



**Readying students for a
constantly changing workplace.**

(Using Facilitated Thinking Smartphone Technology)

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Mahatma Gandhi

Those who know how to think become their own teachers.

■ Executive Summary

This handbook was written from a workforce development and facilitated thinking technology perspective. It offers suggestions for readying students for successful careers as “white collar” knowledge workers.

The Question Addressed

“How can High Schools and Colleges better prepare students for an exponentially changing workplace?”

The Answer

America must now develop a change-adept knowledge workforce who “Think” their way through constant change.

The Solutions

Education needs to focus more on improving the quality of thinking by teaching students the right questions to ask within optimal thinking frameworks (thinking processes).

But, education alone is not the full answer. Effective thinking is still going to be limited by human memory. For most of us that means we will not remember the right questions to ask ... when the time comes to ask them.

So ... in addition to education, Facilitated Thinking Smartphone applications are needed. These apps are essentially automated teachers/mentors/consultants that guide real-time thinking, as if a human mentor were personally present in the classroom or on-the-job.

■ Time of exponential change

Less than a century ago, a student graduating from High School was taught 75% of all the knowledge they needed for a *Lifetime*.

Moreover, when students entered the workplace, much of their thinking was oriented to performing routine manual tasks. Once taught, workers did them over and over again, sometimes for a *Lifetime*.

Today, students graduate from High School without even knowing what work will exist during their *Lifetime*.

A video used by corporation Sony Corp. does a credible job of illustrating the current era of exponential change. To view it go to <http://www.youtube.com/watch?v=cL9Wu2kWwSY>. Here is an example from the video:

- We are currently preparing students for jobs that don't exist yet.
- Using technologies that have not been invented yet.
- In order to solve problems that we don't even know are problems yet.

Note: Having the ability to distinguish between factual information and information that has been "spun" is a critical thinking requirement. And while this author isn't sure how

factual the above statements are, I am fairly certain that we are living in an era of really ... really fast change.

■ Knowledge worker challenges of a change

Conventional wisdom for dealing with "change" is through more training and education. While "learning" and acquiring a critical mental mass of content is obviously essential, clearly American education must now produce workers who think through these challenges of workplace change:

1. The Need to Remember More: The quantity of information to perform work is increasing faster than workers can remember. A study at Carnegie Mellon analyzed how much information the average worker needed to remember for doing their job. It was found that in 1986 workers retained in memory about 75% of the information their jobs required. But by 2007 it was down to about 10%.

2. Information Overload, Spin & Critical Thinking: Not only is the need to remember more information a challenge, but a myriad of information sources enables anyone to "*spin*" information. Critical thinking is required more than ever to assess information truthfulness and validity.

3. Faster Skills Obsolescence: In addition, not only is information overload a problem, but the lifespan of knowledge and human skills to perform work is growing shorter.

Plus, work is getting more complex. Workers are noticing that job practices that were successful yesterday, may not work today and even worse ... cause more problems.

4. Learning & Forgetting: Not only do humans have a memory capacity issue, we also have memory recall limitations. Some studies have shown that the average person (knowledge worker) remembers only about 5% of what they have been taught. Even if this percentage is extremely low, the point is: *when the time comes to apply learning ... much might have been forgotten.*

5. Scripted "Autopilot" thinking: And finally, while all of us possess the ability to think in different ways, each of us develops dominant thinking patterns. So when we think, our mind instinctively draws upon using those dominant skills.

The problem with this kind of "scripted" thinking is it prevents seeing anything other than what is revealed by that script. When workers mostly performed routine tasks, scripted thinking was not a problem ... BUT IT IS NOW!

■ Becoming a change-adept thinker

So if we cannot predict the kinds of jobs students will be doing in the future, and current jobs are quickly becoming more challenging, the question becomes; *"How do we prepare our children to function in this kind of workplace?"*

The answer lies in understanding the evolution of work from a world of much certainty and little change, to a modern world where the only certainty seems to be change.

Industrial age answer-oriented education

During the Industrial age, companies valued standardization. Factory workers were measured on how efficiently they performed work and how well they could memorize routine work practices. They were not encouraged to ask a lot of questions or do much on-the-job thinking.

Education successfully met those work needs with standardized curriculums and tests that required memorizing

standard answers. Even today, students are measured on their ability to give the right answer to:

- National, state and local tests.
- Teacher's questions and pop quizzes.
- Homework assignments, subject matter tests, and proficiency assessments.
- Answers to ... everything!

