

# Modulus for Courses: Description and feedback

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# DynaMat materials within various courses and seminars

- Different mini – courses:
  - With primary school teachers
  - With secondary school teachers
  - Mixed groups
  - International workshops
- National seminar on math education
- Seminars in IMI (experimenting new technology)
- Seminars with teachers at UBM spring conference

# Teachers in primary school

- Recent 2-day course on inquiry-based learning of mathematics in the primary school based on GG – June 2012
- They made the Napoleon problem construction for 10 min. and they spent 10 more min. to make an appropriate design

## **Some comments:**

- Various ideas for constructing the centers of the triangles were discussed, including a command from the command center
- They paid attention to the orientation of the triangle when built by the polygon button (the half-plane in which the triangle is depends on the order of selecting the vertices). In some cases they generalized the original condition and let the triangle be inside instead.

The exploration they did was related to the length of the sides only – no suggestions for exploring the areas or the angles...

- The orientation was discussed also when working with circles and arcs. The eggs were shown as ready made files to be explored.

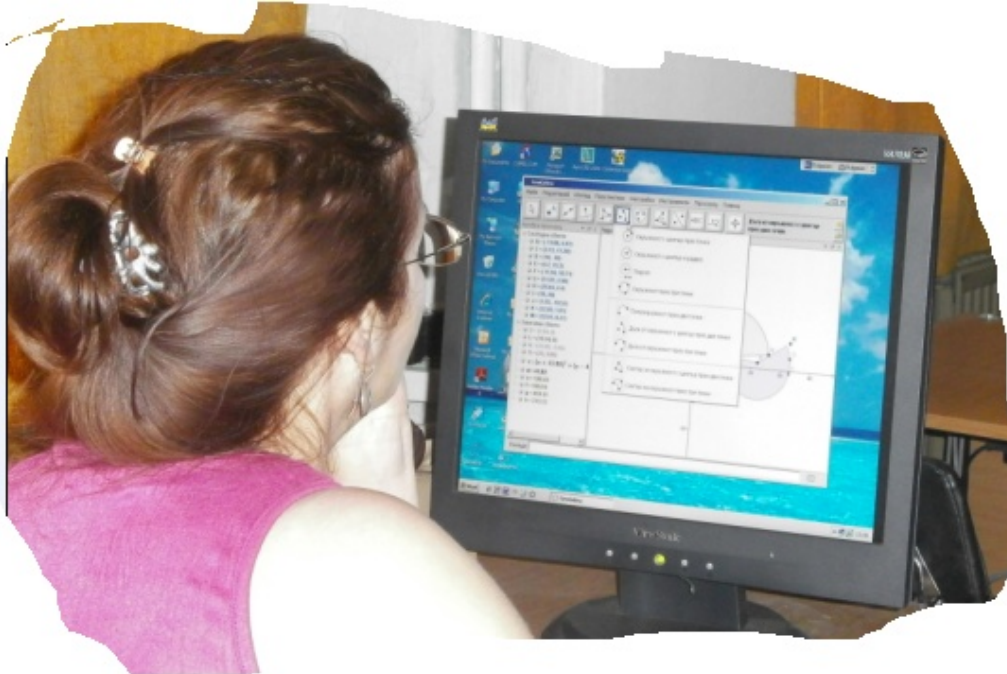
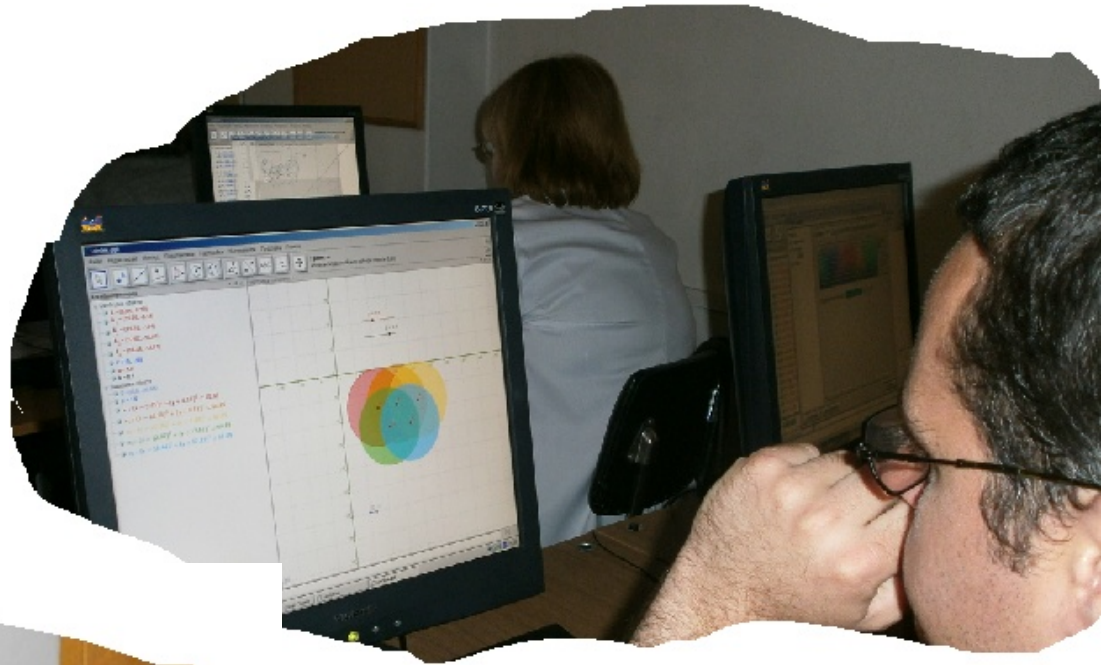
# Mini courses and seminars at HSSI

