

Following Grade Ones' Authentic Ideas: Knowledge Building on Water and Life on Earth

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Abstract Starting the January, the Grade 1 class has been following students' authentic questions and deepening their explanations of issues related to whether all water is connected, how life on earth came to be, and the water cycle. During Knowledge Building circles we took minutes to record students' ideas for continual improvement and to help us reflect on the speaking turns of the students, how deep they went, and promising next steps that popped up from the students. The students took responsibility to introduce new ideas/questions to the community and contributed diverse and improved explanations of the ideas. They were able to connect knowledge learned from elsewhere such as the library, YouTube videos, and television shows, to their study. Idea improvement is salient in their discourse. The teacher listens to see if the students are still on task when many simultaneously being to talk to classmates sitting nearby during a discussion. The students are also asked to summarize their learning when there are visitors to the classroom.

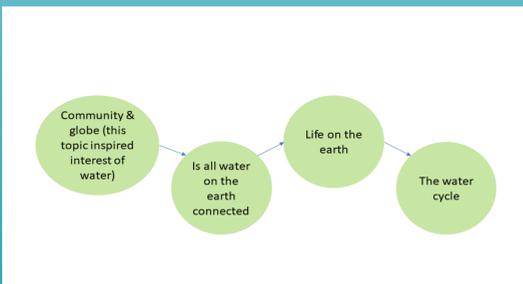


Fig 1. The theme trajectory



Fig 2. A water freezing experiment

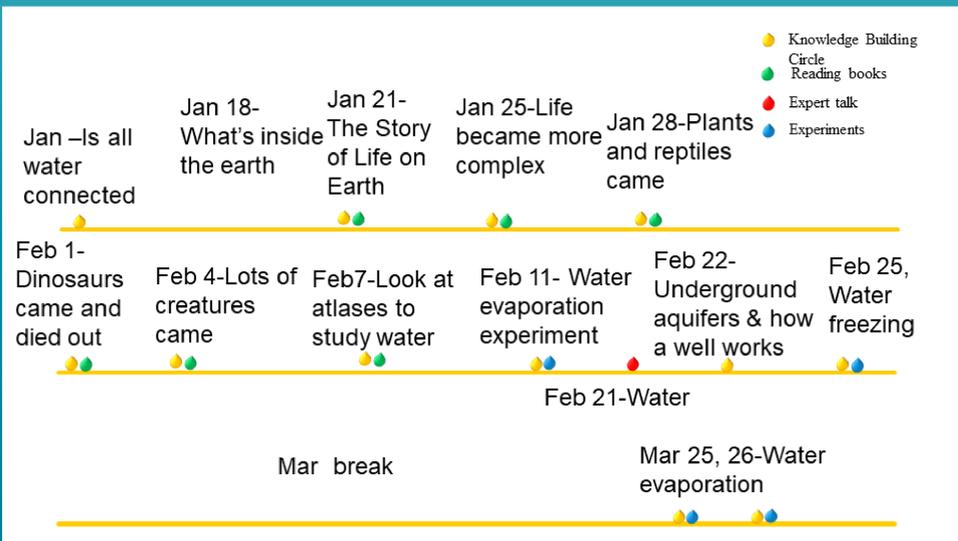


Fig 3. The Knowledge Building process

Excerpt of idea improvement discourse

S10: When it is covered, there is usually a well. A well is a place where people can get water so that you can bring it to your house and you can drink. And there is a bucket on it.
 T: OK. What's the bucket? How does that work? S9?
 S9: You, like, there is something to pull it down.
 Many students e talking.
 T: OK. Just wait, let S9 finish.
 S9: Then it steals some water and then it comes back up. And then you take the water.
 S5: But how would it take the bucket?
 Both S1 and S12 re talking: There is a string. You pull the string back up. And then you have water in the bucket.
 S1: You don't need to put your hand all the way down to the well to find the bucket. It's something you can lift up the bucket from the well.
 S11: But how does the water get back into the well if there is no water left?
 T: Ah! It's a good question!
 S8: But it is not as clean as water from a tap because it comes straight from the water, from the ground.
 S1: Like water that's under the ground.
 S11: No, water will be from the pipe.
 T: So are you thinking there are pipes from a well or...?
 S11: Or maybe actually some of them might be fresh because when it rains, the water would be, when it rains, well will get it, if you flip the bucket, it will get the water. It will be clean because it just brings down from the well.
 T: So you are thinking well water would be clean?
 S11: Yeah! Because it can be a kind of thing...
 S9: And it gets clean, maybe because of something on the bottom of the well.
 S1: Hm, water comes from the ground. Maybe the pipes, maybe there are pipes on the bottom, maybe the water come from the pipes. But it is not clean, maybe there is something in the pipe that cleans the water. The water comes all the way up.
 T: Hm. S9 was thinking too. Maybe there is something down that cleans it up. Or maybe the water is clean already. Maybe ground water is clean.
 S11: But that doesn't look like ...

Excerpt of pervasive Knowledge Building

S5: On TV or figure it out on Sunday. I figured out how the dinosaur has died on TV. Uh, a giant asteroid hit the planet.
 T: Is that one of the theories that scientists said?
 S5: It was on TV.
 T: Oh sure. What does it mean? Storm? I'm going to write the name over here.
 Multiple students: water...cycle. Water cycle!
 T: How do you already know what the water cycle is? How did you learn that?
 Multiple students: French!
 S17: It was a long time ago with ...

Other Knowledge Building principles

Collective responsibility

Teacher: When looking at the transcripts, I was surprised to see how many children talked. Only one child did not talk.
 Researcher: Yes, I noticed that if some students did not talk a lot in a session or topic, they may talk about in another session or topic-maybe that are more interested in or familiar with.

Knowledge Building discourse and embedded assessment

Teacher: I encourage connected discourse, encourage them to build onto each other. They do not need to put their hand up and they are not picked by me. Sometimes when all of them have something to say and they talk to peers around them, I just listen. If they are on topic, I don't try to bring them back.

Rise-above

T: Could some of you tell the visitors what we did with the kettle and what happened? That was pretty cool. S1?
 S1: So we boiled a kettle of water. And we, so water went away, and there was fewer water in the kettle because the water turned into stream.
 T: Would anyone want to build on what S1 just said? S2?
 S2: Stream is just a piece of water.
 T: S17?
 S17: Ocean.. water..when you cook, you leave it for a long for a while and you find little water. It's not like you cat drinks it. It just evaporates.