friendships. Over the duration of 2 weeks, 160 interactive cubes were taken from the exhibit and 60 returned filled out with new friendships. By incorporating Facebook.com into the project, students were able to enhance their friendship and become part of a bigger movement.

Dreams: A Change in Interpretation

Joshua Brandt

Art, Graphic Design

Presented by: Joshua Brandt  
Mentored by: Shawn Randall

Starting time: 3:00 PM

Abstract: This exhibit was born from the question I asked myself, “Do we effect our dreams or do our dreams effect us?” After researching all the options I reached the conclusion that there has been a shift from the first recorded dreams until now. In my findings I realized that in the genesis of documented dreaming, the commonality among dreamers was to interpret the dream as a manifestation of future events. The majority of peoples lives through the ages have been governed by this notion of dreaming. As the influence of science has little by little increased in the world we see a significant and revolutionary shift in the interpretation of dreams. This change is that the scientific world now interprets dreams as a manifestation of the happenings and experiences that we have already lived. It is very interesting to see the difference between the old way and the new. There are still people who feel the old way still applies but from new philosophy many of our dreams can be interpreted by the way we feel. With this research in mind I am prepared to display an exhibit that will show the evolution in dream interpretation as well as what new ways people are learning to control their dreams. I will give an explanation of how we can better remember our dreams as well as definitions for common dream imagery. The vessel or format for this exhibit will be five hanging dreamcatchers and seven or eight yarn lanterns. In the middle of these dreamcatchers I will place my research. I will give quantitative and qualitative information on my subject and split the information up into different categories. Hanging from the lanterns and dreamcatchers will be definitions of dream imagery. I will need a ten foot section on the wall seeing as how I have so many objects to space out along the wall.
One in Seven Americans Can't Afford to Buy Food?

Doug Garding
Art, Graphic Design

Presented by: Doug Garding Starting time: 3:00 PM
Mentored by: Shawn Randall

Abstract: Currently, there are over 45 million Americans receiving aid to buy food. Just 4 years ago, during 2008, there were only 28 million Americans using food stamps. The costs of the program have grown in conjunction with the number of participants. In fact, the amount spent on the program has quadrupled over the last ten years to over $80 billion. So, why are so many people, in what’s often considered the richest, most blessed, and powerful country in the world, seemingly unable to afford to feed themselves? The purpose of this research is to answer the question as to why more people are using food stamps now than ever before. There are many reasons ranging from effects of the Bush and Obama administrations to the poor economy to dismal family situations. It also seeks to shed light on ways that the program is being abused and to what extent fraud is taking these important funds. The research also illuminates some of the social conceptions that BYU-I students have regarding the program.

What is Generation Y lacking?

Chelsea George
Art, Graphic Design

Presented by: Chelsea George Starting time: 3:00 PM
Mentored by: Shawn Randall

Abstract: My project explores the process of voting, the average Generation Y person, and why Generation Y does not vote. My project is trying to educate the younger generation (18-29 year olds) and make them more aware of the consequences of voting and not voting. I am also trying to get Generation Y more interested in government or just educating them a little bit about about the government that runs the country we live in. I believe the topic of voting and politics is not a top priority of the younger generation, but yet it affects so much of their lives. I want to bring politics to the attention of young people and try to make a change is the low turn out of voting and the lack of knowledge in this subject.

What influences voting decisions among college students?

Angie Steggell
Art, Graphic Design

Presented by: Angie Steggell Starting time: 3:00 PM
Mentored by: Shawn Randall

Abstract: The idea behind my project is trying to find out and research the main influencers in the lives of college students when trying to decide what candidate to vote for during a presidential election. We all get our information from somewhere, and I think that social media plays a huge part in this for most college students. However, I’m not naive enough to believe that it’s the only factor, so I want to find out what other influencers there are and how much college students rely upon them when making the final voting decision. I want my project to be an interactive piece for the people that will be looking at it. I want to involve the audience in the process of what I’m finding out about my research topic.
Through My Eyes

Amy Campbell
Art, Photography

Presented by: Amy Campbell
Mentored by: Shawn Randall

Starting time: 3:00 PM

Abstract: A picture is worth a thousand words. I love having the ability to take a picture and make it worth a million. In my life, photography has been a passion that I have used to take out stress in my life. The ability to capture something beautiful and have it always, to look upon or to inspire you is a beautiful gift. To be able to enhance something or to take something dull and transform it into something radiant is what has made this art so intriguing. Taking a picture and sharing it gives the world a personal perspective. Everyone sees things differently but photography gives you the chance to share your single eye view. My family and friends have always supported my talent. My family only wants my talent to develop more to help me get into college. The people who I love make it easy for me to capture a personal or thoughtful moment. My love for those around me has shaped who I am and the talent I have now. I know that from this, it will help shape who I will be and where I will go. / The people in my life are the key inspiration in my art. My family and friends are the people that I have used to shape my talent on. They give me inspiration. I love to see them in a beautiful moment and capture it. Since I know them, it’s motivating to bring out the beautiful and unique in them. They have made it able for me to change their picture from a picture to a story. I believe that this talent that I have, can give joy to people. What is more special than to capture important moments for people to keep forever? I have witnessed this experience. Bringing joy to others, gives me even more. I only want to do this for the rest of my life. I believe the best story is told without words. I believe a picture can be a thousand stories. I have taken and shared these pictures because I want others to hear my story. My story has no words. My story has thoughts and feelings. That is why I love taking pictures.