- Winter and summer schools, mini – courses with teachers
- Content : materials with Napoleon theorem, extremal properties in geometry
- Groups of students (24 per school) and teachers (7 in 2013)

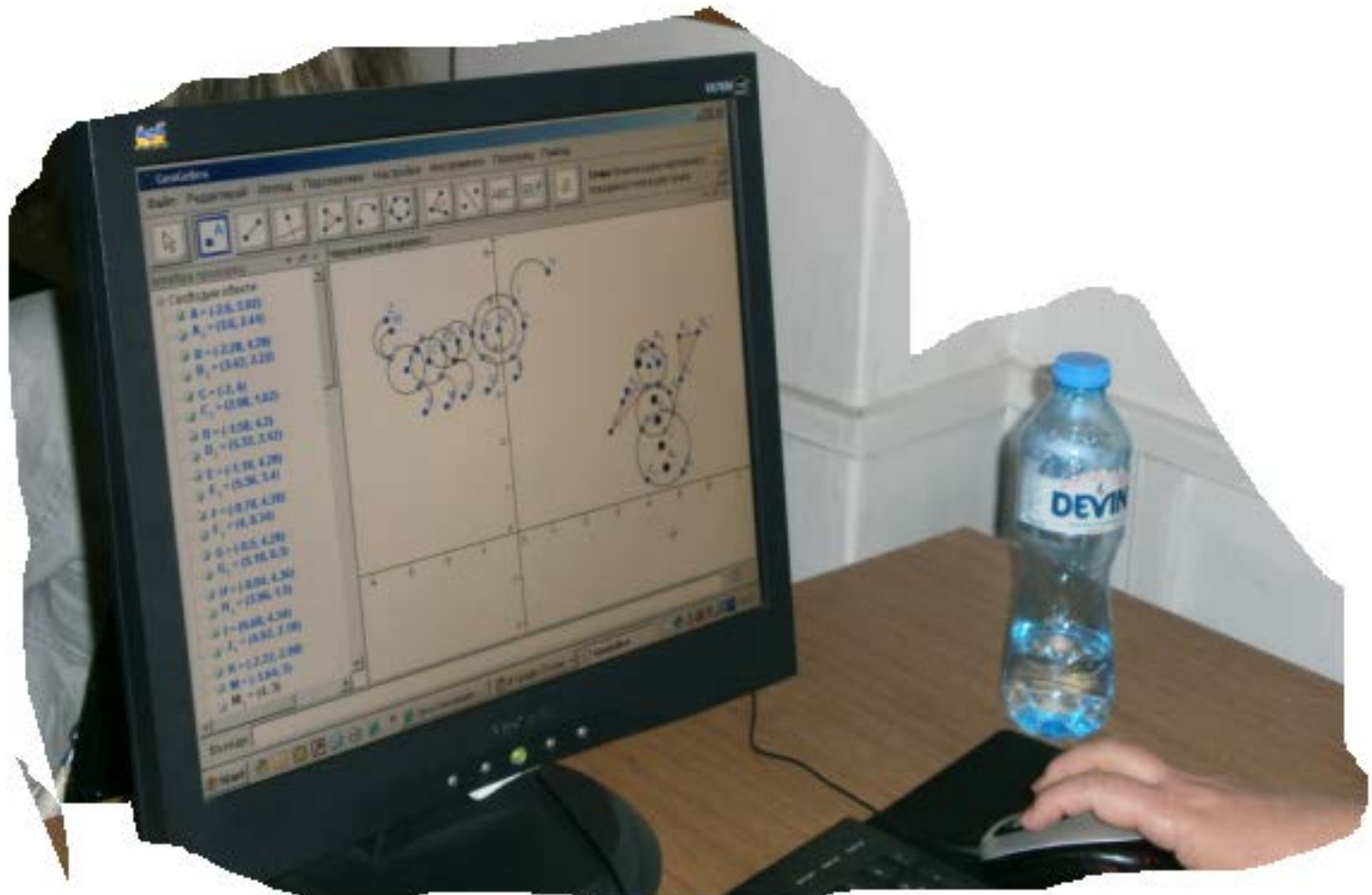
## **Some remarks:**

- Various ideas for generalizations of Napoleon theorem
- The students and teachers need more examples and did. Materials involving such type of problems
