



# ZERO-WASTE MATERIAL CYCLING AND INDUSTRY-ORIENTED INSTRUCTIONAL ACTIVITIES FOR SCIENCE TEACHING



Rodney T. Cajimat<sup>1,2</sup>, and Maricar S. Prudente<sup>2</sup>

<sup>1</sup>College of Teacher Education, Nueva Vizcaya State University, Bambang, 3702 Philippines

<sup>2</sup>Science Education Department, Br. Andrew Gonzalez FSC College of Education, De La Salle University, 2401 Taft Avenue, Malate, Manila, 1004 Metro Manila, Philippines  
e-mail: rodney\_cajimat@dlsu.edu.ph

## ZERO-WASTE INSTRUCTIONAL MATERIAL CYCLING

Instructional material cycling involves the usage of citrus products and wastes derived from the instructional activities. This ensures **material efficiency and waste utilization**.

## CITRUS INDUSTRY AWARENESS AND CITRUS PRODUCT PATRONAGE

Education plays a role in promoting the local citrus industry through the **contextualization of science instructional activities** which utilize some of the processes involved in citrus production.



### CHEMISTRY

Crude Oil Extract

Activity on Essential Oil Extraction from Citrus Rinds

Crude extract was utilized for soap-making activity which may serve as livelihood training.



Extraction of citrus rind from locally grown citrus varieties: Satsuma, pomelo, lime, and calamansi.



Activity on Soap-making with Citrus Extract

TECHNOLOGY & LIVELIHOOD EDUC.

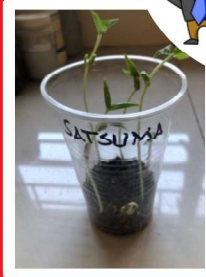
Citrus Fruits



Citrus Soap

### EARTH SCIENCE

Waste materials from all the activities conducted were collected into a bio-compost that was used to grow citrus seedlings.



Activity on Bio-compost for Seed Germination



Activity on Antibacterial Testing for Citrus Soap

This activity enabled the learners to determine the benefits of the citrus soap for increased marketability while enhancing their laboratory skills.



Waste Materials

### BIOLOGY



Articulation across the science-oriented subjects involved the preparation of instructional activities that use the same instructional material and method; hence, the **zero-waste material cycling and industry-oriented instructional activities**.

MULTIDISCIPLINARY

This articulating teaching model lessens the overall amount of waste materials discarded in every activity while promoting awareness and patronage for the local citrus industry and enhances the **scientific knowledge, attitude and skills** of the learners.

IMPLICATION TO TEACHING AND LEARNING