EDUC 904 Action Research Report:

Looking for Critical Thinking

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Abstract

The author of this paper sees the goal of education as the preparation of individuals to participate in society. An essential skill in accomplishing this objective is the development of critical thinking in the student. More than ever before, in this age of information, members of our society need to be competent in analyzing, evaluating, and synthesizing the barrage of content available through the World Wide Web. Nearing the completion of a Masters of Education: Imaginative Education (I.E.), this author found it imperative to explore the relationship between I.E. and critical thinking. Classroom activities were planned with and without the cognitive tools described in I.E., in search of a correlation between their use and critical thinking. Imbedded in this action research report are the journal entries, which were written during the fieldwork in a grade five and six class. This cohort of students reflects the typical makeup of a classroom, from advanced students to a few with extensive individual education plans. Written in a narrative style, the framework for this research report reflects that of a trek up Mount Everest.
Note to the Reader

Throughout history, mankind has pursued and elevated various interests in order to shape reality or find meaning. Rule, religion, and reason are just a few of these; they have all disappointed and, more or less, been discarded. Although the primary focus of this Action Research project has been reason, also known as critical thinking, the author does not believe this ability to be definitive in any sense, just one of many helpful skills to have. Ultimately, our relationships define our reality.
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Looking for Critical Thinking

January 2019 found me enveloped in a grey cloud of foreboding. How was I going to conduct research and field work amidst the plethora of other responsibilities? It felt as if I was standing at the foot of Mt. Everest and been asked to climb it with no previous experience and little time. For all my cheery encouraging of students with, “You can eat even an elephant, one bite at a time,” when applied to myself, I felt little relief from the daunting task ahead of me. After three months of plodding and concentrated effort, the journey is now behind me, and all that is left to do is the sharing of what I have experienced and learned about the relationship between the pedagogy of Imaginative Education and critical thinking.

Situating

“My father has had an enormous influence on my life. As a true Renaissance man (athletic, musical, artistic, mechanical, academic, spiritual), he wove a cocoon of classical music, inspiring literature, and love of the outdoors around my childhood. In the last many decades, I have never once discussed with him something I have read or learned, where he did not already know something about it, adding meaningfully to the conversation. (At eighty plus, his mind is still razor sharp.) From him, I absorbed the love of learning, and as I reached adulthood, I valued my decisions by how logical they were rather than how I felt about something. Later, raising my own children, I passed this priority on by teaching them critical thinking through various curriculums. (I came to regret this decision, as very quickly, one child was soon able to outmaneuver me in debates.) How one thinks about something has seemed much more important/objective/safe than one’s feelings. I have always felt that the absence of critical thinking leaves an individual vulnerable and poorly equipped to face life’s challenges. Ironically,
now as a Master of Education student, the importance of engaging the imagination and emotion is central to the pedagogy I am studying. It has been quite a switch for me” (Effa, 2019).

The Call

“As I was musing about what topic to focus on for my Action Research project, it slowly bubbled to the surface of my consciousness that in the last year and a half of my studies, I have not once heard the word critical thinking. This fact caused me some discomfort, as I am not willing to exchange the ‘sacred cow’ of critical thinking for more fun icons. Of course, I greatly appreciate receiving more ‘ways’ in which to make content accessible or meaningful to students, but not at the price of logical thinking” (Effa, 2019). Finally, I had found the enquiry question, which would launch me on the difficult trek up my own Mount Everest. “Does use of cognitive tools, as outlined in Imaginative Education, stimulate and/or support critical thinking?

Base Camp Contemplations

Just as one, who is about to climb Mount Everest, would never begin the ascent without first collecting and familiarizing themselves with crampons and carabiners, so I must also turn my attention to the trekking poles of my journey - the cognitive tools of Imaginative Education and critical thinking. To successfully answer my enquiry question, I need to first define these trekking poles and then acquaint myself with the anticipated outcomes of using cognitive tools, as well as understanding how critical thinking is demonstrated. In preparation for my journey, I will turn to those that have gone before me in Imaginative Education and critical thinking.

