



### ***D4.3: Country Report (2 of 9) on in-depth field work in Finland***

#### **Episode 3: Map symbols**

##### **Introductory Comments**

This lesson is part of a map project conducted in the classroom. The children had learned map symbols in an earlier phase and this lesson was aimed to confirm their understanding. The lesson took place both in the schoolyard and in the classroom. All grades (the preschoolers and the 1<sup>st</sup> and 2<sup>nd</sup> graders) participated in the lesson.

##### **Pedagogical Framing**

The aim of this lesson was to apply map symbols to objects in the schoolyard. The children's understanding of the map symbols was confirmed and in addition, the children learned to use iPads for both reporting their findings and sharing them with other children in the classroom. The teacher had divided pupils into small groups and they had a paper copy of map symbols with them. With the iPad, their assignment was to take photos of objects in their schoolyard and then describe them with the map symbols. After the outdoor activity, the children returned to the classroom and one pupil explained how to send the pictures to an e-mail address (they had learned this earlier). At the same time, the teacher showed how it's done via the Smart Board. Later on they drew a map of the schoolyard with the iPad, using the map symbols.

##### **Pedagogical Interaction**

At the beginning of the lesson the whole group of children stood in front of the teacher and listened to her. The teacher gave guidelines and clarified what the children had to find out in their activity with the iPads. The teacher set the children's agency for the task:

**Teacher** "Now each group is going to take pictures of different objects, please listen. Each member of the group takes one photo and all the photos must be of different objects. Can you each take four photos, Niklas?"

**Child** "No!"

**Teacher** "That's right, no! Now you try to find objects which meet the map symbols! Now you can go, Good luck! When I ring the bell, you should come back!"

The children are looking for the objects and taking photos in the playground. The teacher observes and provides feedback.

**Teacher** "Okay, let's look! Who has taken this? Okay, what is it?"

**Child** "Lintuemo (Name of the climbing frame)"

**Teacher** "Yes, and what is this?"

**Child** "Pine"

**Teacher** "Yes, pine tree! Okay!"

The children return to the classroom. Teacher gives feedback to the pupils:

**Teacher** "I was very happy about your way of working outdoors. Did all groups manage to take those four photos?"

**Children** "Yes [all together]"

The teacher and children together learn to send photos from the iPads to the e-mail box.

**Teacher** "Could you explain to me, how can we transfer the photos from the iPad to our email box?"

**Child** "First you take the pictures and then you take the arrow."

**Teacher** "Yes, that is right! Did you notice what happens?"

**Child** "Then you press the button 'email'"

**Teacher** "Yes"

**Child** "And then you write norssi 12C gmail dot com."

**Teacher** "Yes, that is the sender, and what is the subject?"

**Child** "My name"

**Teacher** "Yes, the name of the child who is sending the message."

### **Opportunities for Scientific Learning**

This lesson encouraged the children to observe, compare and gather information. The abstract map symbols were linked to the objects, which supported the children's understanding of map symbols and how they are presented. The children learned to report their findings with an ICT tool and the iPad was used collaboratively in the group.

### **Opportunities for Creativity**

Based on the creative dispositions defined in the project, the following evidence can be found in this episode.

- Dialogue and Collaboration during small group work
- Problem solving and agency during photography of the correct objects in the schoolyard and when the results were sent to the e-mail.
- Children were motivated to use iPads for reporting their findings

## **Episode 2: Animal Fence**

### **Introductory Comments**

The 1<sup>st</sup> and 2<sup>nd</sup> graders learned about Finnish animals. The lesson took place in Helen's classroom, in which the children aimed to classify the animals. The lesson lasted for 2 hours.

### **Pedagogical Framing**

The aim of the lesson was to learn how to categorize Finnish animals and work in small groups. In addition, the children learned to use an interactive whiteboard and laptop computers. The teacher provided the assignments.

Firstly there was a teacher-led session in which they named the animals together, after which the children started to work in small groups. When the groups had finished working, they discussed the categories they had made themselves and categorized animals together once more, according to the teacher's categories.

### **Pedagogical Interaction**

The teacher shows the animals and fences on the Smart Board and together the children start to name the animals. Through questioning, the teacher confirms that the children understand the scientific concepts:

**Teacher** “Yes, it’s a snake. What snake is it?”

**Child** “A viper”

**Teacher** “How do you recognize a viper?”

**Child** “It has a line there”, “It has a pattern on its back”

**Teacher** “It’s a saw-edged pattern”

**Teacher** “And what can you see over there?”

**Child** “A tongue”

**Teacher** “And what’s in that tongue?”

**Child** “There’s poison”

The teacher defines all new concepts (names of animals) and asks the children to differentiate between similar animals such as elk and reindeer.

**Teacher** “Now you can begin to categorize these animals with your group. You can decide together what kinds of categories you want to make.”

**The Teacher** shows how to add fences and how to move the animals with a finger.

**Teacher** “The first group can come here and work with the Smart Board, others can start to work with computers. Try to remember to decide together what your answers will be”.

Children work independently in small groups.

