

# iGuess: Introducing GIS Use in Education in Several Subjects

**Luc Zwartjes**

*VLA, on behalf of the iGuess consortium*

## **Abstract**

The consortium of iGuess (Introducing GIS Use in Education in Several Subjects) will develop a teacher training course to promote GIS and instruct teachers in using it. Lots of people use GIS applications daily, like car navigation systems, interactive maps on the internet,... yet GIS learning in Europe is lagging behind. Progress could be made if we initiate continent-wide educational programs, following the example of the US. Not only do we need more GIS-trained people, teachers also need to become aware of the advantages of GIS. It will give them opportunities for collaborating and realising interdisciplinary, cross-curricular, even European projects. Our project aims to bridge this gap by getting the stakeholders to work together, disseminating GIS skills by sharing ideas and best practices in learning about the use of GIS. In the two-year time span of our project, the partners will develop, share, test, enhance and optimise a course for teaching and learning with GIS. The course will contain methodologies, guidelines, good practices and exercises for using GIS in the classroom practice. Standard templates, facilitating the integration of exercises in courses, need to be developed. All content will be made available on a website, containing databases, reports, news, network links. GIS-knowledge in Europe will expand by the increasing number of teachers and pupils that will work with GIS and this will have a great impact on the industries, thriving on GIS.

Keywords: GIS, geography education, lessons

## **What is iGuess**

iGuess is a European Comenius Project that started in October 2008 for a period of 2 years. iGuess is the abbreviation of *Introducing GIS Use in Education in Several Subjects* although *Integrating GIS Use in Education in Several Subjects* might also be a correct name (Figure 1).

<sup>1</sup> The consortium involved in this project aim to increase the use of GIS in education and enhance and its methodology. This is important as GIS is a tool that is already widely used in all sorts of businesses: industry, public services. Beyond schools, people are using this tool to create, store, analyse and manage spatial data and its associated attributes, what might be known as geo-information. This GIS technology is rapidly emerging into several aspects of society and is gaining importance (examples include GPS and digital maps). Many European students are likely to come into contact with it in their future professional lives.

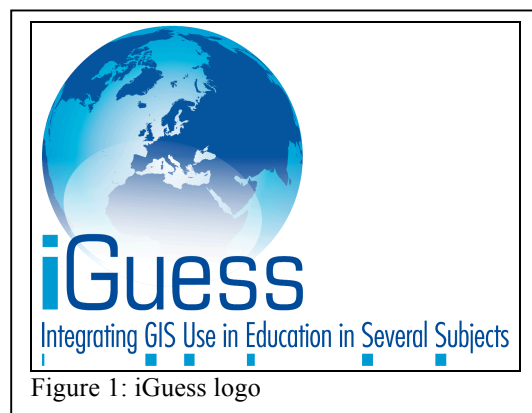


Figure 1: iGuess logo

Schools in the USA picked up on this many years ago and are gradually integrating GIS in their curricula. Unfortunately, European schools are lagging behind, mainly due to the lack of

---

<sup>1</sup> Parts of the text are extracted from the application document of the iGuess project.

awareness and deficit in the skills among teachers. This is also partially due to the fact that the software to use and study GIS has been quite expensive. However, new framework curricula in European school education will include GIS as a learning goal for secondary schools. GI in education is an EC initiative under the IST programme<sup>2</sup>.

Today, in many European countries, GIS introductory courses do exist, but they are mostly aimed at geography teachers. They tend to be highly technological and lack examples of good educational practice. So there is a great necessity for European in-service teacher training projects, introducing and developing GIS in secondary education and lowering the threshold for all teachers by creating an easy access to a workable course.

