Theme 3 Example lesson plan; The true size of countries

### Topic
Mercator projection, lying with maps, the true size of countries

### Purpose
Pupils know that not all maps represent the right size of countries and continents, Greenland is a lot smaller than it looks

### Method
Prompting (Hammond & Manfra, 2009)

### Tool
- The true size, mapping tool to show the real size of countries
- Google Maps (uses Mercator projection)

### Material
- Poster of Africa
- [www.thetruesize.com](http://www.thetruesize.com)
- [Video on youtube](http://www.youtube.com)
- World beach ball or orange

### Collaboration
Each pupil has access to own device, they can work together

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**Learned knowledge**
- Knows that Greenland is not as big as it looks
- Knows that the Mercator projection doesn’t displays the size of countries fair
- Knows that there is no projection that projects the world perfect on a flat surface

**Learned skills**
- Knows how to use thetruesize.com

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**Order of lesson**

1. **Introduction; Open Google Maps with the whole world shown on the beamer (or use a Mercator world map hanging in your classroom).** Ask the pupils to compare Greenland with a continent (Africa, South America). Those seem like they are roughly the same size.

2. **Show thetruesize.com on the beamer, with a clear map.** Tell them that this map lets you drag countries to each other for easy comparison. Search for Greenland. Ask a pupil to come up and let him/her drag Greenland on top of Africa/South America.

3. **Let the pupils do it for themselves.** Give them a couple of exercises they can do in pairs, using thetruesize.com
   a. Find out if the United States (without Alaska and Hawaii) and China together fit into Africa.
   b. Is Finland bigger that Madagascar?

4. **Explain that the map from Google maps (or the map in your classroom) uses the Mercator projection.** It is hard to make the round world into a flat image. That is why al maps are distorted, they don’t show the true world. Some maps change the size, some the size of the land area, direction or distance. They all have benefits for different uses of the map, but it is not possible to have it all on one map. The Mercator projection changes the size of the land area, making

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the land further away from the equator bigger than the land around the equator. That is why Greenland looks as big as Africa, because it is so far up north.

5. To explain the concept of projection; use a beach ball like in this video or an orange to experience it themselves. If your pupils are good in English, you can also show them the video, instead of cutting up a beach ball in class.

6. Use the poster for the pupils that don’t believe or understand thetruesize.com. The poster also uses the square meters of countries in the table on the left.