E-Waste: the future is in our hands

Betsabe Ruiz
Art, Graphic Design

Presented by: Betsabe Ruiz
Mentored by: Shawn Randall

Starting time: 3:00 PM

Abstract: This is a research project that informs about e-waste or electronic waste. It will informed on the amount on waste that is being produced as technology evolves. It will talk about the hazardous materials that are used in certain electronic products and how not disposing of them appropriately can be very harmful to the environment and to our health. It will talk about the right way to dispose of them and how we can help with this process. The purpose of this display is to invite the community to be informed on the subject and to dispose of electronic waste appropriately and to make them aware of where they can do so, in the surrounding area.
Germaphobes

Mike Commons
Art, Graphic Design

Presented by: Mike Commons  
Mentored by: Shawn Randall  
Starting time: 3:00 PM

Abstract: Germaphobes educates the audience of the importance of practicing good hygiene and being aware of surfaces that are potentially hazardous to our health. Products examined are computer keyboards, cell phones, light switches, etc. The exhibit not only reveals the germ content for each item, but the reality that it doesn’t matter how many germs are on a surface, but how many make it to your face. Habits such as eating at the computer, not washing your hands, and even talking on your cell phone are discussed and solutions to these practices are proposed. The number one prevention of becoming sick is and always will be good hand washing. The exhibit will include physical objects that are used daily with data visualization and a call to action. On-site research has been conducted in the McKay library on BYU-Idaho campus and real scenarios and surveys have been analyzed. Hypothesis: By educating the student body about the reality that touching your face is worse than not washing your hands, an increase in self awareness about personal habits will promote healthier lifestyles. Students will become sick less often and school performance will increase.

Where Are You Going?

Laurel Smith
Art, Graphic Design

Presented by: Laurel Smith  
Mentored by: Shawn Randall  
Starting time: 3:00 PM

Abstract: Why is it so hard to make decisions about our own lives? Is it because we don’t know where we want to be? Is it because we want to be everywhere? Is it the fear of not knowing the future consequences of our choices? Or maybe it is because our brains have not yet developed the ability to do so? This study educates students on social science behind the inability to make important life decisions. As college-aged students, many changes are developing in their brains. The lack of making these important life decisions could affect their personal progression. This exhibit will help the students to better understand the issue so that they can rise above it and make a choice. Road sign will be used to communicate the different choices of pathways that could be taken and the confusion that comes from so many possibilities and will take up approximately 5 feet.
<table>
<thead>
<tr>
<th>Title</th>
<th>Presenters</th>
<th>Mentored by</th>
<th>Starting time</th>
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<tbody>
<tr>
<td>Timer-Controlled Bear Bait Box</td>
<td>Scott Custer, Sam Hulse, Saige Paget, Michael Brady, Nathan Keilbart</td>
<td>Greg Roach</td>
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<tr>
<td>Golf Ball Teeing Device</td>
<td>Neil Ralph, Bryan Dial, Ryan Gohnert, Derek Scott</td>
<td>Greg Roach</td>
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<tr>
<td>Target Shooting Dueling Tree</td>
<td>Bryan Rovig, Jonny Holden, Austin Kinghorn, Rachel Jones</td>
<td>Greg Roach</td>
<td>3:00 PM</td>
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<tr>
<td>Bicycle Turn Signal Add-On</td>
<td>Michael Reidhead, Spencer Sorensen, Victor Chu, Daniel Bryner</td>
<td>Greg Roach</td>
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<tr>
<td>Clay Pigeon Launcher</td>
<td>Avery Butifkofer, Caleb Gunderson, Josh Van Tress, Joe Maestas</td>
<td>Greg Roach</td>
<td>3:00 PM</td>
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<tr>
<td>Portable Bicycle Tuning Stand</td>
<td>Sean Walker, Stephanie Morco, Riley Nielsen, James Meiners</td>
<td>Greg Roach</td>
<td>3:00 PM</td>
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RC Baja Car

*Joseph Boster, Erik Richardson, Rob Van Sickle, Rob Warnick*

*Mechanical Engineering, Mechanical Engineering*

**Presented by:** Joseph Boster  
**Mentored by:** Greg Roach

**Abstract:** We will show a working prototype for a RC Baja Car.

---

Portable Tire Dolly

*Tyler Baker, Andrew Baker, Todd Westwood, Tommy Johnson*

*Mechanical Engineering, Mechanical Engineering*

**Presented by:** Tyler Baker  
**Mentored by:** Greg Roach

**Abstract:** We will show a working prototype for a portable tire dolly.
<table>
<thead>
<tr>
<th>Assisting Device</th>
<th>Philip Honzik, Devin Terry, Klint Anderson, Curtis Denos</th>
<th>Mechanical Engineering, Mechanical Engineering</th>
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<tr>
<td>Presented by:</td>
<td>Philip Honzik</td>
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<td>Mentored by:</td>
<td>Alan Dutson</td>
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<tr>
<td>Abstract:</td>
<td>We will show a working prototype for a assistive device.</td>
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<tr>
<th>Measuring Device</th>
<th>Suyog Paneru, Brain Hanacock, Adam Redford, Reuben Haupt</th>
<th>Mechanical Engineering, Mechanical Engineering</th>
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<td>Presented by:</td>
<td>Suyog Paneru</td>
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<td>Mentored by:</td>
<td>Alan Dutson</td>
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<tr>
<td>Abstract:</td>
<td>We will show a working prototype for a measuring device.</td>
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<tr>
<th>Man Lift Design II</th>
<th>Warren Jones, Philip Rollins, Lyle Stratton, Kenneth Hulet</th>
<th>Mechanical Engineering, Mechanical Engineering</th>
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<tr>
<td>Presented by:</td>
<td>Warren Jones</td>
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<td>Mentored by:</td>
<td>Greg Roach</td>
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<td>Abstract:</td>
<td>We will show a working prototype for a man lift design.</td>
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<tr>
<th>Man Lift Design I</th>
<th>Brent Griffith, Cole McCann, Justin Dayley, Thomas Checketts</th>
<th>Mechanical Engineering, Mechanical Engineering</th>
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<tr>
<td>Presented by:</td>
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<tr>
<th>Pharmaceutical Package Design</th>
<th>Austin Terry, Kyle Foster, Evan Parker, Jacob Chapman</th>
<th>Mechanical Engineering, Mechanical Engineering</th>
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<td>Presented by:</td>
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<tr>
<th>Scissors Lift Redesign</th>
<th>Andrew Stevens, Daniel Butikofer, Zack Lindstrom, Travis Roe</th>
<th>Mechanical Engineering, Mechanical Engineering</th>
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<td>Andrew Stevens</td>
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<td>Mentored by:</td>
<td>Alan Dutson</td>
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<tr>
<td>Abstract:</td>
<td>We will show a working prototype for a scissor lift redesign.</td>
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Recycling System
Brett Stone, Ryan Stanley, Brandon Beckstrand, Kenneth Aycock
Mechanical Engineering, Mechanical Engineering
Presented by: Brett Stone
Mentored by: Alan Dutson
Abstract: We will show a working prototype for a recycling center.