January 28, 2019

*It feels like the first official day of preparation to climb up Mount Everest, also known as my Action Research project. Instead of ropes and clamps for gear, I clutch my Educated*
Imaginative Education

The pedagogy of Imaginative Education was developed by educational philosopher, Kieran Egan. At least in part, I.E. is Egan’s response to the conflicting educational goals of western educational institutions: functionalism, with its emphasis on socialization, as supported by Durkheim; idealism with its emphasis on the analysis of ideas and pursuit of truth, as supported by Plato; and humanism, with its emphasis on the individual nature of the student, as supported by Rousseau (Egan, 1997). At its core, Egan’s brilliant educational pedagogy is a theory of recapitulation, which stands on the shoulders of G. Stanley Hall, John F. Herbart, and Lev Vygotsky. This cognitive recapitulation can best be understood as following the sequence of cultural human development, from understanding the world through the senses, orality, literature, theory, and skepticism. Egan categorizes them as ‘kinds of understanding’ (somatic, mythic, romantic, philosophic, and ironic), which he describes as “just the ways the mind works when using particular tools” (Egan, 1997, p. 176). Each ‘kind of understanding’ comprises specific means to engage the interest of the learner, called ‘cognitive tools’. (Please see Appendix B for a complete list.) So, how does all this tie to the name, Imaginative Education. Well, that is where it gets a little hazy for me. Kieran defines imagination as “the capacity to think of things as possibly being so; it is the source of invention, novelty, and generativity” (Egan, 2016, p. 4). Therefore, the cognitive tools enable the student not only to understand more of their world but also allows them to transfer this understanding to new situations or problems, generating creative solutions. Cognitive tools engage the learner and grow the imagination. Rabois (2017) points out that imagination encompasses a mindfulness and empathy, which is
also crucial in critical thinking. “Critical thinking is not just logic or problem solving. It requires imagination and honouring the pulsating life of whatever you study” (Rabois, 2017, p. 1).

**January 28, Continued**

*Within the first half hour, I start to seriously doubt my choice of route. The perusal of the first articles indicates the answer to my inquiry question, “Does the use of cognitive tools, as found in the Imaginative Education pedagogy, support and/or stimulate critical thinking?” with a resounding yes. Now I recognize the yes/no quality of the question. I groan! After a year and a half of graduate studies, how did I not recognize this as a dichotomous question? The enquiry is also too comprehensive for the time I have. I will need to shrink my enquiry to “How do cognitive tools support and stimulate critical thinking in my classroom?”*

Imaginative Education also purports ‘no emotion, no learning’. All discoveries are the “product of someone’s hopes, fears, passions, or ingenuity. If we want students to learn knowledge in a manner that will make it meaningful and memorable, then we need to bring it to life for them” (Egan, 2016, p. 3) through those same emotions. I have no quarrel with these assertions. Other researchers have discovered similar emotional pathways to learning. Chirico, Glaveanu, Cipresso, Riva, and Gaggioli summarize in their article, “Awe Enhances Creative Thinking”, their investigation on “whether the experience of awe impacts on peculiar dimensions of creative potential in terms of creative thinking (2018, p. 123)”. They discovered “a direct causal relationship between awe and creative thinking ...that awe affected key creative thinking components - fluency, flexibility and elaboration” (Chirico et al., 2018, p. 124). In stark contrast, an undergrad textbook, “Human Learning”, has no reference to imagination in the framework of cognitive development and nothing positive to say about emotion and learning. Coming full
circle back to what prompted my inquiry question, Egan’s manifesto, “The Educated Mind”, makes no mention of critical thinking, although it is inherent in especially the cognitive tools in the philosophic and ironic ‘kinds of understanding’. I greatly appreciate the connection cognitive tools create between concepts and learner, but I also need the reassurance that critical thinking has not been left behind.

**January 30**

* I don’t know how I’m going to get to the top of my Mount Everest. The climb to the top, whether literal or virtual, is on a time schedule. How am I going to cover the distance when needs by family keep boycotting my progress; similar to having to slow down to respond to texts when trekking. How do I make myself inaccessible?