## **The iGuess Consortium**

iGuess is lead by KOGEKA, a group of six secondary schools (general, technical and vocational education) and has had GIS experience on European scale with another European project: GISAS. Out of that project came the idea of organizing in-service teacher training modules on GIS. To reach that goal KOGEKA gathered a diverse team, consisting of

- GIS experts: University of Sofia - a very active partner of HERODOT, University of Helsinki - has already organized GIS teacher training courses in Finland, University of the Aegean - running a GIS lab, and Digital Worlds – now part of ESRI UK, develops a simplified version of ArcGIS.
- Teacher training institutes Pedagogical University of the diocese Linz - a competence centre for lifelong learning and using digital media in education, specialized in geoinformation, VVKSO - In-service Training in Catholic Education - Flemisch Association for the Catholic Secondary Education - organizes dozens of in-service teacher training courses in Flanders, among which GIS trainings.
- Curriculum developers: VVKSO is designing curricula for all Flemish catholic schools within the legal limits.
- Secondary education institutes: KOGEKA , VVKSO represent the catholic educational institutions in Flanders in their contacts with all other educational participants (government, industry, parents, media,...), Collège et lycée privés du Sacré-Coeur is a big secondary school in the outskirts of Paris (France).
- A public body with an extensive educational service: Danube-Drava National Park Directorate (Hungary) offers, through its visitor centres, many school programmes, among which GIS teacher training, visualizing the characteristics of the national park
- A non-governmental organisation focused on education: GREEN's core business is setting up sustainable development projects for primary and secondary schools, many of which have spatial aspects, which are visualized using GIS
- An educational GIS software company: Digital Worlds has developed user-friendly GIS software (DW3) for educational purposes based on ArcGIS (ESRI)
- All the iGuess partners have lots of experience in transnational cooperation: teacher training projects, school partnerships, teacher's associations, ICT projects, Interreg projects, UNESCO projects, thematic networks.
- ESRI has freely distributed ArcGIS software and licences among the participating parties. When necessary, it will participate in the discussion about the project and help with the GIS training.

The evaluation of the project is done by an external evaluator because of his independence. This increases the quality of the evaluation and, thus, the quality of the project activities and

---

<sup>2</sup> Information Society Technologies: <http://cordis.europa.eu/ist/>

results. Karl Donert is the GIS expert who evaluates the project with respect to content and organisational aspects.

## **What is the aim of iGuess**

Through the network of the consortium of iGuess, teachers will be made aware of the possibilities of GIS. With the teacher training, we want to provide approaches and methods for teaching and learning with geo-information in education. Enquiry-based, ICT learning in schools will be endorsed by the use of GIS and it can be used in all subjects. Digital competence of students will be enhanced. It is also important that the exercises are translated in the partner languages to stress and compare possible cultural differences. All this should motivate teachers to test and try these innovative and collaborative teaching methods.

Interested teachers will be trained and become experts in GIS and thus pass on the knowledge in their schools and to their pupils. The project also offers free licences and software to learn and to use GIS in the schools of the participating teachers. More and more schools will become convinced of the use of GIS without the costs of buying the software or the licences. GIS will appeal to the teachers, because of the examples of good practice (exercises) that will be included in the teacher training course and also because of the adaptation of the matter to the level of secondary school students. Not only geography teachers will be convinced, but also other subjects will benefit. The themes and exercises can also lead to active citizenship, by producing and mapping data that will raise the awareness of youngsters, citizens and law-makers.

Through an updated website ([www.iguess.eu](http://www.iguess.eu)) that will elaborate on GIS-aspects, information about approaches that support good practice will be disseminated. The mechanisms for quality control will be inherent in the exercises and the guidelines. The website and the training course will also be a platform to enhance educational quality and to exchange innovative products and good practice on a European level.

## **What will the outcome be?**

This project will produce a teacher training course, consisting of 4 modules including exercises, translated in 8 languages (partner countries). The methodology of the exercises is carefully developed keeping in mind what we want to reach. The aim is not to develop a manual for software programmes but to use GIS as a tool for investigation and spatial thinking. Therefore we reflect every exercise to what level of self supported learning we aim it. The basic exercises are meant for the basic level ‘self working’, using worksheets and step-by-step methodology.

The moment we go to the higher levels ‘independent working’ and ‘independent learning’ we drop the step-by-step method and target on the content. The exercise starts with a ‘start-up phase’ informing the teacher of the subject he wants to investigate. The questions have to be answered without a step-by-step document. If the teacher still needs support on a specific GIS tools and skills he will be able to drop back on ‘i-notes’, short 2-page explanatory guides. All the exercise will be developed using the same templates and guidelines developed by the consortium. These will be used in a later phase by the teachers to develop their own exercises (Figure 2).

