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## BRIDGING ACADEMIC LEARNING AND COMMUNITY SERVICE

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### ABSTRACT

This paper outlines a Service-Learning (SL) initiative offered to second-year higher education Mechanical Engineering students to foster mathematical competences and critical soft skills. Service-Learning provides a dynamic framework embracing student development by fusing academic education with real work community needs. By applying mathematical concepts to real-world situations, SL in mathematics education helps students gain a wider appreciation of the practical importance of mathematics and strengthens their critical thinking abilities as they tackle real-world problems and create mathematical solutions or reality interpretations to meet the community's needs. As students interact with their peers and the community, they not only transfer mathematical knowledge but also collaborate on solutions, thereby enhancing their collaboration, communication, and creative skills. Moreover, SL fosters a range of humanistic competencies, such as empathy, leadership, active listening, and community engagement. Through these interactions, students develop a deeper understanding of societal issues and the role of mathematics in addressing them. They learn to appreciate diverse perspectives, leading to a reinforced sense of empathy and cultural awareness. Leadership skills are practiced as students take initiative and assume project responsibility. At the same time, active listening and community involvement are cultivated through direct engagement with community members, ensuring that solutions are relevant and impactful (sometimes in their own lives). Service-learning also promotes self-awareness and personal growth, as students reflect on their experiences and the broader implications of their work. They gain insights into how mathematics can drive positive social change and the importance of their civic engagement. This study describes the integration of SL concepts into the curriculum, with a particular focus on the Statistical Methods course taken by second-year Mechanical Engineering students. The objectives were to develop students' abilities in data analysis, encourage significant community involvement, and evaluate the effect on both their mathematical and humanistic competencies. By bridging academic learning and community service, this initiative aimed to contribute to a full person students' formation who are not only proficient in Statistical Methods but are also equipped with the soft skills necessary for effective and empathetic leadership in their professional and personal lives.

**Keywords** Education · Mathematics · Service-Learning

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