

Student Perspectives of Working in Interdisciplinary Teams
to Improve Maternal and Newborn Care Using mHealth Solutions

Project Purpose

The purpose of this thesis is to answer the question, “What are student perspectives on and responses to working together with students from other majors on an interdisciplinary student team?” This question will be answered by surveying students participating in a competition to implement mHealth, or *mobile health*, in developing nations from September 2017 to August 2018. This Honors thesis proposal will first describe the importance of studying student perspectives on interdisciplinary teams. Further I will present the project overview, which includes a detailed description of the Y-Prize challenge, research methodology, thesis committee qualifications, project timeline, IRB approval, funding, and my culminating experiences.

Project Importance

Previously, healthcare professionals viewed the healthcare system as a series of silos, meaning each discipline was isolated or lacked collaboration with other disciplines. This way of thinking is known as *silo mentality* (Margalit, Thompson, Visovsky, Geske, Collier, Birk, & Paulman, 2009). However, recently, the Institute of Medicine called upon healthcare educators to integrate (IPE) into healthcare curricula, and researchers have responded by developing, implementing, and analyzing programs to improve IPE. (Margalit, Thompson, Visovsky, Geske, Collier, Birk, & Paulman, 2009). Although transitioning from silo mentality has been focused on healthcare and nursing, IPE may also benefit other disciplines that requiring problem-solving.

For example, solving complex problems like maternal and newborn mortality rates requires multi-specialty attention. Researchers Wang and Hong (2015) used data from the 2010

Cambodia Demographic and Health Survey to conclude that three of every five Cambodian women received skilled care during the antenatal, birth, and postnatal phases of pregnancy and birth. In response to the lack of maternal and newborn care in developing nations, several companies have developed mHealth technologies to improve care. The World Health Organization defines mHealth, or *mobile health*, includes the use of mobile phones and other wireless technologies in healthcare (Park, 2016). These technologies use short message service (SMS) and mobile phone apps to increase communication within the healthcare system. Typically, the implementation mHealth solution in a developing nation consists of a community health worker carrying a phone with an app that can set appointments, track visits, call clinics or hospitals, and contains a simple diagnostic trees. The features of the app are primarily used when a community health worker visits a pregnant mother during the antenatal period to check up on her and her baby. Due to the use of technology, business models for distribution, and healthcare expertise, the development of mHealth solutions may require multiple fields and interdisciplinary teamwork. These fields may include nursing, medicine, public health, computer science, business, and statistics. Therefore, improving collaboration between disciplines and moving away from silo mentality should be a focus for other types of organizations, not exclusively healthcare.

While there has been research conducted on student perspectives on IPE, limited research has been conducted on student perspectives on the use of an interdisciplinary student team as part of experiential learning. The hypothesis of my thesis is that students will have positive experiences, face challenges, and learn about other disciplines while working with students in other majors. This thesis aims to provide student perspectives about IPE and to promote interdisciplinary programs as part of experiential learning.

Project Overview

This section of the proposal contains a description of the Y-Prize challenge followed by project methodology, thesis committee qualifications, project timeline, IRB approval, funding, and my culminating experiences.

Y-Prize Challenge

The Y-Prize challenge was developed by the Ballard Center at Brigham Young University. The Ballard center provides educational experiences that match with a student's interests and skills.

One opportunity provided by the Ballard Center is called the Y-Prize Challenge. The Y-Prize Challenge is a competition with several divisions that requires student teams to distribute different inventions intended to benefit people in poverty. The Ballard Center provides the inventions and students in the competition must develop ways to distribute the inventions that will be acceptable to the local culture and financially stable. As part of the competition, the Ballard Center provides funding for students to travel to the country and implement their plans.

Students work in teams that are encouraged to be interdisciplinary and typically involve students from different majors. I am currently involved in the Maternal Health Challenge division. Teams in the Maternal Health Challenge are tasked with distributing an mHealth solution for pregnant women in a developing nation.

The Maternal Health Challenge for 2017-2018 includes three interdisciplinary teams. Each team formed in September, 2017. Teams developed their own sustainable business model for rolling out the mHealth solution. Each team developed contacts within the country including a non-governmental organization (NGO). My interdisciplinary team includes four students, whose majors include Nursing, Information Technology, Finance, and Pre-Business Management. Our

team will travel to Cambodia for one week in August. The other two teams are traveling to Gahana, and XXX.

Methodology

Participants. Participants in this study will include a convenience sample of students participating in the BYU Ballard Center Maternal Health Challenge in the Y-Prize Competition in 2018. I will invite participants from these student-led teams to participate. Because there are multiple interdisciplinary teams with students from different majors, I expect I will be invite 17 participants. This study will be IRB approved.

Measures. Development of survey measures is in process and will be completed as part of this thesis. The survey will be administered online using Qualtrics and will collect both quantitative and qualitative data.

Quantitative data. The Interprofessional Socialization and Valuing Scale (ISVS) developed by King, Shaw, Orchard, and Miller in 2010 will provide quantitative data about students ability to function in an interdisciplinary team and the value they place on interdisciplinary teamwork. ISVS is a validated instrument that uses 24 items in three categories: “Ability to Work With Others,” “Value in Working with Others,” and “Comfort in Working with Others” to measure teamwork and collaboration on a scale from zero to seven (See Appendix A) (King, Shaw, Orchard, Miller, 2010). This instrument will be administered to students prior to their departure and again after they have participated in implementing mHealth.