- Teachers proposal: More materials had to be translated.

# The primary teachers



# Creativity





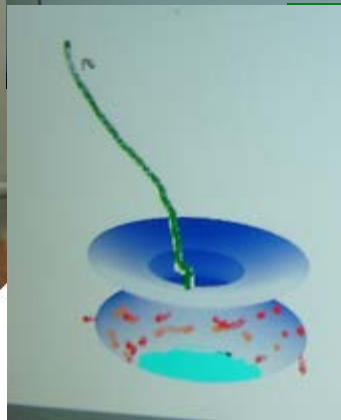
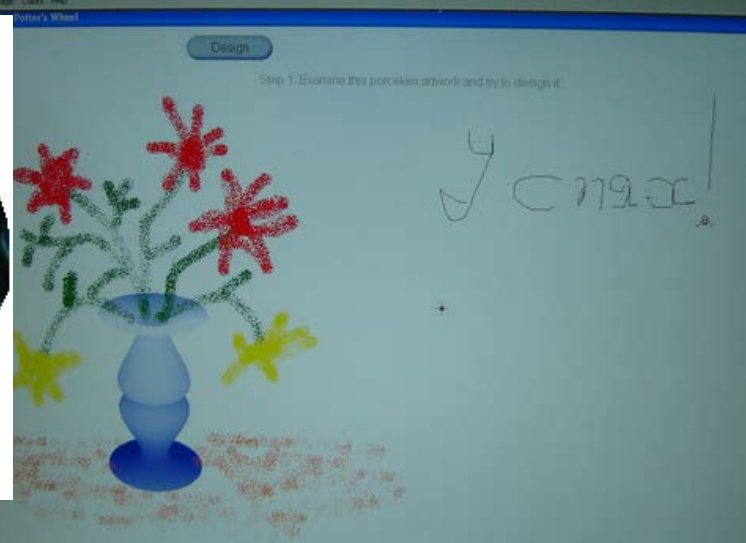
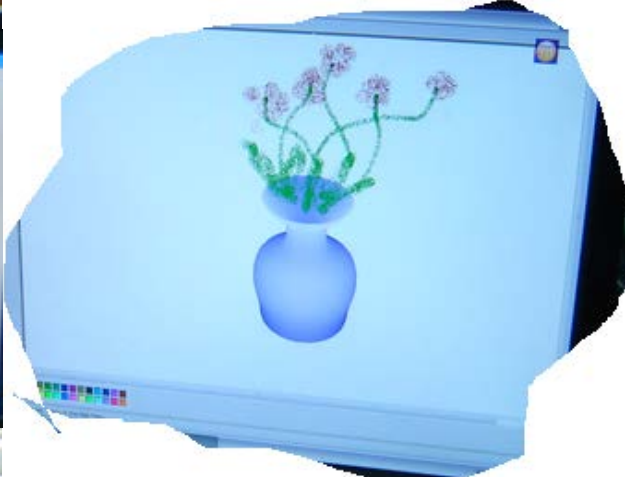
# Enjoyment



# Blagoevgrad

- Primary -8
- Mathematics 3
- Art -2
- History and geography – 1
- IT - 1
- 4-34 years as teachers

