

**Developing a natural-based hand and body cleanser to enhance the livelihood of urban poor families in Quezon City, Philippines**

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**Abstract:** Chemical engineers play a crucial role in large-scale manufacturing industries, where their expertise is utilized to optimize productivity and product quality while minimizing costs. Consequently, this industry demand shapes the curriculum content and training provided to Chemical Engineering students in colleges and universities. However, in the face of escalating climate change and societal challenges, chemical engineering has an important role to play in promoting sustainability and achieving sustainable development goals. At John Dewey School for Children (JDSC), project-based learning is employed with specific focus on sustainability. By incorporating sustainability principles into their projects, students are actively engaged in addressing real-world challenges related to environmental, social, and economic sustainability, fostering a deeper understanding and practical application of sustainable practices and enabling them to play an active role in shaping a more just, equitable, and sustainable future. Through the "TransformEd" community engagement project, JDSC high school students collaborate with parents of Toro Hills Elementary School students who mostly live in urban poor communities in Quezon City, Philippines. The main objectives of the research project are to promote hygiene and sanitation, foster climate action, and enhance the livelihood of the urban poor by developing the process of natural-based hand and body cleansers. The project consists of a six-week on-campus design phase and a three-week field implementation and research. Students have worked closely with their research advisers and parents of Toro Hills Elementary School students to optimize the process, understand cultural conditions, and recommend options for community engagement and empowerment. Achievements in addressing targets of SDG 6 on clean water and sanitation, SDG 8 decent work and economic growth, and SDG 13 climate action will advance the achievement of targets to end poverty [SDG1]; address hunger [SDG2]; promote healthy lives [SDG3]; achieve gender equality and inclusion [SDG5]; build sustainable and safe communities [SDG11]; advance responsible consumption and production [SDG12]; foster climate action [SDG13]; protect life on land [SDG15]; and build partnerships for the goals [SDG17].

**Keywords:** Chemical Engineering, Sustainability, Community Empowerment, Community Engagement, Partnerships, Social Impact, Sustainable Engineering, Sustainable Chemical Engineering, SDGs

**Related SDG Goals:** SDG1, SDG2, SDG3, SDG5, SDG6, SDG8, SDG11, SDG12, SDG13, SDG15, and SDG17