WHAT SURFACE DO I HAVE IN MY HANDS?

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Short description of the workshop: aims and underlying ideas

The aim of this workshop is to introduce in Primary or Secondary schools some geometrical and topological properties of both 1 and 2-sided surfaces, in a very manipulative way by using pieces of paper, rubber, plasticine, or felt and Velcro (such as those of 3D Polyfelt).

We use known formulas that relate the genus, the Euler-Poincaré characteristic, orientability, and the number of the boundary components of the surface, from which we can calculate the genus, and hence get its classification as a topological surface.

During the workshop participants build varied geometric figures: surfaces with paper discs and strips, tilings, polyhedra, zonohedra, polyhedral surfaces in general, and have to fill some worksheet with the mentioned topological data.

Planned structure:

Planned timeline	Topic	Material / Working format / presenter
20 minutes	Presentation and instructions for activities in small groups.	
50 minutes	Time to build and classify some surfaces.	Paper, scissors, glue, worksheet, 3D Polyfelt.
20 minutes	Construction of a big figure, with the help of many participants.	3D Polyfelt

References

"¿Qué superficie topológica tengo en mis manos?", in blog Juegos Topológicos, mayo 2016:

https://topologia.wordpress.com/2016/02/25/que-superficie-tengo-en-mis-manos/

Surfaces with 3D Polyfelt: http://www.polifieltros3d.com/2013/05/tessellations-of-surfaces-with-3d.html