Great Minds Think Differently:
Sustaining a System of Thinking

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ABSTRACT

Should students only be exposed to basic content in schools? Of course not, an educator's job is to teach students how to become self-sufficient learners. In the medical profession, doctors lose their license for malpractice. In the legal profession, attorneys lose their ability to practice law for misconduct. Many times in the education profession, ineffective teachers and administrators continue to teach basic curriculum with no regards to creative thinking for themselves or their students. They behave in this way without fear of losing their job. Wouldn't this be considered malpractice? Unethical? The crucial goal of the education system is to utilize critical thinkers to create more critical thinkers. According to Ayn Rand (1957) in her best seller, *Atlas Shrugged*, the mind is the most important tool for humanity, and reason is its greatest virtue. This paper seeks to uncover the significant aspects of developing and sustaining school-wide reform on creating thinkers. The GREAT MINDS model will clearly outline these vital components.

Introduction

In *Atlas Shrugged*, John Galt, the main character, represented the idea that the mind was the only means by which man could prosper. Galt demonstrated how the world would collapse without the contributions of the great minds. According to many experts, the education system is currently in a state of collapse because the thought process has been omitted from the curriculum. Educators feel pressured due to time constraints, so they end up teaching content only and not teaching the process of learning. There is no development of the great minds. Many times educators want to use a system of checklists to prove that the curriculum has been covered. In the book, *Understanding by Design* (2006), the authors write about the need for "uncoverage" as opposed to "coverage." Their research reveals three types of uncoverage:

- Uncovering students' potential misunderstandings (through focused questions, feedback, diagnostic assessment)

- Uncovering the questions, issues, assumptions, and gray areas lurking underneath the black and white of surface accounts

- Uncovering the core ideas at the heart of understanding a subject, ideas that are not obvious-and perhaps are counterintuitive or baffling – to the novice. (p. 46)

This article will underscore these three "uncoverage" types throughout the concepts outlined in the GREAT MINDS approach to developing a system of educator and student thinkers.

Purpose of the Article

The purpose of this article is to outline ten mental habits needed for school reform in creating a system of thinkers – mental models. It will combine best practices in the education setting that have been deemed effective by thinking gurus coupled with the themes found in *Atlas Shrugged*. This article will assume that when the mind is present it can be molded to function cognitively.   It will use the acronym GREAT MINDS to outline the areas that must be included in a comprehensive system of thinking. The reform model considers the quote from John Galt, "I am, therefore I'll think" (Rand, 1957) as its core belief and expounds on the following intellectual behaviors:

G- Get up and move; M – Metacognition;
R – Reason it out; I – Inquiry;
E – Enjoy learning; N – New Knowledge;
A – Apply to the real world; D – Differentiate;
T – Teacher model; S – Systematic reflection.

That which you call your soul or spirit is your consciousness, and that which you call 'free will' is your mind's freedom to think or not, the only will you have, your only freedom, the choice that controls all the choices you make and determines your life and your character (Rand, 1957). John Galt and the other great minds in Ayn Rand's novel *Atlas Shrugged* were alike in their ability to think their way to success, but very different in their purpose in society. Each used their unlimited mental capacity to drive their efforts. Peter Senge (2000) defines a mental model as a person's theories about the way the world works and influence actions, which in turn influences the interactions of the system. A mental model is a deep attitude and belief. This article will take that definition one step further. In addition to referring to the theories and beliefs of a person as a mental model, it will refer to the person as the avenue to thought and the influences that that individual can have on creating critical thinkers, i.e. great minds. Galt and his friends could be considered mental models. They each had deep-rooted beliefs that they would not compromise. Galt's influence on the rest of society was phenomenal in the sense that his actions were able to either improve or end the functionality of society.

Similar to the main characters in *Atlas Shrugged*, disciplinary literacy is based on the premise that students can develop deep conceptual knowledge in a discipline only by using the habits of reading, writing, talking, and thinking which that discipline values and uses (Bill, 2006, p. 8). In disciplinary literacy classrooms, students act as historians, mathematicians, scientists, readers, and writers as they engage with subject-matter tasks, texts, and talk that apprentice them into each discipline's ways of working (Bill, 2006, p. 10)

Mental Habits

G – Get up and Move! Thinking cannot take place without the circulation of fresh oxygen to the brain. During instruction or staff development, individuals should be asked to stand and move around as much as possible to encourage oxygen flow to the brain. Incorporating the different senses and learning styles in education is useful to retaining and applying knowledge.

