
Experimenting on Regular Polygons in Primary School through programming

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Abstract

The presented project began as an educational lesson plan in geometry for 5th (Kakadiaris Ch., Mpelitsidou N. Stefanides J., Chronopoulou G.) & 6th (Kassoti O., Kliapis P., Ikonomou Th.) grade. Through this activity, pupils had the opportunity to program a simplified construction of a regular polygon using Scratch (Scratch, 2017). The particular algorithm (Theodosi A., 2017) in order to draw a regular polygon calculates the degrees of the angle of the polygon, based on the number of angles of the polygon given each time by the user and draws the regular polygon. Based on their observations about regular polygons for a various number of angles, the pupils concluded that as the number of angles increases the polygon converges to a circle. Through this activity pupils also observed that when in their programs they increased the number of angles and/or the length of the regular polygon's side, the drawing shape was no longer a regular polygon but rather resembled a spiral – probably due to the manipulation of floating point numbers in Scratch.

After the Scratch activity, pupils experimented with a construal on regular polygons (Beynon, 2017). The particular construal was programmed based on the pupils' mathematical background. The pupils had the opportunity to interact with a more stable environment for the construction of regular polygons and to experiment with coding and objects. They also interacted with the construal and they filled an evaluation/self-evaluation form which is presented in this paper.