After the group work session, the teacher asks what the children thought about working with computers and the Smart Board. Most of the children liked to study with ICT tools; they also reflected and assessed why they liked or disliked working with them.

The teacher praised the children for working so well with the computers and Smart Boards and acknowledged that they had worked very well within the groups too.

**Teacher** “You worked very well in your small groups even though you’re so young. You were able to decide your categories together.”

The children came near to the Smart Board and all the groups presented their categories.

Discussion arose about some categories, why the children thought that some animals would belong to a particular category. The teacher did not correct the categories at this phase.

**Teacher** “What does ‘pet’ mean?”

**Child** “They stay inside” “They don’t live outside but they can go there” “You take good care of them”

**Teacher** “Who do those pets live with? Where do they live?”

The children once more categorized the animals together but this time with the categories that the teacher had given: domestic animals, pets, wild animals. They also put within one fence, animals that live near the school. One child moved the animals and the others said where to put them.

### Opportunities for Scientific Learning

In this lesson, children had the opportunities to learn to recognise animals that live nearby; they also learned to describe and classify them. During the small group work, they learned to negotiate, define and justify their solutions into categories that had been collaboratively created.

### Opportunities for Creativity

During this lesson, the children had an opportunity for problem solving and agency and were motivated to study through using ICT tools such as laptop computers and Smart Boards. Dialogue played a crucial role in the lesson and this fostered their collaboration; in discussions with their teacher, reflection and reasoning were involved.



### **D4.3 Country Report (5 of 9): in-depth field work in Greece**

#### **Episode 3: Playing with the microscope**

The activity observed was not part of a wider thematic area but rather a standalone lesson for children to get a chance to learn about the microscope. Children did not know anything beforehand so even the introduction to the microscope intrigued and excited them from the beginning. The activity was introduced in order to prompt children's interest and enthusiasm in science through play and exploration.

#### **Pedagogical Framing**

This session focused on children understanding the use of the microscope. No materials were prepared beforehand as Gianna wanted the children to choose the material used based on their own preference. The aims for the lesson was for the children to familiarise themselves with a scientific tool that the children had never seen before, such as the microscope. Additional aims for the lesson included children raising questions, making comparisons, causing wonderment and creating opportunities for problem solving. As Gianna said in her interview, "I had planned something in terms of learning activities for today but it did not happen. I wanted the children to direct the activity."

#### **Pedagogical Interactions**

The teacher began the lesson by introducing a new friend that is really small, smaller than everybody. She then brought out the microscope which introduced itself as Mr. Microscope. The children asked what does Mr. Microscope do and Gianna responded that people use him to look at very small things. *"The microscope has a better eye than humans so it allows us to see things we have trouble seeing clearly"* was the phrase Gianna used to describe the microscope. *"Even an ant?"* asked K. Gianna then asked K if he is able to see an ant and K responded that he can see the ant but not its parts like the legs. N then added that you have to get very close to the ant if you want to see its members.



In order for the children to understand the use of the microscope, Mr. Microscope would help them by using an easy example. Gianna went to the blackboard and asked the children to stand on the other side of the room by the door. She then proceeded to ask the children if they could see a little dot she had drawn on the blackboard. The children replied that they could not and moved a step closer to the blackboard. This went on until all the children could see the dot. Ar then asked Gianna if she could try it for herself and went on to draw a dot on the blackboard. Ar did not succeed at drawing the dot small enough for her classmates to be unable to see it from the other side of the room so Gianna asked what she had to do. Ar replied she had to draw it smaller and tried again. Gianna then asked all the children to sit close to Mr. Microscope to start playing with it.

*G: Try to imagine that the dot we drew on the board would seem larger through Mr. Microscope. Mr Microscope would make the dot larger and larger until ...*

*All: we would be able to see it.*

*Ad: Imagine how big it would look if it was this [makes a large circle with both his hands] big, Mr Microscope would make it look even bigger.*

Gianna then took a sheet of paper which is used during the language lesson and showed it to the children:





*G: What colour is this [egg holder]?*

*All: Yellow.*

*G: And?*

*All: Blue.*

*G: Do you see any other colours?*

*All: No.*

*G: Is there anything inside the blue?*

*All: No.*

*G: Now we put our eye here in the hole of Mr Microscope and see.*

*K: Miss are we going to see it from here? [points to the screen of the projector].*

*G: Yes one will look through the microscope and the rest will look at the screen.*

