

Teacher Education Design Principle + code:	3. Teacher education should advance teachers' understandings about the nature of science and how scientists work, confronting stereotypical images of science and scientists. TE: NoS
Specific Teacher Outcome(s):	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 3.3 Teachers should be able to use the processes of imagination, reflection and consideration of alternative ideas in supporting children's understanding of scientific ideas and procedures and development of creativity.
Factors linked with:	AO: Kn Sc; P: R&R
Type of material (image – interview (int) – classroom extract (class):	Classroom extract (class)
Originating from:	
Country report :	D4.3 Belgium
Case:	Cases 1 & 2
Episode:	The Waterfall
Teacher:	Maaike and Sarah
Age Group:	4-6
Selected episode present in D4.4 Appendix	No

**Fostering children's reflection and reasoning using holiday pictures.
Valuing children's ideas**

In this classroom (about 50 children and 2 teachers), in order to stimulate conceptual understanding, all theories and reasoning of children are sampled. So time is given to the children to formulate their own opinions and theories. Teachers are not correcting the answers of the children, instead they are listening very well to what children are saying or they look what they are doing. Based on these observations they are using other questions to stimulate their critical thinking or to elicit other opinions, which is illustrated in the fragment below.



On the digital school board in the classroom of Sarah, a photograph of a big waterfall is projected (it is a holiday photograph of one of the children). Based on this photograph a discussion starts about the origin of a waterfall.

Maaïke How do we call them, those great big stones?

Child Rocks

Other Child Rocks are stones of the mountains.

Third child Yes, a mountain is collapsed and because of that, a waterfall arises.

Sarah Yes, that could be Maaïke.

Maaïke From where the water comes?

Child From the city.

Maaïke From the city?

Other child From the river.

Maaïke Yes, water flows in a river. Or is there a river in the mountains above?

Child It could be from the sea.

Sarah It could be

Other Child The water is clean. It comes from the rain.

Sarah Of the rain, then there should be a lot of rain.

Maaïke In the winter in the Mountains, what can we find there?

Child Snow. Snow can melt and then it becomes water.

creative little SCIENTISTS

After this there is a short break because the children are very excited and want to give their explanations and ideas. So they are talking at the same time.

Other child It could also be that they are opening a water well and the water is very high. Then it may be that the water falls out and then it becomes a waterfall.

Maaïke A well above, who knows?

Child Water all comes from a well and then that becomes a waterfall. And then the water runs over the mountain and you will no longer see the mountain.

Maaïke Sarah, maybe we can look it up, because everyone thinks differently.

Sarah Yes, hey.

Maaïke How a waterfall arises? And what types of waterfalls exist?

At the end, the internet is used to check the different theories and concepts of the children, and to discuss what is written by experts. In order to stimulate their visual and audio senses, YouTube films of waterfalls are used.

The children can bring in their solutions and ideas immediately without raising their finger. The teachers allow some noise, however if the children are too excited a little break is necessary. The reason for these discussions, even in this large group, is mentioned by Sarah:

'The children may also think further and react on each other, integrating fantasy. So children are then discussing and leading the kring 'talk'. At those moments, as a teacher, you have to let go. Children should be able to talk to each other and to discuss. Because you're with two teachers, you can much easier hear what all the children say and you can easily interact at the right time. We also believe that children don't have to wait to intervene, or that they have to put their finger on. Often when they have to wait, they have lost what they wanted to say. Eventually they also listen to each other. The more the children are going in discussion, the less they feel that they are the only one talking and they got less blocked. However as a teacher at some point you have to interact again. So, as a teacher you have to let go and then again interact.'



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