Qualitative data. The qualitative data will be collected using open-ended questions. Preliminary questions were developed in conjunction with my faculty advisor and honors coordinator. I will pilot test the survey with the students participating in a different division of the Y-Prize Challenge. Adjustments to survey questions will be made after pilot testing in

collaboration with my advisor. After survey development and pilot testing, I will submit to the BYU IRB a full study protocol for approval. Current pre- and post-survey questions are as follows.

Pre-departure survey questions.

1. Why did you choose to participate in the Y-Prize competition?
2. How did you choose your team members?
3. What do you see as benefits to working with students from other majors (if any)?
4. What do you see as challenges to working with students from other majors (if any)?

Post-implementation survey questions.

1. After implementing your team's project, what benefits did you see to working with students from other majors (if any)?
2. After implementing your team's project, what challenges did you see to working with students from other majors (if any)?
3. How did you overcome those challenges (if any)?
4. What did you learn by working with other students that you did not learn in other college settings?
5. Did you meet your personal expectations for participating in the Y-Prize competition?
6. How will you apply what you learned about working with students from other disciplines in the future?

Survey administration. After creating the survey, I will administer the initial online survey to all participants in the competition. Then, I will send a post-project implementation

online survey to students who have completed the pre-survey and have implemented their mHealth plan by August 31, 2018.

Data analysis. I will conduct quantitative and qualitative analysis of collected data with the assistance of my faculty advisor. Descriptive statistics for quantitative data will include the mean and standard deviation of responses on the ISVS. Paired t-tests will be run on the ISVS questions to assess differences in scores in students before and after implementing their projects in country. Additionally I will look for trends in differences in students responses from different majors.

I will perform qualitative analysis of student responses to open ended questions with my faculty advisor. We will looking for themes and sub-themes in the data. We will compare and contrast the pre-departure responses to the post-implementation responses.

Qualifications of Thesis Committee

Faculty advisor – Shelly Reed PhD. Shelly Reed is a PhD prepared nurse practitioner. Her specialties include Family Nurse Practitioner, Pediatric Nurse Practitioner, and Obstetrics and Gynecology. She has been involved in both quantitative and qualitative research regarding global health and women's health topics since 2009. In 2016, Shelly Reed completed a qualitative study for her PhD dissertation. I have taken N351, Nursing Care of Women and Newborns, from Shelly Reed.

Faculty reader – Katreena Merrill PhD. Katreena Merrill is a PhD prepared nurse. She has methodological research expertise in quantitative and advanced statistics. Her research specialties include Nursing Quality and Safety, and Clinical Research. Katreena also teaches a BYU course on interdisciplinary healthcare.

Department Honors coordinator – Deborah Himes PhD. Deborah Himes is a PhD prepared nurse and nurse practitioner. While working as a women's health NP for eight years, Deborah provided prenatal care and education to expectant mothers. She has experience with study design, preparing IRB submissions, data collection, data analysis and dissemination of study through peer reviewed presentations and journal articles. Deborah has mentored students through research including four graduate students and two undergraduate students. Deborah was my instructor for N291 Nursing Care of the Older Adult and N292 Clinical Practice for Nursing Care of the Older Adult.

Project Timeline

- April 2018: Find a faculty advisor
- April 2018: Search previous research interdisciplinary teamwork versus silos and on
- April 30, 2018: Refine study protocol with assistance of faculty advisor Shelly Reed
- May 1, 2018: Work with faculty advisor to refine survey questions and develop instructions for the questions.
- May 4, 2018: Submit Honors thesis proposal
- May 5, 2018: Pilot survey questions to my team and make adjustments with faculty advisor as needed.
- May 5-19, 2018: Work with faculty advisor to prepare the IRB proposal
- May 20, 2018: Submit to IRB for approval
- June 1, 2018: Administer the ISVS and pre-departure survey questions to student teams implementing mHealth
- July 2018: Consult with the nursing librarian Betsy Hopkins to refine search and establish parameters
- August 20, 2018: Implement my team's mHealth solution in Cambodia

- August 25, 2018: Administer ISVS and post-implementation survey questions
- August 26, 2018: Analyze the data collected from student responses and draft thesis
- September 2018: Submit abstract to the College of Nursing Annual Scholarly Works Conference
- October 2018: Finalize thesis
- November 2, 2018: Submit Thesis Defense Information Form to the Honors Program
- November 2-30, 2018: Defend thesis
- December 7, 2018: Submit finalized thesis to the Honors Department

IRB

Due to the use of human subjects, IRB approval will be obtained prior to beginning this study.

Funding

To complete my research project, I will request \$1000 in research funds from the Honors Program. I will develop a budget with my faculty advisor to plan my implementation of the mHealth app in my country of choice. This budget will include money for purchasing mobile phones to implement my team's mHealth solution and travel to Cambodia. Additional funding from the BYU Ballard Center as part of the Y-Prize competition is provided.

Culminating Experience

In addition to publishing my Honor's thesis, my goals for disseminating findings include submitting an article to the *Ballard Brief*, a publication from the Ballard Center that highlights student achievements in social innovation. Also, I plan to submit an abstract in September 2018 to be considered for presentation at the College of Nursing's annual Scholarly Works and Contribution to the Discipline Conference in fall 2018.

Conclusion

Currently, there are gaps in research on student perspectives when functioning in a team in a college setting. This thesis aims to gather and analyze student perspectives by teamwork and interdisciplinary collaboration while completing a project to improve maternal and newborn care using mHealth solutions. The goal of this thesis is to provide quantitative and qualitative data analysis of students' perspectives in order to indicate the significance of participating in interdisciplinary experiences as part of experiential learning.

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