



GLOBAL  
SCHOOLS

POLITICHE LOCALI  
PER SCUOLE GLOBALI

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*Educating young people for  
sustainable development*

*Workshop  
Building a semi-structured test*

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## THE SEMI-STRUCTURED TEST

- Even if it is a tool that definitely seems simplistic compared to a portfolio of performances, in an Italian school a semi-structured test, going beyond the verification of knowledge, is an innovative tool and its introduction is not easy. As a matter of fact, it is not easy to prepare and even evaluate it.
- Moreover, it takes time to make the comparison in the classroom, after the corrected test has been returned to the pupils
- However, it offers a wealth of good information and if the correction in the classroom is shared seriously, it is a test that also helps to build metacognitive skills

## WHAT DO I WANT TO EVALUATE THROUGH A SEMI-STRUCTURED TEST?

- Cognitive processes
- Emotional attitudes
- Behaviour
- Values

or

- Some of them
- All of them

**WE NEED TO BE SURE ABOUT WHAT/HOW WE WANT TO EVALUATE**

## WHAT INFORMATION IS GAINED THROUGH SEMI-STRUCTURED TEST

<b>DATA REFERRING TO:</b>	<b>FROM WHICH ELICIT ANSWERS/INTENTIONS TOWARDS SUSTAINABILITY</b>	<b>WHAT TO SCORE</b>
Cognitive processus	Cognitive	Score for the class and the individual student
Attitudes	Emotional	Score for the class and the individual student
Behaviour	Behavioural	Score for the class and the individual student
Values	Value - driven	Map for the class and the individual student

<b>DATA REFERRING TO:</b>	<b>FROM WHICH ELICIT ANSWERS/INTENTIONS TOWARDS SUSTAINABILITY</b>	<b>WHAT TO SCORE</b>
Metacognitive processus	Metacognitive skills	Score for the class and the individual student

## COMPONENTS OF A SEMI-STRUCTURED TEST: OPEN QUESTIONS

- Open questions deliberately seek longer answers, and are the opposite of closed questions
- Open questions can get people to realize the extent of specific problems
- Open questions can be a follow-on from closed questions, to develop a conversation and open up someone who is rather indifferent or shy
- Open questions can find out more about a person, their wants, needs, attitudes, behaviour, values

Modified from [http://changingminds.org/techniques/questioning/open\\_closed\\_questions.htm](http://changingminds.org/techniques/questioning/open_closed_questions.htm)

## OPEN QUESTIONS: EXAMPLE

Look at this picture



where you can see the garden of a hotel in Africa with a golf course and a large pool available to tourists, who are also guaranteed 1300 liters of water per person per day per personal use, everything in an area neither particularly rich in freshwater nor equipped with infrastructure for the purification of water used.

**Taking into account the four dimensions of sustainability (environmental, economic, social and political), answer these questions:**

- a) What are the implications of the decision to build a hotel of this type?**
- b) Do you think that there are alternatives to the situation described? If you think so, what do you suggest?**

## COMPONENTS OF A SEMI-STRUCTURED TEST CLOSED QUESTIONS

- Closed questions make it easy to answer
- Closed questions don't force to reveal too much about yourself
- Closed questions are mainly for testing knowledge and understanding

**Example:** If Chad Lake is disappearing, people living there will have serious problems in finding a job.  
Decide if *Yes* or *Not*.

Modified from [http://changingminds.org/techniques/questioning/open\\_closed\\_questions.htm](http://changingminds.org/techniques/questioning/open_closed_questions.htm)

## COMPONENTS OF A SEMI-STRUCTURED TEST A SCALE

A scale permits to give a score from 1 to 5 for the affirmation expressed **as an “index” of your knowledge, values...** 1 = strongly disagree (0-10%); 2 = partially disagree (20-30%); 3 = moderately agree (40-60%); 4 = agree somewhat (70-85%); 5 = strongly agree (90-100%).

EXAMPLE

	1	2	3	4	5
Industrial agriculture increases the chances of work because of the extent of land that involves					
Commercial agriculture of large landowners must reach a targeted application of fertilizers and pesticides, calibrating perfectly- thanks to technology - the quantities of these products needed by crops					



## COMPONENTS OF A SEMI-STRUCTURED TEST MULTIPLE - CHOICE QUESTIONS

How do you feel when you look at this picture?

You can give three answers (“three” is better than “one”, in order to avoid that student chooses a sentence because he thinks it is the “expected” answer)



- It's painful. I think about the problems this bear will face in an area where not only the ice is reduced, but even the glacial corridors are disappearing and the animals have less possibility to move
- .....
- Pretty quiet. I think that science and technology will bring a cure for everything. We need only to have effective fund raising

# THE EVALUATION

## EVALUATING KNOWLEDGE BY A SCALE

Give a score from 1 to 5 for the affirmation expressed as an “index of your knowledge and critical thinking”. 1 = strongly disagree (0-10%); 2 = partially disagree (20-30%); 3 = moderately agree (40-60%); 4 = agree somewhat (70-85%); 5 = strongly agree (90-100%)

	1	2	3	4	5
Industrial agriculture increases the chances of work because of the extent of land that involves					
Commercial agriculture of large landowners must reach a targeted application of fertilizers and pesticides, calibrating perfectly- thanks to technology - the quantities of these products needed by crops					
WHAT WE EVALUATE					
	<b>KNOWLEDGE</b>	<b>CRITICAL THINKING</b>			

## EVALUATING COGNITIVE PROCESSES AND DETECTING VALUES BY AN OPEN QUESTION

Look at this picture



where you can see the garden of a hotel in Africa with a golf course and a large pool available to tourists, who are also guaranteed 1300 liters of water per person per day for personal care, everything in an area neither particularly rich in freshwater nor equipped with infrastructure for the purification of water used.

