

thinking about thinking

Thinking, we do it all the time ... we can't help but do it. It happens during math class and it happens during recess. From the moment we rise in the morning, until we go off to sleep at night, we think. We certainly don't wait until 'thinking time' on Tuesday afternoon, and we don't wait until we are offered a 'thinking tool' to assist us. If thinking is so natural, then why do we struggle to describe it, understand it, intelligently discuss it and address it explicitly with our learners? Why is it such an ethereal phenomenon?

The difficulty may rest with the 'big push' but 'little support' we have been offered in the area of thinking. Apart from Bloom's Taxonomy very few frameworks have been provided to explain how thinking is developed. Very little has been suggested to challenge this widely accepted theory of thinking.

Those who have worked with me and those who have been immersed in my approach to teaching and learning, know my thoughts with regard to *Bloom's Taxonomy*. But for those who are not familiar with either, I would like to take some time to share my *thinking about thinking*.

In contrast to widely held beliefs, I *do not* believe that thinking is hierarchical and that it occurs in 'levels'. Instead, thinking occurs through a cyclical, adaptive process. Rather than addressing thinking in 'levels' - *analysis is a lower level of thinking than evaluation* - I would propose that there are simply 'types of thinking' that are inextricably linked. One *type* is not higher or lower than another. They are simply different.

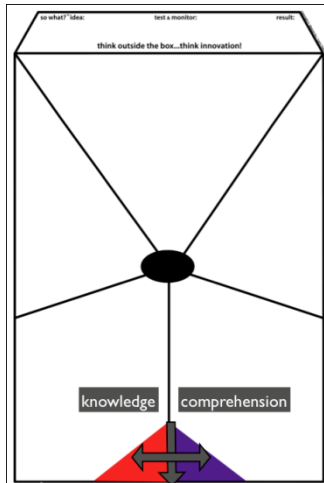
Within any type of thinking, however, I do believe that there are degrees or levels of sophistication. For example, learners can know and understand at a superficial level or at a level of significant depth; learners can be thorough in their analyses and evaluations, or engage in this thinking at a surface level. Where creativity and innovation are concerned, learners can invent something new that might be considered a 'near transfer' – the invention of the white board marker; or they might invent or create what might be considered a 'far transfer' – the invention of a smart board pen. Both involve synthesis type thinking but to very differing degrees of sophistication.

Simply put - thinking is not hierarchical and it does not occur in 'levels'. Instead, thinking occurs through a cyclical, adaptive process. Failure to understand this process comprehensively and deeply will have a significant impact on a teacher's ability to design learning opportunities that truly promote a learner's thinking and, subsequently, his learning.

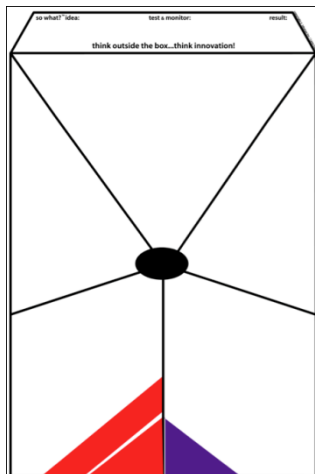
I have prepared a digital presentation to assist in my demonstration of what I call, the *Clark real thinking process*, a conceptual framework that illustrates this idea of 'types of thinking' and 'degrees or levels of

thinking within different types'. It was also illustrate how I believe depth and breadth of thinking are developed and how far transfer of learning is realized. Once you have had an opportunity to review the digital representation, you can download the read more file for a more comprehensive explanation of the *clark real thinking process*.

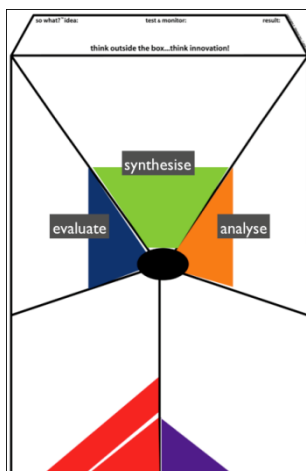
the clark real thinking process



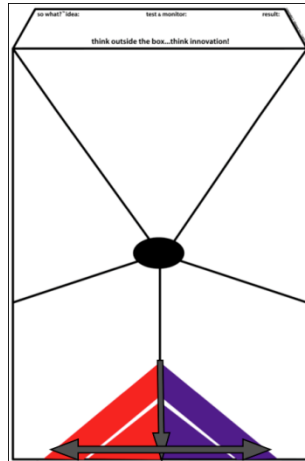
All learners enter into new thinking and learning opportunities with some prior information, knowledge and understanding. This foundation may not be very broad or deep, but a foundation, to some degree, exists for all learners. What is key to the development of thinking is the recognition that a learner can only build upon the foundation that he has at any given time. An attempt to engage the learner in opportunities above or below his personal foundation of knowledge, and understanding, will result in compromised learning. The provision of a thinking tool to aid a learner’s thinking will not alter this reality. It’s bigger than merely providing a wide variety of thinking tools to our kids. Baseline data must be collected by the teacher, and used to aid in the design of learning opportunities that are commensurate with the learner’s foundation. I will address this further, in relation to thinking skills and tools shortly.



