
KNOWLEDGE BUILDING IN ACTION SECONDARY (9–12)



Creating a Knowledge Building Community at Westside

Written by Marisa Kurtz, Landry Britton and Toshi Gunn

Bringing IDEAS to life!

4.1 CREATING A KNOWLEDGE BUILDING COMMUNITY AT WESTSIDE

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INTRODUCTION

How does a new teaching approach not only take root in a classroom, but then spread to modify the approach that an entire department takes when developing a unit of study? This case study tells the story of how Knowledge Building became common practice in the History department at Westside Secondary School in Orangeville, and how Marissa Kurtz, Landry Britton and Toshi Gunn have used Knowledge Building itself to challenge each other and their practice to create a classroom environment driven by student intrigue, interests and questions.

WHY KNOWLEDGE BUILDING? WHY HISTORY?

Covering the entire history of Canada becomes an insurmountable task if you start to list the major moments since its constitution. It is for this very reason that Knowledge Building is such an appealing and appropriate approach for Grade 10 History. Teaching history through Knowledge Building allows for the content of the course to reflect student interest. Marlene Scardamalia states that one of the key KB Principles is “students working with real ideas, authentic questions” (2002). The emotional attachment students have with a question they themselves have created is a major lure in a course that offers such a vast amount of content. If students are asking strong questions they are invested in answering and then building on each other’s responses, the teacher is then free to focus on how the curriculum-identified essential historical skills can be integrated and fostered. The driving questions the teachers started out with were: How can we get students to ask strong questions that address curriculum identified content, how then can we get them to invest, respond to and build upon those ideas using key historical skills, and finally, how can we begin to assess the growth of students?

KB PROVOCATION

“It’s a miracle that curiosity survives formal education” — Albert Einstein

Move 1: How can we get students to ask strong questions that address curriculum identified content?

Any parent knows that the volume of questions a child has is never ending, and yet so often when students reach school age, we dictate what students will invest in and learn about in a course. The first opportunity that Knowledge Building offered was the opportunity for students to delve into a question that genuinely interested them. With genuine interest comes an intrinsic value of wanting to unearth an answer; it was this emotional attachment that we hoped we could tap into by having students ask questions about history. However, it quickly became apparent that before students could be cut loose to ask questions, there would first have to be explicit direction surrounding the idea of question-creation and the difference between a good, open question

and a weak, closed question. To respond to this, a three-part process was developed that directly introduced and instructed the students on how to ask good questions.

Part 1: Understanding the benefit of questioning

In order for Knowledge Building to become a staple within the classroom, it is important for teachers to have honest and open conversations with the way their students have been taught in the past and the way society used to be expected to learn, and to allow the students to engage in a dialogue about why using questions to build knowledge is impactful to their understanding. For a history classroom, this conversation is extremely important, as it allows for the promotion of a shift away from a mindset based around facts, stats, dates and names, to a mindset that is structured around the impact, significance and meaning of an event.

For this mindset shift to occur, introducing the students to the concepts of Bloom’s Taxonomy is integral for the them to see the differences in styles of learning. Breaking down the idea of understanding an historic event by moving away from the Knowledge-based bottom of the Bloom’s triangle (recalling basic information) and allowing students to see the benefit to their understanding by approaching an event from the top tier of Synthesis and Evaluation is crucial. From this point, it is important for teachers to use the Bloom’s Taxonomy mindset to begin to demonstrate to students how it can reshape the way we can question an historical event. Providing students with examples of Bloom’s question stem sheets allows them to see the value of a challenging, non-Googleable question that promotes inquiry and critical thinking, and breaks away from simply recalling information. These stems can be used as a guide for discussions with students on why inquiry-based questioning and Knowledge Building allows them to be stronger critical thinkers, both in and out of school.

Part 2: Critical Thinking Skills and Infographics

One of the most successful methods that we have utilized in allowing students to use peer-based questioning to guide their Knowledge Building within our Canada and World Studies classroom is allowing them to not only see the value of open ended questions, but also to allow them the time to practise creating critical thinking questions without fear of mistakes and grade pressure.

