

Talks

Anders Sanne, Norway

Formative Assessment and ICT

How can assessment promote students' learning and help develop the teaching of mathematics? How can we use ICT tools to promote students' understanding and creativity in mathematics? These are the core questions in an in-service course for teacher specialists in lower secondary school

<https://www.ntnu.no/videre/larerspesialist-matematikk> . In this talk, I will give you a small glimpse into the course.

Susanne Stengrundet, Norway

Trekant, triangel, kolmikko,

This talk suggests how terms related to triangles can be presented in a multi-lingual classroom. Toolbar icons and changes of the language in the program will be a central theme of the talk. Further, we will be discussing advantages and disadvantages with using different working languages in the classroom.

Anne-Mari Jensen, Norway

The Golden Section in Paintings and Art

In this talk I will show how students can use GeoGebra to analyze how artists may have used the golden section in their paintings. We may also look for the golden section in other art pieces and in architecture.

Anete Zača, Latvia and the United Arab Emirates

Teaching Math in Middle East

I have been teaching Math in the United Arab Emirates for two years now. And GeoGebra has been a very helpful tool for me and my students.

Most of my students are children from different Middle East countries, which have English as their second language. Also, some of them studies in English since Kintergarten, there are always some students who are joining with very poor English vocabulary.

Society is different here, and even though a lot of students have all possible technologies at home, still, a lot of students don't even have email, and their parents are not willing to let their children have one.

I have been using GeoGebra books through out all this year as our math blog, where I give students questions, hints, answers and study material.

I will be introducing you with my success and failures in implementing technologies in my students and schools learning environment.

Jānis Dūrējs

Introducing Latvian students to geogebra

Math teachers at Jelgava State Gymnasium have already been introduced with possibilities of using Geogebra software and everyone is using it to some extent, but the students are introduced to the use of software at the beginning of the first school year (7th form).

Once a week, students have a special ICT lesson where they learn and get the basic knowledge and skills how to work with the Geogebra software. Later the knowledge and skills of using Geogebra are developed at the math classes resolving various tasks, studying mathematical relations and creating drawings.

Students often use Geogebra software when they encounter complex situations. Geogebra software is a great tool for teachers in building up their own tasks. It is a great assistant for students to understand different mathematical relations.

Rikke Teglskov and Bo Kristensen, Denmark

A national GeoGebra Championship for primary and lower secondary school

For the second time we have a national GeoGebra Championship for Danish schools. In this talk we will present the thoughts and materials behind the Championship, and show some of the work that the Danish teachers and students have produced for the national Championship.

Marius Zakarevičius and Vilija Šileikienė, Lithuania

How advanced 9-12 grade Geogebra users are creating Geogebra book tasks for teaching geometry in grade 5-8.

Last year, after the 7th Nordic and Baltic GeoGebra Conference, we and our pupils in Lithuania have made some studies on how to use Geogebra animation and with some nice pupils projects we participated in national conferences and contests. Now we came to the idea, that our advanced 9-12 grade Geogebra users can help Lithuania teachers by creating some nice animated Geogebra book tasks for teaching geometry our 5-8 grade pupils.

In our talk we will present our project idea, show some pupil made projects, share our experience and maybe we find someone who will be interested in such collaboration project idea.

Sirje Pihlap and Christine Kattai, Estonia

Using silent screencast in learning parallelograms

The aim of the presentation is to introduce study material for the lesson where students worked in pairs and studied parallelograms (7th grade). Using GeoGebra based silent screencast and worksheet about this screencast students discovered properties of parallelograms. Students and teachers opinions about the lesson are introduced.

Liis Mardi, Estonia

GeoGebra study materials for teaching in flipped classroom

The goal of the presentation is to give an overview of flipped classroom model. Also, to introduce digital learning materials to ease teaching in flipped classroom. Learning materials were made for teaching function, proportional dependence and its graph using GeoGebra. For valuating quality of this learning material teacher's expert opinion was asked in questionnaire. Teachers evaluated the digital learning materials

to be high quality. In teacher's opinion created materials are realistically interesting, interactive and motivating for students.