BUT ... Answers STOP thinking

There is nothing wrong with memorizing answers, in fact, the more answers you can memorize the more effective your thinking becomes. The problem, however, is once an **answer** is given ... generally **thinking stops**.

- When the test is done, thinking about the content usually stops.
- When we find an answer (any answer) to a problem, thinking about the problem typically stops.
- When someone gives us an answer, even if it's the wrong answer, thinking frequently stops.

Knowledge age *question*-oriented education

The cornerstone of this handbook and facilitated thinking technology is:

"Questions promote thinking."

Questions are empowering and asking the right questions can significantly improve thinking effectiveness. Recently, I asked a number of teachers if they ever tested a student's

ability to ask the "*right questions.*" None of them did; in fact, they did not know any teacher who did ... or even any test that measured questioning skills.

■ Question oriented High School Education

Until now, there was never a great need to teach thinking, or have students learn the correct questions to ask. But the game's changed ... businesses need workers who are inquisitive and are THINKERS.

Bill Gates may have put it best when he said:

"American high school education is obsolete. When I compare our high schools to what I see when I'm traveling abroad, I am terrified for our workforce of tomorrow. Our fourth graders are among the top students in the world. By eighth grade, they're in the middle of the pack. By twelfth grade, U.S. students are scoring near the bottom of industrialized nations."

So, what's happening?

From an outsider perspective, the reason and solution seem fairly straight forward and follow this basic assumption:

Students, like knowledge workers, who ask questions are more engaged and are critically thinking about their learning.

The relationship between asking questions and student performance seems to be:

- When students stop asking questions ... thinking stops.
- When students' thinking stops ... learning stops.
- When learning stops ... students' performance drops

Applying this to Mr. Gates's comments finds this correlation. Fourth grade students ask lots of questions and are generally engaged in their learning ... consequently higher performance.

However, as students move through higher grades, they become less prone to ask questions. By high school, many are fearful of asking "stupid" questions. This fear causes students to stop asking questions. The result is the loss of questioning abilities and consequently leads to poor performance in school, and ultimately in the workplace.

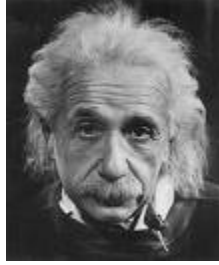
So what's the answer? How can thinking be made easier, more fun, and become a lot more effective? Here are a few suggestions.

Moving thinking to the forefront of education

What's apparent, at least to this author, is the need for a comprehensive approach that puts THINKING at the forefront of High School education. I believe this can be accomplished fairly easily, and without changing much course content by implementing these six proposals.

1. *Attitude*: Acquire a questioning attitude.
2. *Classroom*: Embed learning the right questions to ask in regular subjects.
3. *Project Learning*: Embed learning of thinking process skills in projects.
4. *Assessment*: Assess students as questioners ... not only as answerers.
5. *Critical Thinking (Character Education)*: Promote self-awareness as a foundation for critical thinking.
6. *Curriculum*: Teach thinking as its own subject.

1. Acquire a questioning attitude



Einstein once said:

"What's different about me?"

"It's my ability to ask the right questions clearly & cleanly."

Our attitude is the window through which we view the world; attitude drives our thinking and actions. A positive mental attitude prompts responses for finding good. A negative attitude prompts pessimistic responses for finding the bad in situations.

One of the more important jobs in education is helping students realize that becoming a good questioner is essential for becoming a skilled knowledge worker. This begins with helping students acquire a questioning attitude. If students don't have the intention to ask good questions, nothing much will change. Students need to follow this Chinese proverb:

"He who asks a question may appear a fool for a minute, but he who does not ask a question remains a fool for life."

Facilitated Thinking Proposal

Like most everything in life, a key to acquiring a questioning attitude is simply a conscious effort to start DOING IT. An easy way to start is a fun class discussion that gets kids thinking about why questions are important. The following is a suggested facilitated thinking application to help teachers prepare for this discussion.

Questioning Attitude Class

Famous Quotes

- *A prudent question is one-half of wisdom.* — Francis Bacon
- *Judge a man by his questions rather than his answers.* — Voltaire
- *It is better to know some of the questions than all of the answers.* — James Thurber

Why Questions are Important (Get lesson plan)

- New ideas depend on asking ordinary questions in unusual places.
- Questions can be dangerous to the status quo.
- Nothing stifles thinking more quickly than knowing the answer.

