Appropriate Technology in Rural Health Innovation

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Project Budget:

$13,000

Abstract:

One goal of interdisciplinary education is to train individuals who will work in teams to solve challenging problems in the development of a sustainable society. True interdisciplinary problem-solving aims to produce solutions that work in the real world, with all the attendant constraints. Yet many students have limited engagement with socio-cultural norms that are different from their own, and thus may not consider those differences in the problem-solving process.

This proposal aims to ameliorate this situation by building upon ongoing collaborations between faculty in the College of Health and Behavioral Studies and the College of Integrated Science and Engineering that focuses on innovation, creative problem solving, human-centered design, culturally appropriate design and collaborative project work by students. The goal of this interdisciplinary partnership is to strengthen existing international academic collaborations, to foster new interdisciplinary collaborative learning in STEM fields, and to develop a model for interdisciplinary co-learning using modern design and rapid prototyping technologies, and interdisciplinary community health field work and planning.

Through this collaboration and in partnership with various stakeholders in Morowe, a rural community in South Africa, we completed an interdisciplinary course on Rural Health Innovations in Fall 2021. The course, designed for engineering and nursing students, challenged students to develop viable ideas for effecting measurable positive health outcomes in Morowe. Based on a thorough understanding of the social and cultural context and norms in Morowe, student teams applied the creative design process to develop feasible solutions. One viable solution that has received significant stakeholder approval and thus likely to be adopted is a mobile health education system featuring modern technology.

We propose the embodiment design of a modern technology based mobile health education and awareness system to be deployed in rural communities in sub-Saharan Africa. This vehicular system is conceived as a sustainable, culturally appropriate means to effecting positive personal and community health outcomes and broad STEM education in resource-limited communities. While the initial design, will be developed for Morowe community in South Africa, it will be modifiable and deployable in other rural communities with similar social, environmental and economic factors.

A relationship already exists between James Madison University's School of Nursing (JMU SON), the Department of Engineering (JMU DOE) and the University of Limpopo's School of Nursing (UL SON). A new collaborative academic partnership is currently sought with a technical college of Engineering in Limpopo. Thus, this work both strengthens existing ties and fosters new collaborations.

The product will feature:

1. A mobile vehicular system augmented with sustainable energy powered subsystems to travel between isolated communities.
2. STEM education-based modules and demonstrations emphasizing community based and collaborative approaches to local problem solving.
3. A radio-based telehealth subsystem to disseminate health and wellness related information.

Project Budget Amount:	$13,000
Travel:	$5.000
Equipment:	$2.000
Supplies/Materials:	$5.000
Other:	$1,000