Unlocking Creativity in the Classroom

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UNLOCKING CREATIVITY IN THE CLASSROOM

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UNLOCKING CREATIVITY IN THE CLASSROOM

By

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THESIS

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Introduction

My upbringing and early education were a cultural paradox. I was an intelligent Hispanic girl who started high school in 1969. My cultural background emphasized compliance, conformity, and traditional (read non risk-taking) behavior. The educational system in the late 60’s and early 70’s (post Sputnik) encouraged schools to “identify students with high abilities especially in the areas of mathematics and science, and to provide programming that encouraged and promoted these talents” (Hillmann 2), even if those students were Hispanic and female.

I showed an early aptitude for math and science, slated for a five-year math (to include calculus), four-year science program (to include physics) in high school. I was interested in biology and architecture -- but culture superseded interest and ability. These ambitions were not supported by my family and I did not yet have the courage of my convictions; my upbringing was at war with my own requirements. So, I turned to other interests -- language, voice, theater, and writing -- not exactly traditional either, but at least more ladylike, and therefore more culturally tolerable. And -- I realize now -- a safe and acceptable way to express my creative needs.

Upon graduation, I translated these interests into a choice of journalism as my original college major. I would be a broadcast journalist, in my mind combining the best of my interests and an idealistic notion about the search for truth. But again, I let myself be pressured into changing direction. Family and relationship influences discouraged what was at the time (1973) such a non-traditional career. So I ended up getting a degree in education (everyone was happy -- except me) and I started my career teaching five- year- olds in a bilingual kindergarten program. (In retrospect, I believe every teacher should complete at least a two-year stint in a kindergarten
My experiences with creativity in my first classroom were born of necessity (the mother of invention) and play (the father, according to von Oech, *Whack* 92). Kindergarten in the public school system in the late 70’s was based on oral language development in both English and Spanish. But kindergarten was not mandated and therefore was not supported by materials or staff development. The latter, when present at all, was not needs-based; it was more about packaged programs that had worked for some school system, somewhere. Most of these programs and their promoters had no idea how to work with English language learners in a large urban district that was just learning the importance of accessing the knowledge already acquired in a child’s native language (at least if the language was Spanish; other language learners were out of luck).

The positive side of the experience was that without a set curriculum, and the very real necessity of keeping children with very limited attention spans engaged and learning something constructive, creativity was a matter of survival. I learned to observe my students, to realize where they were developmentally and academically, and to try to move them forward from there. I learned the importance of being flexible, having multiple plans of action for any given situation. I learned different ways to determine, plan for, and assess differences in learning styles.

I learned the importance of play: it teaches everything from problem solving, to socialization, to ethics, to language development, to diplomacy, to consideration of various perspectives, and so much more. As Vygotsky said: “a game…reproduces entirely real elements
of the environment…and does not draw the child away from life even to the slightest…on the contrary, [it] develops…practice in those capacities that will be needed in life” (156).

After six years teaching kindergarten, and a one-year experiment with third grade, I began my work with identified gifted students, fourth and fifth graders. At this time, supported by curriculum which included the Torrance model (fluency, flexibility, elaboration, and originality) and the Eberle SCAMPER model (substitute, combine, adapt, modify [minimize/maximize], put to other uses, eliminate, reverse [rearrange]) -- I began to look for ways to encourage creative practices in the classroom.

Fourth and fifth graders, particularly successful ones, have already largely changed from “question marks to periods” (Postman, quoted in von Oech, Whack 27). They have already begun to see the social rewards of conformity and competition and the importance of “getting it right”. Uncomfortable at first with dramatization, role-playing, searching for other points of view, trying new ways of accomplishing or completing a task, they eventually accepted the invitation to play -- and learn at the same time. They began to get the idea that the two were not mutually exclusive.

Part of my philosophy of teaching has always been the conviction that true learning involves noise and “mess” as well as results. These elements have always (to the chagrin of many an administrator) been evident in my classroom. The important corollaries are: acceptance of new ideas, rationales for new ideas, evaluation and revision of new ideas and, eventually, implementation of new ideas, which, with any luck, often led back to evaluation and revision and so on. This practice was not deliberately based on any theory; it was largely hit and miss. The idea of teaching as a deliberate reflective practice had not yet been brought to my awareness.
In 1996 I got, as von Oech says, “whacked on the side of the head.” Forced by circumstances to overcome the conviction that middle school teachers should receive hazardous duty pay, I discovered my niche. The middle school student is a truly paradoxical form of life: part child, part adult; largely at the mercy of hormones; guarded, then open; rapidly switching from irrational to super rational; wanting to conform and at the same time be different; super confident, then needing large doses of reassurance; basically a walking attitude problem, then oddly reasonable and accommodating; funny, then humorless…well, you get the idea.

But in many ways, these gifted 12- and 13-year-olds reminded me of my five-year-olds. Granted, they were taller and had larger vocabularies; they also had more knowledge about the world, thanks to the technology available, literally, at their fingertips, more schema to help them process the knowledge, more discipline in their thought and work patterns and, in many cases, a certain cynicism about how and whether the world worked and what their place in it was or could be. They had become huge question marks again -- so much opportunity and potential for huge growth -- a perfect place to teach and encourage creative thinking skills.

At about the same time as my move to middle school, I became involved in providing staff development for gifted and talented certification for the El Paso Independent School District. The state of Texas requires that all teachers who provide services for gifted students have 30 clock hours of staff development. Fifteen of those hours involve strategies. The other fifteen deal with the nature and needs of gifted learners, identification and assessment, their social and emotional needs, curriculum differentiation, and creativity. The original creativity module gave teachers information about the Torrance and Eberle models and included exercises that allowed them to play word games such as the “Rearrangements” (Polette 92-99) and
Equation Analysis exercises (Shushan 64) and using rebus charts. Most of the activities were what would be considered the warm-up type. Participants used SCAMPER with a story, choosing a fairy tale and changing it, with interesting results. They were given opportunities to role-play, dramatize, and to practice fluency, flexibility, elaboration, and originality exercises. They had fun -- almost always after an initial reluctance to “play.” Hopefully, some were encouraged to use the strategies in their classrooms and to expand on the ideas or use them as bridges to other activities. Whether this actually occurred was very likely connected to the level of comfort these teachers had regarding the creative impulses in themselves.

In 2005 the director of Advanced Academic Services for the El Paso Independent School District asked me to collaborate on a complete update and revision of the 15 core hours of gifted and talented staff development. Armed with the realization that “why” we do things is as important as “how” we do them, my colleague and I were careful to include theory along with activities in the new modules. When we got to the creativity module, we were slightly overwhelmed. We came across Roger von Oech’s *A Whack on the Side of the Head: How You Can Be More Creative* (1983) and were struck by his premise. We were also struck by the fact that von Oech’s model is a business model. He has made his mark and his fortune working in the private sector supporting corporations in their efforts to help their employees become more creative. We used this book, along with Torrance’s model of fluency, flexibility, elaboration, and originality to frame the creativity module. The use of these ideas with teachers has led to the formal development of strategies for my own classroom.

Von Oech’s principle of the ten mental locks that inhibit creativity forms the conceptual framework for this thesis. I have come to believe that creativity can be released and find
expression in virtually everyone. Using von Oech’s ideas can, at the very least, put a set of
discrete skills in the hands of students, allowing them the opportunity to decide to be creative, to
be more flexible and open-minded, and therefore more likely to be successful in a future that is
difficult to imagine because of its infinite possibilities.

Definition 101

What exactly is creativity? Dictionary definitions are useful to start:

cre.a.tiv.i.ty, noun 1. The state or quality of being creative. 2. The ability to transcend traditional
ideas, rules, patterns, relationships, or the like, and to create meaningful new ideas, forms,
methods, interpretations, etc.: originality, progressiveness or imagination. 3. the process by
which one utilizes creative ability

Dictionary.com Unabridged (v 1.1) Based on Random House
Unabridged Dictionary, Random House, 2006

cre.a.tiv.i.ty, adj. 1. Having the ability or power to create. 2. Productive, creating.

3. Characterized by originality and expressiveness

American Heritage Dictionary of the English

E. Paul Torrance has defined it as:

“the highest point of expertness – satori, a sudden flash of enlightenment ... [which] involves many things.
It requires intense devotion. One must be ‘in love’ with something. It requires constant practice of even
very simple operations over a long period of time. It requires concentration and absorption to the exclusion
of other things. Above all, it requires persistence – hard work, self-discipline, diligence, energy, effort,
competence, [and] expertness” (Torrance, Satori...ix).
Ronald Beghetto (Ideational Code-Switching 2007) defines it as:”…the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social content” (225).

Jane Piirto (Understanding Creativity 2004) defines it as: “the personality, the process, and the product within a domain in interaction with genetic influences and with optimal environmental influences of home, school, community, and culture, gender, and chance. Creativity is a basic human need to make new….Further; creativity is the underpinning, the basement, the foundation that permits talent to be realized” (Piirto 37-38).

Jerome Bruner (On Knowing: Essays for the Left Hand, 1979) defines creativity as “effective surprises …that seem to have the quality of obviousness about them when they occur”. He defines the three elements of effectiveness as: “predictive, which yields high predictive value in its wake, such as theoretical reformulations in science; formal, which orders elements so that new relationships or groupings are evident; and metaphoric, which connects previously unconnected domains of experience with the discipline of art” (18-19).

Roger von Oech defines it as: “…an outlook that allows you to search for ideas and play with your knowledge and experience…you try different approaches…often not getting anywhere. You use crazy, foolish, and impractical ideas as stepping stones to practical new ideas. You break the rules occasionally, and explore for ideas in unusual outside places. In the end… [this] outlook enables you to come up with new ideas” (von Oech, Whack 6).

While these explanations can serve as working definitions for creativity, they merely scratch the surface of the research that has been devoted to this elusive and fascinating concept.
But, definable or not, it exists despite efforts, accidental and deliberate, to stifle it. It persists, and
I salute it:

A Salute

Here’s to the crazy ones.
   The misfits.
   The rebels.
   The troublemakers
The round pegs in the square holes.
The ones who see things differently.
They’re not fond of rules.
And they have no respect for the status quo.

You can praise them, disagree with them, quote them,
disbelieve them, glorify, or vilify them.
About the only thing you can’t do is ignore them.
Because they change things.

They invent. They imagine. They heal.
They explore. They create. They inspire.
They push the human race forward.
Maybe they have to be crazy.

How else can you stare at an empty canvas and see a work of art?
Or sit in silence and hear a song that’s never been written?
Or gaze at a red planet and see a laboratory on wheels?
…While some see them as the crazy ones,
we see genius.

Because the people who are crazy enough to think
they can change the world, are the ones who do.

