

## Supplementary Material

### Evaluation rubric

The evaluation of the documents produced by the students has been assessed using the rubric presented in Table 1.

**Table 1. Evaluation rubric**

	<b>Highest level of achievement</b>	<b>Average level of achievement</b>	<b>Low level of achievement</b>
<b>Standard 1: dependence on the implementation of a new technology</b>	Understand that: The decision depends on more than just the advantages or disadvantages of the technology. It depends on how well it works, how much it costs and how effective it is. Many new technologies have been put in place to make money, even if their disadvantages were greater than their advantages.	Understand that: It depends on the type of new technology involved. In some cases, the decision will depend on the advantages or disadvantages, and in others it will depend on other things.	Understand that: The decision to use a new technology depends primarily on the benefits to society, because if there are too many disadvantages, society will not accept it and this may slow down its further development.
<b>Standard 2: Citizen control of technology</b>	Understand that: Technological development CANNOT be controlled by citizens because those who have the power to develop technology prevent citizens from controlling it. Technological development can be controlled by citizens a little bit when citizens are united and make their voices heard, either for or against a new development.	Understand that: Technological development can be controlled by citizens only when citizens are united and vocal, either for or against a new development. Technological development CANNOT be controlled by citizens because technology advances so fast that the citizen ignores its development.	Understand that: Technological development can be controlled by citizens because each generation of scientists and technologists who will develop the technology comes out of the citizen population. Therefore, citizens have some control over advances in technology.