2. Classroom: Embed learning what questions to ask in regular subjects.

Critical Success Factor – Teacher Courage & Humility

Questioning skills may be more difficult to teach ... than to learn. The reason is questions encourage students to challenge their learning. This means teachers will need the *Courage* to withstand having their knowledge examined. And this means teachers' need *Humility* to understand that they don't have all the answers.

Questioning attitude put into practice

Thinking skills include questions that empower: critical thinking, collaborative thinking, higher order thinking, and contextual thinking.

1. **Critical Thinking Questions:** Critical thinking is, in short, self-awareness of how you are thinking while you are in the process of thinking. The goal is to improve personal intelligence to help ensure students are applying their best thinking for any given situation.
2. **Collaborative Thinking Questions:** Asking collaborative thinking questions facilitates dialogue that produces a collective intelligence. The goal is for teams, groups, organizations, and entire communities to think and act in partnership to create results that no one person alone could produce.
3. **Higher Order Thinking Questions:** Higher Order questions are process oriented. Thinking is significantly aided by knowing the right sequence in asking questions.
4. **Contextual Thinking Questions:** There is positive correlation between people who think better ... with people who have acquired relevant information and knowledge to think upon.

Applying good thinking upon incorrect, biased, or incomplete information results in poor quality and ineffective results.

Facilitated Thinking Proposal

Teachers can add questions to their instruction with little change in lesson plans and content. With a simple button click or voice inquiry, they can access on-demand questions to use. The following is the main menu for an application that does just that.

Questions in the Classroom				
Main Menu				
Thinking Tasks	Critical Thinking Questions	Contextual "Content" Questions	Higher Order Thinking Questions	Team Thinking Question
Observe Situation	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Find the Meaning	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Identify Purpose/Goal	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Gather Data	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Analyze Data	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Create Ideas/Solutions	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Evaluation Criteria	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Make a Decision	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Predict Consequences	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>
Identify Action Steps	<i>Go</i>	<i>Go</i>	<i>Go</i>	<i>Go</i>

3. Project Learning: Embed learning thinking process skills in projects.

Develop thinking processes skills within projects.

In the workplace, all thinking has some purpose, e.g., to solve a problem, reach a goal, understand information, etc. And all thinking is done within thinking processes or the mental frameworks in which thinking occurs.

Understanding the thinking process (sequence of thinking tasks) can significantly influence thinking. Skipping or missing a thinking task can lead to ineffective thinking, as shown in the following sequence.

- Choosing the right thinking process (framework) affects the questions asked.
- Questions asked affects the information gathered.
- Information gathered affects analysis of the situation.
- Analysis of the situation affects conclusions.
- Conclusions affect development of ideas and solutions
- Ideas and solutions affect actions.
- And, actions affect the quality of your work/life!

Facilitated Thinking Proposal

Just as teaching content is best done by using a "Content within Context" approach ... Teaching thinking is best done using a "Thinking within Process" approach.

The best way to learn thinking processes in business is by working on projects. In education, project learning not only promotes students acquiring *content within context*, but more importantly acquiring *thinking within process*.

A suggested way to implement this is to provide teachers and students with the following facilitated thinking Project Planning application. This application mentors students by providing questions, skill builders, and exercises at each step of the thinking process.

Project Plan Main Menu			
Project Phases (Tasks/Steps)	Skill Builder	Games, Exercise	Progress Report
Project Definition			
Project Requirements			
Project Design & Solution			
Project Implementation			

4. Student Assessment

Assess students as questioners ... not just answerers

Today a major focus in education is teaching to the test. So, quite naturally, the current assessment process is about measuring a student's mastery of content.

"Learning how to think seems to be a by-product of learning content."

What if there was a paradigm shift with emphasis is on teaching students **how to think**. Now,

'Learning content becomes the by-product of thinking.'

A new assessment process hypothesis would be:

If ... it is true that students who ask questions are really promoting thinking and learning

Then ... it becomes beneficial to give students exams that ask them to identify the correct questions to ask about a subject matter and content.

In other words:

"The question is the answer"

Facilitated Thinking Proposal: AND/BOTH assessment

Modern education needs an assessment process that measures BOTH content mastery AND questioning/thinking abilities.