Camilla Söderback, Finland

GeoGebra out of a teacher's perspective

A teacher gives her view on the implementation of GeoGebra in the upper secondary school in accordance with the new curriculum of the Finnish upper secondary school. The digitalization of the matriculation exam in maths in 2019 sets new challenges for the teaching profession and collaborative learning.

Arne Amdal, Norway

Digital tools in exams in upper secondary school in Norway

In Norway it is compulsory to use digital tools like a grapher, CAS and spread sheets on the exams in upper secondary school. In this talk I will give you examples of how students use these tools in problem solving.

Mikko Rahikka, Finland

On Sequence and Zip -commands

I have made some studies how to use Sequence command to produce funny things with GeoGebra. On my **talk/workshop** we will see how the command works with different objects.

Sequence-command can be thought kind of as for next loop in programming languages. You can also use nested sequence commands to produce interesting things in 2D and 3D.

Zip-command is kind of cousin to Sequence.

Workshops

Markus Hohenwarter

New GeoGebra Social Networking Website

This summer the GeoGebra website was relaunched introducing several new social networking features. In this workshop we will have a closer look at the structure of the new website, try out some of its new features, and discuss how we can further develop it to support close collaboration within the Nordic and Baltic communities of math and science students and teachers.

Hanan Mohamed Abdelrahman

The practical use of GeoGebra in the classroom to help migrant students

Math Visualization and Exploration by Using GeoGebra

Interactive Examples in Teaching and Learning geometry with GeoGebra

Interactive Examples in Teaching and Learning functions with GeoGebra

Interactive Examples in Teaching and Learning algebra With GeoGebra

Interactive Examples in Teaching and Learning number sense with GeoGebra

the use of the applets created with the help of

GeoGebra and the positive effect on the understanding and knowledge of the students.

Bo Kristensen and Rikke Teglskov, Denmark

Models of real life phenomenons in GeoGebra

It is often a fun and motivating challenge for students to make models of the world around them in GeoGebra. Many objects and phenomenons in our surroundings make for great constructions and other types of models in GeoGebra.

In this workshop we will focus on geometry and construction. One of the criteria will be, that everything must be constructed from a maximum of two free points. To be able to do this, you need to know your GeoGebra geometry tools well.

The workshop will revolve around two tasks.

1) The Fidget Spinner:

A closed task where you need to follow a step-by-step tutorial to make a spinning Fidget Spinner with changing colors.

2) Design and construct the official flag for the Nordic GeoGebra Network:

An open ended task where you need to use your creativity to design a flag suitable to represent the Nordic GeoGebra Network.

You will be given a few criteria, you need to fulfill.

Afterwards you will need to know how to share your design on GeoGebra.org.

To participate in this workshop you'll need the following:

- A computer
- A user account on GeoGebra.org.
- Know how to upload a file to your account.
- Earphones for the tutorials.
- Some knowledge of the geometry tools in GeoGebra.
- A lot of creativity :)

Anders Karlsson and Svetlana Yushmanova, Sweden

Bringing order in GeoGebra Materials.

Participants of this workshop will discuss how to structure uploaded materials, making it more user-friendly. Hopefully we will even get started creating some useful structure. The aim is to create GeoGebra-Book(s) with high quality materials where teachers can easily find the desired material. Can it be done in one universal book for all our languages or do we need to create one for each country's curriculum? We lead the discussion and start the work. Bring your favorite apps!

Anders Karlsson and Svetlana Yushmanova, Sweden

How to construct automatically generated and self-checking practise apps in GeoGebra.

This is a topic that has been covered on previous conferences. However, this should be very interesting to those who have not yet seen it. Participants will learn how to construct GeoGebra apps to practice anything.

Examples can be seen at bit.do/matteappar