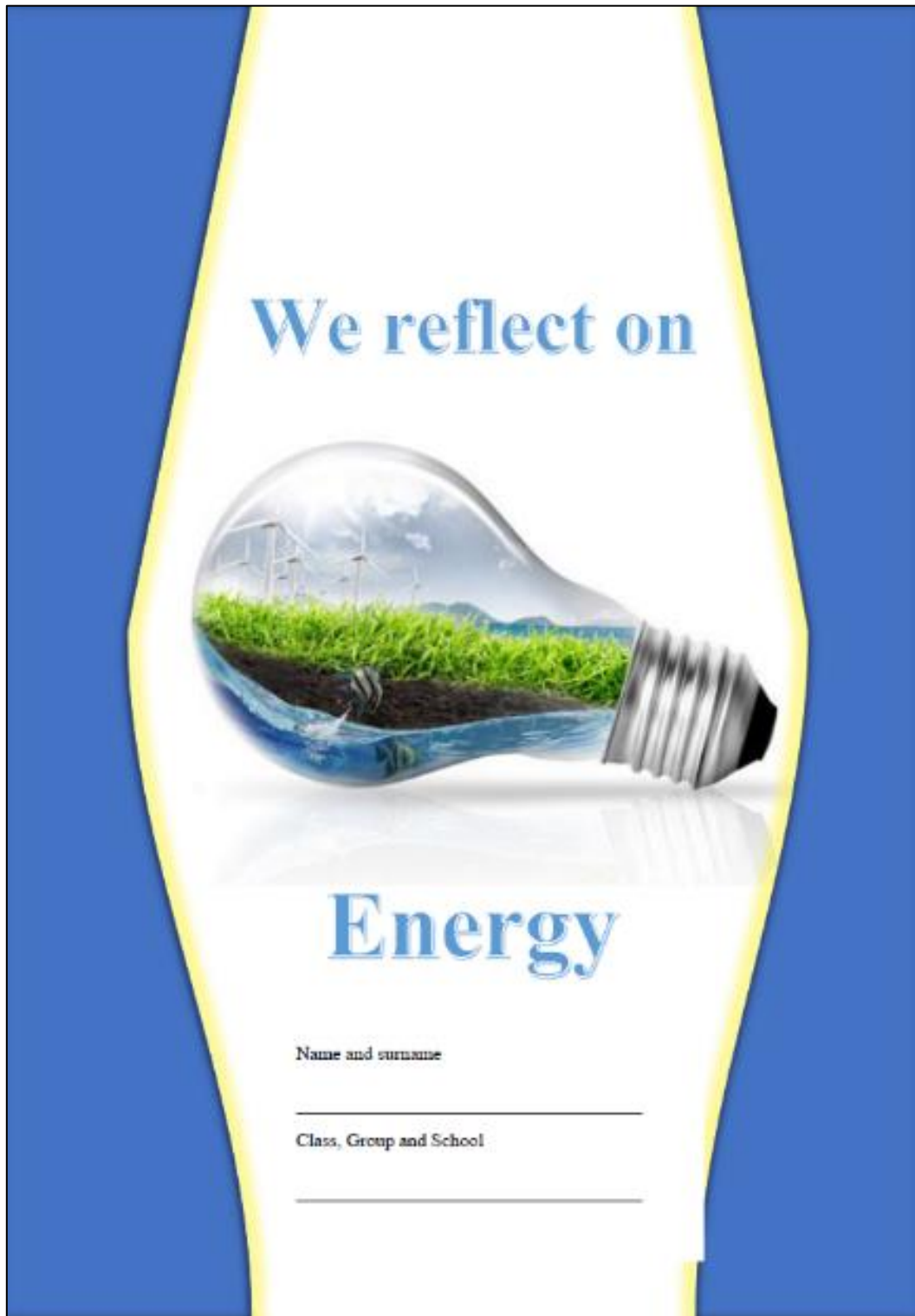
## Supplementary Material

### Evaluation rubric continued

		<b>Highest level of achievement</b>	<b>Average level of achievement</b>	<b>Low level of achievement</b>
<b>Standard conclusion</b>	<b>3:</b>	Expresses, the complete conclusion supported by valid evidence	Expresses the conclusion incompletely or poorly expressed but supported by valid evidence	Failure to express the conclusion in a manner consistent with the evidence
<b>Standard reason</b>	<b>4:</b>	Expresses several reasons supported by valid evidence	Expresses a reason based on valid evidence	No Expresses reasons supported by valid evidence
<b>Standard counterarguments</b>	<b>5:</b>	Expresses several counterarguments supported by valid evidence	Expresses a counterargument supported by valid evidence	No Expresses counterargument supported by valid evidence
<b>Standard modifies its initial assumptions in the light of new evidence</b>	<b>6:</b>	Analyses the arguments and evidence presented and tests the validity of their hypotheses in the light of new evidence. Modifies these hypotheses if necessary	Analyses the arguments and evidence presented and tests the validity of their hypotheses in the light of new evidence.	It does not test its assumptions against the evidence and arguments presented and does not modify its assumptions.
<b>Standard assessing the validity of information</b>	<b>7:</b>	Contrast information and, based on the evaluation, draw appropriate and correctly expressed conclusions about the information.	Contrast information and, based on the evaluation, draw appropriate conclusions about it	Contrast information and but does not properly assess its validity before drawing conclusions.

## Supplementary Material

### Example activity



Reflect together with your partner



Example of a thinking routine. Session two

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Identify the similarities and differences between renewable and non-renewable energy sources. Use the table to help you organise your reflections. Use the first cells to point out the characteristics of the renewable and non-renewable energy sources you know. Then, answer the questions and finally agree on a reasoned conclusion. Remember that during the debate you can improve your answer, using another colour, based on the arguments of the rest of the classmates.

Compare and contrast		
Renewable energy sources	Criteria for comparison	Non-renewable energy sources
How are they alike?		
How do they differ?		
Final conclusion		

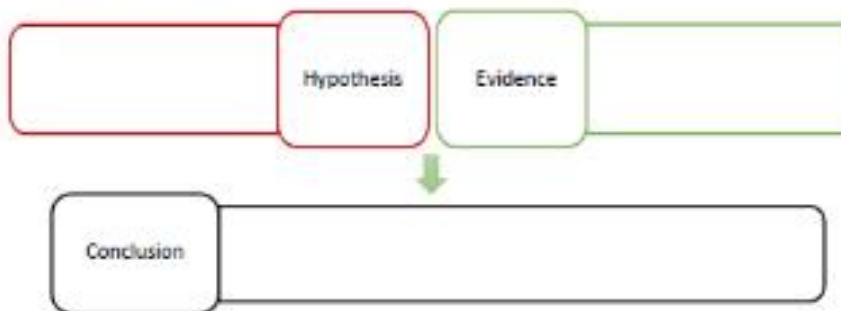
Examples of questions to work on the elements of the social construction of technology

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Read the following questions carefully. Agree on a conclusion for each of them, using arguments to support it. Respond to the question by explaining the conclusion you have reached and adding the arguments that support your conclusion. Participate in the subsequent debate by contributing your conclusions and arguments. Remember that during the debate you can improve your answer, using another colour, based on the arguments of the other participants.

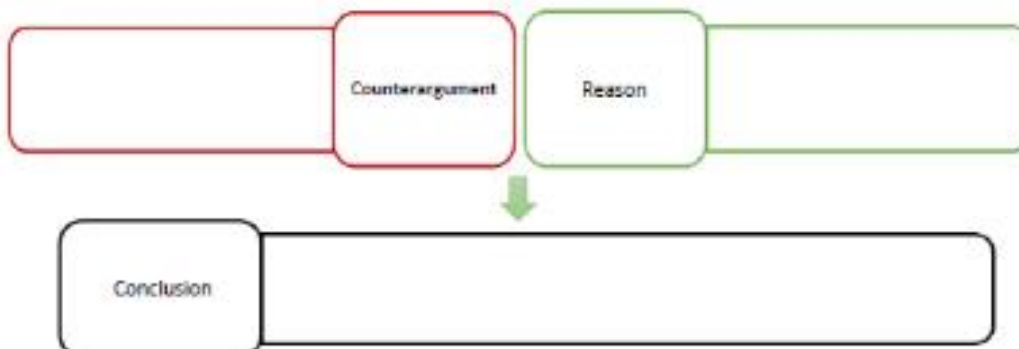
Can you explain how electricity can reach our homes?

Do you think that science and technology have something to do with the fact that we have electricity in our homes?



What energy resources are abundant in Spain?

Who should decide which energy resources to use on Spanish territory?



Who do you think decides whether to invest in developing technologies to harness Spain's energy resources?

Counterargument Reason

Conclusion

What forms of energy sources do you consider having the greatest impact on the environment?

Which of these impacts do you think it is most important to avoid? Why?

Counterargument Reason

Conclusion

8

Why do you think many countries invest in fracking plants?

	Hypothesis	Evidence	
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Conclusion	
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Do you believe that citizens have the power to decide whether or not to implement new technologies such as fracking technology?

	Counterargument	Reason	
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Conclusion	
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