



# Facilitator's Guide

## How Walkie Talkies Work: an Exploration for Children using Ansys simulation software

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## Ansys Software Used

This resource uses Ansys [FILL IN]

This guide supports the integration of a set of slides, titled “Talk, walkie-talkie, talk”, into the classroom.

Walkie-talkies are one of the favorite toys for children. Often it is more than a toy, it is a first step into independence. With a walkie-talkie in their hands, children dare to go a step further away from the house, as they can still communicate with their parents or their siblings. Walkie-talkies embody adventure and courage. But often, they don’t work as expected. For example, it says “reach 3 km” on the box, but that does not always hold true. Reception suddenly might drop just after a few hundred meters. As adults, we can think of reasons why. Maybe they are in a valley, or it is raining today, or it might be because of any other obstacles that might be in the way. But children do not have the background knowledge to understand that and often get frustrated.

These slides aim to pick up a relatable situation for children, provide background information in a fun and visual way, and inspire children to walk through life with open eyes and curiosity. They aim to inspire children to embrace any challenge as a chance to learn and grow, and, instead of getting frustrated, turning into little detectives to find out what is happening.

The slides contain questions as well as simple activities to engage the children with the topic and encourage participation.

## Zip File Contents:

1. Read Me Facilitator’s Guide (this document)
2. Power Point Files

## Age Range: 4-99

This resource was designed to tell a story, give food for thought and inspire knowledgeable discussions.

It is worth noting, that we intentionally use simplified language avoiding specific jargon, to make the topic understandable and relatable for children (**age 4+**) and anyone trained outside of this subject area. The resource can be used with children from age 4 and up.

The focus is on getting the participants (whether young or old) to talk about STEM topics as a group, no matter at which depth, and think outside the box and be inspired.

## Learning Objectives:

After going through this activity, learners will gain a basic understanding of:

- Waves in general - wavelength, frequency
- Electromagnetic waves
- Electromagnetic spectrum
- What happens inside a walkie-talkie?
- Radiation
- Antennas
- Simulation
  - What can be simulated?
  - Why is that useful?

## Format Suggestion:

We expect it to take between **45 to 90 minutes** to go through this exercise, depending on the depth at which the included questions and activities are incorporated.

## Prior/Supplemental Knowledge Required:

No prior knowledge is required for this exercise.

## Additional Resources:

### Other Ansys pre-university resources:

- ["Why this shape? Exploring the historical and structural significance of the Arch part 1"](#)
- ["Materials Intelligence: the Card Game"](#)
- ["Selecting Materials for Musical Instruments: a Case Example with a Xylophone"](#)
- ["Our impact on the planet: let's make it a good one!"](#)
- ["Life's Engineering Tales: Grandma's Hip Replacement"](#)
- ["Life's Engineering Tales, featuring: An element's journey"](#)
- ["Exploring Material Properties via Experiments and Property Charts: the Game"](#)

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## Document Information

This case study is part of a set of teaching resources to help introduce students to topics related to fluids.

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