ThinQ
think • inquire • question

"ThinQ-Trained": What is different about them?
26 February 2020

This is a consolidated, rearticulated, and condensed version of reflections by members of the extended ThinQ family, on their own growth through closely interacting with ThinQ's vision of

a)   the intellectual foundations and intellectual growth that education should facilitate; and

b)   the (relative) place of knowledge, abilities, capacities, attitudes, values, mindsets, and habits of thought in an individual's life.

Before coming into contact with ThinQ, I had courted thinking and rationality from the periphery. Being a restless student dissatisfied with rote schooling, I read what I could read about thinking and rationality, though I had no structure. I was all over the place trying to educate myself, trying to teach myself how to THINK. I was curious pretty much about everything but did not know how to go about satisfying that curiosity.

After meeting some of the ThinQ team members and most importantly, after taking part in the IIE-2016, especially the nine days of a highly-intensive and rigorous workshop, I finally took a deep dive into the world of thinking and 'real Education' — I was given the structure, and till date, I am still going through that inner transformation.

Now I am very uncertain, not just of others but of myself, of my thinking, opinions, and perspectives. "I could be wrong; I am not sure; I do not know; what do you mean; I do not understand; how do you know? Show me the evidence;" etc. are some of the most important words in my vocabulary. I am more critical now, and my rational temper is sharper. I take criticism easily; in fact, I look for it. I find it easier to understand people and unpack what is going on in their minds. I am also a far better human being now, operating way above the animal in me. The best part is, being someone who is working in the area of education; the overflow is evident in my work at UNESCO MGIEP.

IIE-2016 was an initiation into inquiry-oriented education, into rationality. I have signed up for IIE-2017 to deepen this transformation. Though I am patient, I can't wait for this transformation to start overflowing.

Greater need for "quiet" as there is a lot more going-on inside than before.

Enjoying the struggle, the "discomfort" state — being excited rather than frustrated about it.

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There is something unique about "ThinQ-trained" educators. They have breadth of view, and approach inquiry from a broader trans-disciplinary perspective. For them, the main goal of education is the overall wellbeing of the learner — intellectual, emotional, physical. Such individuals are capable of being at peace with themselves, with other beings, and with the planet at large.

ThinQ-trained educators are uncertain and skeptical of everything, starting with their own preconceived notions. They are trained to build and nurture their rational temper, and with the guide of reason, they are able to undergo an inner transformation. And the overflow is what they translate and pass on to learners. ThinQ-trained educators are inquirers who enjoy finding and figuring things out and nurturing fellow inquirers – in this case, students/learners.

Move away from:
- mere "questioning" to "doubting and systematic questioning"
- the sequential notion of knowledge creation — that it can be created only after mastery of existing knowledge.
- the notion that "Abilities are strongly embedded in a particular knowledge context."

I used to be quite obsessed with the answer, the solution to the problem. ThinQ has helped me look beyond the desire to find the answer, to see that at times we might not be able to find the answer, and that's ok.

Seeing (more) clearly the distinction between "skills" and "abilities".
More tentative in presenting concepts and propositions even in one's areas of knowledge expertise.
Reflecting significantly more on a particular concept/proposition than before.

Much more confident about admitting: "I don't know," or "I was wrong."

Becoming keen to handle more difficult, non-trivial intellectual reading/watching, and better able to do so.
Striving more to understand the mental spaces and structures that an individual's expressions (words and sentences) come from.

Looking back, I think ThinQ is the best thing that has happened to me.

Feeling of being on a path towards strengthened understanding of knowledge constructs, how rationally justified knowledge is constructed, and what parades as knowledge in the real world.

The ability to interrogate concepts/justification: While I was always uncomfortable with many concepts in mathematics, I didn't have the tools to interrogate them. In some cases, such as with real numbers, I am still not sure whether there is a good axiomatic system which underlies them. With other objects, such as algebraic objects, I have got a deeper understanding of them — I see this clearly now when interacting with other students at graduate school who are far better than me at computing solutions to complex problems but mess up in subtle proofs or are happy to accept steps of a proof without interrogating them.

A growing recognition of what is important and relevant, and a decreased tolerance for what is not.

A new notion of open-mindedness that includes self-doubt and self-correction.

Quest for consistency (in what we read, hear, see, and do) as a growing habit of mind, with a conscious lookout for inconsistencies and logical contradictions.