Stream Table
Branden Pronk, Zach Merrill, Derek Whipple, Nick Schenk, Steven Dickson
Mechanical Engineering, Mechanical Engineering
Presented by: Branden Pronk
Mentored by: Alan Dutson
Abstract: We will show a working prototype for a stream table.
Quadcopter
Reuben Haupt, Brandon Beckstrand, Cole McCann, Justin Dayley
Mechanical Engineering, Mechanical Engineering
Presented by: Reuben Haupt
Mentored by: Adam Dean
Abstract: Develop a quadcopter that can be flown manually using a remote control and autonomously to travel through GPS waypoints.

RC Snow Plow
Ken Aycock, Zach Lindstrom, Ryan Gardner, Thomas Checketts, Craig Trudo, Kyle Redfearn, Charles Nyanzi
Mechanical Engineering, Mechanical Engineering
Presented by: Ken Aycock
Mentored by: Adam Dean
Abstract: Develop a snow plow that can be operated remotely from inside your house using an iPhone or iPad.

RC Tank
Chris Mathis, Erik Richardson, James Meiners
Mechanical Engineering, Mechanical Engineering
Presented by: Chris Mathis
Mentored by: Adam Dean
Abstract: Develop a remote control tank that can automatically shoot airsoft pellets at a moving orange object.

Multi-Directional User-Controlled Clay Pigeon Launcher
Nathan West, Curtis Denos, Avery Butikofer
Mechanical Engineering, Mechanical Engineering
Presented by: Nathan West
Mentored by: Adam Dean
Abstract: Modify a clay pigeon launcher such that a user can adjust the pitch and yaw of the firing mechanism and release the clay pigeon from a remote control.

Shower Temperature Control
Nick Schenk, Brian Hancock, Steven Dickson, Adam Redford, Roberto Cedeno, Michelle Kleihege, Phillip Roberts
Mechanical Engineering, Mechanical Engineering
Presented by: Nick Schenk
Mentored by: Adam Dean
Abstract: Develop a device to control the water temperature for a shower and be able to control the temperature with an iPhone or iPad. Be able to have the shower automatically turn on to a desired temperature after an alarm clock is set off on the iOS device. Also be able to set parental controls to limit children’s shower time.
Biodiesel Produced From Microalgae; Obstacles and Solutions

Alec Larsen
Chemistry, Chemistry

Presented by: Alec Larsen
Mentored by: Shane Ruebush, Gary Baird
Starting time: 3:00 PM

Abstract: Microalgae are a diverse group of prokaryotic and eukaryotic photosynthetic organisms that grow rapidly due to their simple structure. They can be potentially employed for the production of biodiesel but, there arise several problems that make this process uneconomical. There are three areas of particular concern namely; production and cultivation of the algae, extraction of the algal oil and conversion of the oil into usable biofuels. One of the aspects of algal biodiesel that makes it attractive is the production capability of small amounts of land. Obstacles that come with the production of this fast growing organism are water requirements, nutrient requirements and CO2 requirements. It is suggested to engineer extremophilic algae to contain a nitrogen fixing enzyme built in. The solution to the CO2 is to utilize microalgae as part of carbon sequestration processes for industrial factories, thus delivering the waste CO2 into the algae in a mutually beneficial process. A one-step extraction and conversion process would greatly reduce the cost and time required to produce biodiesel. This process, suggested by researchers at Utah State, uses alcohol and an acid catalyst at a desired temperature to extract the oil and convert it into biodiesel in a one-step reaction. If this process works well and is economical it will reduce the total cost of the biodiesel significantly. Using all of these elements the cost of biodiesel could become competitive with fossil fuels.