The following is part of a proposed rubric designed to measure both content and thinking ability by asking the right questions. It contains "Query Fors" and "Listen Fors."

**Formative Thinking Assessment Rubric
Main Menu**

Thinking Tasks	Emerging – 1	Developing – 2	Proficient -3	Exemplary – 4
1. Define the Problem	Learner is not able, willing, or motivated to understand the importance of Critical Thinking (CT) for problem definition.	Learner poses extraneous or unimportant CT questions that provide only partial problem definition.	Learner states CT questions that correctly recognize the problem but language is ambiguous or imprecise.	Learner clearly and logically expresses CT questions that would lead to complete definition of the problem.
2. Identify Goal or Desired Outcome	Learner does not pose questions that demonstrate the importance of identifying outcomes and setting goals.	Learner develops some critical inquiry questions but not enough to construct attainable outcomes	Learner can articulate the appropriate CT questions, but may be unclear or contain minor errors.	Learner clearly and precisely develops questions that identifies goals and outcomes.
3. etc.

For the complete rubric: www.nthdegreesoft.com/rubric.html

5. Character Education (CE): Foundation for learning and thinking

As important as good thinking skills are, businesses want to hire people with good character. Character education is an important underpinning for thinking and learning and may have been summarized best by Socrates who said:

"The secret to leading a productive, ethical, and meaningful life is in two simple words:
"Know thyself."

For some students, the search for an adequate sense of self can be so powerful that it takes precedence over all else in their lives, including education. So while knowledge keeps changing, and lifelong learning is now a necessity, a lifelong ability that can be taught is ... Finding a sense of self on which to build a life.

Students gain this self-knowledge by regularly examining their behavior and reflecting on the kind of person they are and would like to be. When students do reflective thinking, they are inclined to be honest with themselves, admit what they don't know and take responsibility for their actions. It works like this:

1. Self-awareness leads to knowing personal performance strengths and weaknesses.
2. Knowing strengths and weaknesses leads to understanding how to improve performance.
3. Improving performance leads to better problem solving (goal setting, teamwork, decision making).
4. Better problem solving leads to a willingness to solve more problems.
5. Solving more problems leads to higher self-esteem.
6. Higher self-esteem leads to a more confidence individual who can face the challenges of school, life, and work.

Facilitated Thinking Proposal

High School students need a facilitated thinking Character Education app that functions like a counselor, teacher, or advisor. The following table is a suggested self-mentoring application that prompts self awareness. These questions help students become more conscious of their own personal characteristics, beliefs, and behavior patterns.

A major advantage of an application approach is that it offers a completely safe, unbiased, and non-judgmental environment for students self assessment. It allows students to explore their own ideas and solutions more thoroughly before interacting with a teacher or counselor.

High School Student Self-coach	
Main Menu	
<p>Performance Character</p> <ul style="list-style-type: none"> Personal Visioning Personal Problem Solving Positive Mental Attitude Personal Pattern of Success Setting Goals Making Better Decisions Develop Action Steps and Plans 	<p>Moral Character</p> <ul style="list-style-type: none"> Truth, Honesty & Integrity Friendship and Teamwork Respect and Caring Ethical & Moral Thinking Social Intelligence Empathy & Listening Self-awareness Journaling

6. Curriculum - Teach Thinking as its own subject

Teaching Thinking Skills

If you do a Wikipedia search on the phrase "Thinking Process" you will find two processes: 1) A Creative Problem Solving (CPS) process developed by Alex Osborne in the 1950s. And 2) A Scientific thinking process that has its roots in the "laws of logic" first defined by Aristotle.

In changing times, businesses are discovering that using "work processes" are critical for success. Unfortunately, few "thinking processes" exist and many business people simply apply the Creative Problem Solving process to every situation they encounter.

Facilitated Thinking Proposal

In addition to problem solving, students need to be taught “innovative” thinking.

Innovative thinking is much more difficult than problem solving because it entails having the ability to apply all the following thinking processes. It’s suggested that these Facilitated Thinking courses be taught in High School.

Thinking Processes	Why it’s needed
Critical Thinking	Improves ability to acquire valid information and think about it in an unbiased way.
Systems Thinking	Improves ability to understand complexity and minimizes developing solutions that cause problems elsewhere.
Futures Thinking	Improves ability to anticipate the future and decide what actions are needed now.
Collaborative Thinking	Improves ability to use group intelligence to get results that no one person could develop.
Creative Thinking	Improves ability to find new ways (ideas, solutions) to deal with change.
Both/And Decision Making	Improves decision making ability to use uncertain data about an unknown future.

