ENSITE
Environmental Socio-Scientific Issues
in Initial Teacher Education

IO9: DEVELOPING AN SSI LESSON - FOCUS ON DIDACTIC ASPECTS

INTRODUCTION

ENSITE produces teaching modules for mathematics and science students in initial teacher education.

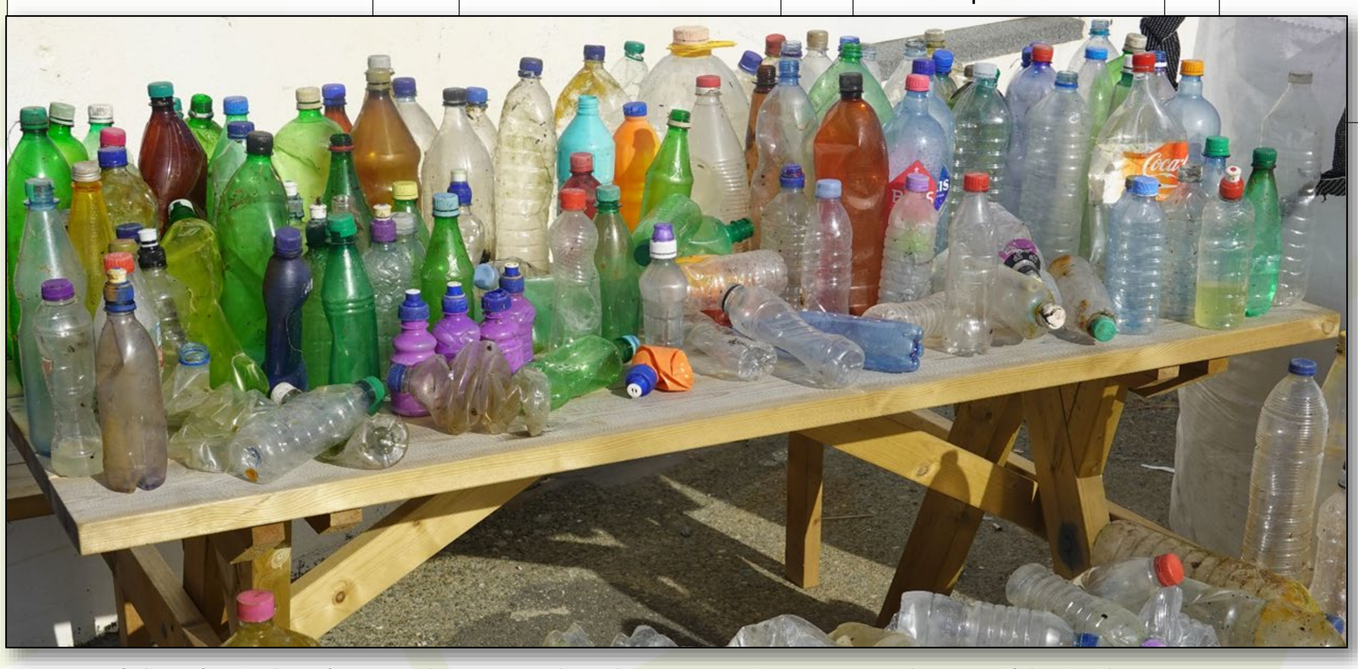
Learning outcomes for future teachers:

- LEARNING: Develop competences in dealing with environmental socio-scientific issues (SSI) themselves
- TEACHING: Acquire teaching skills to support their students in developing these competences

ENSITE MODULE 9

Teaching module 9 introduces future teachers to ideas on how to design a lesson, based on the plastic dilemma, from the perspective of SSI and of sustainable development. Module 9 consists of six parts and includes lecture texts, group discussions, classroom debates and practical activities.

Part 1: Plastics - history and background	Part 2: Exploring plastics	Part 3: Case story: The plastic bottle and recycling	Part 4: Case story - The plastic bottle and marine waste	Part 5: Case story - The plastic bottle and landfill	Part 6: Designing a lesson - case approach
• Activity 1.1: Plastics is everywhere aound us • Activitiy 1.2: Introduction to the history of plastics • Activity 1.3: Wicked dilemma about plastics • Activity 1.4: Plastics and your school context • Activity 1.5: Introducing the plastic bottle and its part in society • Activity 1.6: How much water, oil, carbon dioxide and money can you save if you don't use plastic water bottles? • Activity 1.7: Wicked dilemma - debate	• Activity 2.1 What is plastic? • Activity 2.2 Collect different plastic • Activity 2.3 Identifying different plastic • Activity 2.4 Plastic as an environmental hazard • Activity 2.5 Chemical additives in plastic	• Activity 3.1: Introduction to recycling • Activity 3.2: Recycling plastic bottles - an SSI? • Activity 3.3: Teaser: The case of Norway • Activity 3.4: Recycling in your country • Activity 3.5: Recycling around the world • Activity 3.6: Recycling and energy saving: Energy calculator • Activity 3.7: How to make clothes from plastics?	• Activity 4.1: Introduction to plastic bottles as marine litter • Activity 4.2: Documentation of the collected plastic bottles • Activity 4.3: How plastic is fragmented and degrades • Activity 4.4: Plastic is fragmented into pieces • Activity 4.5: How to calculate the amount of microplastics? • Activity 4.6: Art projects - Examples • Activity 4.7: Art projects	• Activity 5.1: Introduction to plastic and landfills • Activity 5.2: Alternatives to plastic bottles • Activity 5.3: Advantages and disadvantages of new materials - for consumer • Activity 5.4: Advantages and disadvantages of new materials - for nature	• Activity 6.1: Designing a lesson based on a local dilemma



Some of the plastic bottles are thrown and end up as marine waste (Photo: Hilde Ervik).

RPET bottles (recycled polyethylene terephthalate bottles) (Photo: Hilde Ervik).

LEARNING DIMENSION

Future teachers will acquire

- Understanding of what plastic and micro-plastic are and their effects on nature and humankind
- Insights into sustainable development aspects (environmental, social and economic) in relation to the plastic dilemma
- Knowledge on the life cycle of plastic bottles, from production to waste, mainly in their own country, but also with an international perspective
- Knowledge on different dimensions of the plastic dilemma (historic, economic, social, environmental – local and international) and take part in discussions on this dilemma
- Basic knowledge and skills that enable them to take critical action

TEACHING DIMENSION

Future teachers will acquire

- Awareness about plastic pollution as a "wicked problem" in their national and/or local curriculum
- Experience in how to apply plastic dilemmas to teach about the role of science in society
- Experience in using inquiry-based learning approaches to teach plastic dilemmas in an SSI-perspective
- Knowledge on how to set up socio-scientific issues ("wicked problems") on plastics in their context
- Basic knowledge and skills on how to deal with environmental socio-scientific issues in their future teaching

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