<center>*FR* – **Olivier Vogt, student teacher**</center>

<center>**Report on teaching visit – Pisa, Italy – 16.2 – 20.2.2009**</center>

Middle school classes

Italy	*France*	*UK*
I Media	6$^{\text{ème}}$	Year 7
II Media	5$^{\text{ème}}$	Year 8
III Media	4$^{\text{ème}}$	Year 9

Part 1 – Before the visit

The first part of the preparatory work took place at the IUFM (Teacher Training Institute). With Marie-Hélène Le Yaouanq, Yves Alvez and Jean-François Chesné, three maths teachers trainers, Barbara Martucci, a German language teacher who's fluent in Italian, and Stéphane Herrero, the visiting teacher, we started to study the Italian class books extracts on Pythagoras and fractions. Barbara read to us the contents of those extracts so that we got more familiar with Italian. In the same time, she spotted typical Italian points and taught us a bit more of the Italian school culture. So during several Saturday morning meetings, we progressively raised the differences between the French and Italian approaches of maths at medium school. After each meeting, Barbara and Yves grabbed information to answer the remaining questions like "How far did the kids have studied prime numbers before starting fractions?" or "Are there several ways to read loud a fraction?".

This is how we discovered notations differences like the use of the point instead of the x-shaped cross for the multiplication (this notation does exist in France, but it's only used for algebra expressions) but also the presence of units in the calculus: in France this has been forbidden in maths for years and was only used by the physics and chemistry universities (the current programs now encourage this).

In parallel, Barbara had prepared a French-Italian words and expressions list for the class. At that moment, it was tough to record all those expressions but later, in Italy, it integrated my survival toolbox.

In the meanwhile, between two program analyses meetings, I tried to more or less follow a self-learning Harrap's method. The method itself is quite good, but DYI in language learning is always a challenge. In 2000, I already didn't manage to follow a "Learn Spanish" Assimil method on regular bases. In 2004, I faced the exact same problem with Wolof (the second native language of one of my grandmother): I got stuck at lesson 5 again. That's why I now call this phenomenon the "lesson 5 syndrome".

For Spanish, I really managed to learn it when I registered at the Instituto Cervantes in 2002. So, before September, I had in mind to register to the Italian equivalent institute: the Istituto Dante. Unfortunately, I quickly realised I'd never succeed in combining my everyday work at the medium school with Italian courses in Paris.

In addition to all this, Barbara and Yves got in touch with the Italian high-school "Leonardo da Vinci" in Paris. So Stéphane Herrero and I had the opportunity of going and observing the *II Media* maths class three times in November-December.

Those observations have been a great help during the preparation of the visit at Pisa: from the first day, we became clearly aware of the major differences with the French system. For example, in France, as class books are only lent for a year and given back to the school library by the end of June, pupils are used to write the lesson on their notebooks. On the Italian side, we already knew that pupils buy and keep their own books, but we hadn't realised it is their main lesson base: they talk about the lesson with their teacher, the book opened on the right page, and they almost never take notes (just from times to times directly on the book). This difference has an impact on the speed at which the class is performed: you don't "waste" time writing the lesson (I quote "waste" because for some people, writing is a way to memorise).

Another important point: at the moment, Italian students approach maths in a very different way from the French students. Studied subjects are studied in details and more theoretically than in the French system, where, by the way, important subjects are split over several years unlike in Italy. For example, only talking about the Pythagoras theorem, in France the main formula is that the sum of the squares of the legs is equal to the square of the hypotenuse. All the rest is deduced when you have to solve a problem. During the analyses meetings, we did notice the presence of many more formulas connected to Pythagoras and learnt in Italy, but we didn't figure out it is a normal use for any chapter.

Moreover, teachers often give about ten exercises for the next class. In most cases, the book gives the answer to the exercise. It's up to the students to find the way to find the solution. In France, we tend to give fewer exercises but without the answers. And surprisingly, in France, teachers often wish the kids stopped focusing on the exercises solution and rather concentrated on the implied maths principles.