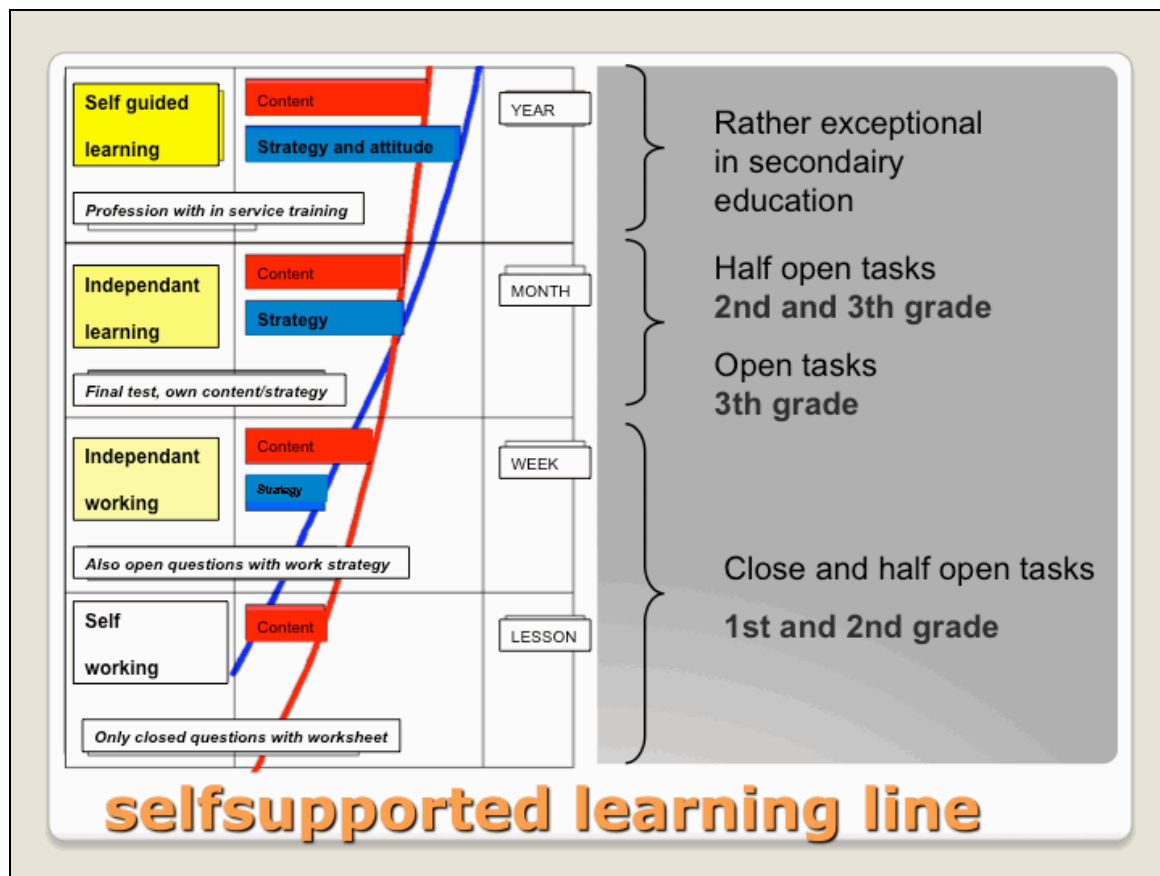


Figure 2: Self supporting learning line for GIS in iGuess

*The first module* produced will be an introduction to GIS and it will be very practical and accessible for laymen. This module will combine the theory with the actual use of the GIS software in basic exercises, so that the participants get acquainted with GIS. These exercises must comply with the templates and guidelines that will also be produced within the project. The participants will have to learn from scratch how to use GIS. This also means going out to collect data.

The theory will give background on Geographical Information and GIS, on the different tools for GIS that exist, going from web-based applications to full GIS software. The basic exercises will – using these tools – learn the teacher the first steps in the possibilities of GIS. The emphasis will be here in the first exercises a step-by-step method. This method will not be maintained for further exercises as they do not force you to think about what you are doing nor what you want to investigate, reach ...

