Interactive maps for visually impaired

Introduction

We visited a boarding school for visually impaired children in Moscow Region, Russia. Visually impaired people can't see geography maps, but they can sense a special type of it by fingers. We saw than the pupils study geography using poorly embossed paper maps. We decided to help to the students and all visually impaired. We decide to construct a series of interactive electronical and non - electronical educational gadgets and toys for impaired people.

Stage 1. 3D – topological relief maps

We made some 3d topological relief maps, but it is very difficult for visually impaired people to feel too many details of the relief map.

Fig. 1. Topological maps are too difficult for visually impaired people.

Stage 1. 3D maps with pop – up continents for visually impaired.

We made contour map on the graph paper using single map and made our contour point by point, counting the coordinates of contours. Thus we have some point arrays. We paste the arrays in 3d- CAD program. We add the curves of the equator, tropics, polar circles. We print the maps with the slots on the continents places, and we print the continent and the biggest islands, using 0.375 mm offset. If Your 3D printer has "Elephant – Leg" bug, You can print the continents upside- down.

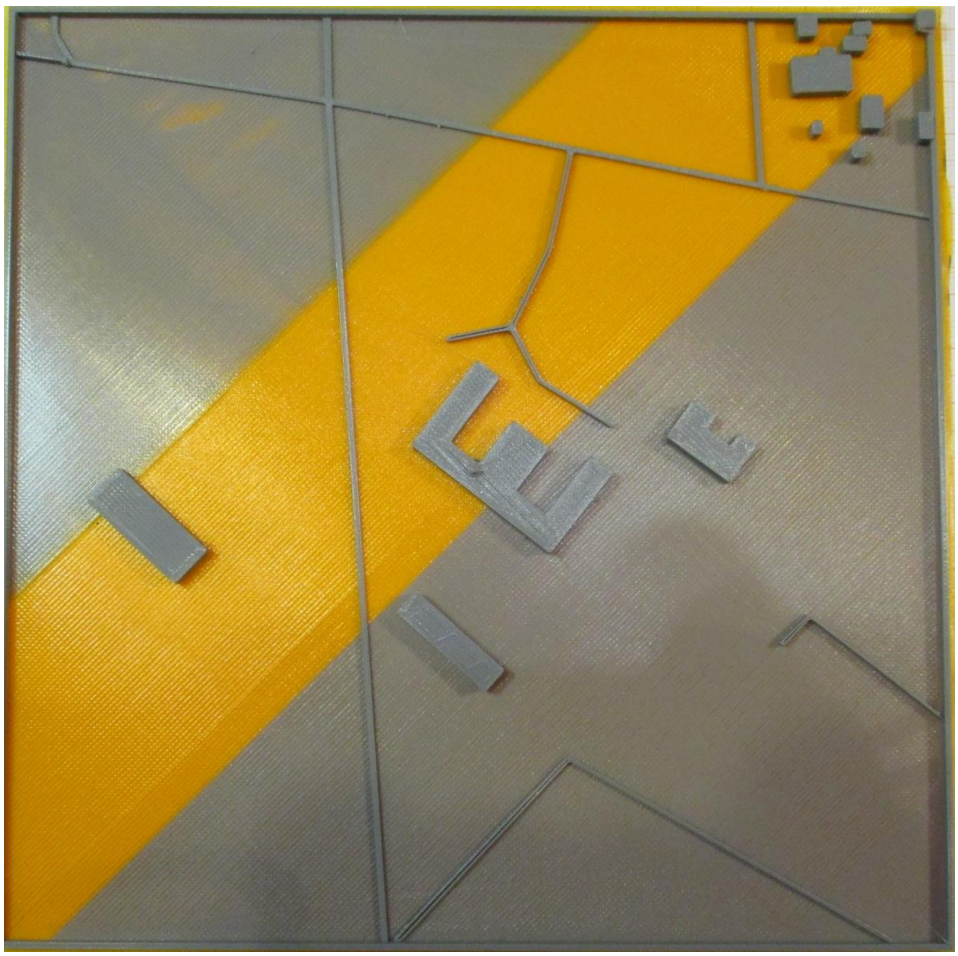

Fig. 2. Simple street maps are familiar to the visually impaired people.

