

- Teacher guidelines for case study -

Dole Sunshine Company turns banana waste into fibers of purpose with Musa Fabric: Natural fiber from banana pseudo-stem



Generic green skills

Cognitive competencies:

- Environmental awareness and a willingness to learn about sustainable development
- Ability to make judgments based on both evidence and sustainability values

Interpersonal competencies:

- Communication and negotiation skills to discuss conflicting interests in complex contexts
- Marketing skills to promote greener products and services
- Consulting skills to advise consumers about green solutions and encourage the use of green technologies



Learning objective

Students are expected to:

1. Understand the green technologies used to upcycle banana waste to textiles.
2. Identify which sustainability issues can be addressed by turning banana waste into fiber.
3. Analyze what the students can do/want to do and the challenges involved in supporting partnerships for upcycling banana waste.
4. Discuss the proposed challenges based on the different values stakeholders hold and benefits that may facilitate the cooperation.



Format

Small group work



Role of teacher

Facilitator



Resources needed

A3 paper, student worksheet, pens, colored pencils, case study, student worksheet



Time required

1.5 hours



Assessment

The assessment will be based on:

The group discussion and the role-play activity. The assessment is based on the clarity of students' arguments; the analysis of what they can do/want to do and the challenges involved in supporting partnerships for upcycling banana waste.

Suggested teaching and learning sequences

Before the class:

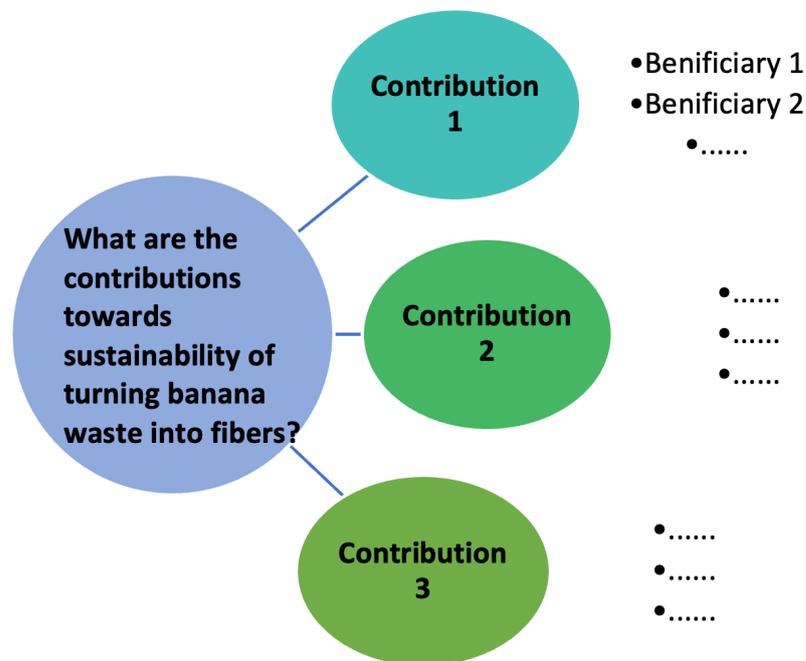
1. Ask students to read the case study “Dole Sunshine Company turns banana waste into fibers of purpose with Musa Fabric: Natural fiber from banana pseudo-stem”, and identify the green technologies used to upcycle banana waste to textiles.
2. Ask students to search online about the partnership between Dole Sunshine Company (DSC) and the social enterprise Musa Fabric that aims to turn banana waste into fibers of purpose, and think about its contribution towards sustainability.

For example, which sustainability issues can be addressed by turning banana waste into fibers and who are the beneficiaries under the principle of “shared value for all stakeholders” (as explained in the case study). Each student should prepare at least two identified contributions to share in class.

During the class:

1. Group sharing

- a. Group students into groups. Facilitate students to share their ideas about the pre-class question: What are the contributions towards sustainability of turning banana waste into fiber?
- b. Ask students to use a mind map to summarize their group findings. The mind map should clearly illustrate contributions to sustainability and the beneficiaries relevant to these contributions.



- c. Invite 2-3 groups to share their group discussion in class based on the mind map, and summarize students’ sharing.

