

Engagement Incentive Grant

Project Narrative:

**Engaging the Design Students in
Developing the Rehabilitation Facility
Prototype to Assist the Wounded
Warriors Returning from Iraq and
Afghanistan:
A Service Learning Project**



Grant Proposal Prepared by
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Project Narrative: 2012-2014 Engagement Incentive Grant Application

Principle Investigator: Vibhavari Jani

“Engaging the Design Students in Developing Specialized Rehabilitation Facility Prototypes to assist the Wounded Warriors Returning from Iraq and Afghanistan: A Service Learning Project”

Needs Analysis: The Iraq and Afghanistan Veterans of America group estimates that **nearly 1 in 3 soldiers** deployed in Iraq and Afghanistan wars suffer from chronic fatigue syndrome, post-traumatic stress disorder (PTSD), depression, or traumatic brain injury (TBI). ***It is estimated that more than 1.5 million Iraq and Afghanistan war (IAW) veterans suffer from one or multiple symptoms mentioned above.*** The cumulative physiological and psychological strain these service men and women suffered while in Iraq or Afghanistan; require immediate attention. Negligence results in horrific results. ***Each month more than 33 Iraq and Afghanistan war (IAW) veterans commit suicide.*** Since Kansas hosts three military bases (Forts Riley and Leavenworth, and McConnell Air Force Base), it is estimated that ***more than 10,000+ veterans have returned and 15,000+ will come back to Kansas in next two years.*** These war veterans require specialized rehabilitation services to overcome trauma and physical injuries. ***Yet, there is not even one specialized rehabilitation center dedicated to the returning wounded warriors in Kansas today.*** Fort Riley Military base has a general hospital that treats some of these soldiers with physical and occupational therapy needs. But these soldiers require many other therapies and treatments and have to travel to multiple rehabilitation centers/hospitals located in various cities for the different treatments they need to fight these ailments. ***Unfortunately, these private rehabilitation centers too are not equipped to handle large number of injured soldiers returning from Iraq and Afghanistan wars.*** While healthcare design research has increased dramatically over the recent decade, little has been accomplished regarding rehabilitation facility design requirements for wounded warriors. Since 90 % of our time is spent indoors, well designed rehabilitation environments can assist these wounded warriors tremendously.

Proposed Engaged Activities: Since Kansas State University is located 30 miles away from Fort Riley Military Base, and Fort Leavenworth and McConnell Air Force bases are within the driving distance, our University hosts many of these service men and women on our campus. Thus the acute needs of these soldiers are close to our University. ***To assist these returning wounded warriors, I would like to work with our students to introduce an engaged instructional program that incorporates service learning pedagogy to assist this wounded warriors.*** The idea is to engage our design students in a ***multi-disciplinary, collaborative, community based design project that can provide evidence based design solutions for the rehabilitation needs of these veterans.*** Through this proposed project, ***graduate students of Interior Architecture and Product Design Department (IAPD) within APDesign, who has yet not had any opportunity to get involved in engagement and service learning experience, will work with the wounded soldiers, their family members and their caregivers, Fort Riley hospital staff and Topeka Rehabilitation Hospital staff to understand the wounded worriers’ needs. Based on their findings, students will design prototypes for a specialized rehabilitation facility for these soldiers.***

The specialized rehabilitation facility design prototypes the IAPD students develop will promote community engagement activities so that the members of the community can provide a “buddy system” for the wounded veterans and give them the support and assistance they need to continue their treatments. Thus this project is aimed at bettering the lives and strengthening the social well-being of underserved wounded warriors’ population of Kansas and our nation and there by the communities they live in.

