

Undergraduate Research Symposium May 19, 2017 Mary Gates Hall

Online Proceedings

2H

SUPPORTING STUDENT GROWTH FROM HIGH SCHOOL THROUGH THE UNIVERSITY

Session Moderator: Walter Andrews, Near Eastern Languages and Civilization

MGH 251

3:30 PM to 5:15 PM

* Note: Titles in order of presentation.

Increasing Environmental Appreciation through Photography in Public Schools

Carolyn Nicole (Carolyn) Hartman, Senior, Environmental Science & Resource Management, Community, Environment, & Planning

Mentor: Christine Stickler, UAA/EXPD, Pipeline

There is a current lack of art and outdoor environmental education within the public school system. Outdoor education refers to any topic that is taught outside, while environmental education concerns the natural environment and issues that pertain to the natural environment. Students are often taught about the problems that deal with our environment, though they are rarely taught to simply appreciate it. Art can be used as a tool to give students enjoyable hands on environmental learning in an outdoor setting. By using photography students are able to interact with their environment, show others how they see the world, and feel a deeper sense of appreciation towards nature. This project was inspired by the Literacy Through Photography program at Duke University and will address the question of how photography in an outdoor curriculum can increase a student's environmental awareness within public schools. To begin answering this question I have compiled a comprehensive literature review and taught a pilot curriculum activity with a K/1 class at Leschi Elementary School that incorporates being outdoors, the environment, and photography. Preliminary literature review and observation results suggest that students enjoy interactive activities outside and that outdoor and environmental education is beneficial for student health, environmental awareness, and happiness. In the future, these findings could be studied further with more pilot programs in a variety of school locations, such as within intercultural schools where nature is lacking.

Recommendations for Varsity Esports: Supporting a New Generation of High School Athlete

Rahul Devanarayanan, Senior, Community, Environment, & Planning

Mentor: Christopher Campbell, Urban Design And Planning Group

Over the past ten years, esports, or competitive gaming, has come to the forefront of youth entertainment. In 2016, global awareness of esports surpassed 1 billion people. The largest segments of this population are college-age (18-25 years) and middle/high school-age (12-18 years). While significant activity is being undertaken by both universities and collegiate athletic conferences to develop varsity programs that structure the experience and growth of esports players, such efforts have not yet been made in high schools. My research clearly outlines the developmental impacts to students of varsity esports programs at the high school level. Based on the finding that such positive impacts scale directly with an administration's support for the club, my paper provides recommendations on how administrators and teachers can support esports programs, even in the common case where esports is a foreign concept to staff. I draw on: 1) an extensive literature review synthesizing secondary research on the effects of participating in high school esports and 'games in the classroom' curricula, 2) programmatic recommendations based on analyses of similar extracurricular and youth development programs, and 3) observations and interviews with existing high school esports communities. The end goal of my research is to make high school esports a more productive developmental experience for high school students by de-stigmatizing and structuring participation. In addition, I highlight opportunities for further research into the mechanics and effects of high school esports programs.

Analyzing the Potential Effects of Online Tutoring in the Context of a Writing Center

*Madeline Gibson (Madeline) Clarke, Senior, Informatics
UW Honors Program*

*Mina Tari, Senior, Informatics, Gender, Women, and
Sexuality Studies*

UW Honors Program

Riley Elizabeth Andert, Senior, Informatics: Data Science

Annie Campbell (Annie) Lacey, Senior, Informatics

Mentor: Matthew Saxton, Information School

Mentor: Amirah Majid, The Information School

The University of Washington (UW) Seattle has over five writing centers on campus, where in-person tutoring is available for students. We hypothesize that certain obstacles reduce access barriers to writing center services for student populations, including those who experience disability, commute long distances, identify as ELL, or are non-residential. UW writing centers have seen an impressive increase in student use in the last 5 years. The overall increase in usage, coupled with changing student needs and resources has sparked an important conversation about the future of writing support services at UW. We hypothesize that online tutoring, in addition to the current model, could help solve issues of access. In order to explore this hypothesis we have prepared a multi-phase, qualitative study, which is currently underway. Drawing upon the demographic and satisfaction data of current campus writing centers, we discuss what current gaps may exist and how online tutoring could potentially bridge them. The current tutoring setup, one-to-one in-person conversation, may also be excluding students who are not comfortable with this format. Through on-campus focus groups, interviews, and surveys we are triangulating on factors of the writing center experience most salient for different stakeholders. We also examine dimensions such as student's area of study, year in school, familial obligations, and current employment status as they may relate to writing center access. In a multi-factor perspective analysis, we gain perspectives of administrators, tutors, users, and potential users at writing centers on campus. In doing so, we pursue a better understanding of how writing centers could use online tutoring to provide services to students who would not have access otherwise. As students and writing center tutors we feel a deep, personal investment in this project and are excited to be a part of building a positive future for writing support at UW.