Courtesy of Apple© Computers, (Intrator and Scribner, Teaching with Fire 210)
Holding a Mirror to a Mirror: Defining Creativity

"It sounded an excellent plan, no doubt, and very neatly and simply arranged. The only difficulty was, she had not the smallest idea how to set about it."

Lewis Carroll, Alice’s Adventures in Wonderland, 1865

Creativity is difficult to define, even by experts in the field. It eludes capture, like a will-o-the-wisp. It seems that at most, all expert after expert can do is isolate and give examples of processes that characterize creative thought and defining features that creative individuals seem to have --in some combination -- in common. The word itself did not appear in any standard dictionary until 1964 (Funk and Wagnall’s Standard Dictionary, International Edition) although the notion that “creativity is an ability has been an assumption made by educators since the 1950’s” (Piirto 6). The earliest references were by J.P. Guilford in a 1950 speech to the American Psychological Association, and Morris L. Stein, in a 1953 Journal of Psychology article titled “Creativity and Culture” (Piirto 6).

In 1986, the Dictionary of Developmental and Educational Psychology defined creativity as: “man’s capacity to produce new ideas, insights, inventions, or artistic objects which are accepted as being of social, spiritual, aesthetic, scientific, or technological value.” Piirto emphasizes “the inclusion of the aspect of social utility for the product of the creator’s imagination is vital” (6). It is also important to note the idea of acceptance, another vital aspect, which will be discussed in more depth later.

The study of creativity is filled with paradoxes. Educators have been aware of its existence and power since the middle of the 20th century, but schools are probably one of the most unfriendly environments for creativity ever conceived. Political calls for uniform
educational standards clash with a society that has never been more diverse or pluralistic. New theories which clarify that learning occurs in a complex system of “emotion…relationship and human interaction” conflict with the Skinnerian paradigm that there is a “discrete cause-effect linkage between teacher input and student output” (Brown, Moffett 29) and which hold students to the idea that education is limited to the “study of other people’s knowledge” (28), rather than including that which they create for themselves.

Jane Piirto (Understanding Creativity, 2004) begins her book with an anecdote about a new teacher assigned to an upper elementary mixed grade level class for gifted and creative students. The teacher had received no information about teaching creative children in her teacher preparation program in college, even though she had taken a course in special education. Her principal mandated her participation in a state conference for teachers of the talented, which offered many sessions which included the word “creative” in them, all of which she dutifully attended. At the end of the conference, she had a suitcase full of notes, handouts, and lesson plan strategies, but still no clear understanding of what, exactly, creativity meant.

After the conference, the teacher thought about a personal retreat she had recently attended dealing with transformational empowerment. The retreat organizers led the participants in meditation and visualization exercises and gave them opportunities to write, draw, and share. That is when the teacher herself felt creative. How then, to resolve in her own mind, and then for her students, what creativity meant? Was it the games, exercises, and lessons she brought home from the experts at the conference; or was it the energy she felt when she meditated, reflected, and interacted with others? (Piirto 1-3)
Here, then, is the dilemma for every educator. Teachers have always avowed that it is their hope to prepare their students for the future. There was a time in the not-so-distant past when that future was somewhat predictable. The American industrialized school model was predicated on that idea. Students gained basic skills, some knowledge of their past, went through a lockstep grade system, and then graduated. Some went to college to acquire more specialized skills, and at the end of these twelve to sixteen years of prescribed coursework, could step confidently into a job. This scenario has changed somewhat. Although there are sources that claim that the idea of multiple jobs and careers within a future workers lifetime are a myth, (Kennedy 1) others point to the relationship between worker flexibility and employability, a shift between “employment security and employability security…high job performance, high-quality problem-solving, successful change…and high cost-effectiveness” (Iles, et al 18).

Students who entered kindergarten in 2008 may not attend even the traditional basic twelve years of school. Options to accelerate, combine, or receive dual credit will move students through the system in a myriad of combinations. Opportunities to learn from other sources, such as online, through satellite connections, or through other electronic or technological means are in their seminal stages and there truly is no way to predict what other avenues may become available in the foreseeable future. Even for those who might opt to follow a more traditional route, the world of their graduation date, 2020, will almost certainly be much different from the one we see today. New businesses that hope to survive past that critical fourth year (Knaup, Piazza 3) and existing businesses that expect to maintain and increase their productivity will rely on employees ready to implement problem-solving skills and innovation. Entrepreneurs will need to recognize opportunities to provide new products and services. The educator who hopes
to prepare her students and provide them with tools that will empower them to meet the challenges of these emerging realities needs to look somewhere other than textbooks and state-mandated assessments.

It is the stance of this paper that while creativity cannot be taught, it is because the latent ability to be creative exists to some degree in everyone. With sufficient knowledge and the practice of what Teresa Amabile (*Motivation and Creativity*, 1990) calls “creativity-specific skills”, *everyone* can be more creative. While the capacity for creativity in the most spectacular sense -- that in which an individual transforms a field of knowledge and receives recognition for that transformation -- may vary vastly from individual to individual, there are certain skills and attitudes which can be practiced to increase the possibility that individuals can recognize and use creative energy in a broader sense: to enhance every aspect of their lives, and to be more flexible in solving the problems presented by a constantly evolving world.

Piirto (14) makes a reference to *Changing the World: A Framework for the Study of Creativity* (Feldman, et al 1994) in which the authors “emphasize that a truly creative contribution is made only when a field is transformed: for example, penicillin transformed medicine.” How, then, does that apply to school? It is highly unlikely that a student will discover something that will transform a field. But educators are required to allow for the preparation needed that might lead to that eventuality. If many experts agree that a creator must have solid knowledge of a field first, that foundation must come from education. And what, exactly, is knowledge of a field? Is it not the core information, understanding, familiarity, and wisdom with which students will then (hopefully) experiment in order to try to generate something new?
Aren’t the techniques and practices we foster in the classroom part of the pattern of “insight and motivation” that must precede the “moment of ‘Aha!’” (Piirto 13)?

Perhaps the best idea is to try to foster a synthesis of the myriad factors and outcomes involved in creativity in the classroom where we are mostly dealing with potential. Business and technology want to keep a competitive edge; they want a process to follow that will guarantee some creative result. The humanist wants students to live a creative life. Perhaps the best idea is somewhere in the middle. There are ways to promote an environment of preparedness and to practice. As Pasteur said: “Chance favors the prepared mind.”

Creativity -- what it is, where it comes from, how we can ascertain its existence, and how we can put it to use -- has been grist for psychologists, philosophers, and even theologians. In order to try to understand creativity a little more clearly, we will survey the “threads” of research into which creativity has been raveled: mystical, psychometric, psychodynamic, cognitive, social-personality, confluence, and pragmatic. Although not all theories have practical application in the classroom it is important to note the evolution of thought in the field, particularly since it is a relatively new field of study. Over the last 58 years, the pattern of thought has changed from creativity being regarded as outer-directed to being regarded as inner-directed, an important shift if we are going to assert that it can be nurtured and amplified in most people, and that that nurturing and amplification can be done in a classroom.

Creativity as Mystical

The suggestion that creativity is “inspired” or unconscious is a common one, and one that has in some cases been perpetuated by creators themselves. It is one of the longest held
impressions about the fundamental nature of creativity. It is also probably one of the least helpful in regard to classroom application.

Piirto speaks in her first chapter of the relationship of creativity to the divine. Early Greeks spoke of poetry as “divine madness”. Plato’s notion of creativity was tethered firmly to inspiration. This is “the analogue to God the Creator, capable of producing works of art… the inspired genius said to be entheos, ‘filled with god,’ …he utters divine words, able to give ‘birth to beauty.’” (Nahm 577). Plato also seems to be one of the originators of the idea that creativity is linked to madness “there is no invention in him [the poet] until he has been inspired and is out of his senses and his mind is no longer in him” (Plato, The Dialogues, quoted in Rothenberg 48).

Religious mythology links creativity to creation – the “Judeo-Christian God created the world…filled the void… in seven” days (Piirto 8). Ancient myths which speak of “growing” featured the name of the Roman goddess of the earth, Ceres, and the Italian corn goddess, Cерерis, which have as their roots the Latin words, creatus and creare and the old French kere, “to make or produce” -- literally -- “to grow” (Piirto 6). Clearly, even ancient people seemed to believe that the ability to make something from nothing or to produce something new or beautiful had to be linked with some entity other than unexceptional human beings.

The mystery and mysticism surrounding creativity has not dispersed even over thousands of years. Parts of Carl Jung’s theories suggest a mystical origin as well. Jung believed in the “creative power of the unconscious as the very source of the creative impulse, whose forms or patterns reflect a tremendous, wordless kind of intuition striving for expression in art or literature that may range from the ineffably sublime to the perversely grotesque” (Dyer 250). Jung’s
theories discuss two modes of creativity, one intentional, the other visionary, in which “works … positively force themselves upon the creator, who is overwhelmed by a flood of thoughts and images which he or she never intended to create” (Dyer 250). Jung thus characterizes the artist as one who has no choice in the act of creativity, a circumstance which both ennobles and condemns:

Every creative person is a duality or a synthesis of contradictory aptitudes. On the one side he is a human being with a personal life, while on the other side he is an impersonal, creative process...The artist is not a person endowed with free will who seeks his own ends, but one who allows art to realize its purposes through him. As a human being he may have moods and a will and personal aims, but as an artist he is 'man' in a higher sense—he is 'collective man'—one who carries and shapes the unconscious, psychic life of mankind. To perform this difficult office it is sometimes necessary for him to sacrifice happiness and everything that makes life worth living for the ordinary human being. (Carl Jung cited in Yurica 3).

Piirto quotes a similar idea from D.H. Feldman who “called creativity a ‘transformational imperative’ meaning that the person was innately compelled to ‘change reality outside the bounds of stable ordered experience’” (Feldman quoted in Piirto14).

These ideas reinforce the idea that creative individuals are somehow gifted by, in connection with, or touched by, the gods. They also can give the impression that creativity requires some extraordinary setting or uncanny epiphany. Viewed out of context, particularly, they seem to perpetuate the perception that not everyone has the capacity to be creative.

These mystical views do very little to explain or promote the role of creativity in organizations and classrooms. If students sit around waiting to be “inspired”, very little will be accomplished. They will not acquire the “attitude, way of thinking, or the workplace skill” (Reid and Petocz 46) necessary to problem-solve or evolve in a constantly evolving reality. They will not understand or want to experience the arduous, determined work that usually accompanies
discovery and innovation, the “99 percent perspiration” that Thomas Edison ascribed to genius, if they are preoccupied by the “1 percent inspiration.”