"...I have always had to some extent an attitude within me that questions, critiques, reflects, reasons. However, the ThinQ training has taken this to another level. In my journey of questioning and inquiring, I usually accepted the authority of knowledgeable persons and reputed books. I still do accept them, but I also doubt them. I do not accept them unless I am sufficiently convinced."

Increased willingness to engage with things outside of one's area of interest, expertise, and comfort zone, and to laboriously work through them in order to learn; even excitement in engaging with them.
A better understanding of the inter-disciplinary, multi-disciplinary, and trans-disciplinary approaches.

A broader range of interests - the reason I wasn't interested in things like biology earlier is that they were presented as purely observational sciences and I have no interest in observational science (that hasn't changed). That biology could be a theoretical science is something I only encountered while with ThinQ. In contrast, the reason I always had an interest in physics and mathematics is due to Feynman and Ian Stewart.

A realization of not having understood even the things that one earlier "helped students understand".

A much better understanding of education than any education department I have encountered. In most other places I've seen, they don't even realize that even if the class they are offering might be stimulating for the present, it is not in any way useful for the students' future.

Realization of the deep reach of formal logic and reasoning in day-to-day thinking.

> There is a big shift in the way I look at 'knowledge': a shift from knowledge as unconnected distinct pieces of information that need to be stored in the mind, and recalled when needed, to being able to connect the different pieces, looking for clues on how they connect, such that the connections — their structure and their history — transform the pieces into an organic whole, and make them rekindle one's joy of learning. The teacher's joy of learning in turn gets transferred to students.
>
> Knowledge with all its complexity is then not a burden, but something meaningful, a wonder, a joyful experience.
>
> With this has come a shift in reading: choosing what to read rather than reading what someone else thinks is important.
>
> ThinQ has helped me put these shifts in perspective, and to articulate them.

Distinguish between goals and pedagogy; see the difference between a program final syllabus and the year-wise 'sequencing' of the syllabus.

> As a ThinQ-trained educator, whenever possible, I try to highlight the abilities that went into arriving a particular piece of knowledge. My focus on empowering students with 'information' is only secondary to empowering them with the abilities/tools for inquiry. Of course, we cannot always altogether dissociate ourselves from transmission of 'information'.

An awareness of the difference between scientific and mathematical thinking.

> In my earlier workshops, I was confined to the curriculum topics. School authorities objected to any stretching of students' minds… If I deviated from the curriculum concepts to make students think more, the teachers would remind me again and again to come back 'on track'. This was very painful. Now, as a ThinQer, I feel liberated.

Thinking at a much deeper level about many concepts. Greater richness in critical thinking.

> Even in 'alternative' systems of schooling, the curriculum and the textbooks might be different but the objectives more or less remain the same. Educators don't question the body of knowledge in the textbooks. It is taken for granted that the knowledge is important for the children to do well after school. The different curricula are like television news that is the same on all the channels (as if there's an implicit agreement that nothing else is important to make it to the news). The anchors, journalists, and style of presentation would be different but the content is always the same. The only difference is in the pedagogy they use to build the understanding.

A difference in the way one interacts with children.

Why can't it be true that the night sky is a black blanket with numerous holes that allows light to come through what we call planets or stars? Something like this was the first trigger that I came across five years ago. It looked eminently plausible. Why can't this alternative hypothesis be true? Why should I believe what textbooks tell me about plants and stars or galaxies? The questions put me in a real spin with tremendous excitement. The journey that began then continues.

What ThinQ taught me was not just doubting and questioning but ways to pursue the questions with reasoning before accepting the relationship between the ground and the conclusions. It has been a choppy journey, nevertheless. I feel there is no ground beneath my feet as the things I read, or claim to know, are mostly beliefs rather than rationally justified conclusions. It has been rather unnerving and unsettling. I still get pangs of breaking away from the deeply ingrained system of belief that education developed in us. But I spring back with renewed self belief, as the onus of finding the truth is squarely on me, and textbooks and authorities are all subject to systematic questioning. History, and the process of creating my own organic understanding, have never been so exhilarating, invigorating and exciting ever before.

"If I get back to a regular school, will I teach any different than I did earlier? May be, may be not. May be I will be torn between my expectations from myself and the school's expectations from me, and be in perpetual conflict — I don't really know. I can't 'teach' anymore."

