

Sigbjörn Hals
Norwegian GeoGebra Institute,
Norwegian University of Science and Technology, Trondheim
sigbjorn.hals@sfj.no

Abstract:

The Norwegian curriculum, textbooks and skilled GeoGebra ambassadors connected to the Norwegian GeoGebra Institute have all given important contributions in the process of making GeoGebra a well known and much used software in different school levels in Norway.

A scholarship from Norwegian University of Science and Technology in Trondheim has made it possible for me to start a research on why some teachers incorporate the use of ICT (GeoGebra) in their math lessons and some don't. (See project description.)

About myself:

I am a textbook writer and math teacher at an upper secondary school in Maaloy, at the west coast of Norway. Last year I got a scholarship from the Norwegian University of Science and Technology in Trondheim. This made it possible to take a two year leave of absence with pay from teaching, to get a new master's degree; now in mathematical education. Zsolt Lavicza is my excellent co-supervisor. ☺

I have translated the different versions of GeoGebra to Norwegian since 2006. I have also translated the Norwegian version of the web page www.geogebra.org and the manuals. Version 3.2 of the manual was translated in cooperation with Jostein Vaage. I have had the pleasure of being in charge of many GeoGebra courses and seminars for teachers in Norway.

About my research project:

Important keywords in the theoretical framework are: Process Analysis, game theory, utility functions and bounded rationality. See attached project description.

About GeoGebra in Norway:

Thanks to some very enthusiastic GeoGebra ambassadors, like Anders Sanne, Jostein Våge and Arne Amdal, GeoGebra has become a very popular and much used mathematical software from primary schools to colleges and universities in Norway. It is referred to in mathematical textbooks for both primary, secondary and upper secondary schools, and many illustrations and figures in official exam exercises are made by GeoGebra.

Norwegian GeoGebra Institute (NGI) at the Norwegian University of Science and Technology in Trondheim was officially opened by Markus Hohenwarter in October 2008. Since then, NGI have trained about 20 instructors from all over the country. These instructors have arranged GeoGebra courses for teachers working at different age levels.

In the Norwegian math curriculum for upper secondary school, the phrases “dynamic geometry” and “with and without digital software” are often used.

The Norwegian exam system is bisected. The first two tasks (out of five) have to be solved with just pen, pencil, ruler and compass. After two hours the students must deliver their answers to part one, and then get access to computers, textbooks, manuals and any other “non-communicating tool” for answering the three tasks in part two. In one of the exam tasks in part two, the students can choose between two alternatives: One for those who use

graphical calculators and one specially designed for using dynamic software like GeoGebra. The curriculum and the exam form make it more useful to spend time on integrating ICT in the math lessons. This is also the reason why GeoGebra has been chosen as a “standard program” for the three big textbook companies in Norway.

As a textbook writer with a special responsibility for the implementation of ICT in our educational recourses, I have tried to make it easier for teachers and students to start using GeoGebra. Here are some of the efforts made:

1. I’ve made a website with tutorial videos, showing how to use different tools in GeoGebra. (<http://www.inter-ped.no/GeoGebra>.)
2. Each mathematical textbook in our company has its own web page with explanations on how to use GeoGebra (and other programs) to solve a selection of exercises from that textbook. (<http://www.inter-ped.no/Sinus1T> and <http://www.inter-ped.no/SinusR2>.)
3. In courses for teachers I’ve showed examples of how useful GeoGebra might be in solving exam exercises. This is done to strengthen the feeling of utility and usefulness. On our web pages we also have pdf-files with screenshots and text, explaining step by step how to solve different exam exercises with GeoGebra.
4. There are GeoGebra-applets on our web pages, connected to relevant chapters and subchapters. These applets are easy to find and use, and make it more likely for teachers and students to start using GeoGebra. (<http://www.inter-ped.no/SinusR1>.)

The other textbook companies are also referring to GeoGebra in their textbooks and web pages.

I would be very pleased to get comments and advices to my research and suggested project description.

Maaloy, 10th of July 2009
Sigbjörn Hals