



IN CONVERSATION:

WHAT DO I NEED TO KNOW TO GET STARTED?

Key:

NV: *Nathalie Vuillod (training engineer, La Maison pour la science Alpes Dauphiné, Grenoble, France)*

ND: *Noemie Drecq (School teacher)*

ND: Good morning Nathalie, we already know each other.

NV: Good morning.

ND: I do not know your training path. Could you introduce yourself?

NV: I am a teacher in primary schools, just as you are, and I am an engineer by training at La Maison pour la science. Do you know the Maisons pour la science ?

ND: Just a little...

NV: The main purpose of the Maisons pour la science is the ongoing teacher training, namely teachers in primary and middle schools, in science, mathematics and technology subjects. The idea is to promote science education based on investigation, at the initiative of the Main à la pâte.

ND: Alright. In which context this training has been organised?

NV: We worked with La Casemate. La Casemate is the centre for scientific culture in Grenoble. They have a Fab Lab. So we actually worked with the Fab Lab's team. And it is in a European project context in which the Fab Lab of La Casemate took part. This European project is called OSHub – Open Science Hub. The idea of this European project, in which various European countries participate, is to work on collaboration between people and above all on sharing resources online. Sharing files to make 3D objects.

ND: Alright. Can you talk about the Fab Lab, because I know a little about it. But actually what is it? What do we make there in fact?



NV: So a Fab Lab is a place where you can find different kinds of digital tools. That could be a laser cutting machine, 3D printer, or a milling machine. There are also tools to cut vinyl to make nice stickers. And everything is computer-controlled. So first you design a plan of the object you want to create and the computer directly connected to the numerical control machine cuts or makes parts of the objects. And then we fit the key pieces together.

ND: And for example, in your classes, this training, how does it fit in the framework of the trainings you were organising before? Is it something totally innovative, different, or is it...?

NV: Yes, so the idea... What is interesting in this project, is really that teachers are trained in the use of Fab Labs. So the training lasted two days and we welcomed the teachers. And the idea was really to imagine pedagogical tools for the students. First of all, to exchange between them. So, there were tools both for the little sections in kindergarten.

ND: Oh yes, I was going to ask you that. In fact, we can do whatever we want.

NV: Yes, of course. The idea is to make 3D objects that will help teachers in their practice.

ND: I want to make my Tangrams, so I go to the Fab Lab, right?

NV: For example. And then, you can also have fun rethinking your Tangram, redesigning it. But what's most interesting, is that there is the idea of sharing all these resources online all over the world. So, in fact, what is sure is that there is certainly someone before you who has already designed Tangrams, maybe in Japan, maybe in Africa, and you can get the file as it is. Then either the tool suits you, or you can remodel the file you have recovered, you can remodel it to your own taste. And then you go to a Fab Lab and you use this file to build a 3D object.

ND: Okay. But are there many Fab Labs in France? Because you see, I am in a rural school...

NV: I think there are more than... I don't have the exact number, but I think there are more than 400. But what's interesting is that it's really something that is really developing everywhere. It's going pretty fast! It's getting easier and easier to access. And to give you an example there is the Fab Lab in Grenoble which has existed for a long time at La Casemate. But I live in a small village in the mountains and there is an association that wanted to open to the population a Fab Lab on the Plateau des Petites Roches, and you can also find a Fab Lab there, simply open to the population. And it's growing rapidly, much like everywhere else.

ND: Okay. In terms of the accessibility of the software, for example, you were saying in your training, the teachers, you train them during...?

NV: For two days.

ND: And that's enough time to master the tools?

NV: Yes, that's enough So, the tools are classic 2D

ND: Ok.

NV: It has become easy to use. And then, in the Fab Labs anyway, if needed, there are also people that can help you, at least at the beginning, to the use of digital machines. But rapidly, you can become autonomous with the machines.

ND: Ok. And how do you see the continuation of the project? Well, we can see that it's innovative, there will be more and more of them. The idea, I suppose, is to train more and more teachers. But how do you see things?



NV: That's the way it is, we trained about fifteen teachers and it was a really interesting project. And then, at the moment, we see a lot on the Internet (you are a teacher so you know it like I do) teachers who share their teaching resources, cards, ideas of sequences, etc. There is a lot of sharing. There are a lot of resources, but they are mostly on paper sheets. The teachers print out the cards or materials that they find interesting.

But on the other hand, for the moment there are not yet a lot of resources, and really no tools, no 3D objects that can be used in the classroom. So we can imagine that in the continuity of these educational resources that already exist today, teachers, little by little, exchange mathematical games... For example, we made a number slide for the multiplication of decimal numbers 2. We also made small boxes with tokens for the youngest.

ND: And by the way, I was now thinking. Do you have access to a platform? Where do you actually find this database, where can you download it?

NV: The idea of Fab Labs is to share. We find... I don't have the exact name of the website in my head. But you can find quite easily all these resources that are shared by all the Fab Labs in the world. So here we are in Grenoble, as part of this OSHub project, we have a place with a Fab Lab in the Villeneuve neighborhood. Well, we go on their site and we will find resources. At the beginning, we made it, ourselves, with the teachers.

ND: Ok. Well, very happy to listen to all this, it's indeed very interesting! If you can create your own toolkit. Just one last question... Can you mix materials?

NV: Yes. we can. So here we had chosen, within the framework of the training, mathematics from kindergarten to CM2. Of course, we can imagine anything you want.

ND: In plastic, wood?

NV: Oh yes! So, The materials, I was thinking of the discipline level. Yes, yes, so it's really interesting. You can work with wood, they are these thin plywood boards, but you can also work with plexiglass as well, we can work with plastic. The 3D printer is mostly plastic. We can work on an object that will assemble different composite materials. And then, for the exploitation of what we are going to do in the classroom, in the case of teachers, we can imagine resources for any discipline.

ND: Ok, well very good. Thank you Nathalie for all this information.

NV: Thank you.

ND: Good luck with this project. I can imagine that it will bring a lot of people together.

