

# The Art of Origami as a Means to Improve Geometric Understanding

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'Origametria' is a programme developed by the Israeli Origami Center, and supported by the Israeli Ministry of Education, to teach geometry through the art of origami. Each week, the programme reaches 5,000 children in 40 schools and kindergartens.

This lecture will show how the Origametria method of teaching geometry in schools and kindergartens parallels the van Hiele's *Three Levels of Geometric Reasoning*.

In kindergarten Origametria, children study geometry at a visual level (the van Hiele's *Level One*), learning the names of geometric shapes and recognising differences between polygons. This is achieved by a 'hands on' approach to folding polygons and by allowing the children to play freely with simple folded paper shapes.

In school-level Origametria, children simultaneously study geometry at visual and theoretical levels (the van Hiele's *Level Two*). They learn to recognise polygons (the visual level) and understand the characteristics of each (the theoretical level). The children fold origami models such as animals and action toys, rather than geometrics. At each new folded step, polygons and other geometric topics are identified and described by the class. By seeing and describing polygons of many different sizes, proportions and rotations, children acquire a very solid and flexible understanding of polygons and other topics.

Many children commencing Middle School learn geometry at the didactic level (the van Hiele's *Level Three*), before satisfactorily passing through the visual and theoretical levels, creating a problematic discontinuity in the learning of geometry. However, learning geometry by the Origametria method prevents this discontinuity, because the method of teaching is always at the level of the student.

Further, the rigorous Origametria method of teaching works towards improving each child's self image, motor control, sequential thinking, etc. Thus, it is not only a method for teaching geometry, but also a useful learning tool in general.