In the book *Atlas Shrugged*, Dagney Taggert was a business woman who did not stay in the office. She often rode on the railways that her family created. She embodied the hands-on approach to knowing her customer's needs. This allowed her to closely monitor the progress and success of the company's ventures and create more effective ways to operate. Her success would have looked quite different had she operated the business from behind her desk. Dagney was considered an action oriented hands-on employer.

The Brain Store's *84 Tips for a Brain-Friendly Classroom (2004)* list several tips that link learning to the brain. Teachers may want to try the following *get up and move* tips.

- Pass around content related objects that are interesting to touch, like modeling clay, packaging peanuts, or rough twine.

- Perform wacky stunts, like a magic trick or turning a cartwheel.

- Schedule water breaks-most people are dehydrated to some degree and drinking water when you are thirsty improves cognition and attention.

- Send student pairs on a walk-and-talk assignment or teach a class outdoors.

- Remind students to sit up straight and frequently have them all stand up to stretch. Poor posture puts stress on the back and can cause joint and muscle pain.

- Play a version of Musical Chairs to mix up the group, practice content, or just have fun.

- Give the brain a break and the body a boost by leading participants through yoga, tai chi, or stretching postures.

- Have learners vote on a topic by walking to certain areas of the room to signal their opinion.

- Send participant pairs outside to walk around the building while discussing 3 questions from a previous lesson.

R – Reason.   Rationality is the recognition of the fact that existence exists, that nothing can alter the truth and nothing can take precedence over that act of perceiving it, which is thinking... (Rand, 1957).   Fundamentally, the means by which we live our lives as humans is reason. Our capacity for reason is what enables us to survive and flourish. We are not born knowing what is good for us; that is learned. Nor are we born knowing how to achieve what is good for us; that too is learned. It is by reason that we learn what is food and what is poison, what animals are useful or dangerous to us, how to make tools, what forms of social organization are fruitful, and so on (Rand, 1964).

Students move towards explanations of the world around them, with incidental observations made providing simple 'cause and effect' explanations.   These attempts at reasoning are often erroneous. To find answers that make sense, however, they need to be taught some specific skills (Pape, 2006).

The ability to reason ranges from basic to advanced skills. In order for a student to become proficient in reasoning skills they must gradually move along the spectrum. Basic reasoning skills include storage, retrieval skills, matching skills, and execution skills. Storage and retrieval skills involve decoding strategies which enable the thinker to transfer information to and from long-term memory. Matching skills allow a learner to make connections with pre-existing information. These skills determine how incoming information is similar to or different from information already stored in long-term memory.   Including in this category are categorization, evaluation of logic, and evaluation of value. Execution procedures organize other reasoning skills in order to help learners build new cognitive structures and restructure old ones. Elaboration, problem solving, and composing are types of execution procedures.

E – Enjoy Learning. The long term memory is massaged when la
ughter occurs. Individuals are more likely to want to learn new information when the activity is enjoyable. Smiles and laughter are exceptional human responses. Physiologically, they cause a drop in pulse rate, the secretion of endorphins, and increased oxygen levels in the blood. They have been found to provoke higher-level thinking and to liberate creativity (Senge, 2000). When laughter occurs, the endorphin surge that transpires brings about positive feelings. These endorphins are considered to be natural pain killers. The side-effects of laughter are a spirit of community, increased memory, stress relief, a mental attitude to meet challenges. Positive feelings produce positive results. The ha-ha turns into an aha. Educators should consider incorporating fun activities throughout instruction in an effort to engage the thought process.

A-   *Apply knowledge to real world.* In disciplinary literacy classrooms, students act as historians, mathematicians, scientists, readers, and writers as they engage with subject-matter tasks, texts, and talk that apprentice them into each discipline's ways of working (Bill, Bintz, Hall, McConachie, Ravi, Resnick & Taylor, 2006).

B-   Making connections with prior knowledge is one of the most critical components of creating thinkers. Each individual is exposed to different experiences in life. Teachers use their personal experiences as examples in their classes. Students use their personal experiences as foundations for increasing their knowledge base.