**Taking into account the four dimensions of sustainability (environmental, economic, social and political), answer these questions:**

- a) What are the implications of the decision to build a hotel of this type?**
- b) Do you think that there are alternatives to the situation described? If you think so, what do you suggest?**

WHAT WE EVALUATE	CONVERGENT THINKING / REASONING	CRITICAL THINKING	
WHAT WE DETECT	VALUES		

<b>THE FIRST QUESTION</b> What are the implications of the decision to build a hotel of this type?	<b>HOW WE SCORE</b> <b>CONVERGENT THINKING /</b> <b>REASONING</b>	<b>HOW WE DETECTE</b> <b>VALUES</b>
<b>THE ANSWERS</b>		
<b>Waste (in general)</b>	1	<u><i>Intrinsic values</i></u> Connecting with Nature Concern for others Social justice
<b>Pollution</b>	1	
<b>Unfair to local people</b>	1	
<b>Waste of money</b>	0,5	<u><i>Extrinsic values</i></u> Wealth
<b>To offer a variety of tourist attractions</b>	0,5	
<b>Wellness and fun for tourists</b>	0,5	
<b>Important for economic, local development</b>	0,5	

<b>THE SECOND QUESTION</b> Do you think that there are alternatives to the situation described? If you think so, what do you suggest?	<b>HOW WE SCORE</b> <b>CRITICAL THINKING</b>	<b>HOW WE DETECTE VALUES</b>
<p>This hotel should not be built there: too much damage to the environment and local populations</p> <p>Think of other entertainment for tourists</p> <p>No alternatives</p>	<p>2</p> <p>1</p>	<p><u>Intrinsic values</u>            Connecting with Nature            Concern for others            Social justice</p> <p><u>Extrinsic values</u>            Wealth</p>

**Be careful: sometimes, in open questions, aspects that we didn't want to investigate can emerge. In this case we have to decide if it is necessary to consider them or not**

## EVALUATING BEHAVIOUR AND DETECTING VALUES BY A MULTIPLE - CHOICE QUESTIONS

You really like some fruit, but you know that in its cropping areas (Developing Countries) workers are exploited and the use of pesticides makes the food dangerous and pollutes local aquifers. What will you do? You can give only one answer

- 1) I do not eat it.
- 2) I rarely eat it so I reduce my footprint.
- 3) I support Organizations that restrict the use of chemicals, although I have no guarantees of the treatment of workers. If nothing else, they will work in a cleaner environment.
- 4) We are told that we eat a lot of food contaminated with pesticides, but I do not see a lot of sick people. I love it and I eat it.
- 5) I read that the Fairtrade crops give certain guarantees with regard to the environment and workers. I try to find this product in stores in my town.
- 6) I read that in cultures in which the contract is respected Fairtrade gives certain guarantees with regard to the environment and workers. I 'm trying to find this product in stores in my town to buy it, even if I have to pay more

<b>WHAT WE EVALUATE</b>	<b>BEHAVIOUR</b>
<b>WHAT WE DETECT</b>	<b>VALUES</b>



## CORRECTION KEY

	BEHAVIOUR	SCORE	VALUES
I don't eat it	Respect for the environment (and for non-human life)	2	Connecting with Nature
I rarely eat it so I reduce my footprint	Partial respect for the environment (and for non-human life)	1	Connecting with Nature
I support organizations that restrict the use of chemicals, even if I have no guarantees of the treatment of workers. If nothing else, they will work in a cleaner environment	Partial respect for the environment (and for non-human life)	1	Connecting with Nature
We are told that we eat a lot of food contaminated with pesticides, but I do not see a lot of sick people. I love it and I eat it.	Indifference	0	
I read that the Fairtrade crops give certain guarantees to respect the environment and people. I try to find this product in shops in my town.	Respect for the environment (and for non-human life) and workers	2	Connecting with Nature Concern for others Social justice
I read that in cultures in which the contract is respected Fairtrade gives certain guarantees to respect the environment and people. I'm trying to find this product in shops in my town to buy it, even if I have to pay more.	Sustainability	3	Connecting with Nature Concern for others Social justice



## EVALUATING ATTITUDES BY A MULTIPLE - CHOICE QUESTIONS

How do you feel when you look at this picture? You can only give three answers



- It's painful. I think about the problems this bear will face in an area where not only the ice is reduced, but even the glacial corridors are disappearing and the animals have less possibility to move.
- .....
- Pretty quiet. I think that science and technology will bring a cure for everything. We need only to have effective fund raising.