ThinQ-training has helped me recognize the subtleties and nuances in the process of inquiry and critical thinking. For example, it has made me realise how painstaking it is to precisely define basic concepts like line, parallel lines, living cells, etc.

Gave me an intellectual high... I was thrilled with the trans-disciplinarity of inquiry tools. It gave me a sense of freedom from being tied down to knowledge content...

A definite change in the way I think; there is more structure to it...

It has changed the way I interact with my child, and so many of my conversations with her end up becoming an exercise in inquiry. I cherish this the most.

Also found some new fields of interest like neuroscience, philosophy, reasoning, and history.

On the negative side, I'm unable to be satisfied with any school ...

A ThinQ-trained educator:

a) Responds to any *sincere* question by a student / learner/interlocutor, howsoever 'dumb' it may appear to be.

b) Knows the limited space of the intellectual dimension in the overall well-being (and 'educatedness') of an individual which involves other types of well-being — functions within the intellectual dimension but looks for opportunities to collaborate with educators in other areas.

c) Constantly reflects on/questions his/her opinions, assumptions, beliefs, etc. Has a certain 'tentativeness' about his/her responses except in Mathematics. (somewhat in line with Keynes' quote: "When the facts change, I change my mind. What do you do, sir?")

d) Does not allow learner-friendly pedagogical practices to blur the focus on Inquiry-orientation.

e) Tries to achieve Learning Outcomes in line with Inquiry-Oriented Education even if other types of outcomes, e.g., knowledge acquisition, appear immensely attractive, or more useful in the short term (e.g., a week before board exams!)

f) Does not consider any topic to be 'taboo' for an Inquiry-Oriented discussion as long as it is age-appropriate.

g) Does not dismiss the need for the learner to 'tackle' / 'crack' / 'manage' the present exam-based system to secure a seat in a good institution/ job/ certificate, etc., but does not confuse that with Inquiry-Oriented Education.

h) Focuses on deepening the existing knowledge of a learner, not just expanding it.

i) Helps the learner create a filter of his or her own before assimilating new information.

(A few of these features may also be shared by other teachers.
But none except a ThinQ-trained educator will have ALL of them, I think).

To sum up the changes ThinQ has brought about in me, let me say how I approached teaching before the ThinQ course, and how I do so after the course.

Teaching before ThinQ
1. Open the textbook, look at the chapter to be taught
2. Find out the objectives
3. Look at the activities, search the internet, talk to other teachers to understand how to teach the objectives
4. Sequence activities in the form of a lesson plan. Design an assessment to check for understanding

Teaching after ThinQ
1. Open the textbook, look at the chapter to be taught
2. Find out the objectives and think about why students should learn them
3. Wonder how the chapter made it to the textbook
4. Scan the whole textbook and look for anything important that one could teach
5. Close the textbook in frustration
6. Open the textbook again and check if the chapter to be taught can be used as a tool for inquiry (if it has careless definitions, classifications that are logically contradictory, experiments that have a fixed conclusion, etc.)

ThinQ gave me a better structure for designing my classes. I also got to understand how important it is to have an outcome before us when planning any program. I had never thought through what exactly we mean by scientific thinking; how a

mathematician thinks; how it is different from the way a scientist thinks; and so on. One of my biggest takeaways was the process of Critical Reading — checking for claims, looking for evidence, reasoning, and arriving at conclusions.

I think an important aspect of a ThinQ-trained educator is an understanding of how not to learn something: One who questions knowledge and encourages the learner to question knowledge. Working from a context that de-sanctifies knowledge itself but that values being at the source of constructing that knowledge. Promoting the question and living in a context of "How do I know what I know." The ability to hold whatever one knows lightly.

Am left inspired now to use more of my remaining life towards the cause of better education and I see more the need for it and more the possibility too. The pre-ThinQ I was resigned and cynical: *nothing is ever going to make any difference to the declining process of education in the world.* Am left with some confidence that I can pitch in too, to whatever little extent, to make some difference somewhere.

I tended to ask questions of others in order to know something. Participating in IIE-2016 made me realize that this habit actually posed a serious limitation to my intellectual growth, and is not something to be proud of as I had earlier thought. Now, I tend to throw the questions that arise in my mind back at myself. To an extent, engaging with the challenging questions during IIE-2016 and the tools of inquiry that were introduced in the course have helped me look inward to seek answers. However, honestly, it is a long journey and I feel that I have just begun.