The mystical understanding of the nature of creativity paradoxically sets limits and is exclusionary. It opines that only certain people can create and that creative capacity is based on a nebulous and unpredictable power that is beyond the control of the creator. This would appear to make the “social utility” (Piirto 6) requirement difficult to fulfill. If the creator is not taking current knowledge and understanding of a field beyond what is known, to some purpose, is the ultimate usefulness of new ideas and perspectives serendipitous as well?

**Psychometric Approaches**

Psychometrics deals with the “measurement of mental traits, capacities and processes” (Encarta English Dictionary). J.P. Guilford, the developer of *Structure of the Intellect* theory was one of the first people to use the term *creativity*. In 1950, Guilford, then president of the American Psychological Association, gave a speech in which he advocated research on two issues: “how to find the promise of creativity in our children; and how to enhance the development of the creative personality” (Piirto 9). Guilford’s speech promoted the idea that it was possible to measure divergent thinking (an idea embraced and expanded by E. Paul Torrance). Guilford distinguished between *convergent thinking* which emphasizes learning, remembering, and being able to access what is already known -- knowledge as it already exists -- and *divergent thinking* which emphasizes redefining, exploring, and building knowledge.

Convergent thinking has always been easy to assess; divergent thinking continues to be quite a different matter. While still in the service during WWII, Lt. Col. J.P. Guilford used his theory that human intellect was comprised of “multiple intelligences, each of which can be
assessed differently from the others” to test flight school candidates on “eight specific intellectual abilities crucial to flying an airplane...decreasing ‘washout’ rates to 9% for bombardiers and 5% for pilots and navigators” (SOI Bridges Learning 1).

Guilford’s call to arms in the 1950 speech was based primarily on his belief that creativity was vital to “the future security of America” (Feldman et al xi). His research was initially funded by the United States military, particularly the Navy and was initiated contemporaneous to the McCarthy hearings. The main purpose of his new ideas about testing had to do with tapping the “strength of superior mental resources” (xii) in order to maintain the upper hand in the Cold War. For the next thirty years creativity research was guided by Guilford’s vision of ways to measure and productively utilize creative traits. Paradoxically, given the reason for Guilford’s concern, the American public school system is predicated on the seemingly obdurate belief that convergent thinking is and should be the sole driver of standards and curriculum.

Guilford’s original terms are still widely used by those who believe that creativity can be enhanced. These are: “fluency, novelty, flexibility, synthesizing ability, analyzing ability, reorganization or redefinition of already existing ideas, degree of complexity, and evaluation” (Piirto 10). His view, however, that creativity traits exist to some degree in all people and that they could “be as productively studied in an unselected sample, as in a sample of extremely accomplished individuals” (Feldman, et al xiii) was at odds with the views of later researchers such as David Feldman, Mihaly Csikszentmihalyi, and Howard Gardner.

Guilford’s work at the University of Southern California helped to change the idea that IQ testing was the only way to identify intelligence, and that IQ was static. Newer research in
cognitive science in the past 50 to 60 years confirms this idea and that fluid intelligence, which is what is measured by IQ tests, can change. These changes seem to be related to environment and can be both positive and negative. Guilford’s *Structure of the Intellect Model* (SOI) unveiled in 1967, suggested three basic components of intelligence that are often depicted as a cube. These are: “1) operations-- cognition, memory, both convergent and divergent production and evaluation; 2) content-- figural, symbolic, semantic, and behavioral; and 3) products--units, classes, relations, systems, transformations, and implications”(Sternberg, O’Hara 252). The interplay of these components results in 120 possible factors. Guilford himself acknowledged that “facets of his model of intelligence that involved creativity were typically not measured by conventional tests of intelligence” (Sternberg, O’Hara 252).

Building on Guilford’s work, Dr. Mary Meeker (Ed.D. University of Southern California) used the *SOI* model to develop a psychometric tool to fit the needs of not only industry, but also education. The SOI assessment is divided into three dimensions: operations, contents, and products. Meeker’s evaluation instrument measures 26 different cognitive abilities, identifying individual students’ strengths and weaknesses in these areas and has been used not only to identify these, but to prescribe various types of educational interventions. Divergent and convergent thinking are measured under operations.

Guilford’s work is the basis for two often cited studies about the role of intelligence in creativity, Getzels and Jackson (1963), and Wallach and Kogan (1971). The Getzels study was “interpreted to prove that a certain threshold of intelligence was necessary for high creative potential, but not necessarily the highest intelligence,” stating then that high IQ and highly divergent thinking were not necessarily related. Another implication of the study was that
divergent thinking skills could be improved with training or practice. The study indicted the public school system with placing a higher value on convergent thinking (and conformity) and maligning divergent thinking as “deviant or rebellious” (Vialle, et al 132). Even in a society whose complexity has changed exponentially since then, this is unfortunately still the prevalent attitude of public schools. The Wallach study noted that “the most fruitful research would be into the areas of creativity within domains” (Piirto 10).

In his original speech, Guilford said that his “delineation of characteristics were limited to scientists and technologists and might be different for other types of creativity” (Vialle et al 132). This theory is the basis for much of the current research on creativity that is being conducted in specific areas of talent, knowledge, or practice. One example cited by Piirto is Creativity Across Domains: Faces of the Muse, (Kaufman and Baer 2005). Although their book brings together many commentators on creativity in many fields: writing, acting, science, and engineering among others -- Kaufman and Baer end the collection of commentaries with a discussion by Robert Sternberg of the persistently unanswered question: Is creativity general or domain-specific, and what are the implications for increasing creative potential through specific educational practices?

E. Paul Torrance, the “Father of Creativity”, took Guilford’s initial challenge seriously and began to develop assessments to measure creative potential. His tests, which were initiated into wide use not only in schools, but in cultural studies all over the world in the 1970’s, quantitatively measured attributes such as fluency, flexibility, elaboration, and originality. Torrance was influenced not only by Guilford, however, but also by Edward De Bono, who insisted that it was necessary to practice creative thinking skills, and by Alfred Binet, the first
author of the Binet-Simon Scale (1905). Another reference is *Personality, Individual Differences and Intelligence* (Maltby et al 2007) whose studies claim that *all* thinking skills can be improved with practice.

Torrance (1979) designed a model (Fig. 1) to help people visualize the factors that, in his view, interacted to allow or optimize creative behaviors. The representation is very similar to Joseph Renzulli’s model that illustrates his explanation of the factors that are the foundation of giftedness. That model includes above-average ability, task commitment (motivation) and creativity. Gifted students are found in the overlap. Also included in Torrance’s work is the idea from Parnes, Noller, and Biondi (*Creative Problem Solving*, 1977) that a necessary part of creativity is mess-finding, the ability to actually identify and define the problem or problems to be solved. So the idea that creative individuals *seek problems out*, behaving proactively, rather than wait for them to become manifest, behaving reactively, is a part of the “creator profile” for many theorists.

![Figure 1](Torrance, Search 12)
Torrance’s assessments have been used by educators to measure certain aspects of creativity, such as divergent thinking. The four basic concepts: fluency, flexibility, elaboration and originality -- give students and teachers one model to use as a starting point to build the habits of creative thinking. Elaboration necessitates a clear understanding of an idea or concept. One way to facilitate that understanding is the use of imitation, which has recently become a less maligned classroom practice. True imitation of a structure, whether it is a scientific procedure or a poetic form, requires concentration and discriminating perception. This practice fits seamlessly into a classroom setting in which teachers are encouraged to model. While working with the Japanese in the late 1970’s, Torrance theorized that imitation and elaboration may be seen as stepping stones to creative outcomes. Both of these processes require careful observation. Elaboration, in particular, requires a change of perspective. The habit of changing perspectives can lead to “results …quite unique and frequently much more effective than the originator could ever have imagined” (Torrance, Satori 102).

One of the difficulties of testing for creativity is that all the tests, even the most highly regarded such as those created by Guilford and Torrance, are predicated on too narrow a definition. The ability most often measured is divergent thinking, which is only one aspect of creativity. “Tests cover items that are relatively generic…research has demonstrated [creativity] to be more domain specific” (Vialle et al 135). Another difficulty is that the administration of such tests requires the use of a precise script, which can be problematic in a classroom, and the details of administration affect results.

One of the important insights that psychometric data has been able to provide is that there appear to be “certain personality traits and experiences… [that]…tend to be characteristic of
people rated as creative” (Feldman 174). These include such things as a high level of effective intelligence -- “a tried and tested route to improve thinking about things that matter to everyone: planning, problem-solving, strategy, persuading and influencing, innovation, decision-making, creativity and learning” (Rhodes 1). Other specific traits include such things as: “an openness to experience, freedom from petty restraints, aesthetic sensitivity, cognitive flexibility, independence, high level of energy and unquestioning commitment” (Feldman 174). It would seem, then, that psychometrics can be used to identify the potential for creativity or at least the presence of certain predispositions that are considered necessary for creativity to flourish.

Current patterns in public education do not usually incorporate psychometric testing to determine potential for creativity. An exception may be testing students for placement in gifted education programs, even though, as pointed out in the Getzels study, the highest levels of intelligence do not necessarily correlate to high creativity.

Cognitive Approach

The cognitive theorist is concerned with what is occurring in the mind as a person creates. For this group, creativity is linked, connected, interwoven, enmeshed, and entangled with the function of the intellect. Creativity is seen as an ability to adapt to novelty and make choices guided by intuition and perception. Thomas B. Ward, professor at The University of Alabama and co-founder of Creative Cognition Research Group at Texas A&M University expresses the foundation of this belief as the “generativity of the human mind ‘the capacity for creative thought is the rule rather than the exception in human cognitive functioning’” (T. Ward quoted in Piirto 20). Ward, along with Stephen Smith and Ronald Finke developed a heuristic known as the Geneplex Model (Fig. 2) which was originally meant to be a broadly descriptive
rather than an explanatory theory” (Ward et al 191). Experiments conducted in this area have examined such factors as: “pre-inventive structures, creative imagery, insight, mental blocks, recently activated knowledge, and conceptual combination” (Piirto 20). Ward is one of many experts who have designed lectures and workshops to enhance creativity across broad areas of human endeavor: business, education, science, social policy and decision-making. These are interactive, providing participants with not just theory, but easily implemented practice.

![Figure 2. Geneplore Model](image-url)
The stages and flow pattern of this model correlate to similar stages and patterns in models by other researchers including: Osborn, Wallas, Parnes, Isaksen and Trefflinger, Barron and von Oech. The models all outline periods of idea generation, fact-finding and testing, criticism, revisitation, ongoing adjustments of various types --including to the product itself.

Robert Weisberg is another theorist who agrees that creativity is tied to the intellect and the choices that the creator makes. He believes that these choices are within the reach of everyone. He asserts that even the extraordinary creations of Picasso and Mozart were accomplished through ordinary means “exercising the same processes that we [mere mortals] use to escape shopping mall parking lot mazes or improvise excuses when late for dinner” (Weisberg quoted in Berkun 82). Therefore, everyone, in his view, has the capacity for extraordinary responses to quandary or dilemma. It isn’t a question of whether we can, but of whether we choose to.

