
KNOWLEDGE BUILDING IN ACTION INTERMEDIATE (7–8)



Improvable Ideas in a Gr. 8 KB Classroom

Written by Jason Frenza

Bringing IDEAS to life!

3.6 IMPROVABLE IDEAS IN A GRADE 8 KB CLASSROOM

Written by Jason Frenza, Grade 8 teacher, HCDSB

INTRODUCTION

This case study tells the story of how Jason Frenza, a Grade 8 teacher and his students at St. Anthony of Padua Catholic Elementary School in Milton created a Knowledge Building Community focused on collective idea improvement.

STARTING WITH THE KB PRINCIPLES

Jason had been practising Knowledge Building for two years in the junior division (Grade 5) before starting with intermediate students. During his year teaching Grade 8, Jason decided that he wanted to find ways to deepen his intermediate students' engagement with the KB Principle of Improvable Ideas. For Jason, improvable ideas means that there isn't a wrong answer or a wrong idea, but, given enough work and time, ideas can grow and develop meaningfully. Jason firmly believes that helping students feel as though they are valuable members of a Knowledge Building community is key to having this principle grow in the classroom.

Jason wanted to engage in this principle to help his students improve their ideas and deepen their thinking by doing more to connect scientific theories and concepts to their everyday world. So, he designed his "Improvable Ideas Board." This board was created to help give his students' ideas a public place to live and grow, and was something that he could use in his classroom as a tool to help students propose, build upon, and deepen their ideas as a community.

KB PROVOCATION

Jason co-created learning goals with his students around the Big Ideas in the curriculum at the beginning of each science strand. This process began by Jason taking the curriculum document and exploring it with his students. Together, they identified the Big Ideas in conjunction with the overall curriculum expectations. They then co-created the learning goals for the study of the unit that stemmed from the students' own interest and curiosity.

What was your greatest challenge?

Time is a challenge because of the amount it takes for student to build their theories through the inquiry process. But the extra time taken has always paid off in the end.

STRATEGIES FOR SUSTAINING IDEA IMPROVEMENT

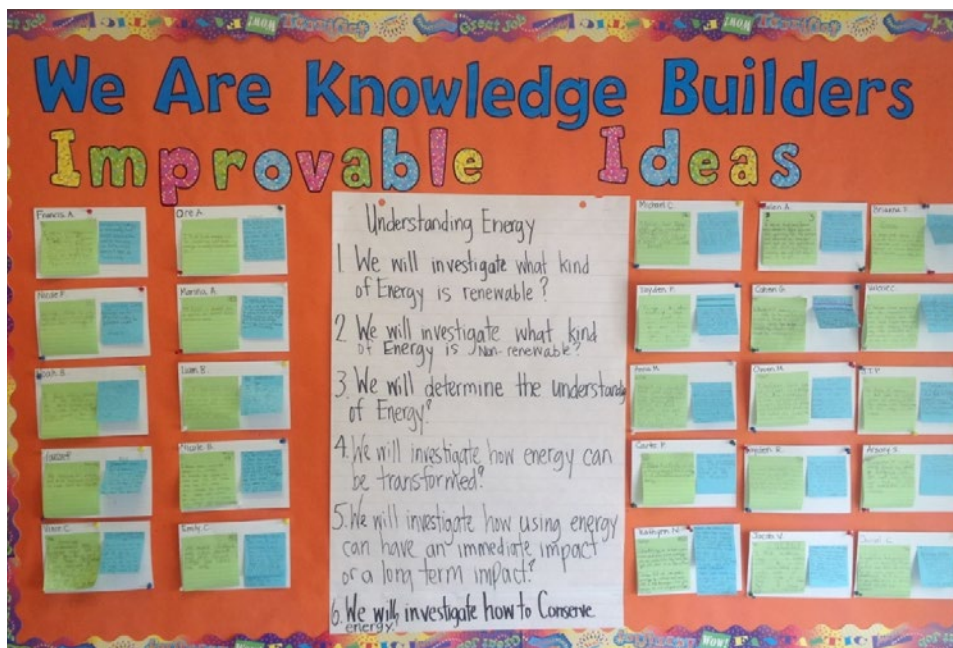
Move 1:

Once the learning goals were created, students were then given a coloured sticky note where they were asked to create an initial theory that related to the particular learning goal they were most curious about.

For example, one of the community's learning goals was: We will use the particle theory of matter to investigate the various forms of solids, liquids, and gases.

Michael's initial theory related to this goal: My theory about fluids is that when fluids are combined with different properties, they will cause reactions, like explosions and lots of smoke. I think that, by doing this, they can also change their states of matter.

After they compose their theory, students then pasted their sticky notes up on the board so that they started to form the collective pool of ideas that they would strive to advance as the work went on.



The improvable ideas board in Jason Frenza's Grade 8 classroom encourages his students to actively build off one another's ideas to grow community knowledge.

