The Big Think

Reflecting, Reacting, and Realizing Improved Learning

By Carol Koechlin and Sandi Zwaan, Educational Consultants

The game has ended, and the scores have been tallied. What were the results? Are we satisfied? Would we have liked something better? What do the winning teams do when they aren't satisfied with their performances? They pick themselves up, rewind the tapes, review, and observe. The coaches and the players analyze their successes and look for the possible causes of their less than stellar plays. Even the winning teams review their play and begin to plan the strategy for the next game, building on the positives and attacking the weaknesses with renewed energy and commitment.

If we as classroom teachers, teacher librarians, and learners don't take a similar action, if we continue using the same strategies and processes we have always used then we can expect only a repetition of the same outcomes. So how do we accomplish the 'post game' review? We don't have the luxury of 'days off between games'. In education there is a need for a continual stream of assessment of the learning; not just the knowledge and understanding of content, but also the effectiveness of the strategies and processes used to achieve that learning. What we need is a streamlined, easy to apply, approach that both teachers and learners can use effectively and efficiently as our units draw to a close and we begin to plan for the next activity. To get better as learners we must apply ongoing metacognative assessment strategies that appraise what we know and how we learned it and inspire us to take action.

Many of our readers are familiar with The Think Models[1] we created a few years ago to replace the common low-level bird units that plagued school libraries. The models offer a better way to 'play the game' because they provide stages of high think inquiry, information processing, and opportunity to build on the knowledge and expertise of others. During the process learners take on more and more responsibility for their own learning as they utilize the best resources, technologies and strategies to their advantage. The classroom teacher and teacher librarian's role is to ignite interest, guide and coach learners, and provide ongoing metacognative assessment throughout a learning experience thus building essential learning to learn skills. To ensure that learners are aware of the content and skills they have gained in the unit each of the Think Models also wraps up the experience with a Big Think so everyone is cognisant of what they have learned and how they learned it.

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[1] Loertscher, David, Koechlin, Carol and Zwaan, Sandi. ***Beyond Bird Units.*** Salt Lake City UT: Hi Willow Research and Publishing, 2007

Over the last couple of years as we have coached teacher librarians and teachers though these models and the design of High Think inquiry we observed a need to expand our work on the Big Think culmination activity. This deliberate metacognative experience has even more value than we originally thought. It has the potential to change everything!

Why do we give students research projects? What do the students gain? How do we know they have benefited? How do students know if they have gained anything? What do teachers learn from these assignments? Do we have evidence that our inquiry assignments contribute to school improvement? Are we keeping pace with the needs of learning today? Like athletic coaches, we want our team to get better and better every "game" we play in our drive toward excellence.

When we ask these questions in workshops and with individual students we are disappointed with the answers we receive, consequently we researched, rethought and expanded our concept of ending formal units of study and research assignments in a Big Think. The outcome is our book called The Big Think[2] which develops 9 metagcognative strategies that can be used with any ability and grade level and any subject to ensure that everyone, students and teachers, not only gain from the main experience but also are aware of what they now know, how they learned it, and how they can improve the learning. Like athletic coaches, we want our team to get better and better every "game" we play in our drive toward excellence.

We propose an idea so simple yet so rewarding it really is worth the investment. By engaging in the Big Think we as teacher librarians can triple the benefits of our efforts. With these three important 'Returns' on our investment we can impact teaching and learning on a school wide basis.

When we put our heads together with classroom teachers, we want one plus one to equal three! Our focus as we watch the rerun of the learning experience as coaches and learners together will be on three main things that happened during our game together: analysis of learning how to learn, how we taught them to learn with our team players, and how our game strategy affects school improvement.

Return #1 Learning to Learn with Our Team Players

Instead of just setting aside individual learnings at the traditional end of the unit and moving on to the next topic, the Big Think enables learners to build on each other's expertise and pool their collective knowledge to do some deep thinking and working

[2] Loertscher, David, Koechlin, Carol and Zwaan, Sandi. ***The Big Think: 9 Metacognative Strategies That Make the Unit End Just the Beginning of Learning.*** Salt Lake City UT: Hi Willow Research and Publishing, 2009.

with this body of new ideas and information. This collaborative knowledge building does not mean that ideas are distilled or meshed together to produce a consensus product. Instead it means that individual knowledge is considered, analyzed, and worked by groups to build a new richer understanding that can only occur once they can see the big picture. When learners are provided this opportunity, content knowledge is broadened and deepened, fresh perspective is gained, and lasting understandings take hold.