**Critical Thinking**

In order to improve the chances of answering my enquiry question, I need to define critical thinking, as it can mean a wide range of things to different people in various disciplines (Rabak, 2018). Critical thinking has been a focus in various fields of research, such as philosophy, psychology, and education. Broadly summarized, philosophy focuses on reflective skepticism, psychology focuses on products of thought such as analysis and interpretation, and in education, Benjamin Bloom and others have categorized learning for teachers with critical cognition being represented by the higher-order thinking skills, such as analysis, synthesis, and evaluation. (Lai, 2011). Critical thinking has been the focus of education since Socrates, but much more recently, critical thinking has had three formal attempts to impact public schools: 1970-1982, formal & informal logic courses; 1980-1993, critical thinking across the curriculum and across the grades; and 1990 to present, depth and comprehensiveness in theory and practice.
Yet, the general consensus among educators is that “thinking critically is a major missing link in education today” (Critical Thinking Movement, 2019). How is this possible?

Maybe a good place to start is at the roots. The word “critical comes from the Greek ‘kritikos’, able to discern, and ‘krinein’, to sift, judge, or separate… as in analyze” (Rabois, 2017, p. 1). Researchers have expanded this succinct definition. Watanabe-Crockett (2018) describes it as “the discipline of analysis and seeing the connections between ideas”, as well as the ability to think independently in order to arrive at one’s own conclusion on topics. Shively, Stith, and Rubenstein (2018) define critical thinking as reasoning which has purpose, comprises of a conclusion to a challenge, and recognizes assumptions and personal lens, substantiated by evidence and recognition of implications. Kohbel and Jenteges outline critical thinking as “a range of skills, such as evaluating sources, formulating arguments, drawing inferences, questioning assumptions, and self-reflection” (2017, p. 119). These, and other definitions, attempt to define the specific skills of rational thought.

The wealth of helpful articles doesn’t negate the occasional incoherent ones. This question in Florea and Hurjui (2014), “It is morally as a teacher to obtain spectacular effects currently paid price possible late consequences of children?” impressed me with the importance of having articles, not originally written in English, translated by a paid professional. An article by Gauffroy and Barrouillet (2011), written in academese, proved too difficult for me to decipher. This sentence is one of many which had me dazed, “First, young children exhibit a conjunctive interpretation underpinned by the construction of a single model corresponding to the explicit model within the initial representation of the conditional”. Pardon?

After slogging through many articles, I would describe critical thinking as a set of cognitive skills which allow one to objectively consider the evidence, in any given situation, and
come to a rational decision. I have chosen eight abilities to help me recognize critical thinking in my students: asking questions, making inferences, forming opinions, drawing own conclusions, seeing both sides of an issue, evaluating, analyzing, and synthesizing.

Definitions aside, it is specific dispositions which often make critical thinking possible. Qualities such as being inquisitive, flexible, and open-minded all support critical thinking (Lai, 2011). Purposefulness and the ability to bring self-regulating judgment to an issue are also key (Lai, 2011). Those that “enjoy intellectual challenges, and can emotionally handle the idea that they might occasionally be wrong about a topic” (Ormond, 2012, p. 422) will be more apt to engage in critical thinking. These dispositions, combined with critical thinking skills, improve “the chances of of producing a logical solution to a problem or a valid conclusion to an argument” (Hogan, 2016). It is interesting to note that these dispositions are also required in creative thinking, in other words, using one’s imagination.

**February 1, 2019**

*Finding a rhythm, as I plough through articles on critical thinking. My enthusiasm for this ‘sacred cow’ burns brighter, and I am tempted to wander down side paths, getting drawn into its’ complexities - but no - I must keep my eyes on the summit - the interplay of critical thinking and cognitive tools.*