Move 2:

Over the course of the study, as the class explored the learning goals and their initial theories, students were provided an opportunity to reflect upon the ideas presented on the board. At mid-point in the unit, students were asked to select a particular theory posted on the board and take that idea and build onto it, based on the scientific concepts and ideas they have explored up until that point. For example, Adam decided to build on Michael's initial theory

about the properties of fluids by citing an example to support the theory that he found from his research: When you mix two different states of matter, example vinegar with baking soda, it causes a chemical reaction. They can change states of matter from a solid to a liquid to a gas. For example, when you mix vinegar, which is a liquid, with the solid baking soda, these two create a chemical reaction, and the vinegar turns into a gas.

Move 3:

At the end of the last learning goal, students were again asked to choose a different idea posted on the board, and again were provided another coloured sticky note. Students were then asked to try to improve the first two ideas posted on the card based on all the work and research they had done up until that point. They were asked to tie in and connect all the relevant concepts that they have learned throughout the study. In this way, they were actively and explicitly building off each other's knowledge and using the ideas of their peers as tools to help move their own learning forward. It is important to note that students were also continually reading and referencing everybody else's ideas as they did their KB work, which included conducting research, engaging in KB Circles, and doing experiments. Community ideas were always available for the whole community to access, and students found them a valuable shared resource. Here is an example of Zachary's refined idea:

Many materials change their states of matter due to the particle theory of matter. One of the laws of the Particle Theory of Matter is that particles move faster and spread farther apart when heated. Something that could also affect the particles could be how adhesive and viscous a material is. Adhesion is when the particles of one fluid (e.g., water) merge with the particles of something else (like a pipe).

Move 4:

Close to the end of the study, the original student (e.g., Micheal) who wrote the very first theory takes their original card once again. They consider all the ideas that classmates have provided (e.g., Adam and Zachary) and devise a final theory based on all of the theories presented to them on their card.

Michael's refined theory: My final theory about fluids is that they can provide energy as well as minimize side effects. While the example hydroelectricity is renewable it also can provide other strong uses for the environment such as prevention of major calamities like floods. Fluids are key factors to providing long lasting renewable energy. Fluids can help substitute non-renewable energy sources and help us live a clean life.

How does the Improvable Ideas Board relate to the other activities you do in class?

The Improvable Ideas Board helps to bring Knowledge Building Discourse to life. It also works very well with Knowledge Building circles. Through Knowledge Building Circles, students bring these improvable ideas to the circle where students can keep building upon them.

How does the Improvable Ideas Board help you create a KB community in your classroom?

The Improvable Ideas Board provides an opportunity for equitable and inclusive teaching practices where the learning styles and the learning needs of all students are met. Since all ideas are improvable, valued, and accepted, every student's idea becomes an important resource in the Knowledge Building community. Even when you start with an extremely simple idea, for instance, 'water is an example of a liquid,' over time, a student can see their ideas growing and flourishing. This helps them to develop critical thinking skills and helps them to expand their knowledge of scientific concepts. The Improvable Ideas Board significantly supports student engagement because the ideas presented on the Board are the students' ideas — ideas that come from their inquiry, interest, prior knowledge, and research, as well as new knowledge gained from each other.

The process of using the Improvable Ideas Board also helps students make connections between the scientific theories they are investigating and their everyday lives.

What do students think?

- "It helps us to look at questions we never would have thought of otherwise, thanks to our increased knowledge."
- "From the prior knowledge that we already have, we're able to expand on that topic and further research so that we can dig deeper."
- "I'd feel I am able to express my opinions in a way that I'm comfortable doing it."
- "Once I expand on my idea and gain more knowledge about that specific topic or question, I feel more comfortable discussing it with my peers."
- "I read Michael's initial theory about how baking soda was a solid. But then I asked myself, how is that possible, because baking soda takes the shape of its container and it doesn't flow? So, I thought about cohesion and how the particles within the materials bond with other particles, and so that helped me understand how baking soda was dissolved in a fluid, but didn't have to take the shape of its container. If I didn't read Michael's initial theory, I wouldn't have thought about this question, or made a real-life connection."

What have you learned about yourself in the process?

Through this process, I have learned the importance of student voice and student engagement. I've learned that teachers need to set conditions in their classrooms where they are building a partnership with their students. Allowing students to be the drivers of their own learning is really critical in meeting the diverse learning needs of your students. What I learned about myself is that I can still create a classroom culture that fosters a love of learning while sometimes taking a step back from direct teaching. Now my students are given opportunities to take the lead.

How does this work help you engage the KB Principles?

Earlier on in my KB journey, it was hard for me to recognize how KB principles connect to each other. However, I'm now beginning to see how the KB principles are tightly interconnecting. For example, while students are engaging in the inquiry process and having mini-KB circles, I see how Rise Above blossoms. Students are synthesizing each other's ideas, developing their understanding, and deepening their thinking skills. I can also see Pervasive Knowledge Building happening as students are making connections between their own lives and the concepts and ideas we're exploring in class. For example, the students were really interested in exploring how oil spills impact our natural environment and human life. So, they are making much broader connections to global issues as well as understanding more deeply how the concepts, problems, or ideas we're exploring together positively and negatively impact our society.

What was your "Aha!" moment?

When I realized that assessment and evaluation is everywhere in a Knowledge Building community, you just have to give yourself permission to take the risk!