2. Group discussion: explore the use of banana fiber

Ask students to choose one industry sector (e.g. manufacturing) or a specific company (e.g. a local paper company and supplier) and refer to the examples of using banana fiber in the different fields introduced in the case study, or from their research online, to discuss the questions listed below:

- a. Which sustainability issues can be addressed through the partnership between Dole Sunshine Company (DSC) and the specific industry sector/company in upcycling banana waste?
- b. Who are the potential stakeholders in the partnership?
- c. What is “the shared value of all stakeholders” (see the case study for an explanation of this) in the partnership?

3. Role play and simulation: promote the use of banana fiber

Explain to students that in the role play and simulation activity they need to:

- a. Decide on a role within their group, based on the stakeholders identified in the partnership (e.g. the head of a paper company, the department head of DSC, customers, the officer in the environment department, the volunteers at ENGO [Environmental Non-Governmental Organization]).
- b. Based on “the shared value of all stakeholders” and their choice of role, students should think about what they can do/want to do to support the partnership between DSC and the specific industry sector/company to upcycle banana waste.
- c. Explain what they can do/want to do and the challenges they may face from the relevant stakeholders (some other roles in your group) and discuss how to address them cooperatively.

You can give students an example to demonstrate the role play: if you are the head of a paper company, you might want to use banana fiber to produce paper. The challenges you face might be: a) the technology of turning banana waste into fiber for paper production; b) increased costs; c) the recycling of banana waste; and d) the promotion of “greener paper”. To address the challenges cooperatively, the officer in the environment department could help to promote the “greener paper”, the department head of DSC could organize training for the technology and the volunteers in ENGO could help recycle the banana waste.

Suggested answers/examples for the activities

1. Group discussion: explore the use of banana fiber

Based on the examples of using banana fiber in the different fields introduced in the case study, or in research online, choose one industry sector (e.g. manufacturing) or a specific company (e.g. a local paper company and supplier) to discuss:

- a. Which sustainability issues can be addressed through the partnership between Dole Sunshine Company (DSC) and the specific industry sector/company in upcycling banana waste?
 - i. Reduce CO₂ emissions: Limiting 4.4 million pieces (200,000 metric tonnes) of banana stem waste from reaching landfills, can reduce approximately 258,720 tonnes of carbon dioxide equivalent (CO₂e) emissions.
 - ii. Benefit the livelihoods of local people: Providing training for the local community and prison inmates to upcycle banana waste to textile, which creates sustainable fashion products worth over 50 million USD.

- b. Who are the potential stakeholders in the partnership?
- iii. Kasilak Foundation
 - iv. Marginalized communities in the highlands of Bukidnon
 - v. Inmates at Davao Penal Colony
 - vi. Conscious consumers around the world
 - vii. Environmental department
 - viii. Local community
- c. What is “the shared value of all stakeholders” (see the case study for an explanation of this) in the partnership?
- Upskilling, technology transfer and employability that benefit local community and sustainable fashion alternatives that in turn help to reduce CO2 emission and benefit conscious consumers around the world.

2. Role play and simulation: promote the use of banana fiber

In relation to the example given above: if you are the head of a paper company, you might want to use banana fiber to produce paper.

- a. The stakeholders may include: the head of a paper company, the department head of DSC, customers, the officer in the environment department, the volunteers at ENGO [Environmental Non-Governmental Organization].
- b. Explain to students that they need to decide on a role from the stakeholders identified in the partnership between DSC and the specific paper company to upcycle banana waste.
- c. Students need to explain the challenges they may face to support the partnership. These might be: a) the technology of turning banana waste into fiber for paper production; b) increased costs; c) the recycling of banana waste; and d) the promotion of “greener paper”.
- d. Students need to discuss how to address the identified challenges cooperatively.
- e. Here are some examples:
 - i. The officer in the environment department could help to promote the “greener paper”.
 - ii. The department head of DSC could organize training for the technology.
 - iii. The volunteers in ENGO could help recycle the banana waste.

Reference:

Dole Sunshine Company turns banana waste into fibres of purpose with Musa Fabric. (2022). Retrieved from <https://www.eco-business.com/press-releases/dole-sunshine-company-turns-banana-waste-into-fibres-of-purpose-with-musa-fabric-2/>