So what is the big deal about critical thinking? In the sea of voices that clamour about personal happiness and fulfillment, is there a need for these cognitive riggers? I am convinced that we need these skills more than ever before. No other generation has had so much global information at their fingertips, nor for us in the West, so many opportunities. Yet the World Wide Web has as much propaganda, censorship, and bias as the town crier from eras past. Our access to information is filtered by algorithms, which often support our own perspectives,
creating echo chambers. The ability to evaluate “the accuracy, credibility, and worth of information and lines of reasoning” (Ormond, 2012, p. 421) is vital to personal freedoms and heterogeneity of thought in society. Shively, Stith, and Rubenstein emphatically believe that “students preparing to enter contemporary society should also be able to think critically and make rational judgments by managing, analyzing, and synthesizing from multiple streams of information” (2018, p. 151). Yet,

“Everyone thinks, it is our nature to do so. But much of our thinking, left to itself, is biased, distorted, partial, uninformed, or downright prejudiced. Yet the quality of our life and of what we produce, make, or build depends precisely on the quality of our thought. Shoddy thinking is costly, both in money and in quality of life. If you want to think well, you must understand at least the rudiments of thought, the most basic structures out of which all thinking is made. You must learn how to take thinking apart” (Critical Thinking Learning Models, 2019).

In order to protect our personal freedoms and find creative solutions to global crises, we need to be able to “derive sound inferences, generate good reasons, recognize questionable assumptions, trace important implications, and think empathically within different points of view” (Lunenberg, 2012, p. 3). Graduating students with critical thinking skills is vitally important, thus my personal urgency to understand how it fits into Imaginative Education.

**Plan to Climb**

It is time to leave base camp contemplations behind, before they bury me. After some thought and discussion with others, I’ve decided not to explicitly teach critical thinking to my students, but rather to observe whether there are more evidences of critical thinking after using
cognitive tools as without. In this way, I hope to determine the relationship between cognitive tools and critical thinking. The next section tracks the field work through my journal.

**Revised Route**

Base camp contemplations have left me already tired, but I feel better equipped for the trek. But once again, I recognize the necessity of revising my route. The edited enquiry question, “How do cognitive tools support and stimulate critical thinking in my classroom?” is still too steep to tackle. I shall have to fine tune it further to, “Do the students in my classroom show evidence of critical thinking, after the use of cognitive tools?” It’s not as grand a route as first attempted, but I think it will be much more feasible.

**Climb**

In my first attempt to observe critical thinking, before and after the use of cognitive tools, I needed a topic that all students would be familiar with, that would not require too much input from me. I choose Trump’s wall. During morning circle, I explained to my students that I was interested in their opinion on Trump’s wall, and that there was no right or wrong answer. They were simply to say for or against and why. My future plan was to use cognitive tools to look further into this topic and observe whether more critical thinking was evident afterwards.

**February 5, 2019**

*Not an auspicious beginning. Having failed to push all the right buttons, my speech to text recording of the students responses to ‘Trump’s wall’ did not record.

From memory - many students said they didn’t know enough about it. (Critical thinking disposition - recognition of not enough data?).

In all the homes, where it had been discussed, they were negative about the wall except for one student who was for it and gave specific reasons. I’m assuming that this*
reflects the views of the parents, as the student is quite young (grade 5) to have read up on the political, socio-economic reasons for and against.

After all the students had responded, I reminded the class that this was a safe place to express oneself, and that I didn’t expect any of them to give the student, who was for the wall, a bad time. All opinions were to be respected, and we don’t have to think alike to be friends. I pointed out that it takes a lot of courage to share an opinion that is opposite of everyone else's.

Interestingly, after the pro-wall student spoke, several students said, that having heard her comments, they could understand why it might be a good idea.

I should explain that I have chosen oral presentations as a foil to other cognitive tools, in order to contrast critical thinking before and after using cognitive tools. I know, of course, that language is a cognitive tool, but then so are sensory experiences and gestures. There is no way of communicating before these. Seeing as ‘lecturing’ is the least effective method of supporting learning, I’ve chosen it as a contrast to other cognitive tools, through which to pursue my enquiry question.

In another effort to give myself a base for my students’ critical thinking abilities, after the class had completed several experiments and I had orally reviewed the laws, I asked the students for personal examples, illustrating Newton’s Laws of Motion.

February 5, Continued

All students gave examples that mirrored mine - none could come up with an original illustration. Zero for critical thinking.

