

<b>Teacher Education Design Principle + code:</b>	3. Teacher education should advance teachers' understandings about the nature of science and how scientists work, confronting stereotypical images of science and scientists. <b>TE: NoS</b>
<b>Specific Teacher Outcome(s):</b>	3.3 Teachers should be able to use foster the processes of imagination, reflection and consideration of alternative ideas in supporting children's understanding of scientific ideas and procedures and development of creativity.
<b>Factors linked with:</b>	<b>AO: Kn.Sc;</b> <b>AO: Und. SI</b>
<b>Type of material (image – interview (int) – classroom extract (class):</b>	Classroom
<b>Originating from:</b>	
<b>Country report :</b>	D4.3 Portugal
<b>Case:</b>	Case 3
<b>Episode:</b>	Wolf, sheep and cabbage
<b>Teacher:</b>	Florence
<b>Age Group:</b>	8
<b>Selected episode present in D4.4 Appendix</b>	Yes



### The activity WolfSheepCabbage

**Problem:** A man needs to bring a wolf, a sheep, and a cabbage across the river.

The boat is tiny and can only carry one passenger at a time.

If he leaves the wolf and the sheep alone together, the wolf will eat the sheep.

If he leaves the sheep and the cabbage alone together, the sheep will eat the cabbage.

How can he bring all three safely across the river?

Working in groups, the children could think of the problem, make their hypothesis and try their solutions. They could use paper models of the boat and passengers to play the game.

The context of the game provoked children's **imagination**, and the informal and fun nature of the task **motivated** the children to become engaged in the problem. Working in groups encouraged children to articulate their ideas and reasoning. Children **collaborated** in sharing and discussing different ways to solve the problem.

Every time a group would reach a solution, it was demonstrated to the teacher using their paper models and moving the boat from one shore to another.

When the solution was correct the teacher would send them to the computer to play that same game using their sequence of moves. Otherwise, the teacher would point out the move in which the game was failing, asking the children to find another solution.

Children's **problem solving skills** were fostered as they suggested and modelled different potential solutions and gave **reasons** why certain ideas work or would not work. Children used and developed science skills such as predicting, observing, analysing and describing, demonstrating scientific or mathematical creativity in generating alternative ideas and strategies and **reasoning critically between them**. They also had to **make connections** between the combinatorial / mathematical aspect of the task and their knowledge of food chains.

### Reflecting on learning

**Child LA:** With this activity we learned that to solve a problem we have to make relationship between what we are 'analysing'

Reflection by the researcher: In the end, when all the groups had found a solution, some reflection of the activity was guided by the teacher, namely addressing the processes they went through to find a solution to the problem: questioning, collaborating, making hypothesis, discussing, testing. Then the children were told that it was much similar to what scientists do: they have to work and think before they find anything new.



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