

# BLACK TIDE - OIL IN THE WATER: TEACHER PERSPECTIVE ON STUDENTS' ASSESSMENT

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## Objective

Knowing the teacher's perspective on students' assessment process, as regards to the competence of planning investigations.

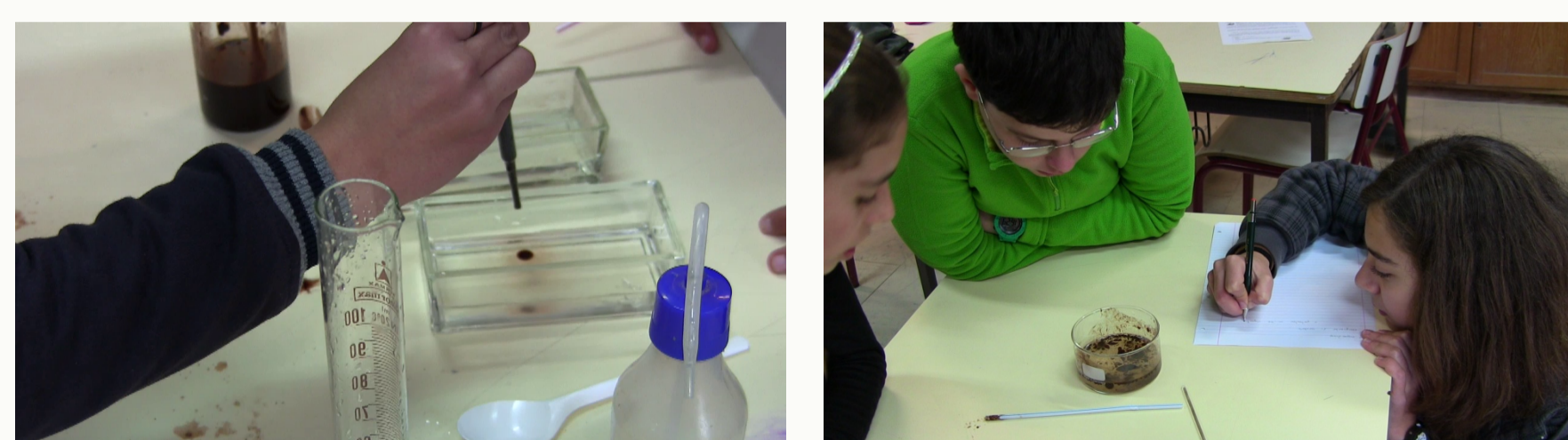
## Black tide oil in the water: Inquiry Activity

**Question: How does oil behave when spilled in water?**

To answer this questions, students have to plan an experiment by taking into account the natural factors that affect the activity of the oceans - currents, waves, winds. (Control of variables)

## Implementation

Participants were 20 students, 13 girls and 7 boys, who attend the 7th grade in a middle school. Their ages varied between 12 and 14 years old  
In the classroom, students worked in groups of three or four elements.  
The inquiry activity was applied through 4 lessons of 90 minutes.



## Assessment Instrument

Elements of IBSE	Operations/ actions involved	Performance levels		
		1	2	3
Planning investigations	Define goals	Does not define coherent goals, according to the proposed problem.	Defines some coherent goals, according to the proposed problem.	Defines coherent goals, according to the proposed problem.
		Does not operationally define the variables.	Defines the variables at study with some difficulty.	Operationally defines the variables at study.
	Define strategies and procedures	Does not define the necessary strategies and procedures to accomplish its goals.	Defines with some difficulty the necessary strategies and procedures to accomplish its goals.	Defines the necessary strategies and procedures to accomplish its goals.
Unclear planning requiring reformulation.		Planning well-presented, but requiring reformulation.	Clear, concise and complete planning.	
Know resources and chose them adequately	Does not select adequate resources, according to the goals and strategies.	Selects some resources that are adequate to the goals and strategies.	Selects the resources that are adequate to the goals and strategies.	

## Example: Student's Work (Level 2)

2) *Students do not indicate the material they will use.*

*1<sup>st</sup> step – Put water in the recipient and add a mixture of 12 tablespoons of vegetable oil and 8 tablespoons of cocoa powder. This mixture of vegetable oil and cocoa is the simulated oil.*

*What was the volume of water used? Did you use that amount of simulated oil? You need to be clearer in your planning, that is, your planning needs to be more detailed.*

*2<sup>nd</sup> step – In that recipient, we will ~~put~~ use a fan to simulate the wind.*

*3<sup>rd</sup> step – In another recipient, we will use the same volume of preparation, equal to the one used before (with water and simulated oil). We will shake the recipient to simulate the ripple.*

*4<sup>th</sup> step – In another equal preparation, we will agitate it with a glass rod to simulate the currents.*

*5<sup>th</sup> step – In another recipient, we will put the preparation and we will do nothing else.*

*6<sup>th</sup> step – Compare all recipients. Observe and register the results.*

## Conclusions

- The assessment instrument comprises several items concerning the various actions related to planning. However, it was difficult to define level 2 of performance, both in the design of the instrument and on assessing students' work.
- To overcome these initial difficulties, the teacher used two strategies: In a first analysis, she wrote the feedback on students' work. Subsequently, in a second analysis, she used the assessment instrument. These actions enabled to assess the competence of planning and categorize the students' work using the performance levels.