

<b>Teacher Education Design Principle + code:</b>	<p>10. Teacher education should enable teachers to recognize and build on children's ideas, theories and interests for the teaching of science and mathematics. <b>TE: ChildIdeas</b></p> <p>3. Teacher education should advance teachers' understandings about the nature of science and how scientists work, confronting stereotypical images of science and scientists. <b>TE: NoS</b></p>
<b>Specific Teacher Outcome(s):</b>	<p>10.2 Teachers should be able to build flexibility into planning to take advantage of unexpected events, children's interests and questions.</p> <p>3.2 Teachers should be able to recognize young children's capabilities to engage with processes associated with the evaluation as well as generation of ideas in science and mathematics, since these processes are also important for the development of learner creativity.</p> <p>3.3 Teachers should be able to use foster the processes of imagination, reflection and consideration of alternative ideas in supporting children's understanding of scientific ideas and procedures and development of creativity.</p>
<b>Factors linked with:</b>	<p><b>AO: Kn.Sc;</b> <b>AO: Sc ProcSkills;</b> <b>AO: Und. SI;</b> <b>P: R and R;</b> <b>P: Affect;</b> <b>T: Ped</b></p>
<b>Type of material (image – interview (int) – classroom extract (class):</b>	<b>Classroom</b>
<b>Originating from:</b>	
<b>Country report :</b>	D4.3 Greece
<b>Case:</b>	Case 1
<b>Episode:</b>	2 – Measuring Tables
<b>Selected episode?</b>	Yes
<b>Teacher:</b>	Mina
<b>Age Group:</b>	5-6

**Children share their findings: The problems of the short ribbon and the wrong way around number.  
Teacher turns children's mistake into a learning opportunity.**

This lesson focuses on children taking measurements of their work tables using any of the measuring tools provided or a measure the dimensions of the table using a tool of their own conception. The teacher started the activity off by reminding children that they have been talking about getting new tables for the classroom. The children would be divided into 8 teams (6 made of 4 children and 2 more with 3 children) to help the teacher with a problem she had. The teacher went on to inform children that she spoke to the carpenter to place an order for new tables, but when he asked her to tell him exactly what tables she wanted, she did not know how to respond. She concluded by asking the children if they wanted to help her measure the tables so that she can alert the carpenter. The teacher felt that it is every important to connect mathematics to the children's everyday life using appropriate activities and making sure that the children are motivated.

The children started working together, with one child holding the tool, one in charge of the recording to the note book and two more assisting the child that was taking the measurement. Some teams kept these roles throughout the activity, while others rotated to take all the roles possible. After 15 minutes Mina invited all the teams to present and discuss their findings.

Each team had the opportunity to present their measurements and findings as Mina wanted to know what they had noted in their notebook. Mina was asking them to provide their measurements for shape, measurement tool used, length, width and height of the table.

**T:** Team 5 used the ribbons to measure the table. What did you measure? The width?

**A child (M):** Yes. And the legs.

**T:** And the legs? Let's see how you managed to do all this. Could I have your attention here please? This is important. Let's see how they managed to measure the table with something different, such as the red ribbon. Team 5, how did you measure the table's width for example? Tell me how - I have never measured anything before in my life.

**A child:** We start here [*places the end of the ribbon to the ground*] and go...

**T:** Wait, you start from here and go where? Here? But, where does our table end? [*children looking*] Mmmm... Isn't it a bit shorter, or longer?

**A child:** Longer.

**T:** Is it longer? The table or the ribbon? Which is longer?

**A child:** The table.

**T:** So the ribbon then is ...

**A child:** shorter

**T:** You needed a little bit more, didn't you?

**All:** Yes we did.

**T:** So, is this the correct measurement for our table then for its width?

**All:** No.

**T:** We have to try again.

[*Children seem disappointed*]

**T:** It does not matter. It does not matter that there is an unsuccessful attempt, as long as we understand what we have to do. When we make an attempt and then we go to check it and it is not

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right, we try again. *[Mina grabs the ribbon]* The example of team 5 shows us that we have to try again. Because we realize from the checks we have done that this ribbon... What do we realize **M**? Say it in your own words - you know this better than me.

**M:** The ribbon is shorter than the table.

**T [to all]:** The ribbon **M** says is shorter than the table. So are we going to give the carpenter the correct measurements?

**All:** No.

**T [to all]:** What table is he going to make? Bigger or smaller?

**All:** Smaller.

**T:** When we realize this, we get the ribbon again, we stretch it and make the correct measurements. OK? Good.

*[The teacher identifies another team's mistake, this time in the measurement the children had recorded for the height of the table, caused by writing down the number the wrong way around - 85 cm instead of 58 cm. She asks them to and helps them verify their measurement. She then explains what the mistake was.]*

**T:** Bravo. So children of the team, you have taken the correct measurement, but you have put the digits the other way around. OK? Bravo! Can you see this? Bravo, Team 6. Very good.

But, there are other things to observe in the measurements you took. Because, from what I see, if we give these measurements to the carpenter as they are, he won't know exactly what to do. He might probably get confused a bit. We thus need to reach a conclusion about the measurements. And in order to do this we have to do what? *[No answer]* What do we have to do? What did we do with the previous measurements? I will tell you a new word. It's called 've-ri-fi-cation'. What does this difficult word mean? We will thus see, we will check if the measurements we took are "real". In order to do the verification, I will help you and you will help me. We will not do the verification now, because you are a bit tired **[A child: and we are hungry]** and you are hungry. I will however collect all the materials, so that we can make the verification tomorrow morning. Do you agree?

**All:** Yes.



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