

PLASTIC, BIODEGRADABLE, OR FABRIC BAG?

Which one would you choose to carry your groceries?

Module development by the PARRISE Primary School Science Group (2016-17):

Efi Dariou¹, Marios Georgiou², Marianna Ioannou³, Stella Timotheou⁴, Maria Vasiliou²

Collaborating schools: 1: Agios Spyridonas Strovolou Primary School, 2: Parekklesia Primary School, 3: B' Ormideias Primary School, 4: Katharis Primary School – Dimitris Lipertis, Cyprus

Primary School Science group coordinator: Andria Agesilaou, Cyprus University of Technology, Cyprus

PARRISE Cyprus coordinator: Dr. Eleni A. Kyza, Cyprus University of Technology, Cyprus

Unit Overview

- **Scientific Discipline:** Physical and environmental sciences
- **Grades:** 2, 3, 4
- **Unit:** Cross-curricular approach: "Natural Environment" (Physical Science) & "Rational Waste Management" (Education for the Environment and Sustainable Development)
- **Duration:** 5 lessons X 80 minutes each
- **Teaching approach:** Collaborative inquiry structured around the Jigsaw approach
- **Learning Objectives:**
 - Familiarize students with the alternatives for shopping bags and develop awareness about their consequences on the environment, animals and human health
 - Involve students in scientific inquiry procedures, such as collecting and analyzing data obtained through multiple sources
 - Promote awareness about the controversy of plastic, biodegradable and fabric bags
 - Develop an informed and evidence-based stance towards the topic
 - Inform their community and related stakeholders about this socio-scientific issue
 - Cultivate Responsible Research and Innovation (RRI) values and attitudes

Socio-Scientific Issue (SSI)



- The learning scenario video of this SSIBL module presents a family at the supermarket. When the family arrives at the cashier, the cashier presents them with three alternatives to carry their groceries: plastic, biodegradable or fabric bag. The family concludes that the choice is not that easy.
- Students' mission was to find out which is the most appropriate bag to carry our groceries.

Inquiry Based Science Education (IBSE)

Application of the jigsaw method to explore different kinds of information sources (comics, videos, articles, interviews, posters) that reflect stakeholders' different perspectives and points of view, in order to provide an evidence-based answer to the driving question "Plastic, biodegradable or fabric bag: Which one would you choose to carry your groceries?"



Citizenship Education (CE)

Respect All Voices

- Foster respect of students' different opinions and points of view expressed, both in jigsaw and expert groups, in a democratic way.
- Engage students in democratic and respectful exchange of ideas.
- Support collaboration critically taking into account the views of all students.

Student's Personal View

- Provide personal and evidence-based answers to the driving question.

Argumentation and Debate

- Promote debate and critical reflection on current practices and legislation about the use of different kinds of shopping bags: plastic, biodegradable, fabric.

Collective citizenship actions

Raising awareness of the wider local population, through informing the school and local community about students' decisions:

- Providing door to door information
- Sharing information brochures, posters, promotional key rings and magnets

- Creating fabric bags from reusable materials, in order to promote fabric bags
- Creating advertising t-shirts
- Writing a script and creating a TV spot to raise the awareness of the community
- Setting up an information stand in the schoolyard
- Presenting information to the school community
- Posting the program results on the school website
- Participate in a TV show

- Participate in teleconferences with other schools
- Presentation of the program at the local PARRISE conference for RRI
- Presentation of the program at the Local Municipality World's Environment Day Event, titled "Return to Nature"
- Proposing mitigation measures to the Mayor, the Environment Commissioner, the Minister of Education and Culture and to the Parliament.



Responsible Research and Innovation (RRI)

- Engaging students in activities which focus on social issues that require scientific knowledge for informed decision making
- Exploring stakeholders' perspectives and points of view, in order to make a final evidence-based decision
- Evaluating and classifying the advantages and disadvantages of each type of bag according to personal criteria but also according to criteria that are important for the stakeholder they represent
- Exploring differences between stakeholders in order to understand that

they highlight arguments that strengthen their view and we, as responsible and informed citizens, must be able to make the right decisions

- Assessing the impact of bag consumption on the environment and society and realizing that our everyday habits need to be characterized by responsibility
- Expressing their point of view by choosing the kind of bag they consider most appropriate, as individuals and as a group
- Engaging students in the dissemination of program results to the broader community

Teachers' Conclusions about the PARRISE Module

- Promoting autonomous learning
- Growing responsibility
- Promoting positive attitude towards the school community
- Improving learning outcomes
- Focusing on active participation
- Growing self-confidence competencies
- Cultivating social skills (communication, dialogue, collaboration, argumentation)
- Involving moral reasoning, epistemological development, and peer debate
- Fostering students' technological, scientific, environmental and social literacy

- Strengthening critical thinking skills (analysis, inference, explanation, evaluation, interpretation, self-regulation)
- Producing students who are truth-seeking, open-minded, analytical, systematic, judicious, and increasingly confident in their reasoning

