GeoGebra elearning lab

Palmira Ronchi - Ada Sargenti

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GeoGebra Institute of Bari

Geo Gebra Institute of TORINO

GeoGebra Institute of Torino

GeoGebra Institute of Torino

GeoGebra Institute of Bari

A close working relationship

Equal standards in Geogebra certification

Shared research background in teacher training.

GeoGebra Institute of Turin

- Chair *Ornella Robutti*

Mathematics Department of University of Turin

- Partner: Social Promotion Association
La Casa degli Insegnanti (*The Teachers' House)*

Ada Sargenti
Responsible for the GeoGebra activities

On the Geogebra logo the city of Turin is represented by the Mole Antonelliana one of the city's major landmarks.

***Mole Antonelliana** – Turin (Italy)*

Since 2010

- Training projects and experimental teaching methodologies
    - managed by the Teachers' House
    - also with the contribution of the Province of Turin

- About 250 teachers have been trained over the past three years

- A "cascade" process has thus been generated

- A first publication with materials from courses and experimental school activities will be available during **GeoGebra day, on October the 4th 2013 in Turin.**

Keywords: project community practice

PROJECT

- **(not only)** Training in the use of GeoGebra software

AND

- Stimulating discussion on the Experimental teaching methodologies that its use requires

- Seminars (integrated into the course)

GeoGebra

COMMUNITY - moodle platforms

The Teachers' House website
http://lacasadegliinsegnanti.wizshelf.org/

*University website DI.FI.MA.
(Teaching physics and mathematics)*
http://teachingdm.unito.it/porteaperte/

PRACTICE

- Training must not be a moment disconnected from teaching

- Teachers tested GeoGebra in the classroom
  - with the guidance of experts
  - for an effective integration of technologies in their activities

GeoGebra Institute of Bari

- Chair   *Eleonora Faggiano*

  Mathematics Department - University of Bari

- Team members: *Rosa Laura Ancona*

    Felice Iavernaro

    Francesca Mazzia

    Antonella Montone
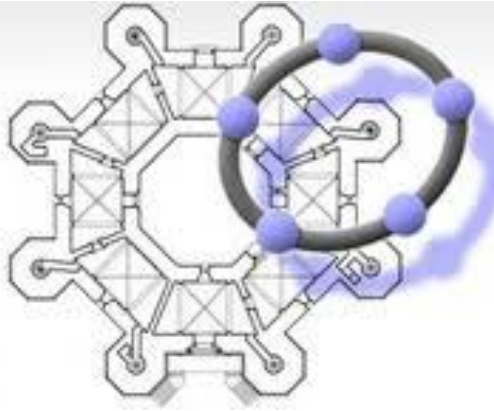
    Palmira Ronchi

The castle was built about 1240 by Frederick II of Swabian and is well known for its **octagonal shape.**

A CASTLE FULL OF THE GOLDEN NUMBER AND MATHEMATICAL SYMBOLS .

***Castel del Monte** – Andria di Bari (Italy)*
Castle of the Mount

Since 2010

- **Mission:** to empower teachers at all levels to use GeoGebra in student-centered learning, highlighting the pedagogical rather than technical aspects of the software as we firmly believe that teachers should learn how to use technological tools (such as GeoGebra) as a methodological resource.

- Training project
  - Etwinning lab events, online courses for maths teachers on the use of Geogebra in on line twinning projects between European schools involved in the Lifelong Learning Program.
  - About 120 European teachers took part in them.

- Design of free teaching and professional development materials, in research projects concerning GeoGebra and IGI, in publications in journals and in presentations at national and international conferences.

Questions

- Does using Geogebra automatically improve teaching and students' learning?

- What specific teaching methods, strategies or models can be used to organize effective GeoGebra training?

