

Undergraduate Research Symposium May 17, 2013 Mary Gates Hall

Online Proceedings

SESSION 1V

RESEARCHING PERFORMANCE & PERFORMING RESEARCH IN DANCE, MUSIC, THEATRE, AND SPOKEN WORD POETRY

Session Moderator: Juliet McMains, Dance
Meany Studio Theatre
1:00 PM to 2:30 PM

* Note: Titles in order of presentation.

Using Dance Concepts in the Classroom

Nicole Alexandra (Nicole) Rover, Senior, Public Health-Global Health, Dance: Dance Studies
Mentor: Betsy Cooper, Dance

Practicing the art and physicality of dance is a beneficial experience that is underutilized in primary education. Previous research, such as Patricia T. Alpert's "The Health Benefits of Dance" and Mabel Elsworth Todd's "The Thinking Body," has shown the benefits of learning dance. The potential values of dancing include working with other people and understanding space, time, and personal empowerment. Yet, many students do not have access to basic dance education and schoolteachers typically do not have the tools to integrate dance in the classroom. The purpose of my research was to identify and define key dance concepts that schoolteachers untrained in dance can implement in their classrooms. Research methods included observing University of Washington introductory dance classes and asking local professional dance instructors what they find to be most important and effective in their dance classes. The data collected was then used to draft a guide for the implementation of basic dance concepts into public school classrooms. The guide is written for teachers without previous formal dance training and takes limited budgets and time constraints into consideration. This allows teachers to learn dance concepts and exercises and confidently teach these to their students in the classroom. I hope the findings from this research will bring dance to students who otherwise would not have such an opportunity to learn and receive the numerous benefits dance offers.

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Biomechanics of Dance: Breaking and Static Equilibrium

Austin Nguyen, Senior, Biology (Physiology), Dance: Dance Studies
Mentor: Tom Daniel, Biology
Mentor: Betsy Cooper, Dance

Every aspect of nature is governed by the laws of physics. These laws include the basic principle of the center of gravity which is defined as a point in an object's body at which the total net torque due to gravity equals zero. Understanding and applying this basic principle is crucial for dancers if they are to be successful movers. Yet the popular form of dance known as breaking seems to defy the laws of physics, particularly static equilibrium – a state where an object will not rotate unless an external force is applied because the center of gravity is located above an object's base of support. Many breakers are able to perform gravity defying movements as they invert their bodies and hold various poses known as "freezes." Using a series of cameras and a three-dimensional (3D) modeling program, I am able to locate the center of gravity in individual breakers and reveal that their movements do not violate the laws of physics. Using the information collected from this research, I can then propose and create new possibilities for freezes based on the concepts of static equilibrium. This research will be a stepping stone for further biomechanical researches in breaking and other forms of dance. Similar experimental techniques can be used to analyze more complex principles such as dynamic equilibrium – balance while in motion.

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Japanese Drum, American Spirit: The Tradition of Taiko in Seattle

Adrienne Millennia (Adrienne) Litman, Senior, Psychology, Dance: Dance Studies

Mentor: Betsy Cooper, Dance

A performing art form originally from Japan, Taiko drumming has been embraced by Japanese Americans as a way to pass down cultural values. In the Seattle area alone, there are nine Taiko groups that perform regularly and two youth Taiko groups. Although research has examined the role of Taiko in the Canadian Japanese community, little research has looked at Taiko in the Japanese American context. My research looks at the role of Seattle Taiko groups in passing down the tradition of Taiko to future generations. My methodology involved participating in a beginning class held by Seattle Kokon Taiko and observing how the teacher introduced the cultural context for Taiko. In addition, other students in the class were interviewed about why they decided to take the Taiko class. For students of Japanese ancestry, the desire to connect back to Japanese culture is likely a prominent reason for taking the Taiko class. The results of this research will contribute to understanding of how cultural dances are transmitted in a context that is different from the dance's origin.

SESSION 2Q

INTERSECTIONS: ART, CULTURE, TECHNOLOGY, PHYSICALITY

Session Moderator: Jennifer Salk, Dance

389 MGH

3:45 PM to 5:15 PM

* Note: Titles in order of presentation.

Cultures in Motion: Dancers as Diplomats

Natasha Radha (Natasha) Khanna, Senior, Political Science, Dance: Creative Studies

Mentor: Betsy Cooper, Dance

Though one of the tensest times in recent history, the Cold War was also an era of cultural exchange between East and West. Amidst the chaos, American dance companies performed on Russian stages while Russian dance companies toured the United States. After the fall of the Iron Curtain, the State Department began sending dance companies to the Soviet Union on cultural diplomacy missions. That practice continued after the establishment of the National Endowment for the Arts (NEA) in 1965. As the Cold War subsided, the allocation of government funds to send dance companies abroad for diplomatic purposes ended, effectively ceasing government funded dance tours. However, the idea of employing dance as a means of diplomacy has experienced a recent resurgence. In 2010, the US State Department collaborated with the Brooklyn Academy of Music, creating a program called DanceMotion USA. Similar to the Soviet Union tours, DanceMotion USA sends American dance companies to a variety of countries on many continents with the same mission as the Cold War tours: promoting cultural exchange through dance, with dancers serving as diplomats. My research involves giving a historical background of the Cold War tours and comparing those tours with the DanceMotion USA tours currently underway. Using accounts from dancers and dance companies from the Cold War and interviewing company directors with past or future involvement in DanceMotion USA programs, I will investigate the origins of the new interest in sending dancers to other countries with government funding, as well as the implications of using dancers as diplomats. If an art form is able to convey a society's core beliefs and values, can that ability be misused or abused? In other words, if cultural diplomacy through dance becomes a part of the regular government agenda, will it change the art of dance, and its purposes?

