



## EGU GIFT WORKSHOP

### Mineral resources

(Vienna, Austria, April 13-15, 2015)

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## General thoughts

My experience to GIFT workshop 2015 has been a real opportunity to find the connection between schools and the geoscience world. The GIFT's topic (Mineral Resources) has been, in my opinion, something of innovative and extremely useful to propose new teaching programs related to geoscience.

From an Italian point of view, ore deposits related topics are rarely taught and anyway always linked to oil deposits. With GIFT workshop every teacher can easily face with the most important mineral ores related topics proposing students to do practical and productive activities.

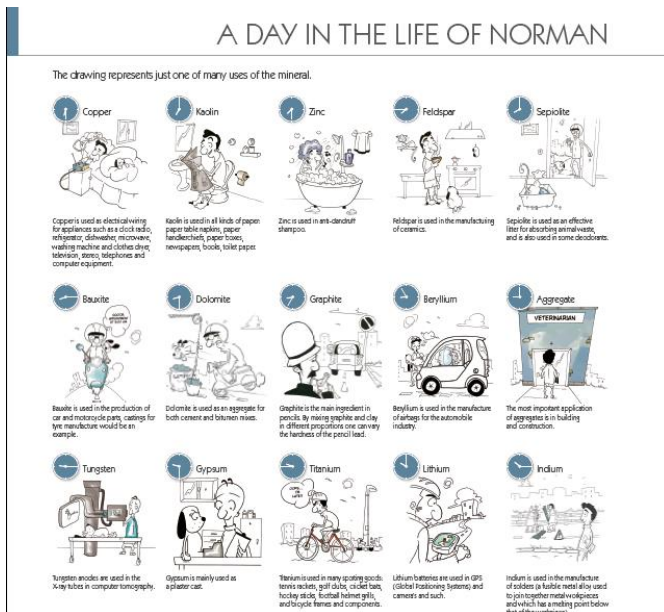


Figure 1: minerals in our life

Honestly I must to say that all the entire event has been really well organized and even the position of the room, where the lectures took place, allowed to visit most of the congress giving a general view of it. In my point of view, the only point of potential improvement is related to the lack of non – metal minerals discussions. In fact, we essentially talked about metal minerals including a large number of minerals that most of the people doesn't even know, but we didn't treat the important group of common construction products like sand and gravel for building, or the large group of silicate minerals.

On the other hand, the decision of focusing only on metals allowed to examine in depth some important global economy related topics providing us with some really interesting new point of discussion.

I think that this GIFT workshop gave all teachers a new awareness of the presence of minerals in our daily routine (figure 1).

Even if I am a geologist still working in the mining sector and I am familiar with the topics that we treated during the GIFT workshop, with this experience I found the way to insert his particular topic in my scholastic programs also in the kindergarten and primary schools. The theme of mineral resources is often explained to students in a too simplistic way or even not discussed at all. In my point of view one of the most important things that this GIFT gave to teachers is the ability to manage this delicate topics of mineral resources learning how to

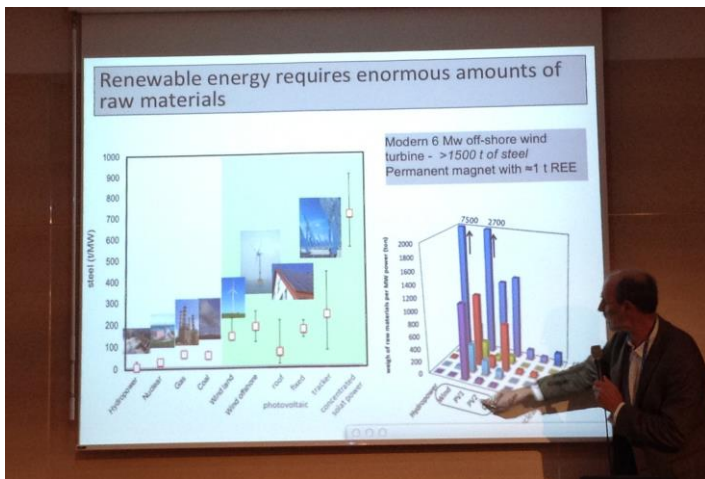


Figure 2: does the green economy is really green?

help students to develop the critical thinking they need to master their own future.