Bio 180 Agarose Gel Genotyping

Kallie Hillam, Tess Rasmussen, Jacob Thatcher, Spencer Eberhard, Rachel Woodson, McKenna Seamos, Jennifer Cutler
Biology, Biotechnology

Presented by: Tess Rasmussen
Mentored by: Steve Christenson, Todd Kelson
Starting time: 3:00 PM

Abstract: The Bio 180 course has a lab that requires the students to complete a gel genotyping activity. The kit from BioRad that is currently used is expensive. In order to lessen the cost of the Bio 180 lab, this experiment was designed to allow us to replicate our own DNA fragments. There are eight sequences to be replicated. To do this, the DNA fragments from the BioRad kit were analyzed. The analysis was done by running the kit samples through gel electrophoresis to determine the sizes of the fragments. An image was captured of the gel showing the resulting sizes of the bands. Once the sizes were known, restriction sites for the DNA sequence were located using BioLabs Inc. NEBcutter. The next step was to choose a restriction enzyme and primers that would give the desired sizes of the sequences. The primers were designed using OligoAnalyzer 3.1 from Integrated DNA Technologies. Polymerase Chain Reaction (PCR) and cloning were used to make copies of the eight DNA fragments that can be used in place of the BioRad kit.
Investigating Light-dependent Nitrogen Fixation in Azotobacter vinelandii

Skyler Hebdon, Parker Crandall
Chemistry, Chemistry

Presented by: Skyler Hebdon
Mentored by: Shane Ruebush

Starting time: 3:00 PM

Abstract: Nitrogen fixation is a biological process that has become increasingly important to our growing world. It is well understood that plants, being the main energy source in all ecosystems, are dependent upon this process to convert unusable molecular nitrogen in the air to ammonia. In nature, there are microorganisms that fulfill this role known as diazotrophs. Scientists have taken great interest in these organisms as a means to improve modern agriculture by increasing the concentration of ammonia in soil. One such organism, Azotobacter vinelandii, requires an intake of glucose and assimilates ammonia into glutamate through the glutamate synthase pathway. Modeling an experiment carried out in 2007 with E. coli, we are in the process of developing a method to increase the output of fixed nitrogen with a lower concentration of glucose by genetically altering A. vinelandii to perform photosynthesis of ammonia with the addition of a proteorhodopsin. This protein is a retinal-dependent macromolecule that catalyzes a proton gradient across the cell membrane. We have compared the isoprene pathways of several retinal-containing bacteria with common proteins in A. vinelandii to select a likely candidate for gene transfer to create recombinant clones that will be photoactive with the insertion of the proteorhodopsin gene. Using online databases and BLAST searches, our results have produced five likely candidates that will be narrowed down based on cost and availability.

Computational study of S-a-pinene derived hydroxy-peroxy radical-water complexes

Kathleen Gienger, Stuart Morgan, Glenn Mumford
Chemistry, Chemistry

Presented by: Kathleen Gienger
Mentored by: Ryan Dabell, Jaron Hansen

Starting time: 3:00 PM

Abstract: Pinenes are a class of unsaturated, bicyclic hydrocarbons found in plants, turpentine, and the atmosphere due to biogenic emission. The double bond in the pinenes is subject to attack from hydroxyl radicals (HO•) in the atmosphere, which subsequently leads to the addition of O2 on the adjacent carbon. The resulting hydrox-peroxy pinene radical belongs to a class of radicals suspected in a variety of atmospheric chemistry processes, such as the formation of tropospheric ozone and NOx. Moreover, when complexed with water, the resulting hydrogen bonding is thought to increase the overall stability of the system, increasing the availability of the species for atmospheric processes. In this study, we examine the lowest energy conformation of the radical-water complex originating from S-a-pinene. Complex binding energies, hydrogen bond angles and bond lengths are assessed at the B3LYP/6-311++G(2d,2p) and MP2/6-311++G(2d,2p) theory levels. Natural bonding orbital analyses and electron difference density plots are also used to better characterize the nature of the hydrogen bond.
The Effects of Video Animation on Student Learning in a Principles of Biology Course

Abigail Blades, Lauren Jewel, Greg McDavitt

Biology, Biology Education

Presented by: Abigail Blades
Mentored by: Abigail Blades, Todd Kelson

Starting time: 3:00 PM

Abstract: Many professors now understand the importance of advancing educational techniques with their new generation of technologically savvy students. This study seeks to understand the efficacy of using video animations specifically tailored towards a Principles of Biology course at BYU-Idaho against the efficacy of using the Campbell “Biology” textbook. We hypothesized that there is an increase in overall retention and knowledge when video animations are used against the text. Our study using 123 students was performed with two groups. In the first study, group A read the textbook and group B watched the screencast for twenty minutes and then took an exam on water, solubility and pH. In the second study, group A watched the screencast and group B studied the text then took an exam on membrane structure and fluidity. The students also took a survey to assess attitude towards the screencasts that were made. Results indicated mean score values for exam one of 75.8% and 71.65% for groups A and B with a P value of 0.06782. Results indicated mean score values for exam two of 71.07% and 60.81% with a P value 0.0002. All students involved in the study had received a previous lecture on water, solubility and pH, or the first exam that they took. Our study gives good preliminary research results indicating the beneficial use of screencasts as alternative methods of study, and proves that students respond positively to such teaching techniques.

Computational study of α-pinene hydroxy-peroxy radical-water complexes

Stuart Morgan

Chemistry, Chemistry

Presented by: Stuart Morgan
Mentored by: Ryan Dabell

Starting time: 3:00 PM

Abstract: Pinenes are chemical compounds that are important constituents of pine resin as well as several other plants. The presence of Pinenes in the atmosphere makes them subject to attack by hydroxyl radicals and oxygen. The resulting hydroxy-peroxy-organic radicals are thought to play a significant role in the formation of stratospheric ozone and NOX. This study reports the findings on the stability of radical-water complexes originating from -pinene and the nature of the hydrogen bonds that form the complexes. Complex binding energies, hydrogen bond angles and bond lengths are assessed at the B3LYP/6-311++G(2d,2p) and MP2/6-311++G(2d,2p) theory levels. Natural bonding orbital analyses and electron difference density plots are also used to better characterize the nature of the hydrogen bond.
Earth's Largest Satellite and the Scientific Method
Kayla Cameron