■ Thinking-oriented College Education

Thinking & Learning Support Systems (TLSS)

More than ever, knowledge worker success depends on a high quality College/University education. While educating students to be thinkers remains a priority, a new and maybe

bigger challenge for Universities is to find new ways of putting thinking at the forefront of workers' careers.

This proposed solution has students graduate, not only with what they remember, but with a comprehensive Thinking & Learning Support System that they can USE on-the-job for a LIFETIME. These kinds of facilitated thinking systems enable knowledge workers to "pull" cognitive tools, learning, and resources *in the moment of need*.

Push vs. Pull Learning

Today's colleges and universities mostly "push" knowledge and information at students. This push model of learning tends to treat students as consumers, with the product being "knowledge."

While obviously important, it needs to be recognized that push learning has weakness like:

- Learning unimportant information that will never be used.
- Learning important information that may be forgotten by the time it needs to be used.
- Acquiring valuable educational material but not using it on the job.
- Losing access to Professors as a learning resource.

In a pull model of learning, the student decides what they need to learn at the moment of learning. The model strives to continually expand the choices available while at the same time helping students find the right cognitive tools and learning resources that are most relevant to them.

So what might a pull system of learning look like?

Flipping traditional learning upside down

Development of Thinking & Learning Support Systems (TLSS) essentially turns the push model upside down. It uses the following approach that supports self-development learning. TLSS model includes these four levels.

Level 1: Self-learning via facilitator questions:

The ultimate goal is for knowledge workers to think through continuous change and “learn” when their jobs require it. This level works by simply finding and asking the right question which gives the workers’ minds the best chance to find the right answer.

Level 2 – Self-learning via cognitive tools:

This level goes deeper with knowledge workers (students) accessing cognitive tools that have encapsulated “Expert” knowledge. Like manual tools improve labor productivity, cognitive tools improve productivity of thought.

Level 3 - Coaching “Apprentice” Learning:

If a person needs more detailed learning, this level provides exercises, examples, demos, videos, etc. This level is more of an apprenticeship or learn-by-doing model and uses simulation software.

Level 4 - Formal Training and eLearning:

This level uses traditional formal training. It focuses on knowledge acquisition for work tasks of a complex nature that may require hands-on practice, or distributing large amounts of knowledge to new workers. It can be characterized by using instructor-led, online, or blended classroom settings.

■ Facilitated Thinking Smartphone Technology

In addition to education, we need to find other ways for making thinking EASIER and BETTER. Our approach is called Facilitated Thinking Smartphone Technology. It was developed on the basis that rarely can people remember all the right questions to ask or mental tools to use when thinking.

Instead of relying on human memory, facilitated thinking technology takes a different approach. Like a skilled consultant or teacher, this technology delivers timely advice by recommending and putting at an individual's fingertips the right questions, tools, insights and successful processes to enhance your "in-the-moment" thinking capabilities.

This technology is built on the premise that choosing a cognitive thinking tool follows the same principle that underlies the selection of any manual tool: *choose the tool appropriate for the task at hand.*

Cognitive Tools (thinklets)

The technology's goal is to provide cognitive tools, called thinklets, that function like a skilled consultant or teacher who is always available and ready to guide worker thinking, precisely when it's needed.

At the heart of the technology is a Thinking Emulation Grid™ that replicates how humans provide intellectual guidance. For a summary description see Appendix B: [Google for Your Mind.](#)

Smartphones: A major game changer

While the Thinking Emulation Grid is the brains of the technology, another success factor is the ability to deliver cognitive tools *real-time* and in the moment of need. Until now, the only way that was going to happen was from human interaction.

An assembly line for your mind.

In some respects, the blending of Facilitated Thinking technology with Smartphones is much like the invention of the assembly line that improved manual worker *labor productivity* ... but now improves knowledge worker *thinking productivity*.

Meeting Productivity

As collaboration, teamwork, and cross-organizational work increase in business, meetings of all types become the setting in which much of the really important work gets done.

Now more than ever success is becoming more reliant on the quality of meetings. Meeting Mentor Smartphones not only significantly increase meeting effectiveness, but shorten time, and make them more fun.

