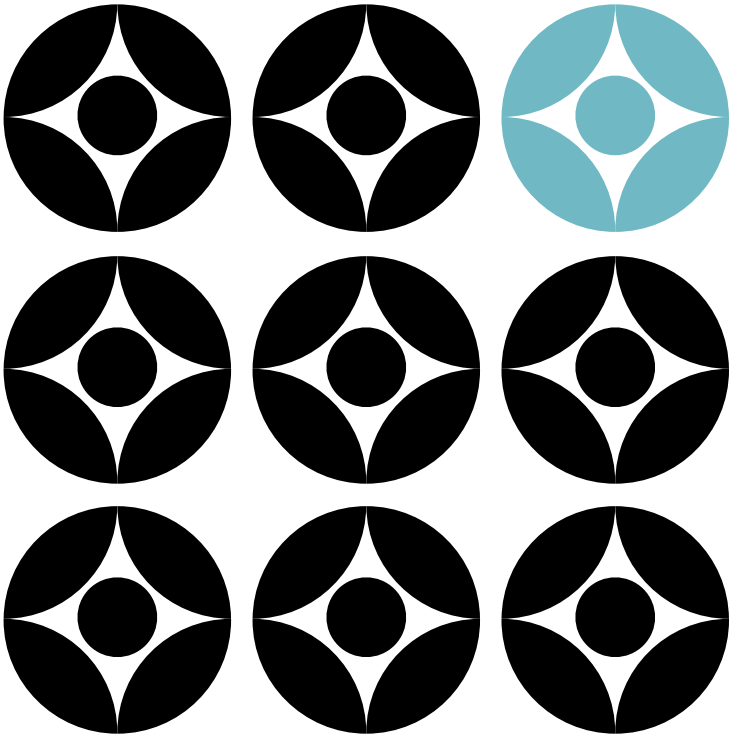
UNDERLYING CAUSES AND LEVERAGE POINTS

TARGET AUDIENCE 14 to 18 years



SHORT SUMMARY During this lesson, the students process the results of their own research, or of a popular-science study that is provided to them, by identifying the underlying causes and reflecting on what they themselves could and would be willing to do.

REQUIRED PRIOR KNOWLEDGE Students are familiar with the basic principles and frameworks with regard to dealing sustainably with electrical and electronic devices (design phase, circular economy, R strategies, dormant devices, etc.).

MODULE 1

MAKE IT WORK! MODULE 4

Interreg North-West Europe SHAREPAIR
djapo
België partner in ontwikkeling
Vlaanderen verbeelding werkt

UNDERLYING CAUSES AND LEVERAGE POINTS

DURATION ▸ 50 minutes

LEARNING OUTCOMES

- Students think consciously about cause-and-effect relationships concerning the production, consumption and repair of electrical and electronic devices.
- Students think consciously about what impact they can and wish to make.
- Students understand how their choices with regard to the production, consumption and repair of electrical and electronic devices can contribute to a more circular economy.

MATERIALS REQUIRED

- A whiteboard or flip chart

TO DO BEFOREHAND

- Read the Background Information document attentively. This text gives you the what, why and how of the subject and the didactic knowledge and insights you need to work with this module.
- Choose those elements from the module that suit your students best and are most compatible with previous and planned lessons.

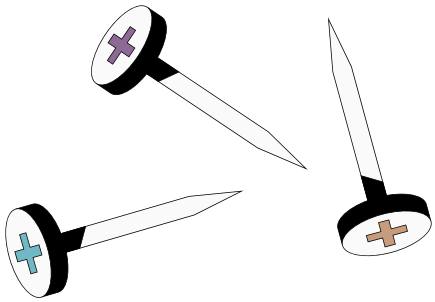
LESSON PLAN

1 – STIMULUS

Stimulate the students to identify the underlying causes behind the findings of their online market research.

MODULE 3

- What reasons might … have to … ?
- What motivates … to … ?
- How can it be that … ?
- Why would … not have taken any measures so far to … ?

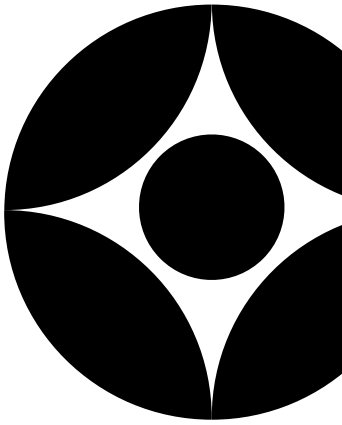


DIFFERENTIATION

If your students were not asked to do the market research, then consider showing them one or more videos, podcasts or articles about popular-scientific research on the production, consumption and repair options of electrical and electronic devices. Consider 'flipping the classroom' to have groups of students read the articles or parts of them and present them briefly to their fellow students. Your students will find more accessible information on https://materialsmatter.eu/browse or https://therestart-project.org/the-global-footprint-of-mobiles/.

2 – CORE

2.1 – Reverse thinking



Use the *Terugdenken (Reverse Thinking)* (© Djapo)[1] method to teach the students to think consciously about cause-and-effect relationships and to identify underlying causes.