Presented by: Kayla Cameron  Mentored by: Brian Tonks

Abstract: The history of Moon origin theories goes back as far as civilization itself. Each ancient group had its own myths about the Moon. In most, the Moon and Sun were deities that were related in some way, whether they were brother and sister or husband and wife. When science started branching off and becoming more and more wide-ranging, scientists started looking towards the heavens and trying to figure out how the Moon came to be. George Darwin, son of Charles Darwin, hypothesized that the Earth flung off a piece of itself when it was mostly formed and still molten. This is called the fission theory. Later scientists suggested the capture theory, in which the Moon was formed somewhere else in the solar system and captured by Earth. Edouard Roche suggested yet a third theory based on Laplace’s nebular formation theory. Called coaccretion, this theory proposes that the Moon formed from a debris disk around Earth. Many different scientists worked on each of these theories and suggested changes and problems with each. In the 1960s, the United States launched a program called Apollo. The main purpose of the missions was to gather evidence from the Moon that could prove or disprove each of the theories. The evidence brought back actually disproved or seriously damaged all three. Two scientists, Hartmann and Cameron, separately came up with the Giant Impact Theory, the theory that is currently the most plausible. This theory states that very early in Earth’s history, a Mars-sized object, nicknamed Theia by some scientists, collided with it. Theia’s iron core sunk to the center of Earth and its mantle spun into orbit. Eventually, this debris formed the Moon. Today, lunar scientists are working out problems and details with computer simulations, but there are still a lot of things that need to be addressed.

Evaluation of Separation Conditions for Simultaneous Electrophoresis and Chromatography
Peter Stevenson, Bret Dunlap

Presented by: Bret Dunlap  Mentored by: David Collins

Abstract: Single-dimension separations are routinely coupled in series to achieve two-dimensional separations. Simultaneous electrophoresis and chromatography (SEC) is a new separation technique concurrently coupling traditional separation methods to achieve improved resolution and reduced analysis times. In SEC, chromatography occurs via capillary action while an orthogonal electric field promotes electrophoresis in a second dimension. A novel apparatus with a dual solvent reservoir is employed to apply the concurrent electric field. In this work, SEC resolution is evaluated and optimized by altering separation conditions. Visible dyes are used to continuously monitor the separation. The feasibility of simultaneously employing electrophoresis and chromatography in two dimensions is discussed.
Transormation of plasmid containing GFP and Kanamycin resistance gene via electroporation.

TATTON HYMAS, Nathan Cope

Biology, Biotechnology

Presented by: Tatton Hymas

Mentored by: Steven Christensen

Starting time: 3:00 PM

Abstract: Using plasmids that contain the GFP and Kanamycin resistance gene, we will insert these plasmids into an agrobactreium thru elctroporation. The plasmids will be grown on a plate containing kanamycin to determine if transformation was successful. A YM broth will also be constructed to use as a culture for additional agrobacterium that can be used for further experiments.

A Novel Examination of Insulin and Progesterone in the Treatment of Parkinson’s Disease

Devon Kienzle, Peterson Trent, Lindsey Friend, Weston Andersen, Craig Jarvis, Benjamin French, Steven Peacock

Biology, Neuroscience

Presented by: Devon Kienzle

Mentored by: Clair Eckersell

Starting time: 3:00 PM

Abstract: Parkinson’s disease is a neuronal degenerative disorder characterized by muscle rigidity, tremor, postural instability, and impediment or even complete loss of muscle movement. These symptoms are often caused by the loss or malfunction of dopamine producing neurons, typically caused by oxidative stress in specific areas of the brain, including the substantia nigra. No cures have been discovered to date, however, several pharmacological agents show promising effects in either preventing or repairing affected brain tissue, and many more have yet to be explored. Understanding which agents preserve dopaminergic neurons may lead to elucidation of possible mechanisms for neuroprotection, as well as potential therapeutic treatments of individuals with Parkinson’s disease. This project examines two potential agents for the treatment of Parkinson’s disease: insulin and progesterone. Both would be explored using the 6-hydroxydopamine (6-OHDA) Parkinson’s disease model. In this model, 6-OHDA acts as a neurotoxin to dopaminergic neurons which are principally located in the substantia nigra. Unilateral lesions of the substantia nigra with 6-OHDA simulates Parkinsonian symptoms on half of the body, while the other half remains unaffected, producing an intra-animal control. Research has shown that Estrogen and IGF-1 have a neuroprotective effect prior to 6-OHDA lesioning. In other words, pretreatment with Estrogen or IGF-1 spares dopaminergic neuronal loss from 6-OHDA. Other studies have shown that insulin provides neuroprotection against oxidative stress in cultured cortical neurons. Progesterone has also been shown to provide neuroprotection in other Parkinson’s disease models, such as Methamphetamine (MA) and 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP). However, no currently published research has determined whether or not Insulin or Progesterone provide neuroprotection for the 6-OHDA Parkinson’s disease model.
Geologic Analysis of Hydrocarbon Potential, Abenaki Sub-basin, Nova Scotia

Tyson Cook, Joseph Grigg, Dan Hill, Stephen Hulbert, Zach Bogle

Geology, Geology

Presented by: Tyson Cook  Mentored by: Mark Lovell  Starting time: 3:00 PM

Abstract: In conjunction with the Imperial Barrel Award competition sponsored by the American Association of Petroleum Geologists a dataset was received for evaluation of hydrocarbon potential in a portion of the Abenaki sub-basin offshore Nova Scotia just northwest of Sable Island. The data include an 89 km2 3D seismic survey, several 2D seismic lines, and 2 well logs from drilling sites within the area of interest. No additional data could be gathered within the 606 km2 study area. The process of finding a viable prospect for hydrocarbon reservoirs begins with a sound understanding of the regional geologic history of the area. Research of the paleogeography, geodynamics, basin structure, stratigraphy, as well as analogous studies from nearby areas led to the identification of several hydrocarbon prospects in the Early Cretaceous Missasauga formation and the Baccaro Formation of the Late Jurassic. Peak hydrocarbon generation has been shown to be within these time periods. A calculated risk analysis based on the presence and quality of a reservoir, source, and seal, source rock maturity, migration route, was performed to create a prospect chance for each identified play. Using seismic data to identify traps and calculate volumes, along with porosity and permeability data, an economic analysis was performed to analyze the feasibility of drilling.