Too often, students begin each new task as if for the very first time. Many times teachers are dismayed when they invite students to recall how they solved a similar problem in the past and the students don't remember; it's as if they never heard of the problem before. Thinking students, by contrast, learn from experience. They can abstract the meaning from one experience, keep it in mind, and apply it to the next experience. Students can be observed growing in this ability when the say, "This reminds me of…" or "this is just like the time when I…" Analogies and references to previous experiences are part of their explanations. Probably the ultimate goal of teaching is for students to apply school learned knowledge to real-life situations and to other content areas (Senge, 2000).

John Galt created a place for all of the great minds to come together in an effort to problem solve the calamity that was happening in the outside world. No matter how intelligent each of the great minds was as individuals or how dissatisfied they were with Collectivism, it was the collaboration of their minds that changed the face of the world.

We are social beings. We congregate in groups, find being listened to therapeutic, draw energy from each other, and seek reciprocity. Probably the foremost intellectual behavior for postindustrial society will be a heightened ability to think in concert with others. Problem-solving has become so complex that no one person can do it alone. No one has access to all the data needed to make critical decisions; no one person can consider as many alternatives as several people could. Working in groups requires the ability to justify ideas and test the feasibility of solutions strategies on others (Senge, 2000).

When teachers are planning instruction several things should be considered when real-world applications are to be made:

- Clarify the larger purposes and ultimate goals of the content. What does the content enable you to do in the real world if you master it? What are the core challenges and authentic performances in this field?

- Identify specific, complex, real-world tasks that embody those challenges or achievement of those goals.

- Determine the understandings, knowledge, and skill learners will need to achieve mastery of such tasks.

- Sketch a learning plan that will enable practice, feedback, and competent performance.

- Infer the questions performers need to always consider as they try to master the content and the task.

- Identify content standards that explicitly refer to or imply such applications.

- Align the elements of the design, as needed. (McTighe & Wiggins, pp.256 & 258)

What if all communities were dedicated, first and foremost, to fostering this connection between living and learning? Such a world might feel very different from our own. There would be no boundaries between "school" and "work" and "life." Skillful people, from groundskeepers to accountants to scientists to artisans, would have a steady stream of apprentices, both children and adults. People of every age would continually embark on new endeavors and enterprises, taking failure in stride, readily seeking one another's help. Teenagers would spend most of their learning time outside school walls, working on projects with real meaning for them. Every place that people worked, met or played would continually grow more capable, less wasteful, more energetic (Senge, 2000).

T-Teacher models. Teaching may be best defined as the organization of learning. It follows, therefore, that the problem of successful teaching is to organize learning for authentic results… [This] is distinctly preferable as a definition to the familiar definitions of teaching either as the direction or guidance of learning. It saves us from arguments about whether the teacher ought to guide or to direct – arguments that are somewhat futile since the truth is he should do both. (Mursell, 1946)

Who do children spend the majority of their active time with each day? An educator's ability to influence children is immeasurable. School systems must first mold their teachers into mental models – individuals who continually seek and create knowledge. Teacher models are essential to the cognitive growth of students, colleagues and the progress of the school as an entity.

As mental models, teachers must guide the thought process. They can use "think-alouds" to show students how to think through problems, questions, and equations, by talking through sample situations from the beginning to the end. In *Understanding by Design* (2006), three roles were defined for the teacher: didactic (direct instruction), facilitative or constructivist methods, and coaching.

- When the teacher is involved in the didactic role, instruction is normally demonstration, modeling, lecture, or questions. The student role is to receive, take in, and respond. They normally observe, attempt, practice, refine, listen, watch, take notes, question, answer, and give responses.

- When the teacher becomes the facilitator, the instructional environment includes concept attainment, cooperative learning, discussion, experimental inquiry, graphic representation, guided inquiry, problem-based learning, questions (open-ended), reciprocal teaching, simulations (ex. Mock trial), Socratic seminar, and writing. The student's role is to construct, examine, and extend meaning. In this mode, students normally compare, induce, define, generalize, collaborate, support others, teach, listen, question, consider, explain, hypothesize, gather data, analyze, visualize, connect, map relationship, question, research, conclude, support, pose or define problems, solve, evaluate, answer and explain, reflect, rethink, clarify, question, predict, teach, examine, consider, challenge, debate, consider, explain, challenge, justify, brainstorm, organize, draft, and revise.