Howard Gardner developed his theory of multiple intelligences to explain various ways and combinations in which people can be intelligent. He also believed that these intelligences are not necessarily creative. Gardner’s original matrix of intelligences included: a) linguistic, b) logical-mathematical, c) spatial, d) bodily-kinesthetic, e) musical, f) interpersonal, and g) intrapersonal. In 1999, he added an eighth intelligence: naturalist.

His analysis of individuals such as Sigmund Freud, Pablo Picasso, T.S. Eliot, Martha Graham, and Mohandas Gandhi provided information not only about the patterns of the work of these individuals, but also insight into conditions or circumstances necessary in their milieu for their work to be recognized (Sternberg and O’Hara 254). This idea is incorporated into the idea of Gardner’s four levels of cognitive analysis: “(a) the subpersonal level of genetic and
neurobiological factors, (b) the personal level of development in some form of human intelligence, (c) the extrapersonal level of progress or development in bodies of knowledge or domains, and (d) the multipersonal level of a social context of a field of inquiry that is created through interactions among colleagues in a domain” (Williams and Yang 380). He believes that recognition in a field is a critical factor of creativity.

David Perkins is a founding member and longtime director of Project Zero at Harvard Graduate School of Education, which is concerned with “cognitive development and cognitive skills in both humanistic and scientific domains (www.pz.harvard.edu). One of his studies involved observing working artists attempting to pinpoint “how creative people formulate synonyms…recognize patterns…solve problems” (Piirto 42). As he observed, he interrupted, literally asking the artists what they were thinking at various points in their work. He concludes that creativity is largely a matter of selection, as Ward said, guided by intuition and perception. Perkins’ Snowflake Model of Creativity adds the seeking out of criticism from trusted colleagues to this intuitive self-evaluation (Wilson Snowflake Model 2). If the assertions made by the cognitive theorists are true, one would think that the result would be the demystification of creativity and the creative process. Not even close.

Jerome Bruner discusses his definition of creativity as “effective surprise” (Bruner On Knowing 18) and separates effectiveness into three parts: predictive, formal, and metaphoric. But all three depend on what he calls “combinatorial activity” (20). They result from making relationships or seeing connections between and among elements, ideas, and experiences that are not evident, or that seem initially impossible.
He also discusses the paradoxical nature of the creative process. The creator must hold within herself the ability to be at once both objective and passionate. Objectivity and judgment are required to purposefully choose to reject forms or conditions as they exist. Passionate commitment is then required to the ideas, designs, or proposals devised to replace them, or to the solution of the problem being examined. The creator must have the wisdom to know when and how to tame the new concept, and how to present it so that it can be understood, or at least considered, rather than being rejected without consideration by whatever stakeholders exist. She must “extend the key to the parade sauvage” (Rimbaud, Les Illuminations, quoted in Bruner 24).

According to Bruner, there is a point in the process at which the creation takes over; it demands completion. This provides the creator with a “creative second wind” (Bruner 25). At this point, the creation is externalized. It may then become, as Freud suggested, an external stimulus and therefore more easily dealt with than an internal one. Or, getting it out of the head and into some type of representation allows for a better look at the whole and at possibilities for other interesting combinatorial associations. Whatever the cause, this “domination by the creation seems to free us of the defenses that keep us hidden from ourselves.” It also implies an instinctual trust on the part of the creator in the creation itself and in the process. According to Bruner, if this phenomenon does not occur, the end result is “contrived and alien” (Bruner 26).

All these paradoxes are linked. Passion often lends the process a sense of immediacy, but often completion is deferred because the creator “burns out”, so to speak and passion is replaced by boredom. The creative mind quite often has several projects going at the same time. Interest ebbs and flows; the solution or completion may be figuratively placed on a back burner. Often creativity is a process of construction and destruction. For the writer it may be the act of revision
-- many, many times. For the scientist, it may be the recreation of an experiment under slightly
different conditions or with different variables. Picasso maintains that if the creation of one his
paintings were photographed, the images would show a metamorphosis: “One would see perhaps
by what course a mind finds its way towards the creation of its dream.” Whatever “corrections”
are made to the initial image on the canvas, the final photographic image “corresponds to my
first vision, before the occurrence of the transformations brought about by my will” (quoted in
Bruner, On Knowing 27).

Finally, the creator must be able to manage the internal drama of being human, with all
the inherent frailties, understandings, and conflicts. This “inner script” which is constantly being
influenced, pondered, and revised can effectively allow insight into “the richest and most
surprising combinations” (Bruner, On Knowing 29). For Bruner, and the other cognitive
theorists, creativity is a focused, thoughtful act; its defining characteristic is choice.

Psychodynamic Approach

Some theorists such as Freud, Kris, Vygotsky, Rothenberg, Eysenck, and Jung discuss
ideas regarding the relationship of creativity to certain types of mental illness, the inclusion of
archetypes, and the idea that creativity eludes rational formulation. These ideas also include the
impression that creative persons need somehow to be “fixed”. Jerome Bruner, in On Knowing: Essays for the Left Hand (1979), talks about Freud’s beliefs that man was “host alike to seeds of
madness and majesty” (151), an idea that does not quite explain Freud’s “pathological view of
the creative process…[that] only unhappy people experienced daydreams and fantasies …an
integral part of the creative process” (Bergquist 1). On the other hand, Bruner observes: “Freud’s
recognition of the deep unconscious processes in the creative act has gone far toward enriching
our understanding of the kinship between the artist, the humanist, and the man of science” (Bruner, *On Knowing* 155). Regardless of the field of endeavor, these theorists seem to agree that emotion and motivation impact creative output.

Hans Eysenck developed a relatively recent causal theory (1993) that includes “genetic determinants, hippocampal formation (of dopamine and serotonin), cognitive inhibition, and psychoticism” (Feist 287). Eysenck’s model proposes a relationship between genetic and neurochemical processes that create personality, which he believes is the direct antecedent of creative achievement. One of the critical aspects of this biologically based theory is *cortical arousal*. “High arousal is associated with a narrowing of attention…low arousal with a widening of attention…creativity depends on a wide attentional focus and an expansion of cognitive searching, to the point of over inclusion, a defining characteristic of psychoticism” (Eysenck quoted in Feist 287).

Ernst Kris, a Freudian theorist, extends the use of Freud’s premise of “dreams-as-work” (Bulkeley 3) into what he calls *primary processes*, (still, rechanneled sexual energy), often expressed in dreams, both sleeping and waking. These processes represent a “regression in the service of the ego, used to seek pleasure and avoid pain” (Kris cited by Bergquist 2). These processes involve free associations, analogies, and concrete images. Kris asserts that creative people have better access to these functions, which he also believes exist in states such as “psychosis and hypnosis”. Inspiration comes from the primary processes because they are “associative…facilitate[ing] the discovery of new combinations of mental elements” (Martindale 138).
What Kris calls secondary process cognition involves abstract, logical, reality-oriented thought. Elaboration, optimization, and implementation require a “return to the secondary process state” allowing the “poet [creator, to achieve] in his waking state…what the rest of us do in our dreams” (Arthur Schopenhauer, quoted in Martindale 138).

Jung, in his distinction of “visionary art” (Bergquist 5) believes that the creator “transcends his personal fate and begins to speak to, and for, humankind.” The connection to the collective unconscious thus “includes the needs of the race, not solely the individual” (Bergquist 5). As discussed previously, in Jung’s vision, this type of creativity is virtually forced upon the creator -- a tremendous, wordless kind of compulsion striving for expression. The execution of this exacting duty sometimes makes necessary the sacrifice of “normal” happiness and other ordinary aspirations that the average human being coexisting with the creator might also want -- the creative duality that Jung talks about. This tenuous coexistence might very well appear as a type of madness. “...There are hardly any exceptions to the rule that a person must pay dearly for the divine gift of the creative fire” (Jung, quoted in Yurica 2).

The theories of L.S. Vygotsky dovetail with Jung’s in that he believes that as humans, certain ideas unite us and that that idea allows for the creation and interpretation of art and culture. Vygotsky sees art as a “social release of unconscious…an explosion of emotions” (Lindqvist 247). He believes that the interpretation of those emotions cause the imagination to burgeon. Vygotsky disagreed with Freud, however, on the notion that art was nothing more than “an expression of conflict between the principles of desire and reality…primarily a matter of [repressed] sexual urges” (Lindqvist 247). Rather he believes that creative ability, which he called imagination, is not unconscious, but conscious, and is the foundation for art and science,
as well as technology -- indeed, for all creative actions. Vygotsky also advocates the belief that since creativity is tied to myriad and varied experiences, adult imagination is richer than that of a child. He describes imagination as a circle: “Emotions are always real and true… [thus] linked to reality. [These] fragments of reality are transformed…take shape, and reenter reality. Imagination is both emotional and intellectual… [thus] it develops creativity” (Lindqvist 249).

In *A Midsummer Night’s Dream*, William Shakespeare wrote: “The lunatic, the lover, and the poet are of imagination all compact.” Denise Shekerjian in her study of MacArthur fellows, *Uncommon Genius: How Great Ideas Are Born*, (1990) discusses the recurrent idea that creativity is linked, somehow, to madness. This question -- whether such a link exists -- like so many others in the study of this topic begins to take on a resemblance to Kekulé’s model of a benzene molecule -- a snake swallowing its own tail. She quotes the report of a fifteen year study published in the April 1987 issue of *Psychology Today*: “the tendency toward manic depression may facilitate access in creative people to a richness and intensity of experience that is not shared by the rest of us” (Shekerjian 182). She notes that shortly after the *Psychology Today* report, *The New York Times* published an article that claimed that it was not the genius himself that was disturbed, but his siblings, who tended to suffer from various psychological disorders. In the end, as Shekerjian says it “may boil down to no more of a link than that both the madman and the creative man favor unconventional thinking, and that both often feel a keen sense of despair and isolation” (Shekerjian 183). It is more reasonable and productive to view the link as one with deviance “sometimes heroic, sometimes reckless” (Shekerjian 192) which requires an ability for inherent recovery, self-renewal, and flexibility because most people, even those in intimate proximity of the creator, will not realize that “the crack is where the light shines through” (Edith Sitwell as quoted in Shekerjian 192).
Psychologist Albert Rothenberg proposes that there is no “invariant connection between genius and psychosis” (Rothenberg 6). Though he catalogs and examines a prodigious list of artists, scientist, writers, and philosophers who did experience psychological tribulations, he insists that there would be a similarly significant list of creators who did not. In *Creativity and Madness: New Findings and Old Stereotypes* (1994), he concludes that the processes used by creators do exist in psychotic individuals but they are separated by the fine -- but critical -- line of *intent*.