Once again, trying to understand how much critical thinking my students ‘naturally’ apply to learning, I decided to look for the first four criteria of critical thinking I had chosen as I
checked in on their science fair projects: asking questions, making inferences, forming own opinion, and drawing own conclusion.

**February 7**

*Science Fair Projects:*

1. *Asking Questions* - One student had a couple of viable questions, “Why is dry ice so cold?” and “How long does dry ice last?”

2. *Making inferences* - Same student, “I will need to buy the dry ice the day before the trial run and demonstration day”. (Dry ice doesn’t last long.)

And that was it for the entire class - very slim pickings. Do I not provide enough opportunity/content for critical thinking to be necessary?

*When choosing a science fair project, the main focus seemed to be the ‘cool’ factor and NOT what they want to learn more about. They seem to have no curiosity ...*

**February 15**

*No trekking today - a blizzard has moved in (a.k.a. snow day).*

Occasionally in research, one hits a wall, and in my metaphor of climbing Mount Everest, today I encountered an unexpected rock slide … rather traumatic! The stretch of path was revisiting Trump’s wall, but this time I choose a variety of cognitive tools to explain the reasons given by the White House. I wanted to discover whether my students could see the issue from another perspective, when emotions other than the ones first held spoke into the situation.

**February 19**

*Not satisfied with the data I’m collecting. Most students changed their original response to Trump’s wall, after I read them an article and then explored the topic further, but through cognitive tools: sensory observation and emotions(somatic); binary opposites of*
safe/unsafe (mythic); graphic organizer, I drew diagrams on the whiteboard as we discussed the article (romantic); and processes, the causal chains in illegal immigration (philosophic). The change of perspective was the only aspect of critical thinking apparent and this seems a bit suspect as well. After my I.E. style presentation, they asked no questions, they made no inferences. Also missing were any aspects of evaluating the new material or analysis and synthesis of it. Hmmm .... I am thinking that if someone else came along and used cognitive tools to present conflicting information, they would all switch their position again.

I certainly used enough cognitive tools ...

Perhaps I expected a faster response to the material than I left time for or was reasonable. Adapting personal schemas to new information takes time. Jerome Bruner, a constructivist learning theorist, espoused the importance of “learning through acts of discovery in order to rearrange and transform what is learned in such a way that one is enabled to go beyond the evidence so reassembled to additional new insights” (J. S. Bruner, 1961, p. 22)(Weibell, 2011). The adjustment to original schemas, also referred to as appropriation through a process of internalization (Ormrod, 2012). Takes time...

Now for the rock slide. One student became so uncomfortable, with fitting in the new information to the original schemas held by himself and his classmates, that he requested that we stop the discussion!!!! I didn’t see that coming. Felt terrible. From a relational and ethical perspective, that ended this exploration.

**February 19, Continued**

*Social Studies - Immigration Unit - Blacks in Canada*
List of cognitive tools used: emotions (somatic); binary opposites of safe/unsafe and brave/cowardly, as well as story and mystery (mythic); extremes, humanizing topic, revolt (romantic); and the heroic quality of bravery.

Read parts of a timeline of Blacks in Canada. The information was shocking at times. (Eg. six year old first slave in Canada, bought and sold several times).

Showed a video on the life of Harriet Tubman (I had to find one that didn’t depict too many of the harsh realities of slavery, because I have a sensitive class).

Emphasized Harriet Tubman’s record of 100% success in getting all those she led to Canada to safety. She never lost one. Although slavery was legal, she followed her conscience.

Having used many cognitive tools, I wanted to see if they could synthesize this information with what they knew and give me suggestions of how she attained this success.

Question (mystery): What tricks could Harriet Tubman have used to get the slaves to safety? Some recalled answers they had previously read (hide in containers or carts, distract slave owners). Other answers included running and digging tunnels - neither which would be that successful. One students had only silly things to suggest. I was disappointed with their lack of critical thinking and creativity.