When I started teaching, I just mimicked my teacher. Slowly I started relating to the difficulties I faced as a student and tried to do things differently so that my students do not feel the same. I thought I was doing a great job. Several years down the lane, I felt I was not doing justice to enhance students' skills. I had great difficulty holding back answers so that students construct their own understanding. I worked on it, giving opportunities to students to construct and arrive at the right/expected answer. ThinQ sessions made me realise that I was still short of Inquiry-Oriented teaching, and was merely doing Inquiry-Based teaching, with an end point as per my expectation in mind.
After the ThinQ course, I question a lot, and even encourage students to ask a lot of questions. We don't follow the textbook.
I taught 'Electricity' in class X, as there was no appointed teacher. … Students were initially shocked and then surprised when I tried challenging the 'facts' in the book. They knew that I was one of the co-authors of the book. They started by asking if whatever is written in the book is wrong. My answer was, we are trying to find out whether it is right. This helped deepen their understanding. Questioning and counter-questioning, experiencing an open-minded distrust of authority, and an exciting sense of discomfort has become a regular feature in my class.
I realised how different my classes were only when the new teacher said, "I don't know… these X graders negate everything they read or I tell them. I am teaching classes VIII and IX also… I do not find this there."

> I could understand his difficulty. I am in the process of converting him. It will take a long time, but I am confident that like me, once he tastes this excitement of discomfort he would also not like to teach the way we were taught and the way we began our teaching.

Going through the IIE course last year led to a paradigm shift in my thinking. There was not simply more of analytical thinking. It now involves systematic, reflective thinking, seeking justification with evidence wherever possible.

Earlier for me, questioning was to know the answers. Post-ThinQ, my questioning is directed towards the rationale for the argument, weighing the evidence and supporting data. Result: I am seeing things differently now, not only in education but in life.

At a personal level, the ThinQ-training has helped to bring more clarity in interactions with my children. At the professional level, it has helped me to put the content differently across to teachers/trainees in the workshops I conduct. Even the way I write my reports is different from what it used to be.

> I believe a ThinQ-trained educator is someone who:
> - is able to be a critical thinker in all they do. This includes being critical of information consumed and disseminated.
> - inspires students, colleagues, friends, and family to question why the world works the way it does.
> - encourages students to challenge textbooks and authority as they reason about things they don't fully understand.
>
> Critical thinking goes across all academic disciplines and removes school subjects from their silos. Being part of ThinQ has improved my capacity to facilitate critical thinking in others.

I learnt that in a discussion, we take the meanings of terms/words for granted, ensuing in confusion and wastage of time in useless arguments. It is crucial to clarify the meanings of terms ... define the multiple meanings of a term that a book/author/writer uses and start from there. This helps me in being acutely aware of the various meanings of terms have and the way people use them. It is useful in diffusing many situations — in personal as well as professional life.

Through the Euclid's Geometry discussion, it became clear that in mathematics, we can create our own set of propositions from which conclusions may be drawn; that these propositions or axioms could be from an imagined world; that children could participate in the classrooms to create new theories in maths and get exciting results- thus preventing rote learning, allowing mathematical intelligences to emerge and be nurtured.

I learnt how mathematical and scientific investigations differ and connect these to my earlier readings of Popper and Kuhn. I have a much clearer knowledge of the scientific and mathematical investigations and I can sense that while I deal with teachers and students.

My critical abilities, to evaluate a book/document critically have been much higher after IIE-B, just because I was given the opportunities to do so several times during the course.

Inquiry-Oriented Education has fascinated me the most. Since I am working on curriculum building and also trying to integrate sustainability, the skills and abilities that I developed in the workshop would stay with me and I would surely nurture this.

There are very few organizations/platforms that have an egalitarian culture, particularly about learning and discussions. I have learnt that ThinQ is among those few teams where this shows. I believe that personal and professional growth occurs best when one gets such an environment.

The open forum discussions added to the learning processes. The way discussions happened were of excellent quality and pushed us to read, reflect and respond.