The ‘finding out’ experience is critical to all thinking and learning. For example, if the learner’s finding out experience is limited or biased, his ability to think will most certainly be limited and biased. Use of a thinking tool to aid him in his evaluation or cause and effect analysis will simply result in limited or biased evaluation or analysis. For this reason, it is recommended that first and foremost, teachers provide learners with criteria for investigating. This might include: the use of a minimum of four different resources; the exploration of at least two perspectives; sequencing investigation tools from the concrete to the abstract, in an effort to promote the learner’s ability to ‘take in the learning’.

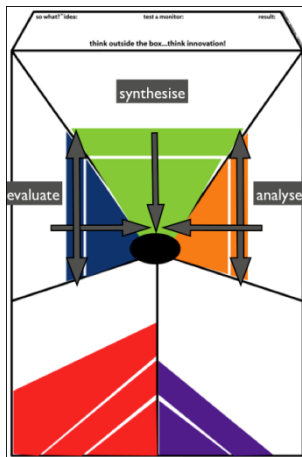


The moment a learner takes new information in, he will begin to process that information. Unfortunately, many of our learners fail to process effectively. Consequently, learning is compromised. Teachers must explicitly aid their learners in processing to ensure that this is as effective



as it can be. In order to do this, however, the teacher must understand what processing is, and how it occurs. Processing involves the thinking skills of examination (analysis), decision-making and judgment (evaluation), and questioning/challenging and designing ideas (synthesis). This thinking occurs simultaneously; it does not occur sequentially; it is messy and comprehensive.

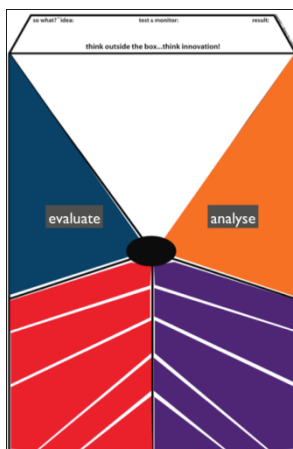
Critically, it is this processing that leads the learner to a new understanding; now deeper and broader than it once was.



In order to develop increased depth and breadth of knowledge and understanding, this cycle must be repeated. Upon the learner's new foundation of depth and breadth, the 'finding out' experience continues; the learner immediately begins to process: analyzing, evaluating and synthesizing the new information, as he investigates. Again, a new level of knowledge and understanding develops.

The learner's ability to analyze, evaluate and synthesize, is directly proportional to the level of depth and breadth apparent in his foundation of knowledge and understanding. While it is critical that learners analyze, evaluate and synthesize, as they find out, early on in the thinking process, the

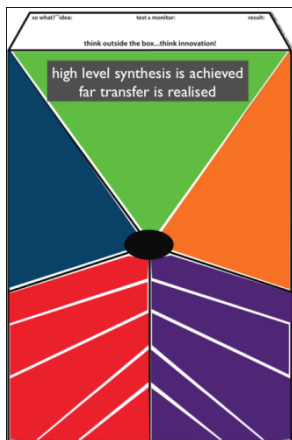
ability to deeply engage in these skills is limited. As the learner's foundation of knowledge and understanding deepens and broadens, so too does the learner's ability to analyze, evaluate and synthesize deepen and broaden.



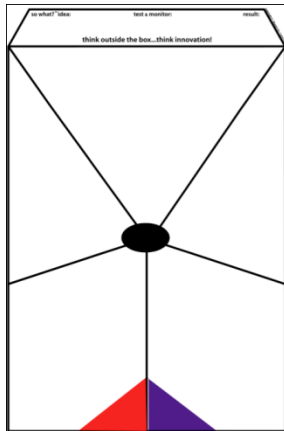
By repeating this cycle, deep knowledge and understanding are explicitly developed over time. With this new foundation solidly in place, learners can engage in deep analysis and deep evaluation of new learning. This anchored thinking sets the learner up for 'high level synthesis' or far transfer. Learners can now consider their new learning and ask the question that I believe is the precursor to true creativity...

So I know it, so what? I need to analyze and evaluate my new learning and consider, 'how I might USE my new learning to make a difference in my life and the lives of others™'. Can I solve a problem that I am now aware of? Can I develop alternatives or recommendations? Can I design a plan, a product or a vision? Can I use patterns and trends to predict the future; evaluate that

future; and make can make changes today for a preferred future?



It is only in the development of deep knowledge and understanding that are learners will develop the capacity to engage in deep synthesis and realize far transfer in their learning. Failure to engage in all types of thinking, will likely result in limited thinking and therefore learning; failure to repeat the cycle, will limit the development of deep knowledge and understanding and consequently, transfer.



Regardless of the thoroughness of the thinking process lived by the learner, he can never know and understand everything about his learning. This is represented by the gaps evident at the top of the knowledge and understanding sections of thinkbox™. While learners will eventually be able to USE their learning to make a difference in their lives and the lives of others, new questions will result in new directions of inquiry and the process of thinking and learning will be new again!

What then are the implications of the 'thinking process' on learning and teaching? We'll explore this critical question in my next Blog...so stay tuned! In the meantime, this might be a question you explore with your colleagues or quietly on your own. It is certainly a question worth thinking about...