After learning about the Bloom’s style of questioning and looking at examples of critical thinking questions, students are given infographics as a tool to inspire and provoke questions. They use infographics on random topics unrelated to the course content to practise. They are able to use

CRITICAL THINKING SKILLS

1 KNOWLEDGE Identification and recall of information	<ul style="list-style-type: none"> define fill in the blank list identify 	<ul style="list-style-type: none"> label locate match memorize 	<ul style="list-style-type: none"> name recall spell state tell underline
Who _____?	Who _____?	Who _____?	Who _____?
Who _____?	Who _____?	Who _____?	Who _____?
Who _____?	Who _____?	Who _____?	Who _____?
2 COMPREHENSION Organization and selection of facts and ideas	<ul style="list-style-type: none"> convert describe explain 	<ul style="list-style-type: none"> interpret paraphrase put in order 	<ul style="list-style-type: none"> rewrite relabel retrace translate use your own words write
Re-tell _____ in your own words. What is the main idea of _____?	What differences exist between _____? Can you write a brief outline?		
3 APPLICATION Use of facts, rules, and principles	<ul style="list-style-type: none"> apply compute deduce construct 	<ul style="list-style-type: none"> demonstrate determine draw find out 	<ul style="list-style-type: none"> give an example illustrate make operate show solve state a rule or principle use
How is _____ an example of _____?	Do you know of another instance where _____?		
How is _____ related to _____?	Could this have happened in _____?		
Why is _____ significant?			
4 ANALYSIS Separating a whole into component parts	<ul style="list-style-type: none"> analyze categorize classify compare 	<ul style="list-style-type: none"> contrast deduce deduct determine the factors 	<ul style="list-style-type: none"> diagram differentiate dissect distinguish examine infer specify
What are the parts or features of _____? Classify _____ according to _____. Outline/diagram/web/map _____?	How does _____ compare/contrast with _____? What evidence can you present for _____?		
5 SYNTHESIS Combining ideas to form a new whole	<ul style="list-style-type: none"> change combine compose construct create design 	<ul style="list-style-type: none"> find an unusual way formulate generate invent originate plan 	<ul style="list-style-type: none"> predict pretend produce manage reconstruct write reorganize revise suggest synthesize
What would you predict/infer from _____?	What solutions would you suggest for _____?		
What ideas can you add to _____?	What might happen if you combined _____ with _____?		
How would you create/design a new _____?			
6 EVALUATION Developing opinions, judgements, or decisions	<ul style="list-style-type: none"> appraise choose compare conclude 	<ul style="list-style-type: none"> decide defend evaluate give your opinions 	<ul style="list-style-type: none"> judge justify prioritize rank rate select support value
Do you agree that _____? Explain. What do you think about _____? What is most important?	Prioritize _____ according to _____. How would you decide about _____? What criteria would you use to assess _____?		

Classroom visual aid: Critical thinking skills chart

the many ideas that are consolidated into an infographic to help spawn questions that they have based on the content given. They use their understanding of Bloom's critical questioning to develop as many open-ended questions as they can, based on the infographic they have been provided with.

Part 3: Peer Based Development and Collaboration

Typically, the process of question development is created in a small group situation. The groups spend their time creating as many critical questions they can think of based on the source(s) they have been provided with. As they begin to develop their questions, they can collaborate and give feedback to help decide if a question is open enough to allow for a deep understanding and building of knowledge to take place. They can work together to tweak and reshape their questions in order to focus in on particular aspects that they would like to investigate, thus helping to inspire more personal engagement with their learning. The teacher can use this time to work with each group to provide assistance and feedback to help further push the students to develop challenging questions. Their goal is to create questions that:

- Can allow for opinion or judgment to be made
- Can have multiple viewpoints
- Are not 'Googleable'
- Promote inquiry and critical thinking
- May have a defined answer that is illusive or non-existent

This activity works well by allowing the students to create their questions on chart paper that they can tweak, cross out, discuss, change, alter and develop in the direction that they want to investigate. They will then have more personal ownership of the question and this will allow them to be more engaged in the process of Knowledge Building around it.

