OPEN SCIENCE HUB
SCICO
MAKER LAB
GREECE

In Conversation:

What do I need to know to get started?

Key:

KV: *Katerina Vafea (vocational senior high school (EPAL) of Myrina, Limnos, Greece)*

CN: *Chavias Nikolaos (computer science teacher, Livadochori High School, Limnos, Greece)*

KV: Good evening, I am Katerina Vafea from the vocational senior high school (EPAL) of Myrina. I would like to ask you some things about the project in which you have been involved since last year, because we are thinking of getting involved as well.

CN: Sure! My name is Chavias Nikolaos. I am a computer science teacher at Livadochori High School and I am available to answer any question you want.

KV: Great. So, how did you find out about this project, the Open Science Hub?

CN: Our partner, SciCo, contacted the school principal. At that time I was not in this school unit where I now serve and upon my return the principal informed me. I realised that the project we were asked to work on was interesting, so I decided to get involved.

KV: So it involves mainly IT and Technology, which is your specialty.

CN: Exactly, yes, and they are related to issues that mainly concern STEM but also issues that have to do with 3d printing etc. also, what I am really interested in that's where we started from, is the part of robotics.

KV: Great! That means we are talking about things that are currently running

CN: Exactly.

KV: And what does the school gain? What do children earn from participating in such a project?

CN: The benefit is multidimensional. I would say that there are benefits both at a social level and at an educational and pedagogical level. In terms of the social level, I believe that students become

more active citizens because they are asked to explore issues that concern the local community and provide solutions for these issues, through technology, if this is possible. At the same time, in order to provide solutions, they have to cooperate with local stakeholders, possibly with educational institutions, or universities, through which they also develop collaboration skills, they further develop their social skills. On the one hand it is the above. On the other hand, they are acquainted with technologies, tools and software, which of course, would not be easy to achieve through the "normal" school programme because such equipment is not available in school – SciCo provided us with this equipment. Also, we do not have the time because, as you know, the IT course is only one hour a week in the Greek curriculum. Therefore, it is an incentive for us to spend more hours at school with the children since we will have the equipment and are able to create with them. Through this, students build a better relationship with the school, their teachers, so I think it is very positive.

KV: And I guess they appreciate the IT course more because it is not the "dry knowledge" that they get mainly through the national curriculum, but it is also involved and connected and applied to everyday life through STEM.

CN: This is very true and, in addition to that, I think that the children's perspective on IT changes, as when students from primary school enter high school, for the majority of them, the perspective they have on information technology is that it's essentially a game, or is simple connected to the use of a mobile phone. However, though this process, their perspective changes and they see that with the IT you create, you can give solutions so they start to take it more seriously.

KV: So we are talking about problem-solving which at the moment is one of the most important soft skills.

CN: Exactly. The whole philosophy of the programme is based on this. There is a problem that the children themselves bring to the table and the children then try to find solutions so that they can solve it.

KV: Nice. Let me ask ... in relation to technical knowledge, that is, if something is needed ... let's say you thought of a project and you are running it – in relation to technical knowledge, if you need something – ok IT has so many fields – is there any support for you from SciCo?

CN: The truth is that when you get involved in this process – you know it as a computer scientist – you will face many problems because we are talking about both software and hardware, with which you have to dive deep and it is not possible to know everything. SciCo supported me personally many times, that is, when I had to ask for help on an issue there was an immediate response – they have people who are trained in these issues that have to do with both Arduino and 3d printing. So if you need something, you will definitely find an answer.

KV: Great. And was it complicated with regards to bureaucracy? Because sometimes, especially in public schools, we get involved in too much paperwork!

CN: Not at all! I'm not a bureaucrat at all as a human being. And if there was such an element in the programme that would be bureaucratic and would drain me from the energy I need for my students, I would not bother at all with the programme.

KV: Very important! Yes!

CN: In other words, during the years I have been working on this programme, I have not spent any energy on bureaucracy.

KV: Well, that's very important because there is so little real time we have at school to waste on such things.

CN: So, school itself has become a bureaucratic monster that eats us every day, absorbs our energy and I personally could not devote any time to bureaucratic issues for this programme too. It would be very difficult for me.

KV: Lovely. Let me ask you one more thing. Since you have already run it, what projects did you work on in benefit of the local community?

CN: Last year, the truth is that I came in with a lot of energy and although it was a difficult period for schools, we ran three projects, all three of which were beneficial for the society. Two of them had to do with aiding the visually impaired – a smart cane for the blind and smart glasses for the blind programmed with Arduino.