Computational study of R-α-pinene-hydroxy-peroxy radical water complexes

Glenn Mumford, Stuart Morgan, Kathleen Gienger

Chemistry, Chemistry

Presented by: Glenn Mumford  Mentored by: Ryan DaBell  Starting time: 3:00 PM

Abstract: Pinene is a class of biogenically emitted compounds that are found in a variety of trees and other flora. Hydroxyl radicals interact with the unsaturated bond in pinenes, which, in turn, react with oxygen forming a pinene-hydroxy-peroxy radical. It is believed that hydroxy-peroxy radicals form complexes with water in the atmosphere via hydrogen bonding between the water and the peroxy and hydroxy moieties. This enhancement in stabilization increases the availability of the radicals for processes such as the formation of tropospheric ozone or NOx. In this computational study, complex binding energies, hydrogen bond angles and bond lengths of R-α-pinene-hydroxy-peroxy radical water complexes are assessed at the B3LYP/6-311++G(2d,2p) and MP2/6-311++G(2d,2p) theory levels. Natural bonding orbital analyses and electron difference density plots are also used to better characterize the nature of the hydrogen bond.
Basalts of the Yellowstone-Snake River Plain Volcanic Province: The Isotopic Story

Jesse Shewell
Geology, Geology
Presented by: Jesse Shewell
Starting time: 3:00 PM
Mentored by: Dan Moore

Abstract: The Yellowstone Snake River Plain (YSRP) volcanic system forms one of the major physiographic features and petrotectonic provinces of North America. The 700 km by 90 km YSRP trends northeast, cutting across the northern Basin and Range Province into the once-continuous Sevier thrust belt. This volcanic province developed over the last 16 Ma as a result of the southwest movement of the North American plate over a melting anomaly. Bimodal magmatic activity is dominated by basalt, most of which resides in the crust, and eruptions of high-silica rhyolite. The radiogenic isotope compositions of YSRP basalt indicate their source(s). This project investigates what strontium, neodymium, hafnium, lead, and helium isotopic compositions indicate about the petrogenetic sources involved in creating YSRP basaltic magmas. Strontium and neodymium isotopes reveal that YSRP basalts are mantle partial melts that assimilate crustal material to varying degrees. Neodymium and hafnium isotopic compositions record the nature of the crust through which the basalts pass: young (Paleozoic and Mesozoic) crust to the west and older (Proterozoic and Archean) crust to the east. Lead isotopes show mixing between plume-derived basalts contaminated by ancient lithospheric mantle, with contamination increasing to the northeast, i.e., where the lithosphere is older. Helium isotopic compositions are high and indicate that basalts were derived from upwelling lower mantle material. These isotopic systems suggest that YSRP basalts are derived from an upwelling mantle plume and then interact to varying degrees with the lithosphere and crust.
Peg Word Method and Method of Loci: Which Mnemonic is Most Helpful Improving Recall of Everyday Household Items?

Levi Lundgreen, Matt Mendenhall

Psychology, Industrial/Organizational Psychology

Abstract: The challenge of improving one’s memory has been a consistent pursuit in college students and all humans alike. Three groups of people—one learning the pegword mnemonic, one learning the method of loci mnemonic, and a control group—will be used to determine which mnemonic allows the highest recall of a list of everyday use household items. It is hypothesized that students taught either mnemonic will remember significantly more items than the control group. Sections from an introduction to psychology undergraduate course will be used as participants. The IV will be the learning method and the DV will be the number of items recalled. Limitations included diversity among students being tested (e.g. race, age, sexual orientation, socio-economic status etc.). Assuming that a mnemonic technique allows for higher recall than control group, a post hoc test will be done to analyze which mnemonic is more effective.

Evaluation of the What's Reel Relationship Curriculum

Sarah Peatrowsky, Drew McGuire

Home and Family, Marriage and Family Studies

Abstract: What’s Reel is a high school marriage education curriculum designed to teach students how to develop healthy relationships and marriages. This study evaluated the effectiveness of this curriculum with a pre-test post-test control group design involving students from six high schools from around the country who were in either the What’s Reel group or a control group. Results will be presented based on the data collected to date (n=85, this is 29 control and 56 experimental from one high school). We hope to find that the What’s Reel curriculum will have the ability to change knowledge, behaviors and attitudes of the participants regarding marital and family relationships. After the curriculum, the What’s Reel group is anticipated to show an increase in accurate knowledge about healthy relationships and marriage, a decrease in dating and relationship violence, and improved attitudes toward healthy relationships and marriage.
Copyright and Communications Major Study