Collaborative knowledge building is a desired outcome of working, playing, and learning today but it doesn't just happen. We as educators need to develop the knowledge and skills that are required to work in participatory and collaborative environments. We must then design opportunity for learners to hone the skills of collective cognition and to work effectively in these environments. Since the Big Think strategies give learners practice with these skills consequently they become better and better at collaborative knowledge building and learning to learn.

As well as a solid return on content acquired, the multi-layered Big Think is designed to help learners reflect on the processes used during the research process or unit of study and consider what worked, what didn't and why. This information is again pooled and examined for patterns and inconsistencies. Together strategies are developed to tackle problems and build on successes. Learners develop a new found efficacy and a positive mindset. They begin to see the importance of personal effort. They expect to get better because they have a plan.

The Big Think activity consists of two elements that add up to increased knowledge building and real growth.

Sample Questions During a Content Big Think Activity

- ***So What?***
    - What are the important ideas we explored?
    - What does this tell us about the topic?
    - What does this mean?
    - What new understandings emerge?
- ***What Next?***
    - What new questions do we have?
    - How can we use what we know?
    - What else do we want to explore?

Sample Questions During a Process Big Think Activity (21st century skills)

- ***So What?***
    - What strategies did we use to learn?
    - How did these strategies work for us?
    - Which worked well or didn't work well and for whom?
- ***What Next?***
    - How can we use what we learned to do better next time?
    - What will we do next?
    - Where else can we apply what we now know and can do?

Return #2 Teaching for Learning: We Reflect as Coaches

Similarly, the adult teacher coaches need to conduct a Big Think at the end of the unit so they know how to tweak their game plan for next time. Everyone involved in the collaborative venture, classroom teachers, teacher librarian, teacher technologists, and other specialists need to put their heads together and debrief the effectiveness of the learning experience. They need to examine all the evidence available; planning notes, assessment data, student testimonials, reflections, visual documentation, and student products. They need to ask revealing and probing questions, e.g.,

Sample Questions During a Coach's Content and Process Big Think Activity

So What?

- What did students learn? How did they learn it? Why is this important?
- What went well? What didn't work? Why?
- Were all learners engaged?
- How well did differentiation strategies work?
- Does the assessment data give us a clear picture of student learning?
- Did the timing and chunking of the unit work?
- What learning environment problems did we encounter e.g. space, technologies, resources.

- How was understanding enhanced by the Big think?
- What process problems and successes were uncovered by the learners during their Big Think?

What Next?

- What new questions do we have?
- How can we use what we now know to do better next time?
- What actions should we take?

Return #3 School Improvement

Finally is the opportunity to triple your investment. Reflective, informed learning and teaching equals continuous growth, the foundation of sustained school improvement.

Teacher librarians need to capture data from the Big Think activities and include this information in school-wide achievement data collection. It is an effective way to document value added by school library interventions. When we can demonstrate that two heads are better than one, when classroom teachers invest in working with teacher librarians, the rewards are irresistible.

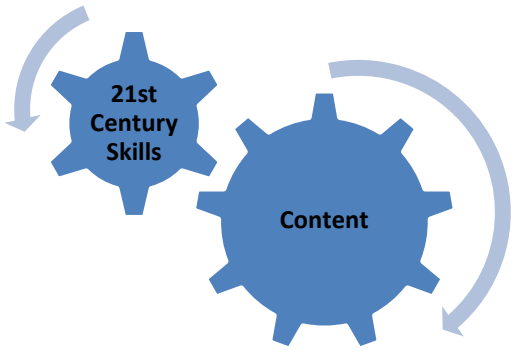
Too often learners are left out of the assessment piece. However when students feel invested, they just might make greater strides toward excellence. When teachers are empowered with a process for improving their teaching and when they are supported and encouraged to adopt a strategic approach to teaching with learning in mind then confidence and passion are restored. The Big Think creates this participatory culture where everyone is moving along toward a winning season; all are focused and confident that their goals are achievable.

We are at a turning point in education. Finances are limited, timetables and curriculums are overstuffed and students and teachers are under pressure to perform. We have to achieve more in the same time with fewer resources. We must make every minute count. It really is the time to work smarter, to focus our efforts on strategies that ensure success and progress.