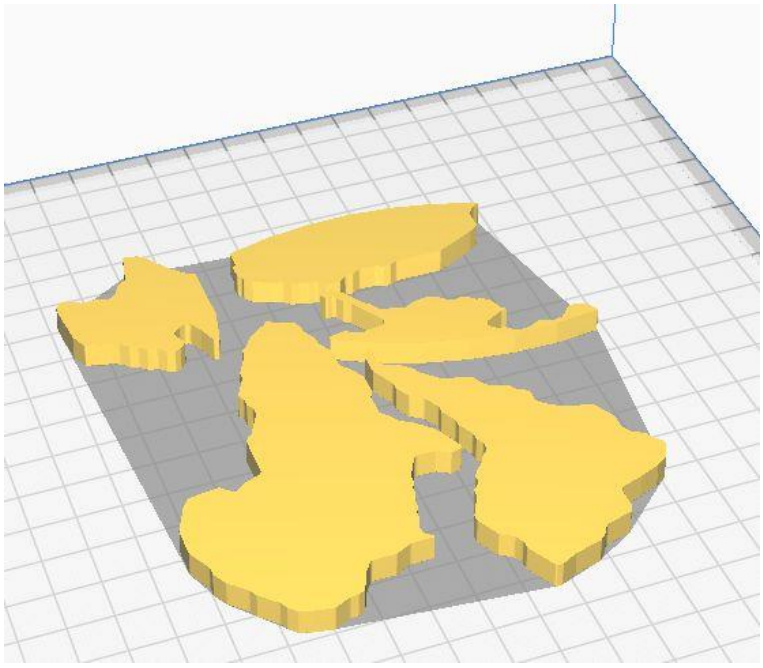

Fig.3. We upside- down continents to avoid elephant- leg bug in printing.

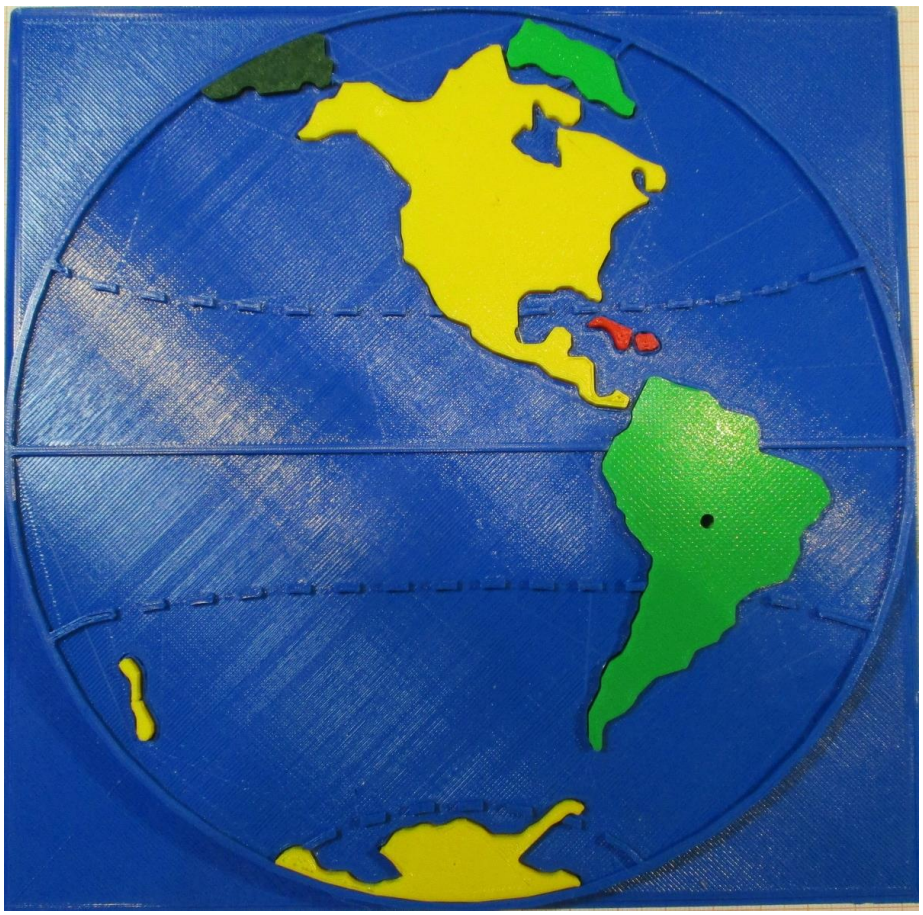

Fig. 4. West hemispere map with continents, the biggest islands and of equator, tropics, polar circles. You can take off continents to touch it.

We attach the files for 3D printers:

V1_Eurasia.stl – Continent Eurasia

V1_Islands.stl - Islands

V1_NorthAm.stl – Continent North America

V1_Other.stl – Other Continents