

Building a Recyclable Wind Turbine: An Interdisciplinary Approach to Teaching Renewable Energy

*Fabio Luiz Paranhos Costa, Instituto de Ciências Exatas e Tecnológicas (ICET) -
Unidade Acadêmica de Ciências Exatas e Tecnológicas - Universidade Federal de Jataí,
Instituto de Jataí-GO, Brasil*

flpcosta@ufj.edu.br

Abstract

This educational activity introduces high school students to renewable energy concepts through the construction of a small wind turbine using accessible and recyclable materials. The project integrates principles from chemistry, physics, and mathematics to demonstrate the conversion of kinetic energy into electrical energy. Students will use recycled items, such as plastic bottles and cardboard, to build the turbine, which will then be connected to a small generator to produce electricity. During the activity, students will explore the physics of wind energy, including the mechanics of turbine blades and the principles of energy conversion. The mathematics component involves calculating the efficiency of the turbine and analyzing energy output data. The chemistry aspect focuses on the materials used in energy storage and the environmental impact of renewable energy technologies. This hands-on project emphasizes the importance of sustainability and innovation, encouraging students to apply interdisciplinary knowledge to real-world challenges. By engaging in this practical exercise, students will gain a deeper understanding of renewable energy, develop problem-solving skills, and appreciate the significance of using recycled materials in technology development.

Keywords:

Renewable Energy, Interdisciplinary Learning, Sustainable Technology