

<b>Teacher Education Design Principle + code:</b>	11. Teacher education should enable teachers to use questioning effectively and encourage children's questions in order to foster creativity and inquiry. <b>TE: Question</b>
<b>Specific Teacher Outcome(s):</b>	11.1 Teachers should be able to use different forms of questioning at appropriate points to scaffold creative learning outcomes in science and mathematics, and in particular to encourage children's reflections and explanations, foster their independence and extend their inquiry.
<b>Factors linked with:</b>	<b>P: Ques;</b> <b>P: Scaff;</b> <b>P: Agency;</b> <b>P: R and R</b>
<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 3
<b>Episode:</b>	3 - The magic flute
<b>Teacher:</b>	Sotiris
<b>Age Group:</b>	6-7
<b>Selected episode present in D4.4 Appendix</b>	No

**Using questions to scaffold children's reflections on and explanations about how it is possible to make music out of straws.**

The following extract refers to the classroom exchanges that took place during the first day of a two-day lesson on sound, which began with the teacher reading the story of the Pied Piper of Hamelin to the class. The children then watched a Walt Disney's "Silly Symphony" animation of the same story and created their own 'magic' pan flute using straws of different colours, a pair of scissors and pieces of scotch tape. During the hands-on activity the children had to cut seven straws to different lengths, sort them from shorter to longer and fasten them together with the scotch tape. Having created their 'magic flute' children were asked to explore it, thinking about how it was possible to produce music out of straws. The exploration and several small group discussions on the issue were followed up by the classroom discussion below, in which the teacher is seen using questions to scaffold the children's reflections and explanations.

**Teacher:** Now that we're done playing with our flutes, I want you to explain to me something. How is it possible to go from just having drinking straws to being able to do this [*he plays his own flute*]? How can I produce sound by placing straws one next to the other from shorter to longer?

**Child 1:** Because we blow.

**Teacher:** Where?

**Child 1:** Into the straw.

**Teacher:** And where did we find the air to blow Child 2?

**Child 2:** In our mouth.

**Teacher:** Do you mean that our mouth has the air?

**Child 3:** Yes.

**Teacher:** Oh I get it now. So if I get a straw and hold it close to somewhere that air is blowing, will I get this sound?

**All:** Yes.

**Teacher:** Today, it is raining. If there was wind and I held the straw like this in the wind, would it make sound?

**All:** Yes.

**Teacher:** What if I put it in front of a small fan? What do you think would happen then? Would it make the same sound?

**All:** Yes, yes.

**Teacher:** So now that I don't have such a fan, what do I do?

**All:** You blow with your mouth.

**Child 4:** Because they also have many colours.

**Teacher:** So if I get black tape and wrap it around the straw, do you think that it will stop making sound?

**Child 4:** Yes.



**Other children:** No, it will still make sound.

**Teacher:** Let's do it all black to see. I don't think colour has anything to do with it, but I am not really sure, maybe it has. If I make it all black, maybe it stops making sound. It might be about the colour you never know.

**Few children:** It will still make sound.

**Teacher:** I do not know. How many think that it will still make sound if I make it black? How many say that it won't?

*[Most children say that it will still make sound, but several children say that it won't.]*

**Teacher:** Should I cut the straw a bit? I don't want to spend the entire tape on it. [He cuts the straw smaller and fastens the black tape around it.] Is it black now?

**All:** Yes.

*[The teacher blows into the black straw. The children that thought that it would still make a sound cheer 'We won'.]*

**Teacher:** So we see that the black straw produces sound as well. Because I made it thicker it might even produce a louder sound than the 'normal' one. Let's see. Let's take another similar piece of straw.

*[Teacher takes a different coloured straw of the same length and shows it to the children.]*

**Teacher:** Child 5 are they the same [length]? Are they equal?

**Child 5:** Yes.

*[Teacher blows into the two straws alternately.]*

**All:** The same.

**Teacher:** The two sounds are?

**All:** The same.

**Teacher:** So, it does not appear to matter if one is thicker than the other. So they make the same sound depending if they are...?

**All:** ... equal.

**Teacher:** Whereas if I have a tall one and a short one? Let's try. I have here a tall and a short one. Let's hear.

*[Teacher takes two straws of different length and blows into them alternately.]*

**Child:** It is like playing the piano and you hear [the notes] Sol (G) – Mi (E), Sol (G) – Mi (E).



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