KV: Oh, very nice!

CN: And the third project involved an automatic feeder for stray animals and basically its philosophy was based on the reuse of some materials and products that would otherwise end up in landfills. So, the children and I thought of making such a feeder in which the base was made of a plastic oil container, the storage container was made from an oil toilette bowl we had at the school, and the food bowl was made from an old dustpan. An Arduino mechanism controlled the entrance to the feeder and automatically opened for some time to drop food for the animal to eat. So the children's environmental awareness was strengthened a bit because they saw how some products can be reused and in the end they could not believe they completed it! Because when we started they were hesitant – would they complete it, how it will be done, would they manage.

KV: It must have been difficult because it was during the quarantine period!

CN: Yes, we worked on it remotely to a great extent, through Tinkercad – especially the circuits and other tasks like that. Then, when we came back to school we were ready to be able to assemble the circuits and programme in mini block, in order for the project to work.

KV: Very nice and original project! And I imagine the kids were excited at the end of the year with all this different things that happened in their school and went out od their daily routine!

CN: The children ARE excited and here I must say that the children make a great effort because we work on these projects after the end of school hours. The children end their six-hour period around 13:15 and we have to sit on until about three because there is no – this is a difficulty – there is no transportation in the afternoons for the children to come to school – it is very difficult for them and for their parents. Anyway, they happily stay on! After so many hours of lessons they enjoy to stay for two more hours – I think you have experienced it in some of the extracurricular activities that students do at school and we both work on them – the children are also productive! They never complained!

KV: This is difficult because as a rural, agricultural area, as an island they are no buses in the afternoon. It is not that the child goes to school and then goes home. There are students who live 20 kilometers away from school.

CN: Exactly. And the parents are most often farmers, so in the afternoon they have work to do. The students also have tutoring in the afternoon, extra curricular activities so they are not free – the afternoon is very difficult for them.

KV: It is also very important that children from rural families or families with fewer opportunities are acquainted with things like robotics or 3D printing.

CN: Look, Katerina, in general one reason I wanted to get involved in this was the fact that these kids do not have the opportunity to discover these technologies easily. And the truth is that SciCo gave us enough materials and equipment: 3D printers, Mindstorms, Arduino, sensors. It would have been impossible to have these as a school – it is not easy to buy them or it would take us too long. And one more thing that pushed me into this process was the fact that – you know this better than I do – women in technology in STEM areas are under-represented.

KV: And not only there.

CN: Exactly. And not only there – in sciences in general. So, it would be a great pleasure for me to see my female students enter the field of science, computer science, mathematics, physics because I firmly believe that women's minds have a lot to offer in this area. I was lucky to have female classmates in my university degree who completed their studies and now are leaders in multinationals: in Coca Cola, in Oracle so I really think that women should enter this field.

KV: This also applies to my vocational school (EPAL). If you consider that we have two IT classes and we only have boys – 6 in one and 3 in the other. It would be a great pleasure if we adopt this project for our students so they get to love Informatics and therefore we will have a bigger influx of girls. Then students will see that IT is all around us and you can use it not just for programming but to do different things. Even to solve your daily issues.

CN: So. I think that through this project the children's perspective on informatics and sciences changes in general because STEM, as you know, includes several sciences.

KV: And engineering, yes. Even art, if we talk about STEAM.

CN: For sure.

KV: Great. I think that the island of Lemnos also benefited from your school participating in such a project. An isolated island, Lemnos, gained visibility outside its walls.

CN: The truth is that as a school and myself, personally, tried to capitalize these projects and we took part in some STEM conferences to show what exactly STEM is, what the benefits are of such programmes, showcase the island and encourage other schools that do not have the problems we have, like being an isolated island, to open their doors, to run these workshops and have their students mainly benefit from it. We were lucky enough to be present at the festival that took place here this summer and the children were so excited. They were exposed to the public and they enjoyed it very much. I think this is also a skill, being able to expose yourself to the public from one point onwards ... So they were happy!

KV: And to make a backup of what you have worked on so that you can explain what you have done. Show it to the outside.

CN: Exactly. It was a very nice experience. And this year I think we are taking the same steps and I hope we have the strength and courage to continue further.

KV: Next year too!

CN: Yes. So, I hope I convinced you.

KV: Yes, I think you convinced me!

CN: The truth is that I also had some doubts at first about the problems I might encounter along the way and if I would have any help. The truth is that the people at SciCo with whom we work reassured us and were able to get us all the answers to the questions we had. So do not have any doubts about it.