The 21st Century Skills movement has put further demands on education that must be addressed if we are to keep pace with global forces driving the need for a more elastic curriculum that will truly prepare learners for their world. In our enthusiasm to prepare learners with evolving skills and literacies and equip them for learning in a shifting landscape, we must be careful not to short-change content learning. It is not a matter of either or, but a thoughtful approach to design of learning that carefully matches needed skills with desired content targets. In a recent article *21st Century Skills: The Challenges Ahead* in Education Leadership, authors Andrew Rotherham and Daniel Willingham

state that, “the issue is how to meet the challenges of delivering content and skills in a rich way that genuinely improves outcomes for students.”[3] The Think Models are the perfect teaching tools to assist educators in skilfully aligning 21st Century Skills with desired content in any discipline. The culminating Big Think is the final review or assessment piece that deepens and broadens understanding and develops collective knowledge as well as informing teachers and learners just where they are in terms of mastering skills and content. Teacher Librarians working with classroom teachers and other specialists can lead the way in ensuring that both content and skills are valued in a 21st Century curriculum. The Big Think is consequently a vehicle for and a thermometer of whole school improvement.

Process drives content and cannot be separated if real, long lasting, learning is to occur.



So just what is a Big Think?

We propose that at the end of every learning experience educators invest a few minutes in a metacognative exercise that will make learners more mindful of what they have gained in the way of knowledge, skills, and learning strategies. For the purpose of this article we will concentrate on the types of learning activities teacher librarians most often are engaged in with learners; research and inquiry lessons, and units based on content learning, as well as literature based studies.

At the end of a typical unit learners usually share their product or present their findings, get a grade, and move on to the next unit of study. Just when our students have enough knowledge about a topic to actually discuss it with some expertise we slam the door

[3] Rotherham, A.J. and Willingham, D. ***21st Century Skills: The Challenges Ahead***. VA: Educational Leadership ASCD, September 2009.

shut on that topic and hope the individual learning will be retained. Occasionally we see evidence of individual self reflection but rarely collective cognition and synthesis of what we now know as a group.

Metacognition is basically the ability to reflect on an experience and reason about what worked and what didn't and why, and then strategize for improvement. Thus metacognition is critical to learning how to learn. Without an opportunity to think about learning, students rarely unpack the importance of new knowledge gained, or make connections to bigger ideas and concepts. They certainly will not grow as learners without opportunity to analyze their strengths and weaknesses and set goals for improvement.

When a unit of study is completed learners are then really ready to play the game of learning. Each individual has something special to bring to the field. We design a Big Think experience to capitalize on learning from the main event and ask learners do some deep thinking about the content in order to build personal and collective knowledge. We know from brain based research that long term memory hinges on making connections and processing information in many different ways. The Big Think strategies apply many principles of brain based learning and thus contribute to real long lasting learning.

Another foundational goal of the Big Think is for learners to improve skills, develop habits of mind, and responsibilities conducive to learning how to learn. Carol Dweck refers to this needed ability as a growth mindset, in her book the, *New Psychology of Success*. Dweck tells us that given a Growth Mindset, necessary resources, opportunity and the transformative power of effort, we can in fact reach our full potential.[4] We can study and apply the mindset psychology in our efforts to improve outcomes for learners and help them to become more self reliant. With greater student and staff involvement in assessment we can demonstrate the value of effort. When we work as teams we can provide opportunities to make the learning experiences in our schools exemplary. We can assist in establishing the habit of personal and professional growth, reflective practise, personal responsibility, and confidence.

During the Big Think it is critical for teachers to still be involved and provide needed guidance and feedback if learners are to get better. The nine metacognative strategies provide learners practice with a variety of learning how to learn skills, but as Rotherham and Willingham also point out in their article, "Experience means only that you use a skill; practice means that you try to improve by noticing what you are doing wrong and formulating strategies to do better. Practice also requires feedback, usually from

[4] Dweck Carol S. **Mindset: the New Psychology of Success.** NY: Ballantine Books 2006.

someone more skilled than you are."[5] Metacognition and useful feedback becomes part of the culture or game plan of learning in our schools and everyone, teachers and students, get better and better.