- Above all, is it enough to learn how to use Geogebra without reflecting on the methodologies, contents and objectives of Mathematics teaching?
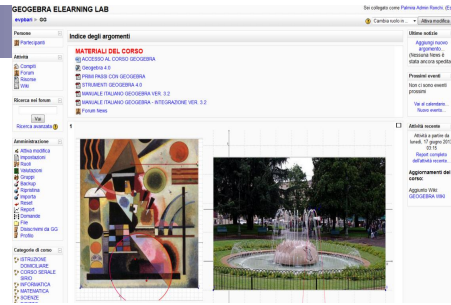
GeoGebra elearning lab Pilot platform
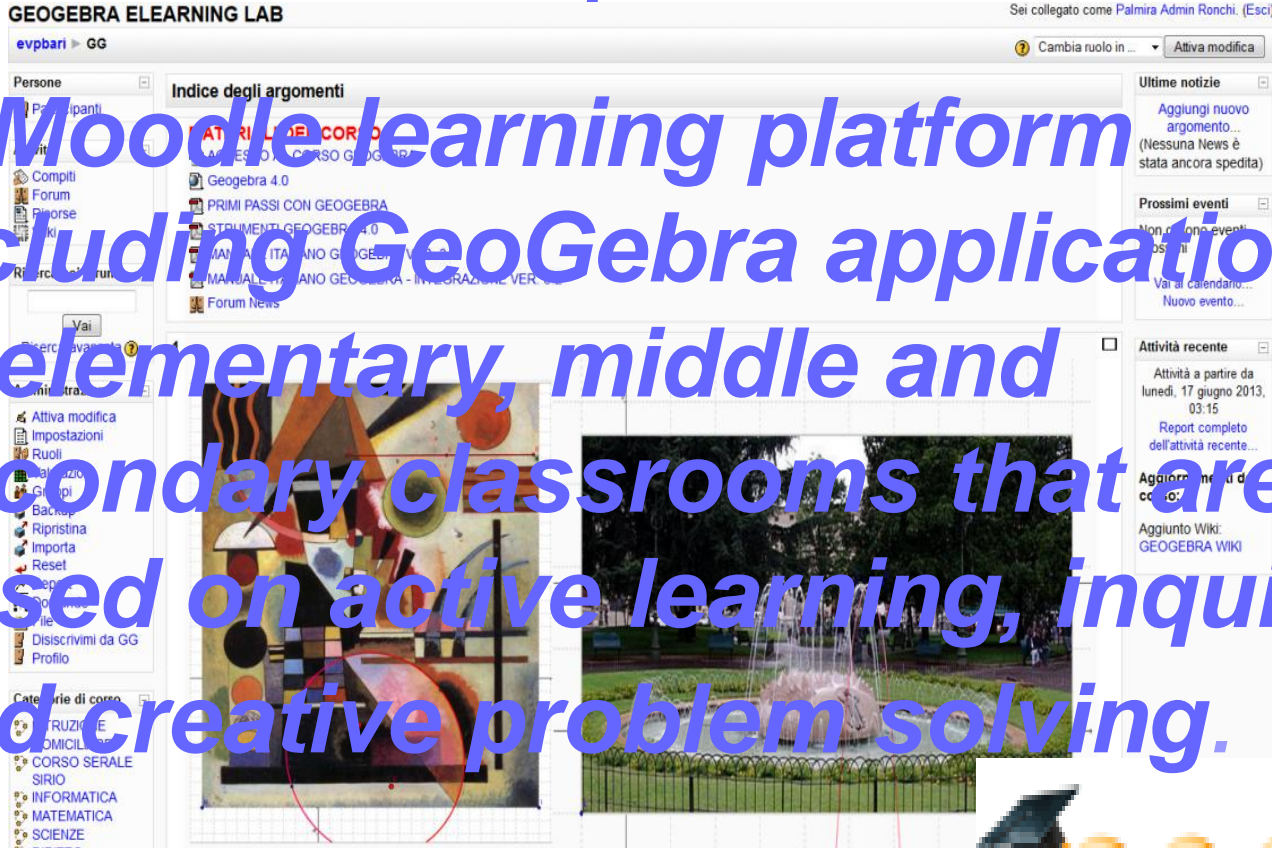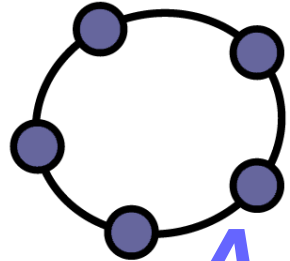
A Moodle learning platform including GeoGebra applications in elementary, middle and secondary classrooms that are based on active learning, inquiry and creative problem solving.