Another important point that I felt I have learned and thing I'm trying to pass on students is the concept that we are actually still in the "stone age": minerals and stones are still far from being replaced with other materials.

After the GIFT the main question that I have been asking my students,

and in general my audiences, does green economy really exist? The answer is always different at the end of the discussion after we discover how many minerals are present in our daily activities

As a teacher with a geological background my personal experience at the GIFT workshop allowed me to achieve mainly three different goals:

- 1) Realization of new didactical ore related projects
- 2) New interconnection to other teachers and scientific institutions.
- 3) New ideas for my professional future within educational area

## 1. DIDACTICAL RESULTS



Figura 3: discovering stones

### Ongoing projects

Attending the GIFT allowed me to improve my didactic programs that were ongoing at that time. I used most of the basic concepts of the GIFT lectures and most information that I had got from the EGU conference to introduce a practical connection between daily life and minerals find in r objects. The concept of "urban mine" has been really useful to enforce the practical laboratory that is ongoing on recycling.

Give this I had propose new hands-on activities also to be performed out of the school with collaboration of local authority using geomaterials like sand, gravel and clay to discover their new uses. With children from kindergarten I could enhance the concept of georesource introducing stones as "general bricks" of our object learning that most of the objects that we touch every day contain minerals or stones (figure 3).

With very young students we can also "explore" our soil just outside of the school in order to understand the difference between rocks and minerals, discovering its main physical features, in addition to the interaction between these materials and water (figure 4).



Figure 4: students from primary school exploring fiscal properties of gravel and sand, permeability of different material

### Projects for the future: Geoscience Information for Kids (GIFK)

Thanks to GIFT experience I realised how important is to involve young generations in geoscience topics in order to grow a more eco-aware generation in the future. In particular, in Italy, we do need new didactic tools in order to approach young generation to science. As part of the classic science program often teachers don't have time to discuss about the contemporary facts related to the planet and often students don't receive any type of "contact" from the school with the daily scientific facts.



Figure 5: the metabolism of societies

On the base of GIFT experience, in collaboration with the school where I teach, I planned for the scholastic year 2015-2016, to perform the GIFK project (Geoscience Information for Kids).

The idea of GIFK project was born a few months ago thanks to the presentation of Stefen Giljum and in particular to the Figure 5 which impresses me for the clearness of the contents. This project is a special program aimed to introduce small kids (from kinder-

garten to primary school) to Earth related issues. The main idea is to give children the possibility to get involved in recent scientific information related to the Earth and to be Immersed into science topics in order to better approach Earth related dynamics.

In particular, considering that thanks to the GIFT I got also involved in ESA didactical programs, I am going to approach the amazing recent Sentinel missions, related the observation of the Earth from space. The principal aim of this program is to change the existing point of view in young generations in order to really understand the unicity of the Earth. With this program, we are going to discuss about environmental and exploitation problems that the Earth is facing, using satellite images in order to observe direct changes on the Earth surface on the time.

The main idea of this project is to lead students to understand how strong the relation between daily life and planet Earth is and how important is our behavior even in small acts. Observing the Earth from the space and in the Solar System context will give the students the awareness of the fragility of our planet.

Moreover, we will also discover the future human missions to understand the importance of space related scientific research and why we need to explore other planets.

### Planet press

An important tool that I'm going to use in the GIFK project is the "Planet Press" which I discovered at GIFT. We are going to select 4 different articles that will be read together with students in order to improve the use of English during science lessons. The aim of Planet Press within the GIFK, is mainly aimed to introduce pupils to the scientific communication's world which is also in English language.

## 2. CONNECTION TO THE WORLD

Another important "result" of the GIFT is represented by the new connections that I established with teachers of other schools coming from different cities in Italy and also from other countries like for example, Malawi, besides international institutions like ESA (European Space Agency).