When creators grasp the juxtaposition of opposite and antithetical ideas and are able to perceive two or more sensory images existing in the same space, they do so with intent and clarity, choosing to use these processes to achieve a creative goal. Psychotic persons are not aware of contradictions; simple substitutions of opposites are acceptable. The energy produced by these processes is inner directed and not focused on “improve[ing] reality.” (Rothenberg 35)

In his introduction to *Extraordinary Minds: Portraits of Exceptional Individuals and an Examination of Our Own Extraordinariness* (1997), Howard Gardner insinuates another reason that there exists the “love-hate relationship with the extraordinary individuals within our ranks” (2). While we, as a society, do pride ourselves on giving the talented in our midst opportunities to develop their potential -- “setting up special programs either to nurture them or to allow the fittest to survive” -- we, as a society, also pride ourselves on our anti-elitism. This is particularly true in regard to intellectualism, in all its forms. This discomfort has often led to emphasis on the “pathographies” (3) of these individuals as much as on their accomplishments. We want and need creative people; it’s just that we want them to be like the rest of us. Otherwise, they make us very uncomfortable.
Social-Personality Approach

Some researchers such as Frank Barron (1968, 1969) Teresa Amabile (1983) and Hans Eysenck (1993) have noted that creative persons share particular personality traits which can be measured by assessments such as the *Myers-Briggs Type Indicator*. Myers-Briggs was developed during World War II by two American women, Isabel Briggs Myers, and her mother, Katherine Briggs, in an attempt to broaden the accessibility of Jung’s theory about the four dichotomies: sensing, intuiting, thinking, and feeling. Jung had stated that “what appears to be random behavior is actually the result of differences in the way people prefer to use their mental capacities” (Jung’s Theory [www.myersbriggs.org](http://www.myersbriggs.org)).

The Myers-Briggs test, though its creators have been criticized for not having a psychology background, has nonetheless been used by individuals, educational institutions, and business enterprises to provide insight into appropriate life management, learning preference, and career choices. Similarly, Eysenck uses a statistical technique called “factor analysis” (Boeree 2) in which people rate themselves on a wide range of personality characteristics which can then be “related to factors such as introversion/extroversion and excitation/inhibition” (Boeree 3). Both of these measures rely on an individual’s assessment and understanding of their own personality traits.

Among highly creative individuals, Barron identified characteristics such as the willingness to take risks, and "other common attributes… a strong motivation to bring order and definition to the world, as well as independent judgment… they tend to rebel against conformity as they accompany their own private visions down lonely, untrod paths” (1979 interview quoted in Barron Family obit 1).
Though stated somewhat differently, Amabile’s research also identifies such personality traits as: “comfort in disagreeing with others and trying unorthodox solutions, the ability to use knowledge from disparate areas, and the ability to persevere through difficult problems and dry spells” (Adams 6). She refers to these traits and others as “creativity-relevant skills”

Colin Martindale (Martindale and Greenough, 1973) also developed a way to assess Eysenck’s theory of cortical arousal. He measures stress levels and uses EEG’s to support the theory that high arousal (stress) interferes with the ability to problem-solve, and low arousal (time spent in alpha state, or relaxed, but focused and aware) enhances problem-solving abilities. Martindale’s findings further confirm that the “low cortical arousal is evident only during the inspiration state and not throughout creative insight…creative individuals tend to have higher resting arousal levels” (Feist 287).

Additionally, researchers Robert Sternberg and Todd Lubart identify a large set of potentially relevant traits such as: “independence of judgment, self-confidence, attraction to complexity, aesthetic orientation and risk-taking” (Sternberg, Lubart: 29). Abraham Maslow theorized that personality traits such as “boldness, freedom, spontaneity, and self-acceptance lead people to the realization of their full potential” (Maslow quoted in Sternberg and Lubart “Concept of Creativity” (9). These and other personality traits are verified by the work of others, such as Denise Shekerjian in *Uncommon Genius*… and Wilma Vialle, et al, in *Handbook on Child Development* (2000). Of critical interest to educators is Sternberg and Lubart’s assertion that “when creative students are taught and their achievements are assessed in a way that values their creative abilities, their academic performance improves…Given the chance to be creative, students who might otherwise lose interest in school may find that it captures their interest”
This assertion seems to suggest that the current high stakes testing practices, focused on the lowest common denominator, are actually detrimental to those students with the most original ideas and who have higher capabilities to problem-solve, possibly causing them to regress, or in the worst-case scenario, to disassociate from the educational system.

**Confluence Approach**

Some of the more recent works on creativity suggest that a variety of components must converge in order for creativity to occur. Researchers such as Teresa Amabile, Mihaly Csikszentmihalyi, and Todd Lubart also assert that creativity can and does have an effect on everyday life, and that a person’s surroundings and context influence creativity, as can both intrinsic and extrinsic motivation.

Teresa Amabile (*Creativity in Context*, 1996) believes that the creator must be intrinsically motivated, have sufficient *domain relevant* knowledge and skills, and also *creativity relevant* skills, such as the ability to cope with complexity and to change one’s conceptual perspective when problem-solving; fluency with heuristics that help to generate ideas; and a work style that includes both intense concentration and unassailable energy. Amabile believes that the preponderance of research on the *characteristics* of the creative person without much on the *circumstances* conducive to creativity encouraged the belief that “creativity or the determinants of creative potential are largely innate” (Nickerson 407). Amabile also comments on the development of intrinsic motivation for creative efforts. She believes that the development of intrinsic motivation has much to do with “perceived locus of control… [which] has implications for the effectiveness of external evaluation of creative activities” (Nickerson 412).
For evaluation to enhance creative activities, it should communicate positive feedback regarding the increase in competence while engaging in those endeavors. People are more likely to achieve “higher levels of creative production… [when] there is pleasure in doing so” (Nickerson 413).

Both of these ideas dovetail into the work of Mihaly Csikszentmihalyi and his concept of flow. Flow is the “holistic sensation that people feel when they act in total involvement…when action follows action according to an internal logic that seems to need no conscious intervention from the actor…[yet] he is in control of his actions” (Csikszentmihalyi, Beyond Boredom 36). For flow to occur, an action must accommodate an optimal balance of skill, or competence, and challenge. The activity must also be autotelic -- engaged in for its own sake -- rather than because it will deliver an external reward.

Csikszentmihalyi maintains that flow, which he does link to creative, autotelic activities, is necessary for optimal performance in everyday life. These autotelic activities provide a variety of benefits, such as the potential for action and enjoyment, an “opportunity to clarify goals and receive feedback about increased competence and enhanced control, and a transcendence of ego boundaries” (Csikszentmihalyi, Beyond Boredom 136). These activities not only “provide perspective from which people evaluate their everyday life and thereby gain impetus for change…they sometimes facilitate involvement with more structured acts” (139, 141). Flow deprivation has a “somatic effect -- lessened alertness” (166), which is in line with the idea that rest and play are necessary for exceptional performance. The popularly held notion in American culture that two weeks vacation a year will keep employees in top form is a perversion of this concept. Paradoxically, so is one of the arguments for multi-track year-round school; long breaks, no matter where in the year they are placed, act against maintaining a foundation to build
and extend upon, depriving students of the opportunity to clarify goals and receive feedback about increased competence and enhanced control in their academic setting. Csikszentmihalyi’s research would argue that short, more frequent breaks between slightly longer learning periods would keep students alert and intellectually stimulated, a scenario that would also address other difficulties that schools face such as content mastery, attendance, and dropout rates.

If we are talking about trying to optimize conditions in which creativity can grow, “…the typical environment in which children grow up is not designed to offer opportunities … [for] free imagination, free movement, room to explore or manipulate real objects” (Csikszentmihalyi, “Systems Perspective” 200). Societal values (including frequent and ruthless evaluation) dictate that activities that do not produce concrete results and extrinsic rewards are not good investments of time. In school, activities such as playing ball and playing an instrument are less about increasing confidence in one’s competence at these activities -- personal learning that enhances growth -- and more about displaying these skills for the approval of an audience which often has a non-authentic standard that students are expected to meet. They become what Amabile calls “non-synergetic” (Adams 10) forms of extrinsic motivation -- controlling rather than enabling. Disapproval for failure to meet such standards does not engender growth, but does introduce what Ernst Kris calls “stringencies, which restrict possible ways in which a problem may be solved” (Chessick 2).

Amabile uses a maze metaphor to describe the interaction of motivation and creativity to solve problems which is linked to Csikszentmihalyi’s autotelism. The problem is represented as a maze with multiple exits that correspond to various possible solutions. She feels that the extrinsically motivated problem-solver will “rely on more conventional, less creative exits from
the maze because they are not involved enough in the task to search for novel exits. Intrinsically motivated individuals...are more likely to spend time looking for alternative solutions because they enjoy the task" (Collins and Amabile 303).

This is another difficulty with cultivating creativity in classrooms: the design of current curriculum is largely based on evaluation by means of irrelevant and artificial measures -- evaluation based on a relatively low standard. There is neither the time for, nor the confidence in, trial and error as a method of problem-solving. Excessive emphasis on basic concepts does not even consider complexity or changes in conceptual frameworks. The courage to enhance conviction and fluency in finding unusual ways to problem-solve is not alive and well in the educational system: it is not encouraged, or it simply does not exist.

Several of the researchers, such as Gardner and Csikszentmihalyi suggest that the times and places in which creators find themselves -- the milieu, or system in which they exist and operate necessarily affects not only their work, but the way in which it is perceived, and whether it is recognized as a change in meme – units of imitation introduced by Richard Dawkins in 1976 as the “building blocks of culture” (Csikszentmihalyi, “Systems Perspective” 316). One can be creative in any field: carpentry, dance, cooking, music, religion only to the extent that the new can be evaluated “in reference to…tradition. Original thought does not occur in a vacuum…without rules there cannot be exceptions, and without traditions there cannot be novelty” (Csikszentmihalyi “Systems Perspective” 315). This social filter not only judges “new”, it ultimately decides which adaptations will be allowed to “be passed on through time” (Csikszentmihalyi “Systems Perspective” 316).
Gardner, in *Frames of Mind: The Theory of Multiple Intelligences* emphasizes the importance of how creative individuals such as Virginia Woolf, Mohandas Gandhi, Sigmund Freud, and others made changes in the domains of literature, politics and psychology that were not immediately accepted -- were in fact rejected and even vilified. Changes in the milieu, the field, and the culture finally allowed their creativity to be recognized, accepted, and transmitted through time. Changes over time in ethical and aesthetic judgments also affect the acceptance of variation and innovation. Extreme events or occurrences -- disasters and catastrophes can cause radical shifts in acceptance or rejection as well.

