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Facilitating Transformative Interdisciplinary Collaborative Projects: The IMPACT (Interdisciplinary, Meaningful, Practice, Applied, Community, Transformative) Project

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Abstract—Institutional and departmental boundaries often sequester undergraduate and graduate students into specific academic silos, hindering knowledge mobilization for its practical implementation, and defining problems in disciplinary rather than practice terms. To create learning among students from diverse fields, we designed and implemented a model for interdisciplinary collaborative projects involving instructors, undergraduate, and graduate students. The aim of the project was to improve the life of a person with a disability living in the community by designing a product that addressed a unique need. In the process, over 1200 students (Engineering, Biology, Rehabilitation Science) participated in a series of collaborative lectures and tutorial activities, including critical feedback sessions. For the first-year Engineering students, this mandatory project was part of their professional and practice training. The project is spread across a seven-week arc during which students iterate on their work by interacting with the client and experts in lecture and participate in studio work on a weekly basis, where the members of the university and local community engage individual teams of engineers. For Biology undergraduate and graduate students, the interdisciplinary project provided an opportunity to apply their critical thinking skills regarding the biological basis of rheumatoid arthritis and its treatment to provide constructive feedback for the design of the mobility device. For the upper year graduate students in the Occupational Therapy (M.Sc., Rehabilitation Science program) who participated, this project provided an opportunity to apply their clinical skills and interact with future engineers who design such products.

In this paper, we will highlight the IMPACT project model for linking expertise and disseminating insights and resources in any discipline with the goal of creating meaningful change in the local community. Specifically, our interdisciplinary model/template successfully solved a real-life challenge faced by a client, with severe rheumatoid arthritis. The designing of the actual mobility device not only engaged the learning of students across disciplines, but also transformed the life of the client as she indicated “you may actually not be aware of how profound a change you’ve made in my daily life, I no longer have to plan, strategize, or organize my activities around optimum times to fuel the car”.