Jillian Jensen, Carissa Larsen, Kristy Jentz, Andy Bell

Communication, Communication

Presented by: Jillian Jensen
Mentored by: Lane Williams
Starting time: 3:00 PM

Abstract: Our group decided to study Brigham Young University – Idaho student’s knowledge of copyright laws. When trying to create a meta question we decided that we needed to focus our study so we would get clear and accurate results. We chose to focus on students in the department of communications at BYU – Idaho. We also decided to focus exclusively on content creation when testing about copyright laws. We decided to focus on Communication majors and copyright information pertaining to content creation and citation for our study. Our group’s meta question is, “How aware are BYU – Idaho Communication majors of copyright laws related to content creation and citation?” We believe that this question is specific, uses specific key words and will help us to collect accurate information to complete our study of copyright law at Brigham Young University - Idaho. We surveyed 150 Communication majors through email. The results have been collected but we have not evaluated the responses yet. Along with our meta question we came up with a series of research questions. Our questions include: • How familiar are you with copyright law? • How relevant are copyright laws to you? • Where have you gained your understanding of copyright laws? • Are you satisfied with your knowledge of copyright law? • Do teachers make copyright relevant to you? We came up with these questions by researching other survey studies that had been previously performed. We hope that by asking students these research questions we will be able to obtain enough data to draw sufficient conclusions to answer our meta question.

Video Gaming’s Effect on Marital Relationships

Ryan Miller, Ryan Cummins, David Sylvester, Ty Carter

Communication, Communication

Presented by: Ryan Miller
Mentored by: Lane Williams
Starting time: 3:00 PM

Abstract: Our group is researching the effects of video games on marital relationships. From our preliminary research on addictions, video games, and relationships we have seen that there are both problems and benefits that may take place within a marriage relationship when video and computer gaming is prevalent. For this conference, we will present using the transcribed results of two focus groups. Each focus group consists of 6-10 married women each. / The questions asked of the groups include: What one word do you think of with the topic “video games?” What did you write down and why? How do video games influence your marital relationship? What’s your biggest frustration with video games in your relationship? What’s the biggest benefit of video games in your relationship? What is the best or worst thing about video gaming in your marital relationship? Thumbs up/thumbs down: Do you think video gaming affects the relationship positively, negatively, or not sure? Yes/No: Video games are a cause of arguments in the home. Do you have any rules or regulations in regards to video games in the home? If so, what are they? Do children or will children have an effect on your rules for video games? / In doing this study we hope to gain a better insight on some of the different effects of video gaming on marital relationships. Our poster and presentation will focus on a summary of major themes which emerge from the analysis of the focus groups. Along with the major themes we will show graphs, word clouds and other visual representations of our findings. /
Are advertisements in the Scroll effective?

Hayden Coombs, Morgan Mathis, Christina Peterson, Bryson Smith, Sarah Dighans

Communication, Communication

Presented by: Bryson Smith
Mentored by: Lane Williams

Starting time: 3:00 PM

Abstract: For over 100 years, students in Rexburg, Idaho have been able to read about campus activities and issues through the printed word. About five years ago, I-Comm Student Media, the student-run media agency on campus that is facilitated by on-campus faculty, absorbed duties to produce and publish the "Scroll". Most of the funding for the "Scroll" comes from advertisements. In order to find out which advertisements are effective, we conducted a survey. The ultimate purpose of this survey is to help the "Scroll" improve its quality and to help the paper sell advertising more effectively. Being able to present facts and statistics to potential clients could help generate more revenue for the "Scroll", increase the reputation of the newspaper, and help propel the "Scroll" towards another 100 years of success. All participants in this study consented. They are completely anonymous and responses will not be shown individually. We sent the survey to 500 random BYU-Idaho students, and had a 27 percent response rate. In analyzing the data, we found that advertising was mostly successful if the ads focused on saving money on food. The top advertisers were Broulims, Alberston, Five Buck Pizza and Jamba Juice. Overall, less than half of readers found the ads in the "Scroll" to be effective. We found that, while most readers have noticed ads for businesses that advertise with the "Scroll", students have not frequented these businesses. Future studies should be conducted to determine what would make the advertisements appealing to readers.

Does Self-Concept Correlate With Intentions for Change of an Overweight Population?

Micah Henneke, Alex North

Psychology, Psychology

Presented by: Micah Henneke
Mentored by: Eric Gee

Starting time: 3:00 PM

Abstract: We will be studying to see if whether physical self-concept in an over-weight population differentiates between those who are intending to change their weight through exercise behaviors and those who aren’t intending to change. We hypothesize that those who are over-weight, but have higher physical self-concept will be less likely to change their eating habits to be healthier. We will measure physical self-concept through the Physical Self Descriptive Questionnaire. There will also be a measure for intentions for change to measure likelihood to change exercise behavior. These results will not be available until mid-March; however, they will be prepared in time for the conference.
The Effect of Mindful Meditation on College Test Scores

Lacey Miller, Lileana Mazariegos, Meredith Dickson

Psychology, Psychology

Presented by: Lacey Miller
Mentored by: Eric Gee

Starting time: 3:00 PM

Abstract: The purpose of this study is to test the effects of short-term mindful meditation (MM) on college test scores. Participants will be chosen from a psychology 311 class on the campus of Brigham Young University-Idaho. The participants will be separated into a control group and an experimental group. Both groups will participate in the class and the test scores from one test will be recorded. The experimental group will then begin practicing MM once a week in forty-five minute sessions for the following two weeks accompanied by home-based meditation by a guided voice recording. The control will be given a placebo of picking a fond song from their childhood and be asked to sing it through three times in a row at least twice a week for the duration of the experiment. The control group will not participate in the mindful meditation workshops. At the end of the two weeks the test scores taken within the two weeks will then be compared to the score taken before the meditation began. The results will be calculated in SPSS using an independent sample t test. Limitations to the study include that outside study techniques of the students will not accounted for. Future research should entail the same type of study performed on different classes and at different college campuses and also on different populations.

Is It True Individuals Seek Those of Equal Attractiveness as Their Own?