Once groups have created their questions, it is important to display the questions to the whole class to allow for all students to be involved in providing feedback, opinions and critiques of each question (with teacher facilitation). This allows each student the ability to see what strong questions look

OBESITY
IN INFANTS TO PRESCHOOLERS

American Heart Association
My Heart. My Life.™

1 IN 3 CHILDREN and adolescents, ages 2-19, **ARE OVERWEIGHT OR OBESE** and nearly **NONE** meet healthy diet and physical activity recommendations.

FRENCH FRIES are the most common vegetable that children eat, making up **25%** of their vegetable intake.

JUICE (which may lack important fiber found in whole fruit) makes up **40%** of children's daily fruit intake.

FACT: An estimated **12.5 MILLION CHILDREN**, ages 5 years or younger, spend **33 HOURS PER WEEK** in **CHILD CARE SETTINGS** where they may **CONSUME MOST OF THEIR DAILY CALORIES.**

OBESITY is linked to **MORE CHRONIC CONDITIONS THAN:**

- SMOKING
- POVERTY
- DRINKING

Increasing the **RISK** of more than **20 PREVENTABLE CONDITIONS**, including sleep apnea, asthma, heart disease, Type 2 diabetes, osteoarthritis, high blood pressure and high cholesterol stroke.

RISK FACTORS

- Children in their early teens who are obese and who have high triglyceride levels have arteries similar to those of 45-year-olds.
- Obese children as young as age 3 show indicators for developing heart disease later in life.
- Children who are overweight from the ages of 7 to 13 may develop heart disease as early as age 25.
- Obese children are twice as likely to die before age 55 than their slimmer peers.

OBESITY MAY BE PREVENTED BY

- PHYSICAL ACTIVITY
- GOOD NUTRITION
- LESS SCREEN TIME
- MORE SLEEP

Between 40% and 50% OF TODDLERS ages 12- to 35-months-old, watch **MORE television** than is recommended.

Nearly **1/2 OF PRESCHOOL-AGED CHILDREN DON'T** get enough **PHYSICAL ACTIVITY.**

The COST of obesity in the United States is staggering, totaling about **\$147 billion.**

Children who **EAT HEALTHY FOODS** and **GET DAILY PHYSICAL ACTIVITY** have:

- FEWER SCHOOL ABSENCES
- HIGHER ACADEMIC ACHIEVEMENT
- HIGHER SELF-ESTEEM
- FEWER BEHAVIORAL PROBLEMS

DEVELOPMENTALLY, BIRTH TO AGE FIVE, is an important time to **TEACH** children to **PREFER HEALTHY FOODS** and **DEVELOP GROSS MOTOR SKILLS,** setting positive patterns and habits.

heart.org/healthierkids

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Infographics helped inspire student questioning

like, and how certain questions can be tweaked to become a more open, critical-based question. This process of learning the value of questioning, understanding the Bloom's mindset, practising question development, and whole classroom based feedback can run from 1–2 periods in length. At this point, students can apply their newly acquired skills of creating questions for historical understanding to an event, time period, etc., using primary source documents to invoke historical inquiry for the introduction of a topic or the summation of a unit.

STRATEGIES FOR SUSTAINING IDEA IMPROVEMENT

Move 2: How then can we get them to invest, respond to and build upon those ideas using key historical skills?

After students have landed upon a strong, open question, the issue becomes: How, as educators, can we not only control the initial volley of personal investment, preconceptions, and emotional attachments students might have to a question, but also help provide them with the requisite historical skills and research skills needed to deconstruct and begin to respond to the question by building knowledge? To confront the issue, another three-part approach was essential.

Part 1: Research Skills

The initial hurdle for students faced in responding to their constructed question was dealing with how to locate and identify reliable sources that addressed it. It was decided that at the Grade 10 level, students would start off in a limited research environment where a teacher could safely assume that the information used was found both with relative ease, and was scholarly enough to be reliable. Gale Powersearch provided by UG2GO provides students with a closed research environment that is easily accessed and searched. After students had direct instruction regarding how to perform effective digital research, they were then afforded the opportunity to utilize any platform to find research.