■ Using Facilitated Thinking Smartphones in Education

To this author, there appears to be many parallels between business meeting facilitators and teachers. So ...if facilitated thinking technology can improve business meeting effectiveness... why can't it also improve class effectiveness?

Teachers as facilitative leaders

Running a classroom is like running a meeting. Teacher's help students become successful, just like a meeting facilitator helps participants be successful. For example:

- Meeting facilitators use Smartphone apps to prepare agendas; teachers use them to prepare lesson plans.
- Meeting facilitators use apps during the meeting as an Automated Consultant that listens to the meeting conversation and offers guidance. Teachers can have it listen to a classroom conversation and get guidance as if a mentor teacher were present.
- AND both can use Smartphone apps to overcome bored workers in meetings and bored students in classes.

Students as Knowledge workers

Knowledge workers use smartphones as a job aid to improve real time thinking performance. Students can use them as a tutor/coach to help them with homework assignments.

Students as Self-learners

Work is changing so fast, knowledge workers just don't have the time to keep up and take training courses. Knowledge workers need to pull learning as they need it.

Similarly, students can use the smart-device as a self development tool and only ask a teacher for assistance when it's needed. In addition, smartphones allow students to learn at their own pace which, for some students, can be less intimidating than participating in a classroom.

Students as Project Collaborators

Collaboration is of growing importance in the workplace. Knowledge workers must know how to use smartphones to effectively work together. For many students, using smartphones comes naturally and should be a fun way to learn collaborative thinking.

■ Appendix A: How the process of thinking works

To this author's surprise, very little has been written about the "process of thinking." While Google searches found millions of hits from a neurological and physical brain standpoint, it found almost nothing from a thinking process standpoint. So here is my "pedagogy" on how thinking works.

The word "Think" Defined

We have all been taught that good thinking starts with a clear understanding of the definition of "words." If so, it may be one reason why nothing much has been written about the process of thinking ... because the word "Think" itself is very poorly defined.

For example, the word "Learn" is clearly defined in the Oxford English dictionary as:

"Learning is the acquisition of Knowledge or skills through experience, or study, or by being taught."

However, the same dictionary defines "Think" as: *A person's ideas or thoughts.* Webster's definition is: *To form or have in the mind,* American Heritage's is: *The act of one that thinks.*

I don't know about you, but to me these definitions are fuzzy. So ... I developed the following definition:

*"Thinking is the **application of cognitive tools (thinklets)** upon learned content in order to find what actions to take."*

How the process of thinking works

Actually, before developing this definition, I needed to understand how the process of thinking really worked. Again, I found very limited information, so here's my explanation of how it works.

"The thinking process works by observing the current situation and comparing that observation with memory to find what action(s) were taken in the past in order to take the same action(s) again."

Thinking as a five step process

- 1. Sensory Observation:** Our brain takes in sensory information about the current situation.
- 2. Memory Scan:** Using the sensory information, our brain scans memory to find the same past situation.
- 3. Interpretation & Decision:** The brain then compares current situation with past situation and takes action based on what was done in the past.
- 4. Association Scan:** If no comparable past knowledge, our brain searches memory for something similar. This can be considered looking for a "cognitive tool."
- 5. Action - Application of Cognitive tools:** Our brain instructs our body to take action by using the cognitive tool. Note: This step probably is iterated,

very quickly and combines lots of prior knowledge experience and tools.

Thinking Process Example: Grocery store checkout

Step	Thinking Action – Grocery store checkout
<p>1. Sensory Observation</p>	<ul style="list-style-type: none"> • My grocery cart has 5 items. • The fast lane is open with 1 person in line but the help light is flashing. • Several other checkouts are open with at least 2 people in line and large orders. • There is a self-checkout open with no line.
<p>2. Memory Scan</p>	<ul style="list-style-type: none"> • I have fewer than 15 items so I could use the fast lane checkout. • The flashing light at the fast lane probably means some problem and delay. • I've never used the self-checkout.
<p>3. Interpretation & decision</p>	<ol style="list-style-type: none"> 1. I'll just get into the fast lane like I've done in the past (brain goes to Action step). This is scripted/autopilot thinking. 2. I'm going to try the self service check out (brain goes to next Association Scan step)
<p>4. Association Scan</p>	<p>Brain searches memory to find a similar experience (cognitive tool -thinklet) that can handle this situation:</p> <ol style="list-style-type: none"> 1. I bet I can use my prior knowledge using ATM machines (thinklet) to help with self-service. 2. If nothing else, I'll have someone teach me how to use self-service (human - thinklet).
<p>5. Action – Application of cognitive tool (thinklet)</p>	<ul style="list-style-type: none"> • Pull out wallet for discount card. • Pay for groceries. • Bag groceries.