The implementation of the Geogebra lab was achieved by incorporating the necessary Moodle server software into a dedicated website.

Moodle is a free and open-source e-learning software platform which enables trainers:

• to develop learning materials supported by several tools and plug-ins,
• to keep track of teacher trainees and their achievements,
• to log and evaluate activities.

"Geogebra elearning lab" events
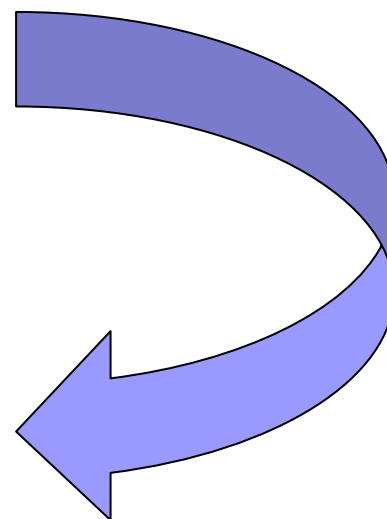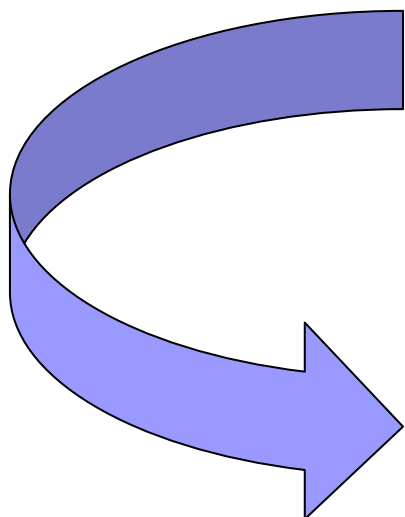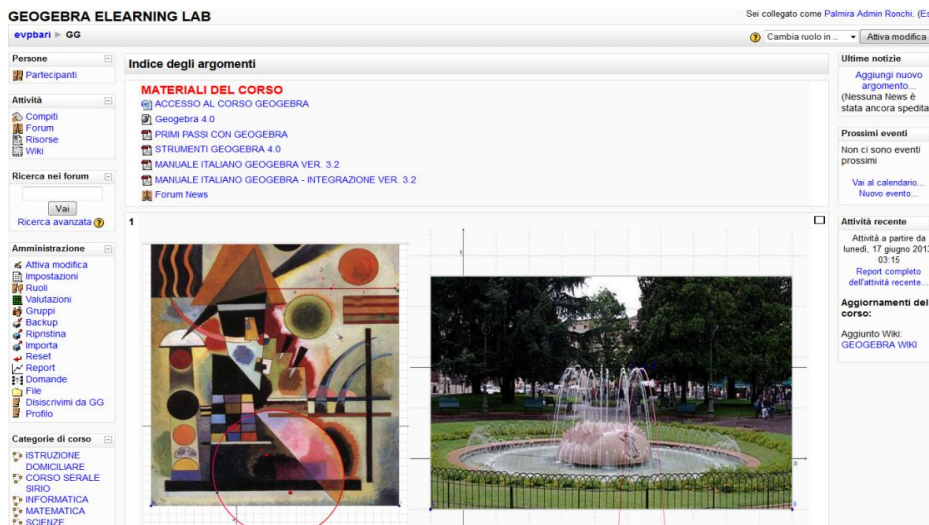
Leading to Geogebra certification

Using Geogebra in a more meaningful way in the school activities.