In my continued trek to the summit, I created a survey with eight questions on ‘Blacks in Canada’. Each question reflected a critical thinking skill, from my previously picked criteria. (Please see Appendix C.)
February 19, Continued

The responses, from an eight-question feedback form, were interesting. Forming a conclusion, evaluating, and synthesizing had the strongest responses, while identifying missing information had the weakest response. These critical thinking responses are inverted to previous ones. Would this be support for cognitive tools supporting critical thinking? The only significant difference in this scenario is the longer turnaround time between presentation of material with cognitive tools and assessment.

A two-page critical thinking terms and definitions assessment was a real struggle for some. I think that the absence of explicit instruction on critical thinking has them unfamiliar with the vocabulary and identifying what these activities practically look like.

(Please see Appendix D.)
After discussion of some of the benefits and challenges of group problem solving in our Career Education class, which they were able to express, I divided them into committees. (I was looking for critical thinking in this activity by using the cognitive tools of change of context (romantic) and process (philosophic). Each group was given a problem to solve and each member needed to contribute to their group’s presentation by addressing one of the following: decision, why, pros, and cons. I grouped the students, more or less, according to ability or personality.

February 21

Career Education - Group Problem Solving

Groupings, Questions, and Responses:

Creative and social students. “What do you do when your friend asks you to go swimming, but you really do not feel like it?” They chose transparency and honesty, saying they were not up to it, but offering to go another time. Their decision reflected value judgments, as to what constitutes a good friendship.

Slower processors or very quiet students. “What would you do if there was a cake with six pieces left over and ten people wanted some?” They followed the instructions for the activity correctly and decided to divide into perfectly fairly, even though some ‘pieces’ would be no bigger than a crumb. Everyone contributed. Their decision reflects a very pragmatic, black and white way of responding to situations.

Focused, academically strong students. “Where would you decide to go on a field trip?” I noticed that this group very quickly drifted off into side, irrelevant conversations. When called on, they had not reached a decision. I was very surprised and disappointed. The group that I thought would do best had failed the exercise. On questioned why they
could not reach a consensus, they referred to transportation hassles and the cost. Not wanting to let them off the hook, I gave the rest of a class a ‘Take Five’, and they had to go out to the hall and reach a decision, which they did very quickly, because they didn’t want to miss out on their T5. (I had also removed the transportation and cost issues.) They decided to go to Science World, because they all enjoyed going there.

Why did the last group struggle with this exercise? Was it group dynamics? Was it getting lost in the weeds of logistics? Was it that it did not really present an interesting challenge, so they didn’t engage? More questions than answers.

February 26

Newton's Laws of Motion

No one had any questions on their experiments.

Observing Newton’s Cradle, all could infer that there was a transfer of energy from one ball to the other, which was great seeing we were at the end of our science unit. All had an opinion/conclusion on it. Re: synthesizing “How could you use what you have learned in a sport you play?” One student - the force applied determines the distance the ball flies in golf. Other than that, they had no ideas. Rather disappointing.

It has been a tiring and often discouraging climb, but today I am struggling with high-altitude ataxia pulmonary (HAPE). One of the inspirations for this journey is under serious stress. It was entirely unexpected and has left me feeling stunned.

February 27

My dad is in town for a few days, and I have the delightful privilege of having him all to myself on a walk, when in response to a discussion on my masters, he makes a mind-numbing comment. As an electrical engineer, my dad also has a masters in education,
which allowed him to teach at what is now UBC-Okanagan. My dad commented, that as a professor, he tried to apply in his teaching what he had learned in his masters’ program: to be innovative, integrating subjects and providing real-world, hands-on experiments. When he reflects back on the hours and hours of preparation this took, he wonders whether he was naive. Was it worth it? Did it make a difference to the quality of learning for his students? His colleagues just lectured out of a textbook, receiving the same pay and job security.

O wow! Really? That’s where I am at, wondering whether all the extra effort makes a difference and is worth it.

Bewildered, I continue to trudge through the last few classes before spring break.

February 28

Last class on immigration. Cognitive tools included: emotions (somatic); story and the binary opposites of safe and unsafe (mythic); humanizing topic and change of context (romantic).

Showed video from 2017 of illegal immigrants fleeing the US into Canada in response to Trump’s election as president. The students needed help with understanding what was happening and why.

