Handouts

SSIBL Teacher Professional Development Course (UJA)

These materials are based on the work within the project Promoting Attainment of Responsible Research & Innovation in Science Education (PARRISE)). Coordination: Dr. Marie-Christine Knippels & Frans van Dam, MSc (Utrecht University)

© PARRISE project (grant no. grant agreement 612438) 2014-2017, lead contributions by Department of Science Education, University of Jaén] [Ariza, M.R., Quesada, A., Abril, A.M. 2017]. CC-NC-SA 4.0 license grant

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu

Session 1 & 2

Should sales of *pangasius* be ceased?

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu

CC BY NC SA

Should sales of pangasius be ceased?

Introduction and objectives

In this activity we will introduce a recent new informing that Carrefour has ceased selling pangasius fish in Spanish stores. You will be asked to inquiry about the reasons behind this decision in order to make an informed opinion about the issues.

The main purpose of this activity is to give you the opportunity to experience an innovative educational approach as a learner intended to prepare critical citizens to be able to actively participate in a world deeply influenced by science and technology.

To understand the wide range of implications you will have to learn about health and environmental aspects related to this issue, develop inquiry skills and critically evaluate different types of argument (social, economic, scientific ...).

Therefore, the objectives of this activity are to:

1. experience innovative science education approaches focused on preparing individuals to actively participate in a world deeply influenced by science and technology.
2. reflect of the knowledge, skills and attitudes developed through the activity.
3. recognise the educational value of socio-scientific issues in illustrating the implications of science and technology and to promote critical, responsive and responsible citizens.
4. develop the following specific teaching skills related to the use of socio-scientific issues in science education:

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu
CC BY NC SA

- Using media to bring relevancy and authenticity into the classroom
- Supporting students' inquiry
- Mapping controversy
- Encouraging student's participation
- Facilitating active listening and constructive interactions
- Supporting argumentation and critical thinking
- Encouraging responsive and responsible action-taken

What to do

1. Formulate all the questions that come to mind after reading the news, and decide which you would like to investigate.
2. Carry out inquiry using different sources to get a deep understanding of the issue.
3. Explore different types of argument (scientific, social, economic, environmental, health-related…)
4. Map the controversy identifying different points of view and interest groups, pros and cons and implications at different levels (individual/social; local/global).
5. Critically discuss the reliability of the different sources of information and the potential existence of bias.
6. Summarise the outcomes of your inquiry about the issue and justify your position.
7. Write a letter to the school canteen giving informed recommendations about including (or not) pangasius fish on the menu.
8. Reflect on the whole process and identify learning outcomes in terms of:
    a. Knowledge
    b. Skills
    c. Values
9. Present your work to the rest of the class.

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu
CC BY NC SA

Sessions 3,4,5,6

Designing SSIBL classroom activities

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu

CC BY NC SA

DESIGN AND EVALUATION OF SSIBL ACTIVITIES

Introduction

These activities are focused on designing a task for inquiring about socio-scientific issues (SSIBL). You then analyse whether this task meets the quality criteria showed Table 1. In order to design the task, you will follow different steps, grouped into three stages:

a) search for information

b) find and establish relationships with curriculum and design

c) evaluation

Guidelines for student teachers

a) Search for information

- Have a look at the media and select a recent news article dealing with a relevant socio-scientific issue, which could be of special interest to your students.
- Once you have selected the news and the issue to focus on, search for more information on the topic. Try to identify as many perspectives and opinions as possible (scientific, social, economic, environmental, ethical or moral). Sources to address the issue from an individual (personal opinion), local (where more people are affected) or social (where an impact is detected on society) points of view have to be identified. Contrast different sources and types of information.
- Now, you have to prepare a global view that allows you to position yourself. Describe how this scenario for promoting critical thinking, responsible decision-making and scientific literacy in your students would be used.

b) Curriculum relationships and design

- You have to look for specific links with the science curriculum, define learning outcomes and discuss how you would assess these learning outcomes related to the SSIBL activity being designed.

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu
CC BY NC SA

- Describe how the task would be introduced and how the work in class would be organized and guided. To do this, take into account the selected news, and pose questions for guiding the research and reasoning of the students towards key aspects.
- Define the final product you will ask the students to create.
- Describe how you would evaluate the learning outcomes outlined above.

c) Evaluation and improvement

- Use Table 1 to self-evaluate and improve your designed task.
- Present your complete designed task, as well as a final paragraph summarizing the changes and improvements introduced in the final design after the self-evaluation process.

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu
CC BY NC SA

Table 1. Criteria to improve the design of SSIBL classroom activities based on the SSIBL model

Dimension	Criteria	Quality (1-10)	Feedback for improvement
Authenticity	The topic used is: socially-relevant, engaging and interesting for students		
Media and resources	Engaging introduction based on media (video, news article) Multi-perspective Validity and reliability issues		
ICT	The chosen topic reveals the existence of uncertainties and risks derived from scientific and technological development and the complex interactions between science, technology and society		
Dimensions (mapping controversy)	Different interest groups Multiple dimensions (scientific, ethical, economic…)		
Overarching question	Promotes reasoning and argumentation Supports students in working productively		
Making decisions (Active citizenship)	Students make decisions and take action about SSI		
Evaluation	Consistent with learning objectives Considering knowledge, skills and dispositions related to SSIBL		

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu
CC BY NC SA

Sessions 6 | TPD Evaluation Questionnaire

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu

CC BY NC SA

Table 2. TPD Evaluation Questionnaire

Please fill this questionnaire in. Give reasons to your answers.

To what extent do you agree with (1 completely disagree, 2 disagree, 3 agree 4 completely agree)

	Give reasons
1. **Inquiry approaches are important for science education**	
2. **SSI are important in science education**	
3. **This course has helped me to develop a good understanding of inquiry approaches**	
4. **This course has helped me to know how to use inquiry in the science classroom**	
5. **This course has helped me to develop a good understanding of socio-scientific issues in science education**	
6. **This course has helped me to know how to use socio-scientific issues in the science classroom**	

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration activities under grant agreement no 612438. www.parrise.eu
CC BY NC SA