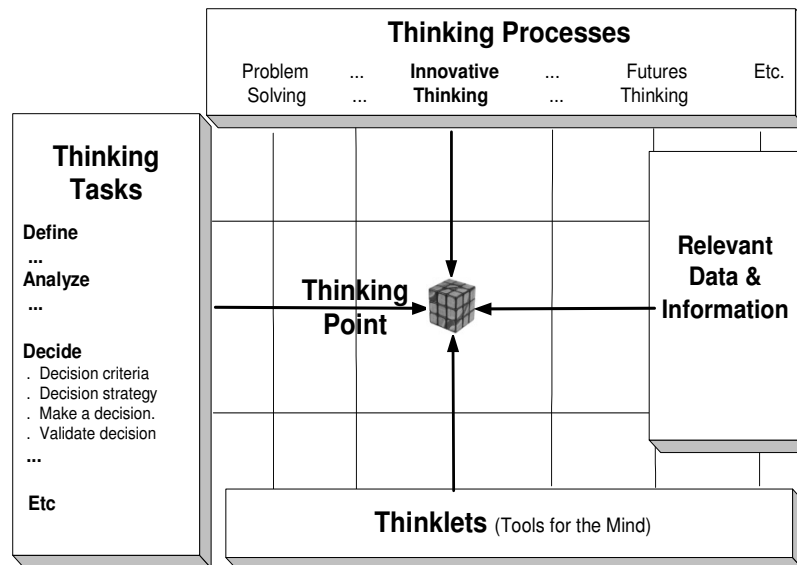
■ Appendix B: Google for Your Mind

The brain of facilitated thinking technology is the Thinking Emulation Grid. It works something like Google, but instead of using *key words* to find information, it uses *thinklets* to find the right thinklets to use and questions to ask.

With a just-in-time approach, the grid delivers the right questions to ask, the correct thinking tools to use, within a proper thinking framework, to enhance personal or team thinking performance.

In some respects, this grid is based on the way our brain works. According to brain theory, the mind does not store information alphabetically, like a dictionary, but organizes information by association. This is why one thought leads to another and why “thinklets” work.

Thinking Emulation Grid



1. Thinking Processes

Thinking Processes are the mental structures or frameworks (practices, processes or procedures) in which thought occurs. Like a human facilitator, these processes guide thinking with the goal of helping people focus on what is important.

2. Thinking Task

Thinking tasks are the basic building blocks of thinking. Understanding the sequence of thinking tasks within a "thinking process" can significantly influence knowledge worker thinking. Skipping or missing a task can lead to ineffective thinking

3. Thinking Points

Thinking Points are where human facilitators are emulated. Thinking points are the cross section between "Thinking Processes" and "Thinking Tasks."

The purpose of a Thinking Point is to function as if the human consultant, expert or professor were working directly with you and providing intellectual guidance to help you find your own best idea, answer, solution.

4. Thinklets: Cognitive tools for the mind.

So what are thinklets? Thinklets can be viewed as mental triggers or "thought switches." Thinklets help the thinker activate non-routine thinking patterns that lead to new associations, relationships and ultimately new innovative ways of thinking.

In its purest sense a Thinklet can be as simple as **“asking the right question at the right time.”** Or, a Thinklet may provide small bursts of thinking stimuli (expert “facilitation” questions) embedded in traditional thinking techniques, templates, and worksheets.

5. Thinking Information & Content

From a knowledge worker perspective, information can be viewed as the “raw material” of thinking. Effective thinking occurs only if a person acquires the right “critical mass” of relevant background data and information to think upon.

For the most part, there is a direct correlation between effective thinking and acquiring accurate and unbiased data to think upon.

Note: For a detailed explanation get this white paper:
Facilitated Thinking Technology: A fifty-fold
increase in thinking productivity.

<http://www.nthdegreesoft.com/wpfft.html>

The End

If you have any questions or comments I'd like to hear them. Send me an email at dj@nthdegreesoft.com.

Thank You!



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