**Pragmatic Approach**

The pragmatists believe that creativity is latent in everyone and that with proper practice in various techniques, people can tap into that creativity and use it not only to problem solve, but to enhance and enrich their lives. Joan Erickson, working with her husband Erik Erickson’s psychosocial stages of life, subsequently described generativity and integrity in the final two stages “as being enhanced by a person’s creative endeavors…wisdom, wonder, awe, and reverence are gained by being creative” (Piirto 16). Mihalyi Csikszentmihalyi’s differentiation between “Big C” creativity, which transforms domains and “little c” creativity which improves individual lives is another example of the idea that everyone has the potential to be creative, even if the resulting change or changes are not recognized by a larger milieu. No one has the means to study the effect of “little c” creativity, but Csikszentmihalyi’s research on flow deprivation seems to indicate that people who are deprived of the opportunity to participate in autotelic activity over a period of time lose concentration and focus in their everyday activities and feel depressed.
Edward De Bono created a system of thinking that models problem-solving as a series of conscious processes that involve switching the problem-solver’s frame of perspective. His *Six Thinking Hats* (1985) was originally conceived as a business example. Underlying his framework is the very determined idea that in order to become a thinker, one must act very deliberately, “performance follows intention” (De Bono 17), but only if the thinker actually practices -- there is work involved. He makes a distinction about what is considered intelligence within a school setting: and what thinking is. How well does a student “get along [with others] and please the teacher” (by meeting standards set by the teacher, we must assume)? Granted, this is a type of intelligence, but it is very restrictive and measures only a narrow field of what students bring into a classroom and what they may actually know. It certainly does not encourage deviation from whatever “norm” has been set in that environment. It certainly does not encourage risk-taking and looking for multiple answers to any questions that might be posed in that environment. And, taken out of that environment, it does not prepare students to function in any problem-solving situation, particularly an ambiguous or unstructured one.

De Bono’s framework actually delineates six modes of the thinking process and makes the mental action of “switching hats” a purposeful way to redirect thinking to make it more focused, productive, and results-producing. His “green hat”, which symbolizes creativity, is linked to his idea of lateral thinking, a process which “cuts across patterns in a system [rather than] just following along them” (De Bono 141). De Bono’s approach also attaches the idea of forward movement to the process of idea production or brainstorming because he feels that suspending judgment “does not tell the thinker what to do – only what not to do” (De Bono 144). This technique is very well-defined and ordered: easy to explain and easy to practice. His entire
system is based on the idea that the thinking process – all of it – is supposed to be productive. Creative thinking is only one piece of this method.

Alex Osborn, founder of Creative Education Foundation (1963) is another innovator from the business world whose Creative Problem Solving model is unique in that each of the six steps begins with a “divergent thinking phase in which one generates lots of ideas…and then a convergent phase in which only the most promising ideas are selected for further exploration” (CPS Model 1). Sidney Parnes, founding Director of the Center for Studies in Creativity at State University College at Buffalo, has helped expand the Creative Problem Solving philosophy. He succeeded Osborn as the head of CEF and has spent forty years working in the field, developing workshops to make the technique practicable. The most intriguing idea from this model is that the creative problem-solver is proactive, rather than reactive. The idea is to look for areas that could benefit from innovation. A fascinating example is the work of Joshua Klein, a speaker at the annual TED: Ideas Worth Spreading event, who developed a vending machine for crows based on his informal observations that crows are extremely intelligent and adaptive. His invention uses Skinnerian principles to train the crows in four stages to deposit coins into a device which then produces a peanut. His conclusion is that because they are intelligent, and they can learn from each other, according to his observations, they can be taught to pick up other things such as “garbage after stadium events, or find expensive components from discarded electronics, or to do search and rescue”. He advocates ways to coexist with synanthropic, hyperadaptive species that are mutually beneficial and “do not involve extermination” (Klein).

Before moving into Roger von Oech and his theories and plan, it is important to note a change that has occurred over time in theories related to creativity – its nature, its requisites, and
its prevalence. From Guilford’s “call to arms” in 1950, which also brought into play the ancient understanding of creativity, came a prestigious group of theorists and researchers who believed that creativity was outer-directed. Whether related to circumstances, innate abilities, or some accident of the gods, creativity was largely seen as something visited on the creator – something over which she or he had very little control. Gardner even speaks of the “Faustian bargain” made by people such as Gandhi, Einstein, Picasso, and Stravinsky that somehow bound them into a pact which if not “compulsively adhered to [would cause their] talent to be compromised or irretrievably lost” (Gardner, Creating Minds 44).

Many more recent theorists have the conviction that creativity is inner-directed, that it is largely dependent on choice and purposeful intent. Environment has an important role in all the schools of thought and I would even distinguish between “Big E” environment (to borrow from Csikszentmihalyi’s differentiation) which includes cultural and socio-political circumstances and conditions within a domain or field, and “small e” environment which has to do with mental state such as Csikszentmihalyi’s concept of flow, Eysenck’s cortical arousal theory, and Amabile’s theories about “non-synergetic” (Adams 10) forms of extrinsic motivation. Perceived disapproval for failure to meet non-authentic standards may introduce stress that further restricts creative responses to difficult problems or circumstances.

Except for brief periods in which educators actually used the work of people such as Torrance and Gardner to search for and enhance creative potential in classroom environments, creativity has had a difficult and marginal place in the public educational system. Great in theory, but not encouraged in practice, it seemed best left for citations in “research–based” changes touted by this or that guru in vogue at any given moment in educational practice.
The business world, however, began to see that the employees it was getting -- products of twelve to twenty years of education -- were missing that flexibility of thought necessary to recognize and optimize potential trends and opportunities, and to anticipate and minimize problems. This charge or need created by the business world encouraged the work of the pragmatists such as De Bono, Osborn -- and Roger von Oech.

A Look at von Oech

It is critical to understand that what creativity is not is a “quick fix”; it is comprised of a teachable set of skills and requires practice, practice, practice. So let’s begin with an examination of von Oech’s model.

When working with corporations, von Oech begins by trying to get people to think about the last time they had a creative idea. They are asked to think about what it was and what motivated it. Most participants have difficulty with this simple exercise, which made him examine the motivation for being creative at all. What is gained by challenging the rules? Why “fix” something that isn’t broken? Why run the risk of failure or being laughed at? People get into mental ruts. They follow established patterns and when faced with a new situation, try to access the schema they already possess to help them navigate it. There is nothing wrong with this as long as life cooperates and doesn’t change. The thing is, however, that life does change and people who are not equipped to deal with change find themselves dissatisfied, distressed -- perhaps even obsolete.

Von Oech makes the point that in the real world change is not only inevitable, it is constant. “it is no longer possible to solve current problems with yesterday’s solutions” (5). The
answer is to “use creative abilities to formulate new ideas, answers, and solutions” (5). And here is the other answer to the question “why create?” -- because it is fun.

He acknowledges creativity is not necessary or even desirable for most aspects of our lives. The thought of people making up their own rules for driving on the freeway during morning or afternoon rush hours is terrifying. We generally prefer that our physicians and dentists follow established procedures when treating our illnesses, though grateful at the same time for innovations that have been implemented over time in those practices, and occasionally even more grateful that creative practitioners continue to seek out new ways to treat devastating illness and disease.

But established practices also make the assumption that the best ideas have already been thought of, or have come from someone else. The translation to education is clear. Most “successful” students spend most of their academic careers trying to figure out what the teacher wants so that they can produce it, get their “A” and move on. But what happens to these students when they don’t have anyone to tell them what to do? And when and how do they learn to take the risks associated with real learning?

Von Oech says that our habits, and this applies to teachers and students, are against us. He enumerates ten attitudes which he calls “mental locks” (14) that keep people from “thinking something different” (Szent-Gyorgyi quoted in von Oech, Whack 11).
### Von Oech’s Mental Locks

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<td>1. The Right Answer</td>
<td>6. That’s Not My Area</td>
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<td>2. That’s Not Logical</td>
<td>7. Don’t Be Foolish</td>
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<td>3. Follow the Rules</td>
<td>8. Avoid Ambiguity</td>
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<td>4. Be Practical</td>
<td>9. To Err Is Wrong</td>
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<td>5. Play is Frivolous</td>
<td>10. I’m Not Creative</td>
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Unlocking these mental attitudes provides the tools and skills that allow people -- including teachers and students -- to be more creative. The other factor that is often necessary is what von Oech calls the “whack on the side of the head” (18), that impetus that “shakes us out of routine patterns, forces us to rethink our problems, and stimulates us to ask the question that may lead to other right answers”(18). A “whack” can take many forms. It can be a reassignment to another class or school, a physical injury that causes us to adjust movements we have taken for granted, or questions we’ve never thought about: If the universe has boundaries, what are they? Or, what would it be like to be two-dimensional? What if the Chinese had decided to colonize North America when they “discovered” it in 1421?

“Whacks” force a perspective shift and may allow us to anticipate a problem, recognize a challenge, optimize an opportunity, or “generate some new ideas” (22).
**Some Historical “Whacks”**

Thomas Edison’s initial interest was improving the telegraph. His innovations included the multiplex telegraph and the ticker tape machine. When financier Jay Gould bought Western Union in the early 1870’s -- creating a monopoly -- Edison “realized that the need for innovation was reduced” (22). Thus “whacked” out of his customary mode of thinking, within a few years, he had “come up with the light bulb, the power plant, the phonograph, the film projector, and many other inventions” (22). Without Gould’s “whack” it is probable that these creations would have been much delayed.

In the early 1980’s a severe freeze cost a citrus grower named Rex McPherson 85% of his crop. He was a third-generation grower, but the disaster “whacked” him into re-thinking the traditional methods and elements of his business. As a result his yield rose and his losses went down (22).

Disasters on a wider scale have caused innovation and new solutions as well. Earthquakes and tornadoes have been the impetus for changes in building design and materials. The threat of terrorism has caused changes in rules and protocols in most modes of transportation all over the world. “Whacks” can sometimes be painful, but they do result in change.

In order to provide some insight into ways that von Oech’s “locks” can be rendered harmless in the classroom, let’s examine them and explore some strategies for students (and teachers) to consider in order to develop and enhance confidence in their creative abilities. Please note that while all the strategies do unlock creative thinking, they may not all lead to a specific product; they may be used as means to an end.
“The question is more important than the answer. Once a question is answered, the inquiry process stops.”

Socrates

Von Oech begins his book by talking about an exercise he was given as a sophomore in high school. His teacher put a dot on the chalkboard and asked the class what it was.