*The second module* consists of examples that are collected and developed by the partners of the consortium. The participants will be able to process their collected data and see what some of the possibilities within GIS are. In *the third module* the teachers/participants in the course will be introduced to the guidelines to make the exercises. They will learn how to make exercises that fit in with their lessons. In *the fourth module* the participants will attend a workshop in which they will actually work together with other European teachers and create their own GIS exercises.

Every module will be evaluated using criteria of the ECDL GIS driving license and the HERODOT Benchmark on GIS in secondary education. Throughout the project a website will be developed. On this website partners, participants... can consult a number of data. There will be a database with examples of exercises. These can be external exercises or exercises

developed by the partners of the consortium. A list of e-partners and organisations experienced with geo-information in education will also be presented on the website to further motivate the teachers to do the exercises. Furthermore, the consortium will publish a report on the state of GIS in education on the website, as well as a report on the opportunities to use GIS in curricula in the partner countries. To raise the awareness and to create publicity, there are also iGuess brochures and posters.

It is planned that teachers who complete the course will be awarded a GIS driving licence. Together with this driving licence they will be granted a licence to use GIS software (Arcview from ESRI) for free during one year in their school. This will enable teachers to learn, test, study and convince others to use GIS.

## **Time schedule**

The iGuess consortium started its activities in October 2008. Every half year during a project meeting the main developments and strategies are outlined and followed. In between these meetings consultations will be held via different channels. During the last meeting (May 2009 in Sofia) the details of the first try out of the exercises was set up. This pilot will be done by a group of Greek teachers in Mytiline, Lesvos in September 2009. The feedback from this will help enhance the next exercises for the final training in September 2010 in Geel, Belgium. At this training teachers from all over Europe will be able to participate via the Comenius catalogue.

## **Conclusion**

iGuess is delivering, for the first time, a pan-EU approach to help teachers use a new technology in their classroom with GIS. It will offer new teaching approaches (in class, interdisciplinary and on a European level), new learning opportunities and new skills development. We want to simplify GIS teaching to the level of teachers and their secondary pupils, so that GIS-awareness is raised step by step. Moreover, incorporating GIS into curricula is an innovation that enables the study of environmental phenomena and the solution of problems in a new way.

Another new innovation aspect will be the development of a “GIS driving licence” for the secondary school teachers, which could be used in their CV when applying for a job. Thanks to our GIS driving licence, attendees to the course will take GIS knowledge AND free licences/software back to their schools so they can test, study and teach GIS in class. During and after the course they will have access to ready-made exercises that can be used in any subject and they will be able to adapt the exercises to match their own interests.

## **References**

AICA: The ECDL GIS driver license (pdf)

<http://aicenet.net/certificazioni/ecdl/specialised-level/ecdl-gis> accessed 21/12/2008

ANDERSLAND Svein, KNUDSEN Arne: Web-based GIS in Upper Secondary Schools (ppt)

<http://www.herodot.net/conferences/stockholm/HERODOT-Stockholm2.html#pres> accessed 10/01/2009

FARGHER Mary: Linking Lessons learnt from the Classroom with Research Findings on Pedagogies with GIS (pdf)

<http://www.herodot.net/conferences/stockholm/HERODOT-Stockholm2.html#pres> accessed 21/12/2008

HERODOT: Benchmark on GIS in school Geography and teacher education (doc),  
<http://www.herodot.net/geography-benchmark.html> accessed 21/12/2008

KOGEKA: iGuess, Application form 2008: Lifelong Learning Programme Sub-programmes  
– Multilateral Projects, Networks, Accompanying measures – , May 2008

KOOLVORD Bob: Connecting Project-based GIS Curricula with Secondary Schools (ppt)  
<http://www.herodot.net/conferences/stockholm/HERODOT-Stockholm2.html#pres> accessed  
10/01/2009

GERSMEHL Carol and Phil: Modes of spatial thinking,  
<http://www.jeffreylash.com/courses/3137/PDF/BasicModesOfSpatialThinking.pdf> accessed  
21/12/2008