- Pretty quiet. I see that there is still ice around ... so I think the photo is only a moment in the life of a family of bears during the summer season.
- Pretty quiet.....
- Enraged.....
- Engaged. I want to commit myself personally in society to fight against global environmental problems.
- Engaged.....
- Engaged. I want to help organizations that implement educational projects aimed at all citizens, through which they learn to reduce their contribution to the production of greenhouse gases.

	ATTITUDES	SCORE	VALUES
It's painful. I think about problems this bear will face in an area where not only the ice is reduced, but even the glacial corridors are disappearing and the animals have less possibility to move and risks their life	Moral suffering	2	<b><u>Intrinsic values</u></b> Connecting with Nature
Pretty quiet. I think that science and technology will bring a cure for everything. We need only to have effective fund raising	Indifference or Trust in Science and Technology	0	

	<b>ATTITUDES</b>	<b>SCORE</b>	<b>VALUES</b>
Engaged. I want to commit myself personally in society to fight against global environmental problems.	Desire of participation	3	Concern about sustainable development  Participation in decision-making process

## DETECTING METACOGNITIVE COMPETENCIES. EXAMPLE OF QUESTIONS

- Which learning acquired thanks to school education helped you to give your answers?
- In which subjects?
- Which experiences in school and outside school have helped you to give your answers?

# THE WORKSHOP

**You have:**

- **TO UNDERSTAND WHICH CRITERIA CAN BE USED TO EVALUATE THE ANSWERS TO SOME QUESTIONS PROVIDED, ACCORDING TO CRITERIA ABOVE-SAID**
- **TO PREPARE SOME QUESTIONS TAKING INTO ACCOUNT THE FOUR IMPERATIVES OF SUSTAINABILITY (WORKING ON A PROBLEM)**
- **TO PREPARE QUESTION ABOUT METACOGNITIVES PROCESSES**
- **TO PREPARE «MULTIPLE CHOICE QUESTIONS» TO INVESTIGATE BEHAVIOUR OR ATTITUDES**
- **TO DETECT VALUES IN SOME OF THE ANSWERS PROVIDED**

## TO EVALUATE THE RESPONSE TO A QUESTION

- Starting from a problem, imagine to have prepared a question.
- Which information about your students you can get from their answers?

Cognitive processes?

Emotional attitudes?

Behaviour?

Values?

Some of them?

All of them?

- **The question:**

**An Ecological Rucksack is the total quantity (in kg) of materials removed from nature to create a product or service, minus the actual weight of the product. That is, ecological rucksacks look at hidden material flows. Try to list the components of the ecological rucksack of a beef burger**

<http://www.gdrc.org/sustdev/concepts/27-rucksacks.html>

Ecological rucksacks take a life cycle approach and signal the environmental strain or the resource efficiency of the product or service.



## TO PREPARE QUESTIONS

- Through their answers, students have to reveal their capacity to face the problems.
- Taking into account the four imperatives of sustainability (economic, social, environmental, institutional imperatives), prepare some questions starting from a problem.
- Metacognitive aspects must not to be forgotten
- You can read the problem on next slide and create suitable questions about it.

## The case of Xylella

- Recently there is much talk of the problem of olive trees in Puglia, attacked by a bacterium that grows in the xylem conducting vessels of host plants, causing alterations or death of infected plants because of the occlusion of lymph vessels and the consequent irregular lymph flow from the roots to leaves..
- It is transmitted by insect vectors (typically Xylella, family Cicadellidae) that acquire the bacterium by feeding on the xylem vessels of infected plants and transmitting it to healthy ones.
- You are trying to decide what to do. The insect vector is among the weeds that grow at the base of trees and moves easily in the thick branches of the olive trees which - with the intensive cultivation developed thanks to European funding- stretch across vast tracts of monoculture, where operations of accurate cleaning and of pruning olive groves and individual trees are less implemented. The Xylella fears cold winters, but the last ones have been warmer than average because of greenhouse effect. Scientific research on the action of this bacterium in Puglia is not developed and there are no funds already allocated. For now, it proceeds with the elimination of diseased trees. What do you think of this situation? Think about it answering the following questions.

## TO PREPARE A MULTIPLE CHOICE QUESTIONS WITH SENTENCES TO INVESTIGATE EMOTIONAL ATTITUDES

- The problem

How do you feel when you look at this picture?



In it we see an area of forest destroyed to make room for the cultivation of palm oil, oil used in many different ways in bakery products and whose health impact is discussed because it seems to be dangerous. You can only give three answers, ticking on the list the box that corresponds to the sentence you choose

## TO DETECT VALUES (AND PERSONAL PERSPECTIVE) IN SOME ANSWERS PROVIDED

- «I can't make this choice because it would be unfair...for people who live here»
- «Yes...If I were a mayor...By this choice...I would win the elections!»
- «Too many problems on your mind! Be happy. The situation isn't so serious, I think!»
- «It's too dangerous for people...»
- It should be important to be careful...The loss of living beings...I'm sure! It could be a problem, in the future.»
- «People need a job. This is the most important thing.»
- The beauty of Nature is priceless



Thank you!

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