These new connections allowed me to improve my skills in teaching geoscience learning new tools and new strategies to involve students in the best way.



Figure 6: students from Malawi



Figure 7: ESA Summer School, Matt Taylor of Rosetta mission together with teachers.

With Yvonne, from Malawi, we shared pictures of our last schoolastic year discussing about the differences of

the two countries with our students. Through the GIFT I could, also, attend the ESA summer school for teachers last July, and get aware of new future projects related to space sciences.

### 3. PROFESSIONAL OPPORTUNITY

The GIFT experiences represented for me also an important change of my professional life. Since I work with different schools through the association that I founded a few years ago in collaboration with the Earth science Department of Milano University, the participation to this workshop, gave to the association itself a new visibility attracting new teachers that showed interest in our didactical projects.

from an educational point of view, after the GIFT, I could create new projects not only for school but also aimed to increase the sensitivity of people on Earth. Through the geoscience information that I got from the GIFT I could also involve the municipalities and citizens in periodical meetings related to geoscience issues.

On the other hand, as a geologist, that also works in a quarry of natural aggregates, after the GIFT experience I could start collaborating also with the A.n.e.p.l.a. association (Associazione Nazionale Estrattori Produttori Lapidei Affini), which is one of the most important associations of construction stones producers in Italy, with the aim of bringing a different point of view of the relationship between population and mining industry.

### 4. DISSEMINATION ACTIVITIES

I found it very interesting to share this experience with other teachers. First of all, I organised two different small meetings with teachers directly involved in my projects, in order to explain how the workshop took place and how the didactic project that I presented at GIFT was illustrated to other teachers. In this occasion I was able to briefly discuss about the GIFT topics and how is possible to introduce ore related topics in the Italian didactical programs. After this presentation another school decided to enjoy our didactical programs next year.



Figure 8: dissemination activity of the GIFT during the training course for teachers, Milan University

Since I also collaborate with University of Milan in training formation courses, I presented the GIFT activity also to 100 teachers that qualified last July. I explained all the potentiality of the GIFT and how this experience can be useful for science teachers even if the theme is not directly related to the ministerial program or to past academic studies. It has been also important to explain how funny can be experiences like this.

Another important promoting event took place during the Planet Earth week that took place in Italy from 18 to 25 October. In this occasion I presented the GIFT activities to more than



Figure 9: dissemination activity during the Earth Planet week

30 teachers from primary and secondary schools in Milan and suburbs. This activity, led in collaboration with the Mineralogical Museum of Earth Science Department, aimed to involve teachers in the discovery of ongoing activities

performed by the Museum for school. In particular for this year, by taking advantage of the GIFT message the activities will be focus on microscopical observations of some of the most important ores.

Figure 10: discovering ore deposits at the Mineralogical Museum of Milan

University



Figure 10 discussion about ore minerals with Valeria Caironi at the University of Milan.



Figure 11 Il Geco foundation presents GIFT at the University of Milan

I shared my experience also with some student's parents in order to highlight both the didactical and scientific point of view. I decided to involve them because I am convinced that they also need to be informed about the teachers training and development and because it is important to show how far teachers are dynamic figures ready to go to an international context in order to improve and enrich their knowledge.

The communication with parents took place through different events,

- for kindergarten school, through a party at the end of scholastic year where parents had been involved in the same practical activities that the children had experimented during the year.
- For the primary school through another event named "scientific coffee" that took place during the week of the Planet Earth, in a very familiar context in a pub. In this occasion, parents were informed about the GIFT and about the past and future programs.

## Conclusions

This experience opened my mind on future enforcing my conviction that children are our future and educational programs need to involve students at all levels, starting from the beginning. After the GIFT my sense of surprise in front of science is growing day by day completely transforming my idea of teaching.



*Thank you very much to all the "GIFT people" that allowed this beautiful experience.*

*A special thanks goes to Francesca and Francesca and to Carlo Laj!*