- As teacher/coach, learning includes much feedback, coaching and guided practice. The student's role is to refine skills and deepen understandings. In this mode, the student listens, considers, practices, retries, refine, revise reflect, refine, and recycle through.

Within each of the three roles, teachers must make crucial decisions about when certain components of the learning process should take place. McTighe & Wiggins (2006) addresses several questions that frequently come to a teacher's mind.

- When should I answer and when should I question?
- When should I advocate and when should I purvey equally plausible alternatives?
- When should I speak my mind and when should I play devil's advocate?
- When should I state the purpose of the lecture and when should I let it be inferred?
- When should I do research and when should they?
- When should I frame the talk by my questions and when should I ask students to launch the discussion?

- When should I challenge an inappropriate answer and when should I let it go, to let a student challenge it?

- When should I come to the aid of a participant whose views are wrongly being ignored and when should I just wait?

- When should I correct clearly wrong statements of fact and when should I let them go?

- When should I act more like a quiet sideline observer and when should I act like a coparticipant?

The answers to these questions will vary depending on the situation. It is important to do less direct instruction and more student discovery. Teachers in the better performing nations tend to develop key ideas through problems and discussions. The irony is that less telling can yield more and better learning if our assignments and assessments are well designed and our use of teaching approaches is judicious, well timed, and goal directed (McTighe & Wiggins, p. 246).

Educators should empower students and teachers with leadership responsibilities. The school should create a climate and culture that respects individuals as capable thinkers and allow for creativity.

M- Metacognition. Metacognition is defined as the awareness of our own thinking. In the book, *Teaching for Thinking*, Charles A. Letteri (1992) writes about diagnosing and augmenting basic cognitive skills. To succeed, a student must possess a repertoire of thinking skills that meet the cognitive demands of learning and performance tasks. Without appropriate cognitive skills, students can never be self-directed and independent in academic tasks. He goes on to define learning as a specific controlled action that the mind applies to new information so that it becomes part of the long-term memory.

For some time, many educators believed solely in Piaget's Theory of Learning. Piaget believed that students learn in developmental stages and student understanding is limited by their developmental stage. Current theory, however, suggests that through careful guidance of student learning, young children can learn the skills to undertake authentic science inquiry. Through careful scaffolding of student learning, encouraging metacognitive thought and overcoming limited domain specific knowledge, students should be able to engage in higher order thinking processes; being able to pose questions, collect and interpret data and reflect on their own thinking, thus engaging in scientific inquiry and abstract reasoning (Watters & Diezmann, 1998).

Many children who are diagnosed with learning disabilities and below grade level performance do not use specific cognitive controls – cognitive skills required to learn and use specific curriculum. Letteri (1992, pp. 64-68) describes the seven cognitive controls that students should possess in order to become successful learners.

- Complex: The structure and relationships among all the categories of information in long-term memory and their use in academic

- learning and performance. This skill is required to view information or problems from multiple perspectives.

- Sharpening: The skill required to maintain distinctions between individual concepts and structures of concepts in order to avoid overlapping and confusion among them. Included are the mnemonic systems to structure and maintain information in long-term memory in clear, stable, and accessible formats.

- Tolerance: The skill required to engage and examine apparently ambiguous information for purposes of modifying existing structures of information and to accommodate new information within these related structures. This skill is involved in problem recognition, identification, and solution construction.

- Analytic: The skill required to segment complex information into component parts for purposes of identification (naming, labeling), establishing appropriate relationships between the components, and decisions related to further processing.

- Narrow: The consistent use of a complete and accurate list of parameters to judge the placement of new information in the structures (categories) of long-term memory.

- Focusing: The skill required to selectively attend to the relevant (important) components of the information or task without being distracted by irrelevant (unimportant) components.

- Comparative Analysis: The skill required to select a correct response or problem solution from among several highly similar but not identical alternatives. The skill to perform a highly accurate and properly ordered and directed comparison between two or more elements of information and to determine and state the basis for similarity and difference.

Both students and teachers need to become proficient in each of the seven cognitive controls in order to take control of their own learning. It is important for teachers to pre-determine which cognitive requirements are needed for students to perform successfully on curriculum content.