Emotional Labor for Tutors and Consultants: A Mixed Methods Approach

*Hohjin Im, Senior, Psychology, Economics
UW Honors Program*

Wei Chen (Doris) Chin, Junior, Extended Pre-Major

Ji Heon (Sophia) Lee, Senior, Psychology

*Ki Beom (KiBeom) Kwon, Senior, Public Health-Global
Health*

*Mentor: Misty Anne Winzenried, Odegaard Writing and
Research Center*

As student-workers, peer-tutors often have multiple responsibilities in and outside their immediate line of work. During tutoring sessions, tutors frequently engage in emotionally strenuous challenges, one of which being the act of appropriating their outer displays of emotion to fit perceived notions of normative display rules, despite their conflicting inner emotions. This results in a stress called emotional labor (Hochschild, 1983). Although emotional labor has been shown to frequently be associated with negative job outcomes in other professions, little research has been done examining the prevalence of it in tutor roles. To investigate the extent to which tutors experience emotional labor, and the possible avenues of managing stress, student-tutors at a campus tutoring center were issued a two-part, mixed-methods survey. The first half consisted of Mann's Emotional Requirement Inventory and Tutor Emotional Labor Scale to quantify the level of experienced emotional labor. Quantitative levels of emotional labor will be averaged and compared with published norms. Preliminary results suggest that most tutors hold implicit assumptions of obligatory positive display rules and subsequently act upon them. The second half asked tutors to qualitatively share their experience regarding their most recent emotionally laborious session and what strategies, if any, they employed to regulate the stress. Preliminary results suggest that emotional labor can be amplified from additional conflicts in and outside a tutoring session. Further analysis of qualitative results will provide means to propose various strategies in regulating stress. Combined with the pilot data, this research suggests that 1) emotional labor is a significant factor to consider in related peer-educator roles, and 2) strategies for regulating stress may include social sharing and expressive writing. Additionally, this study's purpose is to investigate the benefits of utilizing mixed-methods in measuring replicable quantitative data and in-depth qualitative data to set a precedent for future research.

Examining STEM Curricula: Exploring STEM Major Attrition through Student Transcript Data

Siyang (Lysia) Li, Senior, Informatics: Data Science

Peter Lu, Senior, Informatics: Data Science

Rohan Lee (Rohan) Aras, Senior, Informatics: Data Science, Community, Environment, & Planning, Mathematics

Coulter Thomas (Coulter) L'heureux, Senior, Informatics: Data Science

Mentor: Jevin West, Information School

Mentor: Lovenoor Aulck, iSchool

The U.S is projected to face a shortage of a million graduates in STEM fields by 2022 according to the President's Council of Advisers on Science and Technology. Much of this is the result of the current attrition rate from university STEM programs. Only half of all students entering the university intending to major in STEM fields graduate with a STEM degree. Decreasing this attrition rate by just 20% (or by 10 percentage points from 50% to 40%) will address over three quarters of this million-individual STEM gap. Therefore, it is of great interest to study the systemic factors that influence STEM attrition. This study will contribute to the existing body of knowledge on STEM attrition by studying the trajectory of students into and out of STEM fields by examining transcript records for every undergraduate student at the University of Washington from 1998 to 2007. As a first step, we will build a model that intuitively students' intended majors by calculating affinity scores based on prerequisite classes taken by students. Examining changes in these affinity scores over time will allow for the identification of inflection points where a student's interests are likely changing. With this information, we can identify when students change fields of study and, on a broader level, also identify when they transition away from STEM fields. We hope to then use a supervised machine learning model to identify the features of students' transcript records that predict if and when this attrition will occur. Ultimately, we hope this information will help inform institutional strategy to improve STEM curriculum design, resource allocation, and retention strategies.

Newbook Digital Texts: Understanding and Developing a New Model of Undergraduate Research

Jion Yi, Junior, International Studies

UW Honors Program, Undergraduate Research

Conference Travel Awardee

Michael Manca, Senior, History, International Studies:

Europe

Arthur Karl Walker, Senior, Psychology, History

UW Honors Program

Erika Arias, Junior, Pre-Major (Arts & Sciences)

McNair Scholar, Undergraduate Research Conference

Travel Awardee, UW Honors Program

Drew Philip (Drew) Shiels, Senior, English, History

Mentor: Walter Andrews, Near Eastern Languages and Civilization

UW offers an excellent research environment. But is there a way to further improve undergraduate experience in research? What is a way to put greater emphasis on student growth while achieving the faculty's research agenda? We, the interns of Newbook Digital Texts, have sought a new model of undergraduate research model that would answer this question. The core of this interdisciplinary research model is undergraduate leadership. It divides teams into different specialties. In each team, one or more undergrads work as team leads to plan the research project, assign tasks, and gain feedback—not leadership—from research professors and/or advisors. It also gives students opportunities for outreach activities, where they present their research project at regional and national symposiums and grant committees for funding. This model hypothesizes that undergraduates can learn interdisciplinary communication, the skill which would become increasingly important in any career. It also teaches students to autonomously choose a topic, plan, and lead a project with independence and creativity for any kind of post-undergraduate work. How do we know that this model of research works? We have sent out a survey to all of our former and current interns to ask their opinions and experiences with the model. Based on the survey, the remarkable result of this new model is as follows: by showcasing the skills that they learned from this research framework at Newbook, our past interns have obtained notable scholarships and awards such as Mary Gates and McNair, and after their graduation, have secured jobs at Dell, Amazon, digital start-ups, and several NGO's. The key implication of this model is its applicability to any other fields of study. We believe that this model of undergraduate research carries many positive implications for undergraduate education and helps incorporation of technology into humanities studies.