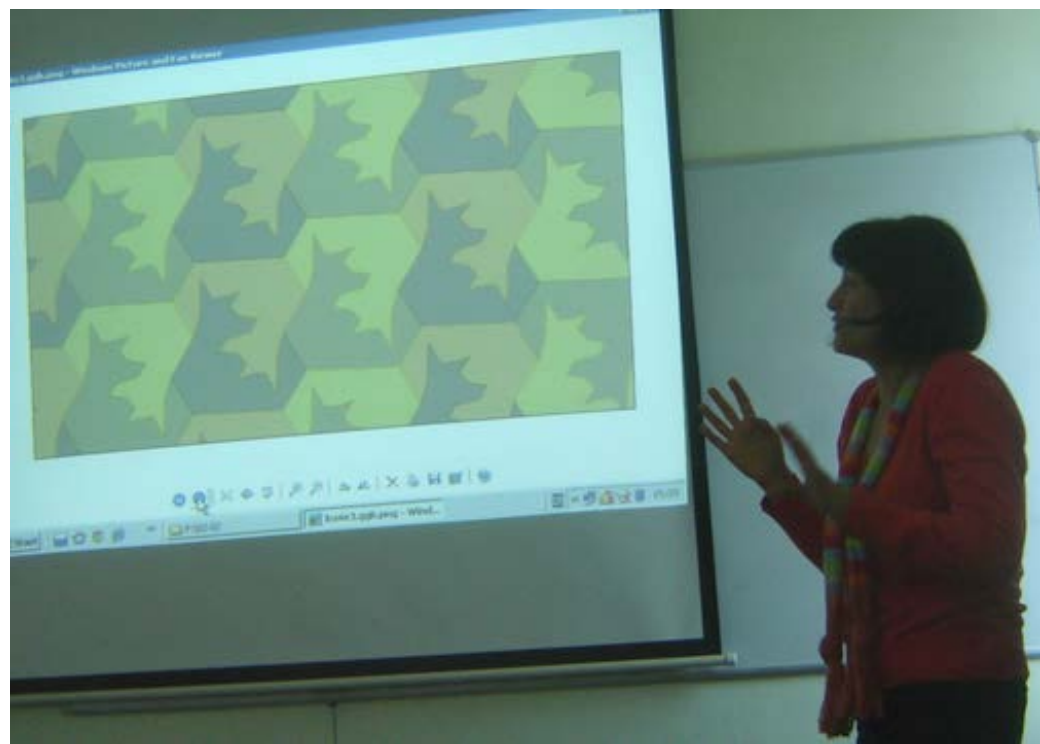
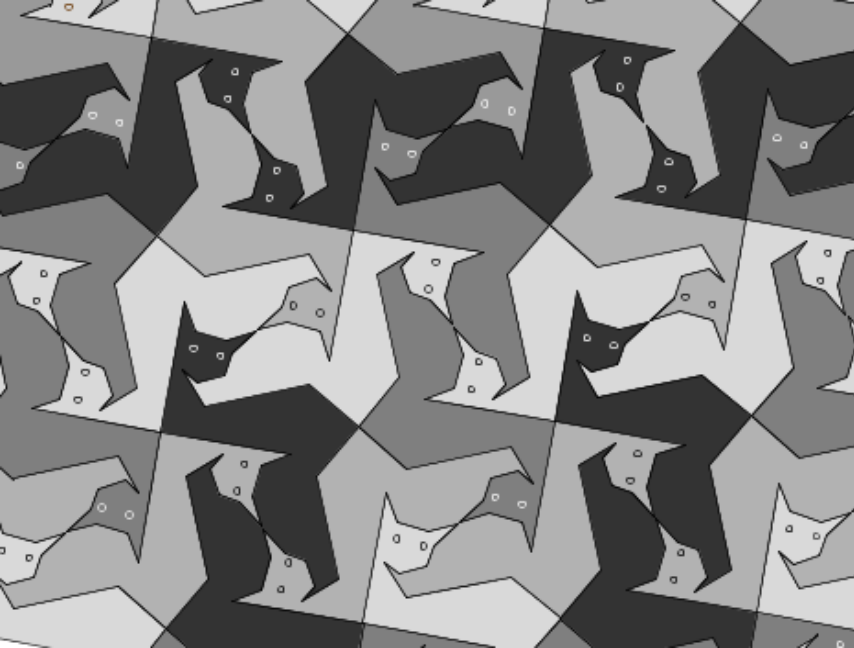