Ability to influence my customers to appreciate capabilities and learnings at a generalisable level. For example, clients often ask questions like "you understand anomaly detection in the auto industry but how do you do that for a food industry"? While the handling of the clients was done differently in the past, I now tell them the need to look at data as a generalised input and anomaly detection using data then becomes a domain agnostic capability. Influencing and educating clients to ask intelligent questions has now become part of 'bread and butter' for the company and I suspect, the clients enjoy this process of learning as well.

For me, the translation of the learnings is useful at the work place where I have asked at least two of my potential clients the question, "so what does success look like to you?" This comes down to not just a good articulation of the problem but also a strong definition for success as the client sees it and matches it with our vision. Not the kind of technical discussion one would expect when discussing normally but now, it is easier for me to unravel the expectations that the client is after even if it is camouflaged in a mountain of words!

The word that I particularly liked to describe the ThinQ process is 'unbundling' and the process with which we do it. While there are a good number of schools that attempt concept-based / IOE based education, IIE helps the learner build / develop the solutions using concepts that are already known or postulating new assumptions and theories as he/she goes through the journey. Of course, the

postulations come with probabilities and falsifiabilities and a whole lot of other basis that this structure needs to stand on. We create those learnings for the students and the construction of the theories and the basis for the assumptions rest on this strong foundation.

The strength of IIE also lies in extrapolating the learnings to new areas and building concepts and knowledge around those. The cross-domain jump requires skill sets that are broader than those acquired from the other education pedagogies that you mention in the mail. Through the various inquiry modes, we were able to explore the theory construction modes that were transdisciplinary in nature. This is one big strength of IIE and a major differentiator. The other strength lies in understanding not just what the concepts help us construct but also understand the building blocks that help make those constructions – for eg., What is the difference between a substance and an object? This is different from explaining the concept between physical / chemical change.

I am not quite sure as to what I need to write about the ThinQ trained educators. I see a lot of confidence erosion as many are still taken by the 'knowledge' required to facilitate the sessions while giving the process of inquiry a back seat. I wish they could train their strengths on the unbundling and the process of inquiry and gain confidence from it. This is an area of work. Only after confidence is gained, facilitation with clarity can follow and only after years of such practice can an organisation get to a cruise control mode. So quite some work still to be done to create the educators here.

We talked about the 'infinite mountain' at some point in IIE-B, which had a significant impression on me towards the end of the workshop. "Don't measure your progress by how far you are from the top, but rather by how much you've climbed so far," was the message, and it really hit me on that last day (of the workshop). Not long after I joined Facebook when I was fourteen, I got exposed to a host new-age media and fake news. Among the various pages and YouTube channels I subscribed to was Spirit Science, And I was a passive, blind follower. When I was asked to watch that video on the last day, it really struck me. I could not believe that I used to buy into stuff like this (and I used to buy into a lot more than just Spirit Science), so strong was my disbelief in fact that I almost couldn't watch the entire video.

The first step I took onto this mountain is so far back that it has almost faded under the clouds. What started as an uncertainty of God's existence is now the purpose and meaning of mine. The ideals of rational thought, which I began learning much before I realized, became intertwined with my personal identity, and not long

afterwards, I realized I wanted to share these ideals with the world; I realized I wanted to be an educator.

ThinQ has spring-boarded me on this journey; it has helped me develop the crude image of the kind of educator I want to become into something I can really see. In the last eighteen months, I've shifted from wanting to become an educator of science and science literacy to and educator of rational inquiry. This shift could have never happened without ThinQ, and I strongly believe my current ambition is aligned more closely with the ideals I've always had.

The positives from my end:

1) I am able to critically read/scan (still in that stage I am still not there) through articles. I am quite tentative in my response to anyone including my own child. The experience and background of the different participants was good and I gained a lot listening to everyone's journeys.

2) I felt the theory construction exercises of different subjects helped me to understand the LTs much better.

3) I believe a lot can happen with stories. I am happy to have been introduced about P4C in LT6. I am convinced that P4C is something I want to try with children and act as a facilitator for discussions! I am still not there and trying to figure out the attributes of the facilitator to have a meaningful discussion among children!

4) I am beginning to understand the importance of coming up with definitions and counterexamples to that and reworking etc after IIE-B.

I understand the ThinQ course is not subscribing to any particular person's method of teaching. It rather helps individuals pick the best from all the education philosophies (and more importantly take them with a pinch of salt) and encourages to develop their own style of working with children to develop the child's critical thinking and inquiry abilities.