We have developed these nine basic strategies to provide the best potential for engagement and high think. The Big Think activities do not need to be time consuming. They can take anywhere from 5 minutes to a class period or longer in the event that more involved What Next activities are sparked. The point is that the Big Think needs to be designed as part of the lesson or unit because it just too important to neglect. The following chart provides an overview of each strategy.

The Big Think Changes Everything

Nine Metacognative Strategies that Make the Unit End Just the Beginning of Learning

Strategy **Teachers and learners think about content and process**	**What?** **The information to knowledge journey**	**Why?** **Knowledge building and real growth**	**How?** **Make connections as a group between what I know and what we discovered. Develop what we now know.**
Active Discussion	Small and large group face to face and/or virtual discussion ignited by a question or scenario	To develop, clarify, interpret, empathize, defend, understand	Informal discussion, formal panel, debate, press conference, blog, wiki, interactive video conferencing etc.

[5] Rotherham, A.J. and Willingham, D. ***21st Century Skills: The Challenges Ahead***. VA: Educational Leadership ASCD, September 2009.

Create New Questions	Collaborative reflection, analysis, discovery, exploration of opinions and points of view directed by student developed questions	To create a culture of inquiry, to ensure personal relevance, perspective, purpose and direction for thinking, springboards for further actions, research, critical analysis	Use question building assists; question storming, Bloom's Taxonomy, De Bono's Thinking Hats, question matrix etc.
Higher Order Thinking	Collaborative critical and creative thinking	To raise level of understanding, solve, infer, predict, evaluate, argue, innovate	Stretching, comparing, speculating, predicting, discovering effect and impact, analyzing, synthesizing, evaluating
Interact with an Expert	Confirm, amend, or enhance understandings, explore ideas and interpretations	To exchange ideas, glean new knowledge, gain perspective, add relevance, make real world connections	Interview, consultation, face to face and/or by videoconference, blog, Twitter, Skype, email. Real or virtual field trip, tour
New Problem or Challenge	Stimulate creative collaboration by presenting a new problem or challenge that draws on collective knowledge and expertise	Transfer and apply knowledge, solve problems, develop fluency and flexibility, simulate real life situations, make learning relevant	Introduce an element shift or what if scenario, problems possibilities jigsaw, concept jigsaw, teach or coach,
Thoughtful Writing	Construct and articulate deep understanding through a process of	Consider alternate ideas and perspectives, construct meaning,	Concept writing, quick write, chart, letter, wish list, zine, wikis and

	collaborative writing	write collaboratively, stimulate curiosity and interdependent thinking	other Web2.0 tools
Construct Visuals	Active building of knowledge through visual representations	To clarify concepts, build knowledge, convey meaning on sight, accommodate visual learners, enable those with language or learning deficiencies	Charts, graphs, flow charts, timelines, webs, illustrations, cartoons, comic strips, concept mapping software and other technology applications
ReCreate	Transform information and ideas to a new medium	To present information and ideas via a new medium, build understanding of concepts and events, tap into emotional intelligence, develop empathy	Create a skit, dramatic representation, collage, web, video, game, podcast and other creative technology applications
Sandbox	Play with ideas and information to create or invent something new	Brain based learning, utilizing all senses, stimulates curiosity, wonder and discovery, ownership and freedom of choice, ignites renewed passion for learning	Creative technology applications, music, drama, visual arts, video, tangible manipulatives

Loertscher, David, Koechlin, Carol and Zwaan, Sandi. ***The Big Think: 9 Metacognative Strategies That Make the Unit End Just the Beginning of Learning.*** Salt Lake City UT: Hi Willow Research and Publishing, 2009.

Back to the game plan

We call on teacher librarians to coach their staff and students on the many benefits of Big Think strategies. At the end of a unit keep the thinking flowing and strive for deeper understandings, facilitate transformations of learning and spark new student innovations and creations. Invest in the design of Big Think activities to help learners become more mindful of what they are learning, how they are learning it, and why; help teachers become reflective practitioners; and contribute to whole school improvement and excellence.

This is the winning formula!

- Collaborate with classroom teachers and other specialists to design and teach research and inquiry units using the Think Models. Culminate with a Big Think of content and processes to further elevate library projects so that the product or presentation is no longer the end; it is just the beginning of real learning!
- Conduct a Big Think with teaching partners.
- Share evidence with the entire school community.
- **Reflect, react and realize improved learning**

Selected Resources

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