I-Inquiry. In *Atlas Shrugged,* the question "Who is John Galt?" is used as a rhetorical and a thought provoking question. Throughout the novel, readers create mental models of the answer to that question or mystery. This question serves as a good example of a leading question that promotes thought. The importance of well utilized questions can tap into an individual's thought processes and connects their prior knowledge to future understandings.

As we all know, young children have a natural curiosity and wonder about the world around them. When students are exposed to the concept of finding answers as well as asking questions, they begin to build their inquiry skills (Pape, 2006, p. 30). The big-idea questions signal that education is not just about learning "the answer" but about learning how to learn. Questioning strategies are essential to student growth. Educators sometimes become nervous when students begin to question instruction especially when answers are not readily available. Instead of meeting questions with fear, students should be extended an invitation to question the status quo. When students and teachers start creating essential questions that pry into current knowledge, new knowledge is the outcome. Any creator or scientist had to be willing to take some risk in their trek towards a new invention or creation. Not only should classrooms facilitate questioning, but it should also encourage discovery, evaluation and application.

McTighe & Wiggins (2006, pp.108-109) uses four different but overlapping meanings for the term essential when used to characterize questions.

- Important questions that recur throughout all our lives. These questions are broad in scope and timeless in nature. They are perpetually arguable. (What is justice?)

- Core ideas and inquiries within a discipline. Essential questions in this sense are those that point to the core of big ideas in a subject and to the frontiers of technical knowledge. (What is healthful eating?)

- Helps students effectively inquire and make sense of important but complicated ideas, knowledge, and know-how – a bridge to findings that experts may believe are settled but learners do not yet grasp or see as valuable. (How do the best writers hook and hold their readers?)

- Questions that will most engage a specific and diverse set of learners. Questions are essential if they hook and hold the attention of your students.

It is important to design questions that focus on the big idea, but articulate to the learner's interest. Essential questions should provoke deep thought, lively discussion, sustained, relevant, and genuine inquiry, consider alternatives, weigh evidence, support ideas, and justify answers. They should also stimulate vital, ongoing rethinking of big ideas, assumptions, spark meaningful connections with prior learning and personal experiences. Most importantly, essential questions should create opportunities for learners to transfer what is learned to other situations and subjects.

Students who behave intelligently grow not just in their ability to use thinking skills but in their enjoyment of problem solving. They seek problems to solve. They make up problems, request them from others, and solve them with increasing independence, without an adult's help or intervention. Such statements as "Don't tell me the answer; I can figure it out by myself" indicate growing autonomy. These students will be life-long learners (Senge, 2000).

N- New Knowledge. For learning to continue, teachers must consistently be exposed to best practices and students must be given every opportunity to discover new information. Gaining knowledge causes individuals to want more and more. According to the Institute of Learning (2006, p. 8), to develop complex knowledge in any discipline, students need opportunities to read, reason, investigate, speak, and write about the overarching concepts within that discipline. Questions can be posed by educators to drive the class's intellectual work. The overarching questions or essential questions cause students to seek new knowledge. Sometimes these questions are unanswerable. Their sole purpose is to provoke thought.

People learn by connecting information to prior knowledge. Students learn from their own experiences and from the experiences of those around them. Educators sometimes underestimate the importance of tapping into students' past successful or positive experiences. Teacher should also avoid those negative experiences that bring on a shut-down mode. Administrators sometimes make the same mistake by not tapping into teachers' background knowledge.

The body releases certain chemicals that cause the brain to work collaboratively with or in opposition to learning expectations. Many times these chemicals are released during new learning based on how the brain remembers the emotions that were felt during similar past experiences. Dopamine is released by the body and causes an individual to become optimistic, positive, and have realistic perceptions. Dopamine is considered nature's reward system. It is an internal reward that comes from success, not struggle. Educators must be cognizant of the fact that external rewards often confuse the dopamine from working effectively.