On and off Campus Collaborative Partners and Their Roles: The major off campus partners are Fort Riley Military Hospital and Topeka Rehabilitation Hospital medical staff, HOK (a comprehensive design firm that provides architecture, landscape architecture, and engineering services), Steelcase Inc. (Large Furniture Manufacturer), and Nurture (Healthcare Furniture Manufacturer, a subsidiary of Steelcase Inc.). The principle investigator has worked with Fort Riley and Topeka Rehabilitation Hospital staff since 2010 to understand the wounded warriors’ needs. The students will visit the Fort Riley and Topeka Rehabilitation Hospitals to understand wounded warriors’ needs and facility design requirements. The PI has also shared the project information with Steelcase Inc. They are very supportive of this project and are very excited to partner with KSU/APDesign. They are committed to assisting students during this project given the need for and the importance of this project and will hosts the students on their Grand Rapids campus. The cost of student lunches, transportation within Grand Rapids, presentations by their representatives and design professionals will be supported by Steelcase and its approx. value is \$3,000.00. Students will visit Steelcase Inc. to understand the importance of ergonomics, anthropometrics, and how properly designed environments can contribute in healing the wounded warriors. Therapists from both hospitals; and professionals from HOK, Steelcase and Nurture will work with the students and provide their guidance to students in develop their rehabilitation facility prototypes. Thus students will have the opportunity to work with the professionals specializing in healthcare design including architecture, interior design, and engineering that will enhance their knowledge of healthcare

facility needs. The faculty members of the diverse disciplines within APDesign, Colleges of Engineering, Human Ecology and Education will work with the students and provide guidance. These disciplines include Architecture, Interior Architecture, Product Design, Furniture Design, Lighting Design, Landscape Architecture, Electrical, Structural and Mechanical Engineering, Nutrition, and Counseling. Thus students will gain not only design skills but also develop communication, team building, and effective collaboration and leadership skills.

Short Term Goals: The major short term goal of this project is to enhance an existing course by introducing service learning components that facilitates: 1) engagement of our students with the local community, 2) our students' understanding about the importance of service learning and engagement, 3) involvement of our design students in community based service learning research and design projects; 4) development of evidence based specialized rehabilitation facility prototypes that the community health centers/hospitals can adapt to help these wounded warriors in achieving wellness of their mind, body and soul, 5) preparation of future engaged community leaders, 6) a meaningful relationship between my students, our University, and Forts Riley and Leavenworth and McConnell Military Bases by sharing the outcomes of this project, 7) in-person presentations and exhibition of student work, 8) publish research papers and articles in reputed journals, 9) presentation of this project at various conferences, 10) development of grant proposal for external funding to further the research outlined in the long term goals below. *I plan to seek external funding from Agency for Healthcare Research and Quality (AHRQ), Center for Healthcare Design, and the White House's Joining Forces initiative that encourages organizations and individuals alike in working together to develop solutions to assist these wounded warriors to further this research.*

Long Term Goals: 1) Develop a database of specialized rehabilitation facility needs of the wounded warriors that the healthcare facilities' administrators can access to evaluate the needs for renovation of their buildings; 2) prepare specialized rehabilitation facility design guidelines that these administrators can adapt to renovate their buildings, or build a new building, 3) Identify strategies that the rehabilitation facility staff can adapt to assist these soldiers in integrating back within the society they left behind when they went to war, 4) develop educational resources that other educators can utilize to involve their students in community based service learning projects,

Based on this research, in future, I ultimately plan to publish a book on wounded warrior's rehabilitation needs and how designers can assist them in faster recovery and rehabilitation.

Timeline of the Proposed Project:

July 1st – Dec. 20th

Phase One: Research

July 1st – August 20th:

Research and preparation of the Service Learning curriculum and project by the PI

Aug. 26th – Dec 15th: **Phase Two: Fall Term Service Learning Project Execution**

August 26th – Sept. 15th

Research phase: Students will visit Fort Riley Military hospital to understand the needs of the wounded warriors, their family members and care givers, and work in teams to conduct literature reviews and precedent analysis to gather data on requirements of the specialized rehabilitation facilities.

Sept. 15th – Oct. 13th

Conceptual Design Phase: Based on the evidence gathered, students will develop conceptual design for various specialized rehabilitation facility prototypes.