# National seminar: *The inquiry-based approach in math education*



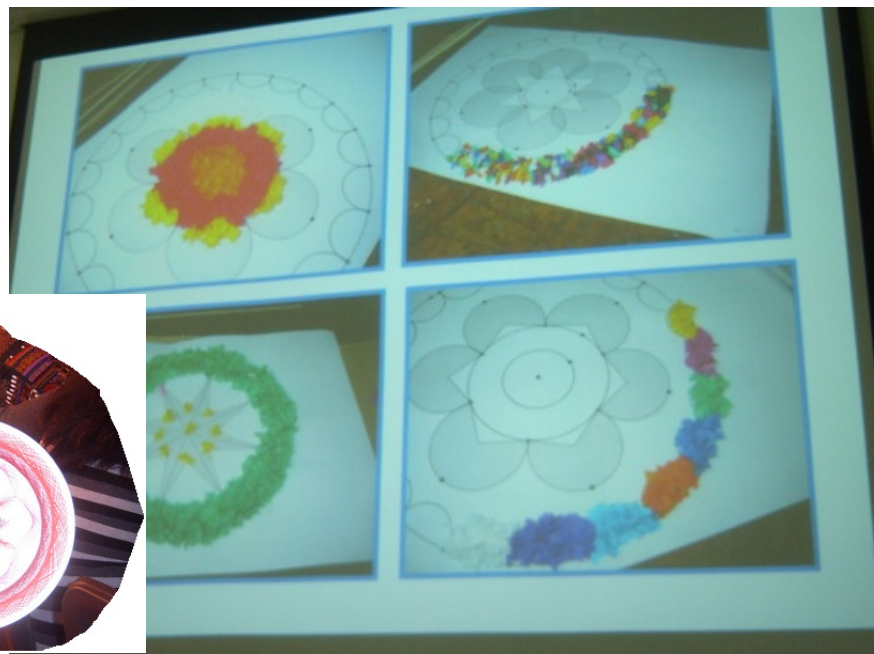
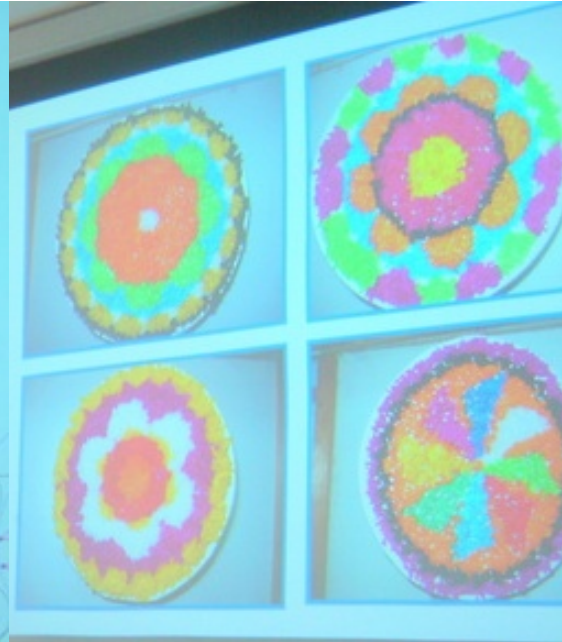
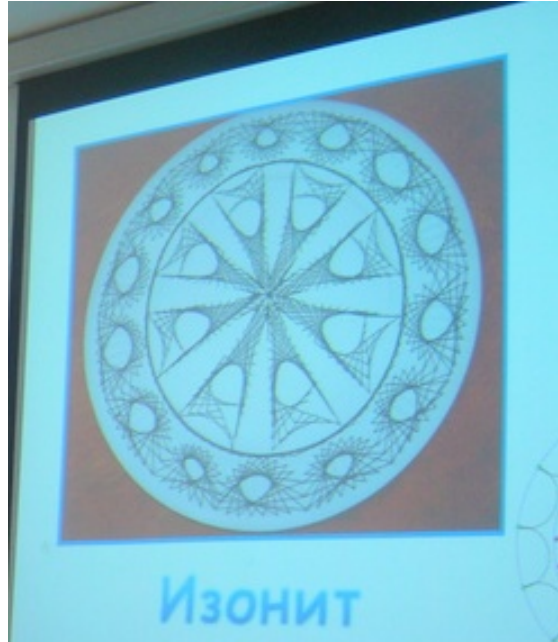




# Seminars with teachers at IMI









## Comenius Logo, Imagine F спирали, фрактали, паркетиране

Фракталът се генерира от повтаряща се схема, обикновено рекурсивен или итерационен процес. Това му придава множество интересни характеристики, най-важните от които са **самоподобността** и безкрайната подробност независимо от увеличението.

## Фрактали – приложение /Павел

This section displays several applications of fractals. It includes a spiral fractal, a colorful circular fractal, a fractal tree, and a fractal face. Each image is accompanied by a small diagram or text box explaining its properties or generation process.



# Visits to Stara Zagora





# Teachers in art in 10<sup>th</sup> school in Sofia