D- Differentiate. Differentiated instruction is a broad term that refers to a variety of classroom practices that accommodate differences in students' learning styles, interests, prior knowledges, socialization needs, and comfort zones. On the secondary level, it involves a balance between the content and competencies expected on the mandated assessments and various pedagogical options to maximize durable learning (Benjamin, 2002, p.1). In order to experience success, student needs must be addressed on an individual basis and incorporated into the instructional environment. Students learn differently and must be given the opportunity to experience different activities and assessments. Choice should be built into assignments so that students can take part in things that interest them. Using differentiated practices helps to teach students how to learn in meaningful ways. Benjamin (2002) writes about several activities that can be used to elicit differentiated instruction:

- Flexible grouping
- Pre-assessment
- Interest centers
- Learning contracts
- Open reading choice
- Learning logs
- Reflective journals
- Inquiry and discovery
- Socratic seminar
- Portfolios
- Inclusion of the arts

- Allowing for readiness and prior knowledge
- Multi-sensory learning opportunities
- Learning opportunities that allow for multiple forms of intelligence
- Allowing for socialization
- Consideration of Bloom's taxonomy
- Multicultural considerations. (p. 27)

Differentiated learning has been used in the special education classrooms for many years. It is now becoming more prominent in all areas of instruction due to the varied needs of students. The strengths behind differentiated instruction engage all students in learning because they quickly gain a sense of success, derived from activities entrenched in multiple intelligences, emotions, and interconnected activities that cross many contents.

S – Systemic Reflection. Reflection is thinking for an extended period by linking recent experiences to earlier ones in order to promote a more complex and interconnected mental representation. Systemic thinking involves looking for commonalities, differences and interrelations throughout the learning process. Critical reflection used as a professional development model elicits higher order thinking in teachers, self-analysis, and collaborative planning in essence making a fundamental difference in student learning.

When learning becomes the focus, individuals must acknowledge that they don't know everything. Reflection on best practices causes everyone in the school to look at thinking strategies that are used and how they impact student cognition.

During the reflection process, it becomes obvious that the majority of educators want to learn, grow, and contribute to the processes and systems on a campus. Leaders must be inclusive and caring in their attempts to educate students. Effective educators vary greatly in their ways of doing things. These differences give rise to meaningful systems of thought.

In the book, *Reflective Practice to Improve Schools* (2006, p. 251), the authors developed a R-E-F-L-E-C-T-I-O-N mnemonic. It captures the essence of lessons learned about reflective practice: **R**elationships are first, **E**xpand options through dialogue, **F**ocus on learning, **L**eadership accelerates reflective practice, **E**nergy is required for any system to grow, **C**ourage is needed to reflect and act, **T**rust takes time, **I**nside-out, **O**utside-in, and **N**urture people and ideas. Although the book talks specifically about reflective practices and its impact on school improvement and student achievement, these same phrases are an ideal description of reflection as it relates to critical thinking.

Forming relationships allows communication within any system. When relationships are formed, a school's staff can guide the establishment of what the schools beliefs are on thinking and delivery of curriculum and instruction. Relationships are essential to academic achievement and should be based on critical thought. These relationships exist between parents and students, parent and teachers, teachers and students, administrators and parents, students, and teachers, colleagues, etc.

It is easier to be creative when options exist. Educators and students can contribute to this bank of options by engaging in conversations that serve to improve academic achievement. An open exchange through dialogue allows community members to participate in the creative process of shaping future directions and moving forward with important work (Ghere, G. S., Montie, J., Sommers, W. A. & York-Barr, J., 2006, p. 252).

When learning becomes the focus, individuals must acknowledge that they don't know everything. Reflection on best critical thinking practices causes everyone in the school to look at the decisions that are made, to learn from them, and to make better decisions in the future.

The vision of the school and its policy on teacher and student creativity and individuality depends heavily on the actions of the principal and other school leaders. The administrators must create an environment where all stakeholders are willing and interested in continual improvement.

Reflection creates energy by leading to new discoveries and insights about practice. Reflection with others creates even more energy as discoveries and insights are shared and channeled through relationships among educators throughout the school. Without positive energy that is productively channeled, systems die (Ghere, G. S. et al., 2006, p. 253). School leaders must encourage activities that promote increases in energy. As mentioned earlier in this paper, applying the inquiry approach to situations to arrive at a creative solution will also energize the learning process.

Courage is the internal capacity that supports taking action, despite knowing the inherent risks. Making a commitment to reflective practice on a personal basis is a courageous act because it means opening ourselves up to considering multiple perspectives and ways of doing things. It means critically examining our assumptions and our behaviors (Ghere, G. S. et al., 2006, p. 253). All who are involved in educating children must be able to put aside perceptions and assumptions and become open to doing things in different ways.