Lo Gayle Olmos, Micha Henneck, Melissa Watson

Psychology, Psychology

Presented by: Lo Gayle Olmos
Mentored by: Eric Gee

Starting time: 3:00 PM

Abstract: People, mainly female, rate couples without even realizing it by saying little remarks like “they make a cute couple” or “he/she can do better”. These little comments are examples of how people rate the compatibility of a couple, by rating each individual’s attractiveness and comparing them to each other if they are equivalent. Lee, Loewenstein, Ariely, Hong, and Young (2008) came up with the equity theory that says that a relationship is stronger and more satisfactory when mates are compatible to each other instead of mismatched. This leads us to our hypothesis: if individuals do date those that are of equal attractiveness, then random people will be able to match the couples together according to the rating they give each individual. This study will be conducted to determine if individuals date people that are the same level of attractiveness as them. The study will be conducted with 60 BYU-Idaho students that will be selected using the stratified method in the MC. They will all do the same task, which is rating pictures of spouses and then matching them together accordingly to their rating. The rating scale will be 1-8 and the married couples will be obtained from Rexburg, they will all be face shots taken against a white background The results should show high correlation between the ratings of the individuals and their spouses.
Impact of Aquariums on Stress Levels
Kristin Miyasaki, Sarah Jarvis
Psychology, Psychology
Presented by: Kristin Miyasaki  Starting time: 3:00 PM
Mentored by: Eric Gee

Abstract: Psychological stress is often the result of work, school, and relationships. Stress can have many negative impacts including decreasing immune function, increasing work related accidents, and reducing productivity. Because of these and the many other negative impacts of stress, considerable research has gone into exploring methods of reducing stress. One area of focus in stress research is the environment and how it affects stress levels. Altering the environment with visual stimuli has been shown to reduce stress. Artwork, particularly artwork featuring natural images, is another visual stimulus shown to decrease stress. Interaction with animals has also been shown to lower blood pressure. A combination of natural decoration and animal exposure would be expected to have a positive effect on stress levels. However, very little research has been conducted on the stress reduction possible from aquariums. This study looks at the impact a simple aquarium has on mild stress levels following an isolated stress event. Stress was induced in 39 participants with a mock interview for participants’ dream job that included singing and mental math. Following the stressful event, participants were placed in a room with an aquarium. Stress levels were monitored through heart rate and the State Trait Anxiety Inventory for Adults. This study predicted that stress levels would be lower following exposure to an aquarium in comparison to exposure to the control condition. If results show decreased stress levels, than increasing simple aquariums in areas that induce stress would be beneficial. Large aquariums are found in doctor and dentist offices, but they are not often economically feasible for most homes, and especially for students, a highly stressed population. Promoting ownership of or exposure to simple aquariums among the student population may be beneficial. Future research directions include investigating the benefits of an aquarium in the home and the impact of aquariums on chronic stress levels.

The Resurrection of Mozart
Craig James, Kelsey Bingham, Jessi Lovesee, Brianna Fletcher
Psychology, Psychology
Presented by: Craig James  Starting time: 3:00 PM
Mentored by: Eric Gee

Abstract: THE RESURRECTION OF MOZART.  C. L. James, K. Bingham, J. Lovesee, and B. L. Fletcher.
## Learn, Progress, Improve

**Kayla Pascoe**  
Horticulture, Floral Design

**Presented by:** Kayla Pascoe  
**Mentored by:** Benjamin Romney

**Abstract:** "When you take a flower in your hand and really look at it, it's your world for the moment. I want to give that world to someone else. Most people in the city rush around so, they have no time to look at a flower. I want them to see it whether they want to or not." - Georgia O’ Keefe Flowers are the most perfect and beautiful example of God’s love for me. It is absolutely incredible that He took the time to create millions of flowers, each with their own intricate color and structure. I want to share that immense love and joy with others, through flowers, that is why I design. As I design I love to put the personality and feeling of the recipient into their arrangement. Flowers should always be personal and heartfelt. When designing bridal bouquets, I love to add small trinkets into the design that are special and dear to her. Getting to know the personality and taste of those that I design for is vital. It is amazing to create the perfect gift for Valentine’s day, mother’s day, a new baby, or any other special occasion. Flowers evoke emotion in people that is not available through any other medium. I firmly believe in the responsibility for each of us to learn what we can, progress forward and improve our abilities. Education has allowed me to progress and to reach the level of design where I am currently. There is never a time or place to stop learning, whether from a formal teacher or from others. Ideas and creative flow have been available to me in immense amounts through my educational ventures. Floral design is a never ending creative process! The question that I ask myself that directs my work more than any other is, “why not?” This wonderful question allows me to get outside of the traditional box and create something new and incredible! If everyone stayed within the normal realm of design it would allow for no progression or improvement. I enjoy stretching the limits to improve my abilities and the way that others view my art medium.

## The Pottery Process

**Andrew Romero, Galina Klimova, Emily Perry, Josh Boehner, Josh Corry, Sean Murdock, Ken Ockler, Kwani Winder**  
Art, Three-Dimensional Studies

**Presented by:** Andrew Romero  
**Mentored by:** Rich Briggs

**Abstract:** Eight ceramics students will demonstrate using the potter’s wheel. We will provide a display and explain the process of taking an obscure mass of clay and following the steps necessary to produce a work of art. An additional display will be shown to exhibit the variety of firing methods available at BYU-Idaho as well as the variety of kilns and materials necessary to satisfy the artist’s aesthetic intent. / This display will show that our art is about the process behind the finished piece. Brother Briggs tells each of his classes, “Failure is part of success.” We have to experiment and even fail before we create art that represents who we are and what we want to say. /
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