Divide the students into groups of three to six, or in the same groups as during the market research. Tell them that each group will be using the *Reverse Thinking* method to find the **underlying causes** behind their research findings. This helps the students to realize that events rarely have one single, unequivocal cause, but that various causes all contribute to different degrees. Moreover, identifying the underlying causes behind their research findings will help the students to find **leverage points for change** and take the corresponding action.

Step 1 – Thinking of possible causes

Give every group a large sheet with four empty columns. The students write down a short summary of their research findings in the fourth column, the column on the right, for example:

- Electronics manufacturers make it difficult on purpose for consumers or external repairers to repair their devices.
- There are twenty dormant devices in my family home.
- Many of the discarded electrical and electronic devices that Belgians bring to recycling centres ultimately end up in landfill sites in Congo or China.
- Most smartphone manufacturers are not transparent about the full production process of their product on their website.
- The average period during which software is supported for *device X* is … percent shorter than the mechanical lifespan of *device X*.
- Having a broken laptop repaired by the manufacturer is … percent more expensive than buying a new laptop of the same brand.

DIFFERENTIATION MODULE 2

You could also describe a desired or undesired future event and then try to imagine what the hypothetical causes could be, for instance using the critical thinking questions from the *Route Map*.

- Manufacturers have a legal obligation to continue supporting software for at least 10 years (system updates and operating systems etc.) for every laptop they sell.
- Electronics manufacturers make their products easier to disassemble and they sell repair parts.

1 ~ *The Terugdenken (Reverse Thinking)* method is part of the *Systeemdenken (Systems Thinking)* method by Djapo. Systems thinking helps students to explore our complex world by consciously looking for connections. It helps them develop a nuanced perspective on the world, and to remain alert to the various points of view in any story. This helps them to defer judgement before adopting an opinion, and to gain greater insight into complex themes. For more information about systems thinking, visit www.djapo.be.

The students brainstorm per group about the reasons for this and write down at least three causes in the column immediately to the left of the research findings.

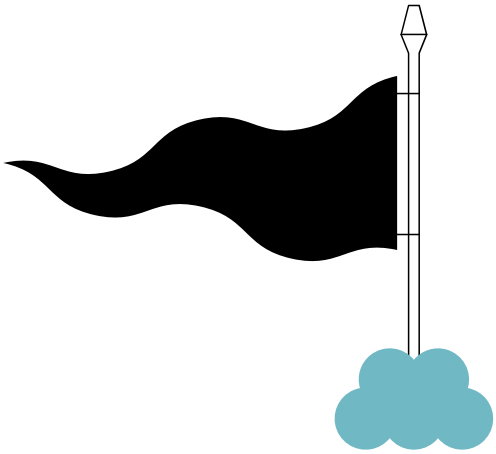
- For example, for the research finding 'There are twenty dormant devices in my family home':
  My family members are unaware of the value of the materials in their dormant devices.
- Or, for the research finding 'Electronics manufacturers make it difficult on purpose for consumers or external repairers to repair their devices':
  Manufacturers want consumers to buy as many new products as possible.

They then draw arrows from each cause to the research finding.

The students then select one of the origins in the third column and brainstorm about the reasons for this. They write down at least three causes in the second column, for example for the cause 'My family members are unaware of the value of the materials in their dormant devices':
Manufacturers are not transparent about the origins of the materials in their devices.
Then they draw arrows from each cause to the effect.

The students then select one of the causes in the second column and brainstorm about the reasons for this. They write down at least three causes in the first column, for example for the cause 'Manufacturers are not transparent about the origins of the materials in their devices':
Knowledge of the circumstances in which mine workers extract raw materials would make consumers too ashamed to buy the resulting products.

Again, they draw arrows from each cause to the effect.



Knowledge of the circumstances in which mineworkers extract raw materials would make consumers too ashamed to buy the resulting products.	→ Manufacturers are not transparent about the origins of the materials in their devices.	→ My family members are unaware of the value of the materials in their dormant appliances.	→ There are twenty dormant appliances in my family home.

Step 2 – Reflecting on causes and effects

The students reflect in their groups on what they have written down.

- Are there any other causes we could add?
- Can causes also be effects?
- Can effects also be causes?
- Can effects sometimes be invisible?
- Can negative effects themselves sometimes have positive effects?

DIFFERENTIATION

Thinking of possible effects

Groups that have the time could also think of the possible effects of their research result. If you ask them to do this, draw seven columns on their sheet. The students then write their research findings in the middle column and record the effects in the fifth, sixth and seventh columns. For example, for the research finding 'Electronics manufacturers make it difficult on purpose for consumers or external repairers to repair their devices':

- Consumers cannot find replacement parts to repair their devices.
- Consumers rarely repair their devices.
- Consumers buy a new *device X* every two years.