When leaders attempt to create trusting relationships, they must be willing to put all their cards on the table. Reflection on past experiences, can lead individuals to become risk takers. In this process, people become more willing to participate when they can be open and honest without fear of being penalized.

Becoming a reflective educator is a process of inside-out change. Reflection is an internal capacity that is tapped by a genuine desire to learn and grow, not by external mandates. Becoming a reflective educator also requires being open to outside influences, such as colleagues with different views, findings from research, experiences of other schools and systems, and concerns expressed by the public and policymakers (Ghere, G. S. et al., 2006, p. 254).

During the reflection process, it becomes obvious that the majority of educators want to learn, grow, and contribute to the processes and system on a campus. Leaders must be inclusive and caring in their attempts to attract people into their decision making teams. Effective educators vary greatly in their ways of doing things. These differences give rise to meaningful learning.

In Galt's radio presentation, he was able to reflect publicly on his perceptions of society's Collectivist mentality. In his reflections, he explained to those individuals still in society the importance of using the mind.

Concluding Remarks

In conclusion, it is crucial that schools take on the role of facilitating the thinking process. The world is depending on the minds of those individuals who are in the schools. In the

words of John Galt, "I am, therefore I'll think." Every minute of everyday in the school system, children's minds should be nurtured and molded to become critical thinkers. Schools must implement a school-wide system of critical thinking.

> A person in authority – a superintendent, school board president, principal, chancellor, or legislator – can't dictate that people will become inspired to engage in improving the school. Such dictates will, at best, make people comply with the changes without feeling any commitment to them. When the imperative to change fades so will their interest in it. People will only sustain interest if they choose to make a commitment on their own, and if this kind of learning orientation continues through the life of the initiative (and the school).

> But if you can't force commitment, what can you do? You can do the same things that a teacher can do to foster genuine learning with students. You can nudge a little here, inspire a litter there, provide a role model. Your primary influence is in the environment you create – an environment that encourages awareness and reflection, that gives people access to tools and training that they ask for, and that enables them to develop their own ability to make choices. (Cambron-McCabe et al., 2000, p. 273)

Following the GREAT MINDS mental behaviors are essential to the success of any program. All educators should practice these concepts in an effort to lead the critical thinking movement. The GREAT MINDS reform model includes the following actions: getting up and move, utilizing reason, having fun while learning, applying knowledge to the real world, educators serving as thinking models, metacognition, inquiry, gaining new knowledge, differentiating learning, and reflection.

References

Benjamin, A. (2002). *Differentiated instruction: A guide for middle and high school teachers.* Larchmont, NY: Eye on Education, Incorporated.

Beyer, B. K., Brown, A. L., Campione, J. C., Ennis, R. H., Guenther, J., Keefe, J. W., Letteri, C. A., Marzano, R. J., Presseisen, B. Z., Rosenshine, B., Schrag, F., Sternber, R. J., & Walberg, H. J. (1992). *Teaching for thinking.* Reston, VA: National Association of Secondary School Principals.

Bill, V. L., Bintz, J., Hall, M., McConachie, S., Ravi, A., Resnick, L. & Taylor, J. A. (2006). Task, text, and literacy for all subjects. *Educational Leadership*, *64* (2), 8-21.

Cambron-McCabe, Dutton, J., Kleiner, A., Lucas, T., Senge, P., & Smith, B. (2000). *Schools that learn: A fifth discipline fieldbook for educators, parents, and everyone who cares about education.* New York: Doubleday.

Ghere, G. S., Montie, J., Sommers, W. A. & York-Barr, J. (2006). *Reflective practice to improve schools: An action guide for educators.* Thousand Oaks, CA: Corwin Press.

McTighe, J. & Wiggins, G. (2006). *Understanding by design*. Upper Saddle River, NJ: Pearson Education Incorporated.

Mursell, J. L. (1946). *Successful teaching: Its psychological principles*. New York: McGraw-Hill.

Pape, J. (2006). Scientific inquiry in early childhood – A Tasmanian perspective. *Teaching Science, 52*(3), 30-31.

Rand, Ayn (1957). *Atlas shrugged.* New York: Random House.

Rand, Ayn (1964). *The virtue of selfishness* (Centennial Edition). New York: Signet.

Watters, J. J. & Diezmann, C. M. (1998). This is nothing like school: Discourse and the social environment as key components in learning science. *Early Childhood Development and Care, 140*, 73-84.