
KNOWLEDGE BUILDING IN ACTION

PRIMARY (K-3)



Exploring Cycles using Knowledge Building and Knowledge Forum in Grade 1

Adapted from Christian Tarchi and Colleagues

Bringing IDEAS to life!

1.3 EXPLORING CYCLES USING KNOWLEDGE BUILDING AND KNOWLEDGE FORUM IN GRADE 1

This case study is adapted from Tarchi, C., Chuy, M., Donoahue, Z., Stephenson, C., Messina, R., & Scardamalia, M. Knowledge Building and Knowledge Forum: Getting Started with Pedagogy and Technology. LEARNING Landscapes | Vol. 6, No. 2, Spring 2013.

INTRODUCTION

The Grade 1 students were involved in a year-long inquiry focused on “cycles in nature.” Their first Knowledge Building study began in the winter with the subject of **water and the water cycle**. In this case study, we highlight how the teacher integrated Knowledge Forum into the Knowledge Building process to engage students not only in generating their own questions and ideas but in sustaining efforts to improve those ideas as a community.

KB PROVOCATION

The students explored **Real Ideas, Authentic Problems**, by starting with an experiment. A plastic cup half full with water was placed in a resealable bag and the bag was taped onto a window in the classroom. The level of water was marked on the cup. After a few days the children noticed water pooling in the bottom of the bag. Students were fascinated and wanted to know:

WHERE DID IT
COME FROM?

HOW DID IT
GET THERE?

The students’ wonderings and questions were the beginning of an inquiry into water that lasted three months!

Move 1: Introducing Knowledge Forum

Students began generating a few ideas. The teacher demonstrated how Knowledge Forum can help them in recording ideas, so their ideas could be preserved and improved in a community space.

The first Knowledge Forum session in Grade 1 lasted 45 minutes. During the first 10 minutes of the class, the teacher invited students to sit on a carpet while she was projecting a blank Knowledge Forum view onto a big screen. The teacher explained that every child has access to this electronic space to record ideas so that his/her ideas can be preserved and improved. It was important that students had ownership over this community space. So, together, the teacher and children collectively decided to name this new view “Grade One Water Experiment.” Then she explained how to record a note, give it a title, and save it.

Move 2: Posing Theories

The next day the teacher worked with each child, encouraging each child to state his/ her best theory—a theory that would explain why there was water in the bottom of the bag. The teacher typed everything the child said in a Knowledge Forum note, under the student’s name (their writing skills were too limited for them to record the ideas on their own), and contributed it to their “Grade One Water Experiment” view. To help students elaborate their theories, the teacher asked clarifying questions:

Teacher: “Tell me more about where you think the water came from?” “How do you think the water got there?”

She did not push them towards any particular answer. Students were free to go in any direction with their ideas. Once the student had finished telling his/her theory and it had been recorded, the teacher asked each child to think of a title. She stressed the importance of the title to every child she worked with, and defined it as a main idea, or “What’s important in your theory?” Students need to navigate the vast information they have access to and summarize; creating a title is a developmentally appropriate way to begin to develop such capabilities. They can quickly see that a generic title such as “Water” will not be helpful for others who may be searching for specific information, as they are all working on water. Thus students need to think deeply about what is unique about their note. Once a note had been posted, the teacher showed the child how to open and read the notes produced by other students, explaining that others may have different ideas. The teacher emphasized that Knowledge Forum is a place to record ideas so that they can be reviewed later.

The teacher also encouraged children to use the Knowledge Forum Scaffold supports. To do this, she sat with each child, reflected on a note he/she had written, and decided together which scaffold should be included.