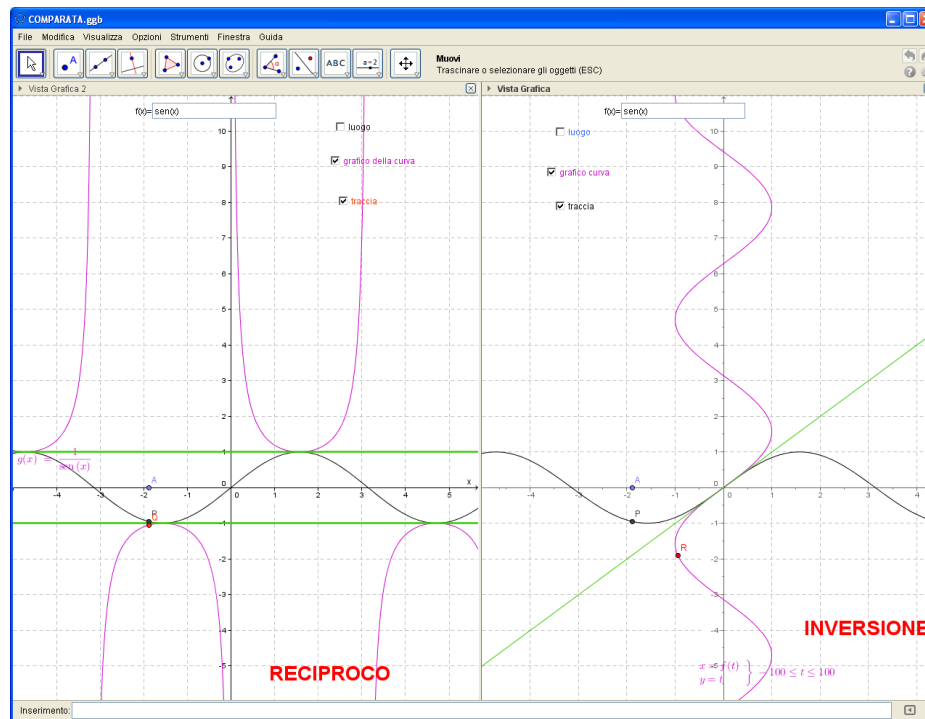# The pilot "Geogebra elearning lab" event SCHEDULE

Tasks duration	Topics from National standard curriculum and International and National student assessments	Some operations of Geogebra from Geogebra certification Guidelines
1. two days	**Geometry**	- Installation and introduction of Geogebra. - Getting started with Geogebra - First construction using Geogebra - Customizing and simplifying the user interface - User defined tools
2. two days	**Numbers**	- Basic algebraic input, commands and functions - Inserting static text and pictures into the graphics window - Inserting dynamic text into the graphics window - Creating Dynamic work-session - Export of Pictures to the clipboard or as image file - Free and Dependent Objects
3. two days	**Function**	- Lline and conic sections - Slider - Graphics' Transformations - Slope - Derivative and Integral Commands
4. one day	**Uncertainty & data**	- Spreedsheet View - Auxiliary Objects - Trace to Spreadsheet - List Tools and Analysis Tools
5. one day	**Virtual conference session with an expert and creation of a discussion forum.**	- Geogebra news and updates - GeoGebra: CAS, 3D, Chrome, ...
	Final Questionnaire and end of the Geogebra lab event.	

Two online training weeks

"GEOGEBRA ELEARNING LAB task

The tasks are structured in two parts: a step by step reconstruction of a Geogebra work-session and a challenge concerning the work session topic. In the figure above there is an example of the third task, for secondary school teachers, concerning the inverse and reciprocal functions.

The related challenges are: "Observing the function graphic, which suggestions can be obtained in order to draw its reciprocal function graphic?". "Observing the function graphic, which suggestions can be obtained in order to draw its inverse function graphic?". Is the result still a graphic of a function?

"GEOGEBRA ELEARNING LAB event
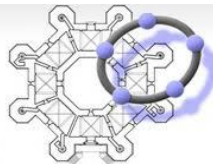## How to get a Geogebra certification

In each task trainees do practice in Geogebra construction, save the generated ggb file, answer questions and then <u>send the work session file to the task lab-repository</u>.

After the two online training weeks teachers have a maximum of <u>one month to plan a lesson using Geogebra and to try it out it in the classroom,</u> monitored by an online tutor who provides support both in the planning of the lesson and if there are problems regarding Geogebra.

The teacher may decide <u>to experiment with his own idea or with a suggestion coming from the course activities.</u>

There is no special schedule or exact timeline for this online event, meaning that teachers can work on their sessions and tasks whenever they like. <u>The online tutor will put the next day's sessions and tasks in the last day of the previous session,</u> so that teachers have time to work on them for the whole two days.

<u>To receive the final certificate trainees have to insert their work-files in the dedicated task repository</u> and use the Moodle WIKI until the end of the course – where they have to write a short reflective paper about their experience using Geogebra in their school activities.

Thank you for your attention!