

# **Our impact on the planet- Let's make it a good one!**

## **Facilitator's Guide**

Elisabeth Hülse

Ansys Academic Development Team

[education@ansys.com](mailto:education@ansys.com)

This guide supports the integration of a set of slides, titled “Our impact on the planet. Let’s make it a good one!” into the classroom.

### Zip File Contents:

- Read Me Facilitator’s Guide
- PowerPoint presentation

### Age Range:

This resource was designed to tell a story, give food for thought, and inspire. It is therefore suitable for all ages.

It is, however, worth noting, that we intentionally use simplified language avoiding specific jargon, to make the story understandable and relatable for children (**age 7+**) and anyone trained outside of this subject area.

The focus of this resource is to encourage discussion around a STEM topic, regardless of age.

### Learning Objectives:

After going through this activity, learners will be able to have an informed conversation about:

- materials availability and its influence on product development
- how our awareness of our impact on the planet has changed over time
- and the influence that awareness has on product development

### Estimated Time for Completion:

This set of slides can be presented within **10-15 min**. It has the option of stretching the time out to **30-45 min**, by involving the audience and using the question slides.

Below are some tips for presentation:

- The slides intentionally consist mainly of images and illustrations. **You will find the points to address - the story - in the notes field.**
- Some slides contain questions to the audience as an option to pause the presentation and inspire conversation. This is optional and slides can be hidden, if time does not allow their integration.

### Prior/Supplemental Knowledge Required:

No prior knowledge is required for this exercise.

### Fundamental concepts covered:

- Materials
- Product development
- Sustainable development (Three capitals: people, planet, prosperity)

## Additional In-class Activities



### Activities using Materials Intelligence: the Card Game



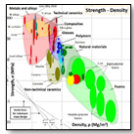
1. **Download and Print** the card game via the link above. Definitions of the material properties can be found on a card within the deck.
2. There are two options of how to play the game, depending on the focus of the activity:
  - a. Play the game according to the instructions found within the deck. This will provide a general understanding of **materials, material families, and their properties**
  - b. OR, play the card game only using the **eco properties** highlighted in green on the cards. This will provide a better understanding and comparison of the **environmental impact of the materials**.

### Activities using Ashby Charts (material property charts)



1. Download “Poster: the Evolution of Materials” via the link here.

These charts illustrate how materials have evolved over time. To make it simple, focus merely on the amount of materials present. **Discuss how many new materials were developed in which amount of time.** Note that even new material families were invented. **Brainstorm how this might have affected the development, design, and manufacturing of certain products.**



*(Hint: One more recent example would be materials that can be used in additive manufacturing as opposed to manufacturing by hand, opening the possibility of producing a higher volume of a certain product in less time.)*

2. Download “Poster: Industrial Design” via the link here

These charts compare materials not just referring to physical properties such as strength, but also with reference to **cost and how they feel and sound**. Properties that are also considered in product development.

Pick a few materials you are familiar with (i.e. steel, cork, brick, silica glass) and compare their acoustic properties, as well as how they feel, how much they cost, etc., to gain an understanding of these properties and how they might affect product development.

### Activities using Ansys Granta EduPack



1. If you have access to the Ansys Granta EduPack™ software, set of teaching resources to support materials education, try to **recreate some of the charts** shown in the posters above and **explore filters (i.e. date first used)**
2. Open “Level 2 Sustainability” and create a bar chart showing **“Annual world production”** on the Y-axis, and explore which materials are produced the most. Pick a material with a high “Annual world production”. Explore which element this material is composed of, using the links to the elements at the bottom of the materials data sheet. Explore each element and its **main mining areas**. This exercise might give an impression on **travel distances** between where the material is used (i.e. your home country) and where it came from



### Additional Ansys Resources:

Learn more about Materials Selection with Ashby Charts here.

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## Document Information

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**ANSYS, Inc.**  
Southpointe  
2600 Ansys Drive  
Canonsburg, PA 15317  
U.S.A.  
724.746.3304  
[ansysinfo@ansys.com](mailto:ansysinfo@ansys.com)

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