Part 2: Historical Skills

The second hurdle for students to tackle was applying the historical thinking skill of primary source analysis to their researched materials. The active use of Knowledge Building in history inherently involves students actively analyzing primary sources of the time period linked to their question. To ensure students were familiar with these essential skills, the delivery of daily lessons was adjusted to focus around a three-part lesson plan that involved an action portion where students would deconstruct primary sources using various scaffolds and support structures. This ensured that students had successfully interacted daily with the requisite skills by the time the Knowledge Building unit required it.

Part 3: Knowledge Building Through Knowledge Forum

Having a class open and confident enough to share their ideas and findings publicly so actual Knowledge Building can occur is tough enough; however, the difficulty increases if there is no platform for students to effectively grow and track their thoughts. It was important that a safe collaborative classroom environment was the norm for this course. Both daily group deconstruction of sources and large group discussions were essential in the intentional creation of a collaborative classroom environment. For the platform that provided an effective online workspace for students,

the department turned initially to Knowledge Forum, which is the technology that supports Knowledge Building pedagogy. Knowledge Forum is basically an open, communal discussion space where students can contribute ideas and thoughts in the form of multimedia notes. Knowledge Forum proved to be a fantastic tool as it was very visual and is built to directly support a classroom participating in Knowledge Building. After the department had more experience, other methods of tracking were effectively implemented. A physical corkboard version of Knowledge Forum was used with success in essential level classes, and Google Docs was also successfully used in many Applied and Open level classes.

Move 3: How can we begin to assess the growth of students?

Knowledge Forum provided a perfect platform to monitor and track students' thought processes, growth and participation. Initially, we wondered, how does the tangled web of thoughts and ideas get assessed, and how will a student receive a mark that evaluates not only their participation in the process but the growth of their understanding of the course and curriculum? In response to these concerns, ideas from Sandra Herbst surrounding the triangulation of data and a more direct application of historical thinking skills were applied.

Part 1: Triangulation of Data:

To create an environment that is conducive to collaboration and encourages Knowledge Building, we have made it a priority to co-construct our Assessment for Critical Thinking (ACT). ACT is used to ensure that students are engaged with historical content in a respectful and thoughtful manner. We have made it a priority to ensure that our students experience an environment that encourages and embraces growth mindset. ACT is a formal evaluation process that incorporates growing success and curriculum documents and allows for the triangulation of data in the observation and communication sectors. Its formal nature allows for continual feedback and reflection which students can use to improve their skill sets.

Part 2: Historical Skills Evaluations:

The assessment of Knowledge Building has varied between teachers and classes. The way in which we assess Knowledge Building depends on the individual class's needs and the teacher's comfort level. Some of the ways we have assessed our students include seminars, essays, interviews, infographics, debates, and long answer responses. We feel that it is important to choose assignments that fit the strengths of the students we are teaching. We use Knowledge Building as the basis to build the knowledge that students will need to understand the larger topic at hand and then we choose assignments that best showcase the understanding that the students have gained.

NEXT STEPS

Recently we have been looking at a way to re-engage students' interest levels and overall success in our Grade 9 Academic Geography program. We decided to sit down before the school year started and redesign our whole Grade 9 Geography course to be based around the ideas and principles of Knowledge Building. Our goal was to make the course question-based to allow

students to investigate major Canadian and Global geographic issues. Each week students would be introduced to a new geographic issue (water, fossil fuels, immigration, first nations populations, etc.)

The next step for the History department is to integrate Knowledge Building more seamlessly into our Grade 10 Applied History stream. Knowledge Building lends itself well to applied learners as it allows them to explore in greater depth topics and ideas that spark their interest. As for a school goal, we have made connections to the Math department and been working hand-in-hand to modify and adjust the progress we have made in the History department so that Knowledge Building can take root in Math based courses as well.

REFERENCES

Scardamalia, M. (2002). Collective cognitive responsibility for the advancement of knowledge. In B. Smith (Eds.), *Liberal education in a knowledge society* (pp. 76–98). Chicago: Open Court.