After a few seconds, someone stated the obvious: that it was a dot of chalk on the chalkboard. The other students were satisfied to leave it at that. The teacher then told them that she had done the same thing with kindergarteners the day before and had gotten responses like: “an owl’s eye, a cigar butt, the top of a telephone pole, a squashed bug, a star, a pebble, a rotten egg” (29). Ten years had passed since those sophomores had been kindergarteners; in that time those students had learned not only to find the right answer, they had stopped thinking, and worse, questioning after a “right” answer, a reasonable answer, an acceptable answer. They seldom entertained the possibility that there could be more than that one right answer. And as French philosopher Emile Chartier said: “Nothing is more dangerous than an idea when it is the only one we have” (quoted in von Oech 30).
Edward de Bono describes the mind as an “active information system” (25) that naturally and automatically organizes incoming information into patterns or schema which allow perception. Without this ability to organize, we could not learn even so simple a thing as crossing the street. But, the disadvantage of this “active system” is that it renders the brain “brilliantly uncreative [we] use such fixed patterns on every possible occasion in the future…imprisoned by the history of experience” (26).

This lock is particularly insidious in a classroom. If the end of education is to create people who can think, by that I mean reason, entertain options, make decisions based on consideration of evidence, solve problems in domains of knowledge that we, as their teachers, can neither conceive of or predict, then what are we doing letting them believe that there is only one answer to any given problem? Also, ego involvement in defending a single idea leads to less willingness to listen to the ideas of others, further closing the mind. It becomes stagnation, or worse, blind, unquestioning acceptance -- a vicious cycle and dangerous practice in a republic.

Also, it disregards ways of knowing that may not be in the mainstream of the classroom, but may be a part of individual student’s” fluid intelligence or reasoning ability”(Cattell quoted in Sternberg and O’Hara 253) Cattell believed fluid intelligence to be more important to creativity than “crystallized (learned) intelligence.”

This segues into equity issues connected to high stakes testing and problems with the nature of inquiry that stretch all the way to the university level. Mike Rose, in his examination of disadvantaged students, Lives on the Boundary, notes: “It is a source of exasperation to many freshman that the university is so predisposed to question past solution, to seek counter explanations – to continually turn something nice and clean and clear into a problem” (189).
School has become about the transmission of huge amounts of discrete facts and isolated skills with the stated and shortsighted goal of knowing which answer to bubble on a scanner sheet. The choices are limited; in this scenario there can be only one right answer. The educational penalties for failure to comply are dismal – more time in mind-numbing classes with even more emphasis on selecting the right answer. On the other hand, educational rewards for compliance also exist. Good grades translate into social and familial rewards as well and become tied, in some cases, to perfectionism and student self esteem.

In fact, one could make a case that the school system as it exists in the current political climate is a perfect, if horrifying, example of the idea of one right answer taken to an hysterical and dangerous extreme: The problem we have with high stakes testing has come about and feeds on itself because someone with power decided that there was only one right answer to the question: How do we hold teachers and students accountable for what goes on in the classroom on a daily basis? The answer: testing. The system as it exists causes students year after year to exchange one unrelated body of facts for another. Each year brings “a new textbook, new dates and documents, [facts, figures]…new tests – but the same rewards and the same reasons to forget” (Rose 190). It should be, as Rose says, “no surprise that they develop a restricted sense of how intellectual work is conducted” (190). John Dewey saw the problem more than 100 years ago “Only in education, never in the life of the farmer, sailor, merchant, physician or laboratory experimenter does knowledge mean a store of information aloof from doing” (quoted in Rose 190). Getting into the mental habit, or rut, of using only one method of solving a problem or performing a task precludes not only innovation, but excellence. “Education by giving shape and expression to our experience can also be the principal instrument for setting limits on the
enterprise of minds” (Bruner, *Actual Minds* 117). Yes, there must be a transmission of a core of knowledge, for all creativity has knowledge as a base, but education must also “provide alternative views of the world and strengthen the will to explore them” (117).

J.P. Guilford, in early studies and in his *Structure of the Intellect* model (1967), outlined divergent production as one of the operations present. He defined divergent production as a “broad search for information and the generation of numerous novel answers to problems as opposed to a single correct answer” (Sternberg and O’Hara 252).

Robert Sternberg discusses an added dimension of idea production, that of “task appropriateness” (Sternberg and O’Hara 255). To be productive in a classroom, it is necessary to include this element, at least after generating large number of ideas. I like to think of it as categorizing. No ideas are ever thrown out, but after evaluating their appropriateness to the problem at hand, some ideas may be placed in a “percolation” file which can be reevaluated and accessed at any time.

Other researchers emphasize other important points. Von Oech stresses the need to be open, look at the obvious, look at the big picture, look in places you might have been avoiding, listen to other ideas and use them as stepping stones. Piirto talks about the necessity of having naïveté “attention to small things and the [ability] to see the old things in their fields and domains as if they are new…the acceptance and curiosity about the odd and the strange” (46).

Here again, it becomes important for the teacher to have the same sensibilities. If she has not been teaching for five, ten, or fifteen years but has taught the same year five, ten, or fifteen times it will be very difficult for her to awaken the idea in her students that there are alternative answers to questions raised by content.
Questions

The necessary precursor of getting an answer is of course, asking a question. It is very important to realize that the answers you get will be based on the questions you ask. My favorite story from Von Oech is the one that tells of a mysterious illness that decimated a small village in Lithuania in the eighteenth century. Victims were struck suddenly, quickly sinking into a coma, then dying. After several days of hurried burials, the villagers were horrified to learn that at least one of the victims had actually recovered and wakened from the coma, only to find that he had been buried alive. The townspeople met to discuss what they should do about this situation. One group suggested that a small amount of food and water should be placed in each coffin and a tube of some kind should be attached to an air hole in the lid. Such procedures would be expensive, but they felt it would be worth it to save people’s lives.

Another group had a much less expensive solution. They suggested that a twelve inch spike be attached to the underside of each coffin lid, right over the victim’s heart. Once the coffin was closed, there would be no doubt that the person inside was dead.

What caused the differences in the two solutions? It was the question each group asked – the problem definition, if you will. “The first asked, ‘What should we do if we bury somebody alive?’ The second asked: ‘How can we make sure that everyone we bury is dead?’” (von Oech 34).

The story illustrates the importance of question design. It is vital in teacher planning, but it is also important to teach students to design and formulate their own questions in an area of study.
At first many student-generated questions may be simply the recall of facts. Answers may be found either through simple recall or by checking the text, whether the text is history, literature, or science. It becomes much more interesting when students formulate questions whose answers are more ambiguous. By framing questions open to interpretation or calling for a judgment, they are learning to do what Rose calls “questioning past solution -- turning something nice and clean and clear into a problem” (189). Stirring up new questions usually means something of value will turn up. These types of questions call for what Sternberg calls “synthetic ability”. They must “see problems in new ways and escape the bounds of conventional thinking” (Sternberg and Lubart 11). By listening to alternative answers for which there is textual support, their viewpoints and minds are opened up to new possibilities. This also brings the second and third parts of Sternberg’s triarchic theory of intelligence (1985,1988,1996) into play. Students must use analytical ability to “recognize ideas that are worth pursuing” and practical-contextual ability to “persuade others of the value of their ideas” (Sternberg and Lubart 11).

Ask a Right Question

Dr. Sandra Kaplan has created a set of what she calls “prompts for thinking” to help students go deeper into and more broadly across content, but that also can be used in question design. The prompts include: details, trends, big ideas, language of the discipline, patterns, unanswered questions, rules, ethics, relationships over time, perspective, and interdisciplinary connections. (Appendix 1.1)

I use the thinking prompts in many ways, but this exercise helps students form the habit of asking questions that extract more useful information from whatever content they study. This is an exercise that helps engender interest in the study of – for example – a small but telling
incident from the American Civil War. All questions stem from limited or incomplete knowledge of facts, so students are presented with the following facts: a man named Henry Brown lived in a wooden box for a period of time; the box was made of wood, had a top and a bottom, and was ventilated. Because of this incident the man came to be known as Henry “Box” Brown. Students are required to use at least one of the thinking prompts to formulate questions that will give them information in order to get the rest of the facts about Mr. Brown and why he lived in the box. The questions must be fashioned in such a way that they require more than a one word answer. The teacher’s role is to answer the question truthfully but as succinctly as possible -- no extraneous information. The idea is to get them to ask more questions, to use others’ questions as stepping stones -- to think and make connections.

A sample question might be: What trends were in effect at the time that Henry “Box” Brown lived? A possible answer: There were economic trends that made a large part of the United States dependent on agriculture. There were political trends that were dividing the country into factions based on geography. There were social trends that were also dividing the country into factions based on geography.

Another sample question: Was Henry breaking any rules by living in the box? This question can be answered by one word: yes. The student would then have to reformulate in order to elicit more information. Eventually students are able to piece together the story of the slave Henry Brown who had himself shipped North in a wooden crate to escape slavery in the South. The depth of thinking produced and the necessity for creative questioning is obvious -- and so much more interesting than a standard lecture on the differences in thought between slaveholders
and abolitionists. The questions regarding ethics and multiple perspectives often resurface in subsequent discussions and lead to other ideas related to the study of this very complex topic.

A variation of this technique is to give students a list of seemingly unconnected words and ask them to formulate questions that will clarify the relationship among them. This activity can be used to begin a study of American involvement in World War II. Students are given these words: typhoon, fingernail clippings, Mongols, Japan, and kamikaze. Again, using the prompts, they formulate questions to elicit as much information as possible. Again, the teacher should answer as succinctly as possible.

Because it is later in the year and because the words seem unrelated, a sample question might be: Is there an interdisciplinary connection among these words? The answer: yes. Another sample question: What are the big ideas connected to these words? A possible answer might be: nationalism, personal honor, and cultural tradition. After a series of questions students can make the following connection: Mongolian attempts to conquer Japan in the 13\textsuperscript{th} century were unsuccessful because of terrible typhoons that included \textit{kamikaze} or “divine winds”. During World War II Japanese kamikaze pilots who were embracing a suicide mission would leave behind a personal memento for their families in the form of fingernail clippings.

Another strategy that uses the prompts to formulate questions is the iconic pathway. Students are given a problem and use several prompts in a series to create questions that will lead to a solution for the problem. One of the first novels students read in my class is \textit{The Hobbit} (Tolkien, 1937). Toward the end of the novel, Bilbo, the protagonist, secretly claims a family heirloom of the self-proclaimed King under the Mountain as his promised fourteenth share of the newly recovered treasure. The King wants the heirloom very badly and claims it, above all the
treasure, as his own, promising dire consequences for anyone who finds and withholds it. The determination of the ownership of said heirloom (which happens to be a diamond the size of a fist) is the problem. Students use prompts such as ethics, perspective, and rules to formulate questions to help solve this impassioned dilemma. (Appendix 1.2)

These strategies demonstrate several ways that students can be given opportunities to create questions -- to define the problem -- so that they can then generate possible answers.
Lock #2 That’s Not Logical

“In what ways are a cat and a refrigerator alike?”