As a consequence, those three observations changed my point of view on the sessions I was about to give at Pisa. No way would I build a structure "à la French", I had to adapt to Italian manners.

At first, I planned proposing a concrete problem for which pupils would have to know the hypotenuse length but would only know the legs lengths. That way, the Pythagoras theorem would match with the search of a tool to solve this particular problem.

Eventually, I decided to start with the discovery of the Pythagoras theorem, observing the property for isosceles right-angled triangles (this is the book introduction activity). This activity would then be followed by the theorem demonstration for any kind of right-angled triangle. And at last, I could give the problem I had in mind (which is: you can raise a wardrobe only if the diagonal is lower than the ceiling) and so the class would build the three formulas seen in Italy:

- $i = \sqrt{c_1^2 + c_2^2}$
- $c_1 = \sqrt{i^2 - c_2^2}$

- $c_2 = \sqrt{i^2 - c_1^2}$

On the other hand, with those session observations I was reassured about my listening skills. Even if I still didn't manage to speak Italian, I did understand most of what was said during the class. At that moment, I was a bit surprised, but now I suppose it's probably due to the proximity of the Italian, Spanish and French maths vocabularies.

Few weeks before Christmas, Stéphane and I tried to present to the trainers our class courses in Italian during a Saturday morning session. During this presentation, I've been more worried by the language than by the course structure itself: this was the first time I was speaking Italian in front of someone (so far, I repeated sentences in my car or in front of my computer…). When I managed to hold my reflexes of Spanish speaking, I was often lost by a lack of vocabulary. I even had to adapt the lesson during the presentation to match my speaking capacities.

After this session, I forced myself to pass through the «lesson 5 syndrom»…

For the course structure, I followed advices I had been given at that time: I prepared part of it on the computer in order to video project it. Those preparations were mostly activity corrections using dynamic geometry with Geogebra.

Part 2 – The visit at Pisa (from the 16th to the 20th of February 2009)

Since I got on the plane, something has been obsessing me: getting better in Italian!!

I think I've spent the whole week seeking again and again for words and verbs in the Harrap's method and the dictionary. I clearly remember falling asleep once, reciting in my head the conjugation of verbs I just discovered. At the hotel, despite of the tiredness, I forced myself watching TV (especially movies and San Remo festival interviews).

Rossella Masi welcomed us very kindly on our arrival at the Istituto Santa Caterina.

On Monday and Tuesday, we observed her three classes:
- I *Media*: fractions (maths).
- II *Media*: square root (maths), notions of forces and pressure (sciences).
- III *Media*: first degree equations (maths), genetics (sciences).

We acknowledged the same behaviours in class as the one saw at the "Leonardo da Vinci" middle school. Teacher-pupils communication was important as well. Monday and Tuesday afternoons, after classes, I then worked on my lessons to make sure I'd be using the right vocabulary and I'd be able to react at the best I could in case the pupils would start asking many questions. Stéphane was working in the same room so it helped creating a cooperative atmosphere, as well for the building of our lessons, as for our adaptation to the Italian language.

Still in the spirit of getting better in the language, I took this opportunity trying remembering the most common class words. Most of these words were in the "French - Italian" and "English – Italian" word lists we had brought, so that way I could review those back at the hotel.

As planned, Stéphane started on Wednesday his first class with fractions for I *Media*. And I then followed with Pythagoras for II *Media*.

Stéphane's course went well. As soon the activity sheet was distributed, the pupils started to work. They didn't break the silence before several minutes. Some of them didn't even dare calling Stéphane for questions. The silence the kids imposed to themselves was quite amazing knowing they're used to build their lesson through oral communication.

During my own course, I tried to speak the more Italian I could, but unfortunately, when a word doesn't come to my mind quickly, I say it in Spanish almost by reflex. Sometimes I didn't even notice I was saying Spanish words.

Out of this, the structure of this first activity (manual construction of squares with isosceles right-angled triangle shaped pieces of paper) helped me not to speak too often Videoclip1, Videoclip2, Videoclip3, Videoclip4. Thanks to that, I managed to stay concentrated and not too tired for the whole hour.