Move 3: Developing Ideas

During the next two days, every child had an opportunity to write a note with the help of the teacher. The children used Knowledge Forum two times a week over the next several weeks for 15 minutes a session. Priority was given to their own ideas and authentic problems of understanding. Authoritative sources, including books, were not introduced right away; rather, the children had a chance to present their ideas, read each other’s notes, and try to improve their theories before

The screenshot shows a Knowledge Forum note editor. At the top, the title is "What happened to the water?". Below the title are tabs for "Read", "Edit", "Author(s)", "Connections", "History", "Attachments", and "Properties". The main text area contains the note: "My theory - is that the water evaporates to the top of the bag and then falls to the corner of the bag -". To the left of the text area is a "Scaffolds" list with several options, each highlighted with a yellow border: "Theory Building", "My theory", "New Information", "I need to understand", "This theory cannot explain", "Putting our knowledge together", "Our improved theory", and "Our rise-above idea". Below the scaffolds is a "Keyword(s)" field with a small icon. At the bottom left, there are "Attachments: Attach Insert" buttons. At the bottom right, there is a "Contribute" button. A caption box at the bottom of the screenshot reads: "A Knowledge Forum note with the Knowledge Building scaffolds framed in yellow alongside the note editor."

having their ideas potentially overshadowed by more formal, “correct,” or accepted ideas. Children continued to closely observe as water kept accumulating in the bottom of the bag. They also noticed streaks of water droplets on the sides of the bags, and that there was less water in the cup itself. The teacher typed the children’s improved theories into a “build on” note. There were some children whose theories were similar to their initial theories, while other children’s theories reflected their improved understanding of where the water in the bag came from:

“The water evaporates to the top of the bag and then it falls to the corner of the bag.”

“My theory is that the water vapour goes up and changes its state, and turns into liquid and goes down and falls into the bottom of the bag.”

“My theory is that the water from the top of the bag dripped down into the cup. P.S. How did the water get to the top of the bag?”

STRATEGIES FOR SUSTAINING IDEA IMPROVEMENT:

After the initial excitement about recording, reading, and building on ideas in Knowledge Forum, the challenge is to incorporate community dynamics that allow students to take on the more difficult processes of idea improvement, and make this process commonplace and enjoyable (Scardamalia & Bereiter, 2010).

Constructive Use of Authoritative Sources: To develop understanding of the important role authoritative sources might play in Knowledge Building, the teacher read to the children from a variety of sources. In this case, the teacher only introduced authoritative sources after students had an opportunity to contribute and play with their own original ideas and questions. In order to help students to improve those initial ideas, the teacher began to introduce diverse authoritative sources. She even presented contrasting data and information from different books to highlight for students the need to deal with supportive as well as conflicting information.

Students were able to work more independently on Knowledge Forum by spring. They were excited about this new adventure — their theories had a place to “live” — a community space that meant their ideas were not simply expressed and forgotten, but recorded and available to be built on by others. The students seemed to especially appreciate “build on” notes to their own notes. Their engagement in reading and writing on Knowledge Forum motivated them to continually exercise literacy skills, dramatically reducing the need for additional, unrelated reading and writing activities in the classroom. As the teacher read aloud to students, she stopped often to allow them to ask questions, make comments, theorize, and relate what they were hearing to their own lives and experiences. This injection of new ideas and information sparks the principle of Idea Improvement.

Knowledge Building Discourse: The interplay between work on and off the database and between student ideas and authoritative sources is critical in helping the children develop their theories and ideas. Toward this end, student time on Knowledge Forum was intermixed with KB Talks, also referred to as KB Circles, which occurred twice a week for varying amounts of time. In KB Talks, children had the opportunity to listen to each other’s theories and questions and build onto each other’s ideas. Often ideas generated in KB Talks would be recorded in Knowledge Forum at the next opportunity.

“Knowledge Building Discourse is the core of a Knowledge Building class. It is the way to hear about the diversity of ideas in the classroom and the diversity of research experiences that is needed to develop the shared community knowledge. It is how we learn from each other and contribute to the learning of each other. While there may be different activities and experiments occurring in the classroom, KB Talks help focus the identified learning goals of the community. KB Talks help ensure accountability of the members of the learning community—we meet to learn from and with each other. KB Talks may be about concepts the students are trying to understand but they can also be about the process of learning and how we are operating as a Knowledge Building community. They give us the opportunity to reflect on our learning methods and see what needs to be improved.”

— Zoe Donahue, Grade 1 teacher.

REFERENCES

Bereiter, C., & Scardamalia, M. (2010). Can children really create new knowledge? *Canadian Journal of Learning and Technology, 36(1)*.