Oct. 14th -18th

Review and presentation of students' conceptual work: students present their preliminary design ideas and get feedback from the warriors, medical staff and professionals.

Oct. 19th – Nov. 16th

Design Development Phase: Students work with warriors, medical staff and professionals to revise their design proposals

Nov. 17th – 21st

Mid term review and presentation of Students' design development: feedback from the warriors, medical staff and professionals.

Nov. 21st – Dec. 15th

Final Design Presentation Phase: Revision and final design development

December 16th – 20th

Final Presentation of the Service Learning Project at Fort Riley and KSU

January 21st – May 16th, 2014

Phase Three

The principle investigator will undertake: Analysis of this project's research findings, develop and present research papers on outcomes and findings of this project, develop exhibition of students' work.

May 17th – August 20th, 2014

Phase Four

PI to meet with the program officers at various funding agencies, and prepare external grant funding proposals

Accomplishment Bench Marks:

Academic Bench Marks: 1) development of students as compassionate and thoughtful designers, keen observers, effective communicators, caring and considerate leaders, 2) Successful completion of service learning project through multi disciplinary collaborative team approach. **Research Bench Marks:** 1) Development of several evidence based Rehabilitation facility design prototypes for the wounded warriors, 2) Presentation of this project at national and international conferences, 3) Publication of this project in various refereed journals and conference proceedings. **Professional Relationship Development Bench Marks:** Strengthen collaborative relationship with the medical profession, the design profession (including designers and architects), furniture manufacturers. **Community Relationship Development Bench Marks:** 1) development of strong collaborative relationship with Military through engagement activities for Forts Riley and Leavenworth and McConnell Air Force Base, 2) Students - faculty relationship development with multiple constituencies including the wounded warriors, their family members, the caregivers and medical providers and the local community,

Potential Impact on All Collaborators

Impact on and Warriors' Health and Wellbeing: the rehabilitation facility prototypes will be designed to promote environmentally friendly, community based centers that facilitates the mental, physical and spiritual healing process of the warriors as described in the narrative. **Impact on Military:** Empirical research indicate that well designed rehabilitation facilities can accelerate healing process, and thereby contribute in reducing suicide rates. **Academic Impact:** this project will enrich the University students, faculty and administrators, through various engaged activities. The students will understand: 1) the impact they can have on the healing process of the warriors through their design, 2) satisfaction of serving people in need, 3) their responsibility as a designer and why they should think of health, welfare and safety of all constituents of their community, 4) why they should give back to the society. These factors will contribute in their development as a compassionate, thoughtful designers.

Impact on the University: The collaboration among all parties will provide: a) a fertile ground for the germination of new ideas and opportunities, b) contribute in academic and professional growth of students, c) opportunities for furthering the research, service and community engagement goals of the academy. **Impact on the Professionals:** The medical staff and professionals' lives will also be impacted as it provides them the platform for fulfilling their goals of assisting people in need. They too will have: 1) the satisfaction of assisting students; 2) taking part in students' academic and professional growth. This knowledge share in turn, will be helpful to the warriors, thus they too will contribute in assisting the soldiers. **Impact on the Community:** Students will be able to develop relationships with local community through the exhibition of their work, giving them inspiration to support the wounded warriors and helping them in integrating back into the society they left behind. This in turn will make them happy, and increase their wellbeing as well.

Amount of Funding Requested and Any Matching Funds

This applicant requests \$10,000.00 for this project and will serve as Principle Investigator. Please see detailed budget and justification attached with this proposal. The department will provide match funds of \$5,666.40 to cover: 1) plotting and printing costs 2) rehabilitation facility design prototype materials, 3) support staff time, 4) hosting three design reviews of students' work, 5) inviting and hosting medical staff and professionals, 6) model making equipment service charges including CNC, Laser and wood workshops. The dean of APDesign will provide \$1,500.00 and the principle investigator will also contribute \$3,000 to facilitate the presentations of this project at national and international conferences.