The activity appeared to be a bit difficult. I think this is mainly due to my own difficulties to give clear oral directions. During the hour, I realised it would be impossible to start the general demonstration, so I improvised additional questions, but I had to take my language limits into account.

Fortunately, the kids have concentrated a lot, making a great effort to understand what I was saying and helping me finding the right words when necessary Videoclip5.

During the Wednesday afternoon, I decide to follow the similar course structure as Stéphane's: clear written directions and a correction ready to be developed with PowerPoint Videoclip6. Logically I would improvise less and the task would be easier (at least for me).

In the evening Stéphane helped me pointing fuzzy areas where the pupils might follow the wrong track. At the end, only one point was remaining. At the beginning of the activity, a right-angled triangle was drawn on figure 1 and a question asked to redraw a congruent triangle in a square of figure 2. The right-angle vertex was already placed in figure 2. As I was getting short with space on the sheet and that there was no reason to change the triangle orientation, I chose to leave the question as it was.

Rooky mistake!! I had forgotten Murphy's Law: «Anything that can go wrong will go wrong» (http://en.wikipedia.org/wiki/Murphy's_law). Italian students are used to look for non-standard situations. In fact, we already had noticed this phenomenon while observing the corrections of exercises on fractions.

So on Thursday, from the very beginning, many kids started to draw triangles in all directions, except the one I expected… I had to explain on the blackboard where the vertices of the triangles intended to be Videoclip7. I then went to the tables where mistakes were remaining Videoclip8.

Except this small incident, the rebuilt of this activity has worked as planned.

The day after, I taught my last lesson. Through exercises, I had to put in place the three formulas used to calculate the length of one of the triangle sides knowing the two others Videoclip9 - Videoclip10. The structure of the lesson was quite simple and I started to feel more confident in Italian (when talking about Pythagoras

anyway). My only written backup has then been the solution of the exercises. On Friday, everything went fine. I would have liked covering more exercises, but I was still limited by my language skills 📹Videoclip11. At least, the stress had flown away.

Part 3 – After the visit

Just after the last classes, Stéphane made an interesting remark: we weren't sure how each pupil had understood the lessons. We might put all the credits on the fact we didn't know the children well, like it happens every September with my pupils. But after all, we still manage to catch up the global atmosphere: the behaviour, the faces expressions, the way to talk (the tone, the choice of the words) are for us usual indicators we've had a hard to time to feel in Pisa.

Now I'm back in Paris, I find interesting to re-use Italian practices for my own teaching. I'd especially like to introduce the fact to give ten short exercises with the answer so that the pupils feel more concerned by the method than the result. But I doubt it's going to be an easy task because the kids seeing the answer will probably think the work is already done …

However, I already introduced translated Italian expressions in my math class vocabulary

For example, few weeks after my visit at Pisa, my 4ème classes had a lesson about "equal fractions". I've used the term "equivalent fractions" instead, warning that sometimes they'll find "equal". The kids admitted this without any problem. I think it makes more sense to them to say that $\frac{3}{5} \times \frac{5}{7}$ equals $\frac{15}{35}$ but that $\frac{15}{35}$ and $\frac{3}{7}$ are equivalent. Even if in two years they'll learn that $\frac{15}{35}$ really equals $\frac{3}{7}$ because those two fractions represent the same number, I think that at the moment the pupils might be disturbed by the fact the numerator and denominator are different.

Other point: in France there's no official French name associated to the fact that an equation keeps the same solutions if you add, subtract, multiply or divide the same expression to "each side". Hearing "1st and 2nd principles of equivalence" in III *Media*, I remembered my old philosophy lessons. Our teacher had told us that human beings face the unknown more easily if they can name it. The expressions "1st and 2nd principles of equivalence" are now part of my lessons on equations. Following the same idea, I now pay attention not to say that "$2x = 4$ is the same equation as $2x - 4 = 0$". I rather say that these two equations are equivalent, the link being the 1st principle of equivalence.