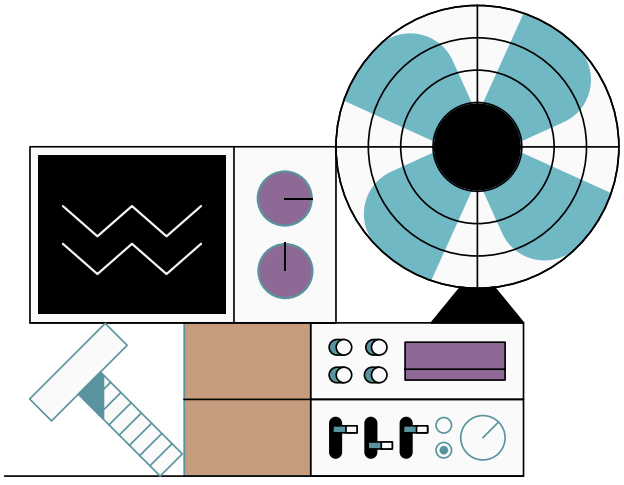
DIFFERENTIATION

If students have suggested these causes on the basis of limited prior knowledge, you could ask them to verify that the causes they have identified are correct. First, ask the students to indicate which causes they have doubts about. Then have them look online for reliable sources to support their argument.

Step 3 – Reflecting on the thinking process

With the whole group, go over the steps the students took and ask about their experiences with regard to their thinking process.

- You have been thinking of possible causes together. Did that go smoothly or not?
- Were there obstacles or difficulties when you were thinking of possible causes?
- Why is it useful to think about the causes of an event?
- Did *Reverse Thinking* help you to obtain a more complete picture of the research finding? Why or why not?
- What other situations might benefit from using the *Reverse Thinking* method?



3 – CONCLUSION

Use the *Keuzekwadrant (Choice Quadrant)* (© Djapo) to help students reflect on the causes (and effects) that the class or group would like to act on or know more about. This will help the students to find leverage points for change and take corresponding action.

The students look at the causes (and effects) on the white-board or on the flip chart. They then situate them in the *Choice Quadrant* by reflecting on:

- Which causes (and effects) are you unable and unwilling to change?
- Which causes (and effects) are you able and willing to change?
- Which causes (and effects) are you able but unwilling to change?
- Which causes (and effects) are you unable to change, but would like to change?

Turn the causes (and effects) into critical thinking questions that can be written in the top right corner of the *Choice Quadrant*, i.e., the causes (and effects) that belong both to 'I want to take action on this' and 'I think we could have an impact on this'. Do this by completing the following question for each case:

- What can and do we want to do as a class (or group) to .../to prevent ...?

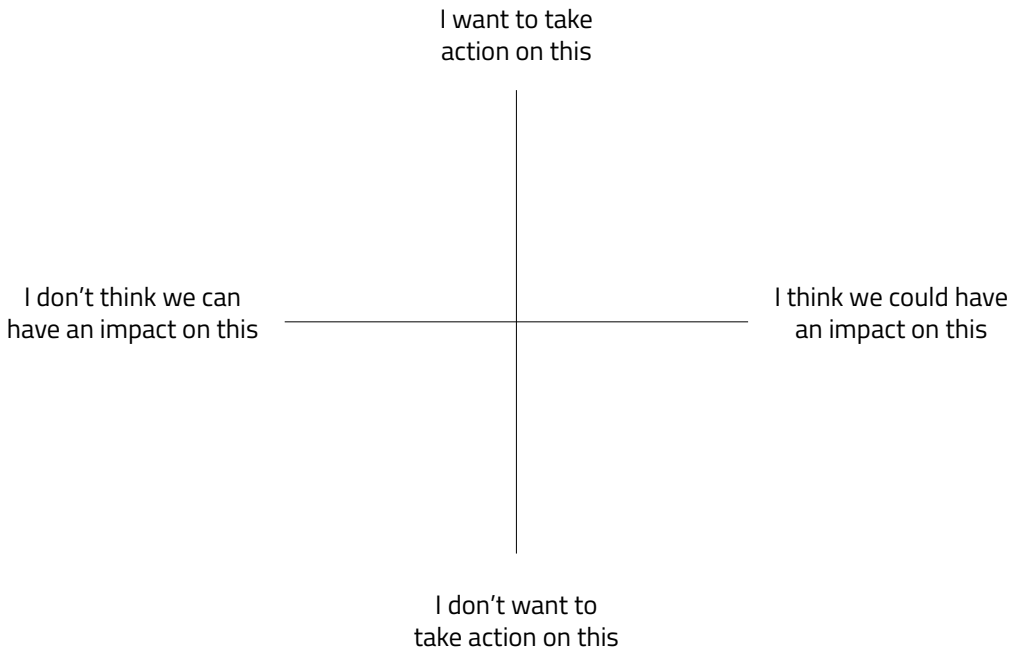
ATTENTION!

Encourage the students not to conclude too quickly that they can't do anything about something. Maybe they can't change the lifespan of batteries in general, but they could prolong the lifespan of the batteries they use themselves by using their own devices carefully, or they could stimulate the sector to change by only buying products that have sustainable batteries.

DIFFERENTIATION

If you are planning to conclude the project with this lesson, end by reflecting together on what the students have learned. Even though your students won't be doing an activity together, this is still an opportunity for you to stimulate them to consume more consciously, to do something in the future, etc.

- What are you taking from this?
- What can I do myself?



ACKNOWLEDGMENTS

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