*Gianna puts the paper under the microscope.*

*K: Oh there are many small dots here.*

*Other children excitedly observe the dots (indistinct in audio recording).*

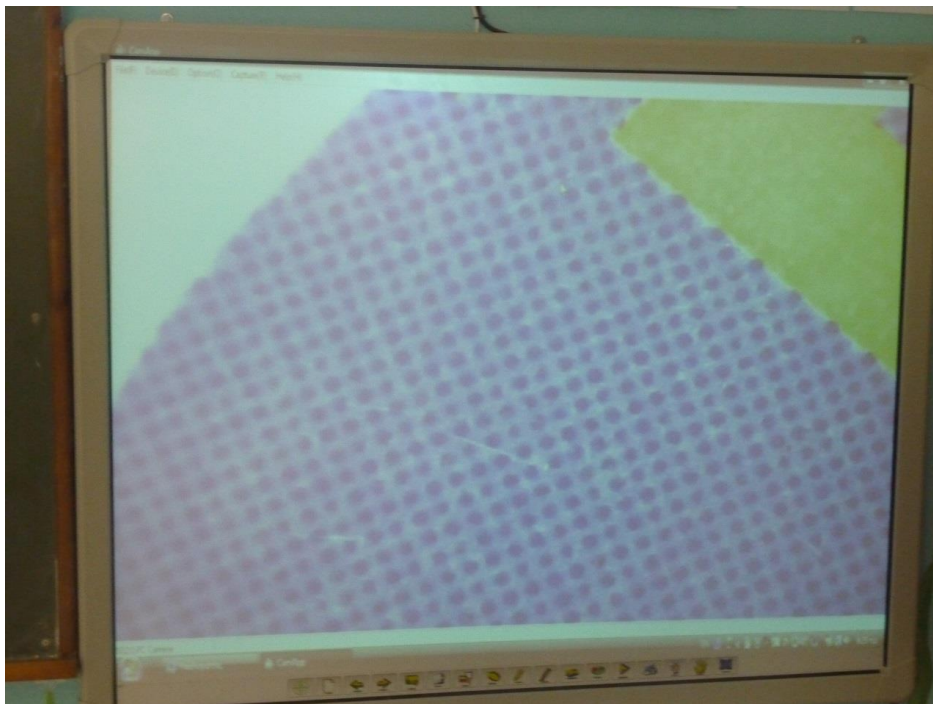
*G: Are there any dots here? (lifts up the paper)*

*Ad, N, Z, Ar: No there are not.*

*G: How can there be dots here then?*

*Children do not respond.*

*G: Let's try something else then.*



Gianna then told the children that they could put their hands under the microscope to see if they can understand what is going on. An put his hand first and said that it looks like bread. What made a big impression to all the children was how dirty was An's hand. *"If we have even a little dirt in our hands, the microscope makes it seem a lot more"* said Gianna. Children then proceeded to place their hands under the microscope and focused on what seemed interesting to them (K's broken fingernail, Ar's nail polish) and yelled out their observations. The most commonly phrase used by the children during their observations was *"This looks like..."*. After the first two children put their hands under the microscope, the rest started to yell out different things or parts of their body they wanted to see. Ad put the microscope to see the inside of his nose, An wanted to look inside his ear and T wanted to see her hair. The children were captivated by the activity and seemed particularly excited during the entire time. Ar pointed out that this was not a lesson and asked whether they were going to have a lesson during the day. Gianna although she did not interfere a lot with children's observations did try to direct children towards identifying different shapes that they could see through the microscope.





The children were very interested in looking at the different things placed under the microscope and particularly enjoyed finding out what the picture they saw resembled with. Gianna after observing the excitement of the children asked them to think about what part of their body they wanted to put under the microscope. Gianna took advantage of the time the children were putting various parts of their body under the microscope to start asking questions about the human body. Children responded with high levels of excitement for one more time.

At some point children started to bring different items they found inside the classroom and kept asking Gianna to allow them put them under the microscope. Gianna responded by proposing that each child would bring an item to the microscope that would be hidden from everybody else. *“This will be a fun game of guessing”*, Gianna said. Children brought forward a variety of items (book, eraser, sponge, chalk) and the rest of the children had to guess what the item under the microscope was.

Gianna seemed just as excited during this as the children, something she commented in her interview. Gianna said that she enjoyed the lesson very much and was pleased with the children’s interest to the activity. She added that when she realised how enthusiastic the children were during the activity, she decided to allow them to completely direct the direction of the lesson. Children were so excited that even after Gianna told them that the lesson was over, they went outside and started bringing even more items to put under the microscope.



### Opportunities for Creativity

The microscope and the related activities carried out caused great interest and enthusiasm throughout the learning in both the teacher and the children. Motivation, curiosity and sense of initiative were evident in children's commitment to the activity. Children actively participated in all the activities and shared their observations and thoughts. Gianna said that she did not feel that the activity was very creative because it involved her handling the microscope which limited what children could do for themselves. The most creative part of the lesson happened after its conclusion when children went outside for recess and came back in the classroom holding various items from the school yard (bees, ants, flowers, etc.). At that point they handled everything themselves and made interesting observations without any interference from the teacher. It was an excellent opportunity of self-motivated children inquiry and observation fuelled by children's interests and motivation.

Particular features of creative teaching evident in this episode include the provision of exciting experiences to foster children's curiosity and interest. The provision of meaningful resources, the space and time given for children's own play, exploration and problem solving and the use of questioning to support children's reflection and reasoning. According to the teacher interview, Gianna saw the brief activity with the dot on the board as creative because it allowed children to think and problematize.



The project CREATIVE LITTLE SCIENTISTS has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 289081.