Dividing them into three teams, each team was given a question to debate and present: team one’s question, “What is the Canadian government’s responsibility to its’ citizens?”; team two’s question, “What is the Canadian government’s responsibility to immigrants/refugees?”; and team three’s question, “How should the Canadian government decide who they let stay and who they send back?”
Team one basically parroted back a discussion we had had the previous week about what services the government provides from our taxes.

Team two’s answers included: keep safe; screen for real refugees; provide houses, food, and money; and make sure refugees want to contribute.

Team three responded first with empathy to their plight. Immigrants and refugees need to be drug free, healthy, no communicative diseases, no police record, need education, and not carry a gun.

I didn’t find the responses particularly supportive of critical thinking. Team two did identify the needs of refugees in their list. It was great to see the empathy of team three and interesting that who could stay was all in reference to their own safety and well-being. So I don’t think this shows seeing the issue from different perspectives, which is an aspect of critical thinking.

March 1

Regarding data collection, it didn’t help that we lost some school to snow days and then my EA was not in the classroom for a week, due to family illness. That made observation and reflection in the classroom almost impossible.

As a summative assessment for my unit on immigration, I gave the students two options: a five-question interview with me or painting a poster reflecting what they had learned. The questions reflected categories from a table created by Shively, Stith, and Rubenstein (2018) to assess critical thinking: considers previous assumptions, draws implications, considers other perspective and position, communicates point of view, and provides evidence. The questions were posted, so that they could make an informed choice. (Please see Appendix E.) In addition to assessing their learning, I was also looking for evidence of critical thinking within this content.
Only four students chose to paint; I think our painting throughout the term, copying various styles from around the world, had exhausted this interest.

Half way through the interviews, I realized I was conducting verbal surveys and needed to be more interactive with the students to better understand what they had learned. Now I see in transcribing them, that I forgot to add the additional questions I asked in response to their comments. Interviewing is trickier than I originally thought. (Please see Appendix F for transcriptions.) I have also attempted to transcribe their comments verbatim. Generally, they had short answers to all the questions, with really no evidence of higher-order thinking: evaluation, analysis, and synthesizing.

Following are the posters that several students painted in response to their reflections on what they had learned during our unit on immigration. The pictures in poster one are to be ‘read’ from left to right, like a book. Looking at these images, the silhouettes flow from a family relationship, to the chaos of war, to violence against individuals, to the prison of immigration/refugee paperwork, crossing the finish line, and finally families reunited but with broken hearts. This poster is the only one that reflects aspects of critical thinking: inference, opinion, conclusion, and some analysis. I was pleased with the empathy it portrayed. Sadly, the student was not satisfied with it at all.

Poster two depicts a border crossing and refugees trying to get across the river. It would be great if I could report that the outline of the hand was symbolic, but when asked, the student said she was trying to create multiple bridges over the river at the same time, so thought that covering her hand in paint would accomplish that.

In poster three, the elephant symbolizes the immigrant who is happily ignoring the host countries hostilities (student’s explanation).
Poster four is by a student, who although very bright, chooses to not put much effort into many assignments.

Poster five is self-explanatory.

I had hoped to place the above comments beside the appropriate poster, but google docs was not cooperating. Give me a feather, black ink, and a scribe any day.
March 5

Very discouraging day as I assessed learning of our term unit on Immigration. Very little, if any, increase in understanding, after all my cognitive tools!!! Am I incompetent as a teacher? Are my expectations, of the turnaround between using cognitive tools and seeing evidence of critical thinking, too short? If it were feasible, I think a better way to learn about immigration would be for the class to ‘adopt’ an immigrant or refugee student/family. Existential questions about my career choice press themselves upon me.

Term two’s unit in Career Education had focused on healthy relationships. Cognitive tools, such as mimesis, expectation and satisfaction, story, role play, and definition of self, had
helped define relational challenges and possible solutions. As a summative assessment, I chose to have them complete a critical thinking activity entitled ‘The Six Sentence Assessment’ (Kohlbel & Jenteges, 2017). This exercise requires the student to explain a challenge, their response, possible criticism, defense, and anticipated result in six sentences. Many elements of the criteria I chose as evidences of critical thinking (forming opinion, inference, coming to a conclusion, synthesis) are required to complete this activity.

