

ESCHER, GEOMETRY & ART

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Escher, Geometry and Art, is an optional course offered to different student careers in los Andes University (Bogota, Republic of Colombia). The study of geometry is based in Escher's woodcuts & lithographs. The students may create with free software their proper designs like friezes, rosettes, wall papers, art reflections, Droste effects, mosaics, hyperbolic tessellations, origami and fractal art. This report refers to seven years experience in geometry teaching combined with computer art, inspired in the masterpieces of Dutch graphic artist M.C. Escher. This experience was selected as relevant in Colombian high education in 2006, has been exposed in two national Colombian mathematics congresses, in the interactive centre MALOKA and in the international centre of business and exhibitions CORFERIAS in Bogota. The main exhibition, with fifty-four posters, was organized in July 2011 during the XIII CIAEM (Recife, Brazil).

Key words: Escher, tessellations, Droste effect, origami, fractal art, creativity, teaching geometry.

INTRODUCTION

Geometry is a very important discipline to develop imaginative thinking students. In this case, by combining art and computer it is possible to stimulate his creativity, and even transfer it to some other pole activity students. Escher represented a paradigmatic case in reasoning principles geometry to make art. Actually is possible to construct some similar Escher production, helped with special software. The main didactic recourse in this experience is the system of home work and relations ships in the classroom and laboratory.

STIMULATING STUDENTS CREATIVITY, WITH GEOMETRY AND ART

Students from different career and levels may participate in our optional curs; such diverse composition is optimal to increase relations ships in a creative atmosphere. The students, stimulated by visual material and several exercises, solve their task alone or in teams. Mistakes are never looked at negatively, but considered one more step to the truth. Main themes: Euclidean Geometry, friezes, rosettes, wallpapers; polygons, mosaics; non Euclidian Geometry, hyperbolic tessellations; spherical geometry; spirals, Droste effect; Polyhedra, origami; topological transformations, metamorphosis; Fractal Geometry. Complementary themes: Pythagoras theorem, coordinate plane, conics curves, Thales theorem, proportions, similarity, series, complex numbers. Works performed by students are posted in public exhibition.