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Bridging the Gap Between Theory and Practice: Exploring the Application of Education Theory in Dance Technique Classes

Emma Dvorin (Emma) Strong, Senior, Anthropology, Dance: Dance Studies

Mentor: Betsy Cooper, Dance

Mentor: Juliet McMains, Dance

A vast amount of research exists in the field of education psychology concerning topics such as brain-based learning,

teacher-directed versus student-centered learning, the impact of social and individual factors on the learning experience, and more. Despite this wealth of information, there is often a striking disconnection between the current educational research and the actual experience of students in the classroom. Undergraduate classes, modeled on teaching practices that have been the norm for decades, are often out of sync with contemporary research addressing the scientific and social realities of the learning process. An exception to this phenomenon is observable in dance technique classes in the University of Washington Dance Program. Dance instructors at the UW implement many education theories successfully in their classes, and students reap the positive benefits of these teaching techniques. In order to better understand the teaching methods at work in these learning environments, I conducted observations of UW dance classes and interviewed dance students. Through my research, I have identified key factors that combine to create a classroom environment conducive to learning theory application in everyday teaching. Although the physicality of dance sets it apart from most academic classes, I argue that these same factors could be replicated and utilized in academic classes with similar success. This research is a critical step towards closing the gap between what we know to be effective education theories (and related teaching techniques) and the reality of student experience in many academic classrooms.

POSTER SESSION 3

Balcony, Easel 120

2:30 PM to 4:00 PM

Repositioning of the Jaw by Using Oral Orthotics

Bernard Woo Jin (Bernard) Do, Senior, Biology (Physiology)
Mentor: Mark Cooper, Biology

Jaw joint dysfunction resulting in TMJ has been associated with the development of movement disorders. Displacement of the condylar head (long bony process of the mandible) from the 4/7 Gelb position has been frequently documented in these patients. The use of an oral orthotic creates a vertical distraction that realigns the jaw into proper Gelb position resulting in therapeutic effects. With increasing vertical distraction of the orthotics the distance between the articular eminence and the condylar head was shortened and the angular change of the condyle from its origin was increased. This jaw alignment repositioned the condyle to come forward and down away from the posterior glenoid process. This realignment of the jaw has the potential to restore normal muscular control by the releasing of entrapped branches of the trigeminal nerves. The orthotic may also produce a "sensory trick" that restores normal neural firing, producing both transient and long-term therapeutic effects. This research along with continued investigation of neural mechanism may reveal how oral orthotics are able to suppress debilitating movement dis-

orders.

POSTER SESSION 4

Balcony, Easel 117

4:15 PM to 5:45 PM

Quantifying the Fate of Applied N Fertilizer Over a One-Year Period in Douglas-Fir Plantations using Stable Isotope Technology

Joanna Ciol (Joanna) Harrison, Freshman, Environmental Science & Resource Management

Mentor: Betsy Vance, School of Environmental and Forest Sciences

Mentor: Robert Harrison, Forest Resources

Nitrogen is a commonly limiting nutrient for Douglas-fir growth in commercial stands throughout the Pacific Northwest. Fertilizer nitrogen is applied to mitigate these deficiencies though some studies estimate that only about 30% of the nitrogen is actually taken up by the trees. Knowing where the rest of the nitrogen goes will help determine the best way to fertilize trees and reduce excess use of nitrogen fertilizers. This is beneficial both to stand managers looking to reduce costs associated with fertilization and to the environment as excessive fertilization can lead to increased nitrates in water. For this study, fertilizers labeled with ^{15}N were used to track to the movement of nitrogen within a commercial Douglas-fir ecosystem. Nitrogen-15 is a stable isotope of nitrogen and is often used to trace nitrogen compounds in the environment. Three enhanced fertilizers designed to increase fertilizer N uptake by reducing volatile loss of N and one industry standard fertilizer were used on ten different commercial Douglas-fir stands throughout the Pacific Northwest. The fertilizers were applied at same rate over a period of one year. For the purpose of this study we will be looking specifically at two of the stands. Mineral soil (up to 60cm depth) and foliage samples were collected prior to fertilization to determine the background abundance levels of ^{15}N . Following fertilization, mineral soil and foliage samples were collected at regular intervals to quantify the amount of N^{15} recovered over time and final sampling was conducted one year after fertilization. Mineral soil and foliage samples were prepared and analyzed for N^{15} . To quantify the amount of N^{15} taken up by each component, background abundance of N^{15} was subtracted from the amount of N^{15} recovered in both the mineral soil fractions and the foliage. We anticipate that the enhanced fertilizers will increase N uptake.