March 7

I asked students to think of a bothersome relational challenge in their personal life through which to complete The Six Sentence Critical Thinking Activity. (Please see Appendix G.) Only one student was unable to come up with a scenario without prompting from me. In reading through their responses, I could identify the elements of critical thinking I had hoped would surface, even though at a simple level. This is interesting, as I have observed this phenomena previously; the use of critical thinking in social settings, but yet it seems so absent within the academic content. Perhaps it is because they have had more practice at it. Seeing as we are social beings from birth, there is the strong instinct to not become isolated, so ways of being to encounter acceptance are quickly learned by most. Academic subjects do not carry within them the same motivation. Although they would struggle with critical thinking vocabulary and definitions, they demonstrate a reflexive way of being socially that demonstrates subconscious critical thinking skills.

Summit Contemplations

I have gone as far as time allows. I rest, lying on my back, looking at the clouds drift by and collecting myself and my thoughts before heading back down. I have reached the summit of
my scaled back route (“Do the students in my classroom show evidence of critical thinking, after the use of cognitive tools?”), but feel that the true summit lies in a previous enquiry question (“How do cognitive tools support and stimulate critical thinking in my classroom?”). My reflections lead me to relationships, the relationship between Imaginative Education and critical thinking, as well as the relationship between critical thinking and the New BC Curriculum.

**Imaginative Education and Critical Thinking**

It appears, at this point in my teaching trek, that using cognitive tools enriches learning, easily engaging the student by using presentation types that the child has a particular interest in at that moment and is already using outside of the classroom to make meaning of their world. Unfortunately, although the pedagogy of Imaginative Education presents content in interesting, accessible, and memorable ways, I did not see an immediate correlation to critical thinking. The hoped for effect of imagination, in I.E., are the discoveries of creative and original possibilities to challenges. Critical thinking parallels this hope as it “should enable us to go beyond the obvious and our original perspective” (Rabois, 2017, p. 1). A common purpose of both Imaginative Education and critical thinking is the striving to “make connections with the real-world, to help students evaluate information that is presented to them from a different viewpoint” (Sweet, 2015, p. 1). Also shared is the process of content taking root, so that thinking is transformed (Lunenberg, 2012). My guess is that content learned through cognitive tools is processed at a deeper level, which will become a platform for critical thinking later on, but most likely not without explicit instruction on the values and processes.

**Critical Thinking and the New BC Curriculum**

A look at the “Overview of Critical Thinking in the BC K-12 Curriculum Revisions” of 2017 is not encouraging. Although the current curriculum maintains its commitment to the 1989
mandate to provide an education which supports clear and critical thinking, “assessment structure provides little guidance to teachers on defining critical thinking” (Fillion & Martelli, 2018, p. 5), or strategies to teach it effectively. Egan points out that Imaginative Education requires a solid foundation of knowledge; this is also true for critical thinking. My concern is that the emphasis on personalized education, core and curricular competencies, and a completely new assessment matrix (still unclearly defined) will squeeze out much of the foundational content which I.E. and critical thinking required. Fillion and Martelli’s “consultations with teachers and school board coordinators reveal that they desperately want a more fleshed out perspective on critical thinking” (2018, p. 15). Obviously, if critical thinking is currently going to be taught, it will be at teachers’ efforts to find resources and include it.

And Now?

It is time to head back down the mountain and re-enter the fray of the classroom. Spring break is finished; the action research project is complete. I walk away from the whole experience with several important realizations for my teaching. Cognitive tools are not a magic wand when it comes to critical thinking. I liken them to the sowing of seeds for a later harvest. I also understand now that critical thinking needs to be explicitly taught if we want students to respond to content with clarity, accuracy, precision, relevance, depth, breadth, logic and fairness (Elder & Paul, 2010). And in regards to my ‘high-altitude ataxia pulmonary’, finding a balance between excellence in teaching and other life priorities will always be a challenge. It has been a steep climb, but in the end, well worth it.
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