Roger von Oech, A Whack on the Side of the Head

Von Oech begins this chapter with a list of various types of thinking and describes how he felt the need to categorize them in some way. His solution was two categories: “hard thinking” which included: logic, reason, precision, consistency, analysis, focus, specificity; and “soft thinking” which included: dream, metaphor, humor, ambiguity, fantasy, paradox, and hunch. He compared “hard thinking” to a spotlight: narrow and focused; whereas “soft thinking” was more diffuse, but encompassed a wider area.

Look at the words listed as “soft thinking”; their function is to integrate and find similarities among things. The “hard thinking” words separate and identify differences among things. If you apply “hard thinking” to the introductory question, likenesses will probably not come to mind very easily. After all, the two objects are separate and different, it isn’t logical to think that they are alike. But, let’s apply “soft thinking” to the question: they both purr, they both have tails, they can both be receptacles for fish and milk, they can both be furry…you get the idea.

According to von Oech, it is clear that both types of thinking are a part of creativity. “Hard thinking” is necessary after the generative phase of the process, but can impede or stop generation if applied too early. Hard thinking engages Sternberg’s analytical and practical-contextual thinking and makes use of Edward De Bono’s use of six separate thinking strategies to be used to generate, evaluate and implement ideas in Six Thinking Hats. The hats used for
“hard thinking” are the factual/neutral white hat, the constructive/generative/effective yellow hat, and the factual/negative or projected/negative black hat. In his second book, *A Kick in the Seat of the Pants*, (1986), von Oech uses the images of the judge and the warrior when he talks about “hard thinking” (89-135).

“Soft thinking is part of the generative or imaginative phase during which students might ask: “What if? Why not? What rules can we break? What assumptions can we drop?”” (von Oech, *Whack* 42). This stage is playful, non-judgmental -- necessary for the search for different ideas and the manipulation of data. De Bono’s hats for “soft thinking” would be the emotional/intuitive red hat, the creative/alternative-seeking green hat, and to some extent, the positive/speculative yellow hat.

The Red Hat has to do with intuition and hunches as well as emotions. Von Oech feels that one of the most detrimental effects of this “mental lock” is that the “prisoner” may not take advantage of “one of the mind’s softest and most valuable creations: the intuitive hunch” (45). Both Von Oech and Piirto discuss how the mind constantly records, connects, and stores huge amounts of unrelated data: experiences, feelings and knowledge which it processes and combines, often resulting in an answer to a problem or situation, if we listen and trust it.

Using the red hat, a thinker never has to justify her feelings about an idea. It gives permission to react and feel rather than moving rationally from point A to point B. Red hat thinking allows the expression of emotion. De Bono believes: “Emotions give relevance to our thinking and fit that thinking to our needs and the context of the moment. They are a necessary part of the operation of the brain, not an intrusion or relic...” (58-9). Emotions are tied to values which also affect thinking. How often do emotions positive (joy, excitement) and negative (fear,
anger) color decision-making? This hat allows thinkers to put the emotions forward so that they can be dealt with before final solutions to problems are implemented. The red hat would be an interesting concept to work with in talking about literature, history, or current events. People apply “red hat thinking” to scientific concepts all the time. Consider cloning, stem cell research and global warming.

The Green Hat is “specifically concerned with new ideas and new ways of looking at things” (De Bono 135). This hat allows the thinker to “put forth as provocations ideas that are deliberately illogical” (136). De Bono suggest “lateral thinking”, thinking across pattern systems, as a strategy that uses “movement value” (144) as a way to move an idea forward or use it as a stepping stone. He uses as an example the question: What if everyone became a policeman? This question was the provocation for the idea of “neighborhood watch”, an idea he outlined in *New York Magazine* in 1971, now used all over the United States with a resulting “significant fall in crime” (145).

The Yellow Hat, which has to do with speculative positive thinking can be related to creativity in that it seeks opportunities, looks at the value of “if” and invents the best possible scenario. It is tied to vision in De Bono’s view, which “sets a direction for thinking and action” (129).

Von Oech and Michalko discuss the use of metaphor as a way to make the unfamiliar familiar, to make the complex understandable. It is a way to make connections between seemingly unrelated ideas and “your imagination will leap to fill the gap in order to make sense of it…this willingness to use your imagination, to fill in the gaps produces the unpredictable idea” (Michalko159).
Michalko extends his idea of the metaphor by claiming that language limits and predisposes our thinking, “drawing a magic circle around us…a circle from which there is no escape save by stepping out of the circle (language) into another one” (51) Friedrich Nietzsche agreed, saying that “a verbal description of reality was rendered impossible by the structure of the language itself” (Nietzsche quoted in Michalko 52). Michalko discusses Einstein’s habit of constructing “imaginary, metaphorical scenarios” (212). He suggests that what is often helpful to creative problem solving and thinking is to try to extract the “essence” of the problem, constructing a “metaphorical story or image that presents a similar problem in as much detail as possible” (213). One of the most famous examples of the successful use of this technique was Friedrich Kekule’s discovery of the structure of the benzene molecule; “he had an image of a snake biting its own tail. This image led to his breakthrough discovery” (Michalko 218).

Mind mapping is a technique introduced in the 1970’s by a British brain researcher named Tony Buzan, who suggested it as a whole brain alternative to linear thinking. The technique uses key words to allow the brain to free associate, creating thought webs which can produce unusual and unexpected connections. It can also allow users to represent their thoughts through sketching -- representing to learn. Michalko outlines several variations all of which suggest strategies. He outlines methods used by Picasso, Darwin, T.S. Eliot, and Da Vinci. These techniques allow activation of the right brain; when you make a metaphorical connection between seemingly unconnected objects or ideas, it opens your mind to other connections “that might otherwise have remained invisible” (Michalko 223)

Both von Oech and De Bono emphasize the need for both types of thinking in the creative process, but also the need to know when to use each. Introducing the “hard thinking”
processes too early discourage creativity. Failure to introduce them may mean that the ideas generated in the “soft thinking” phase may never be put into action.

Juntune also discusses the difference between a “concept idea” and an “action idea”. She believes that the reason that creative thinking sometimes doesn’t work is that after generating alternatives, people can’t find what she calls an “act on” proposal.

Colin Martindale, in an article on the biological bases for creativity discusses Ernst Kris’ opinion that creative people are “better able to alternate between primary process (soft) and secondary process (hard) modes of thought than are uncreative people” Kris quoted in Martindale 138). According to Kris primary process thought is “free-associative, analogical, and concrete…facilitating the discovery of new combinations”. Secondary process thought is “abstract, logical, and reality-oriented” (Martindale 138). But also, according to Kris creative elaboration can only take place by “a return to the secondary process state” (138). The key seems to be the ability to switch easily from one mode of thinking to the other.

I feel it necessary to add an observation by Raymond Nickerson that while it is necessary for a creative solution, product, or response to be not merely different but “appropriate, correct, useful, or valuable…we should not make [creativity’s] existence dependent on its being recognized as such…for every creative product that is eventually recognized…there are others that go unnoticed indefinitely” (Nickerson 393).

I do not by any means want to denigrate the importance of knowledge in creativity. In order to change a domain, one must have extensive knowledge in it. Clear knowledge of content allows for what Weisberg calls “immersion” and that may allow for “automaticity” which may
allow creative people the intellectual energy to innovate without draining their “capacity” (Weisberg 246). School, as Bruner says is “an entry into the life of the mind…it is life itself, not merely a preparation for living…the special community where one experiences discovery by the use of intelligence, where one leaps into new and unimagined realms of experience…discontinuous with what went on before” (Bruner 118). School should also be a place that gives students opportunities to explore a wide range of content so that they might discover or enhance an interest. Many people have suggested the idea that “chance favors the prepared mind” (Michalko 251). A broad knowledge base influences a person’s ability to recognize and take advantage of the creative idea or solution that might present itself. A school climate too involved in assessment and accountability engages in or privileges the “hard thinking” skills to the exclusion or detriment of “soft thinking”. Intelligence is a complex concept and apparently, as von Oech says: “Musical ability, decorating, painting, and cooking seem to have no place in many test makers’ conceptions of intelligence” (44). Crystallized intelligence, the kind covered by textbooks and tested is necessary to creativity but not sufficient to ensure it. Most theorists agree that logic and analysis have their place but not until ideas have reached the practical phase.

Brown and Moffett (1999), speak of metaphor as the final part of the “philosopher’s stone” which ancients believed could transform baser metals into gold. But for Brown and Moffett’s metaphors the “deeper significance lies in its representation of the…integration within the human experience that results from engaging in the process of self-inquiry …and individuation” (20). They believe that metaphor can be used “for deepening our understanding and knowledge of complex phenomena (32).”
The juxtaposition of unlikely images can help students make new connections. Poetry provides a flexible framework for students to use when experimenting with this juxtaposition. Although talking about love with middle school students is always perilous, they are asked to make the illogical connection between love and food – another interesting middle school obsession. Working with metaphors initially in language gives students a base for their use in other areas.

I use this strategy to develop vocabulary, to teach a variety of poetry forms, literary elements -- hyperbole, personification, metaphor, onomatopoeia, alliteration, and simile, to teach revision, and to strengthen their understanding of the parts of speech and their use.

**Luscious Words**

This is a writing lesson, so the steps of the writing process are utilized. During prewriting students examine examples of love poetry from Shakespeare (Sonnet XVIII); see Appendix 2.1 and Wagstaff (Earth Trembles Waiting); see Appendix 2.2 and examples of love letters written by John Keats, George Bernard Shaw, and Mark Twain, see Appendix 2.3. They note and discuss details regarding the feelings expressed in these examples of the writer toward the subject. Some salient feelings that emerge are impatience, longing, happiness, desire to please, even obsession.

Students are then asked to consider whether these feelings can be applied to various food items. I use transparencies of photographs of a steak with all the trimmings, a huge slice of chocolate cake, a pizza bubbling with melted cheese, and a plate showing mounds of fruit and cubed cheeses. Through discussion, students are led to make the connection that people have
parallel feelings about loving food and loving people; that even “pet” names are often food-related: Honey, Sweetheart, etc., and that food and people often fulfill the same function: celebration, comfort, camaraderie, etc.

Using Post-Its and a blank display space (white board, wall, chart tablets), students then brainstorm words that are related to food. They are asked to consider words that describe food’s texture, taste, and appearance; verbs related to ways in which foods can be prepared, or actions foods can actually perform (melt, bubble); and onomatopoeias that can be associated with food. After five to seven minutes, students are asked to group these words together on the display space and create a heading for each group. The headings that are usually designated are: adjectives, verbs, adverbs, and onomatopoeias.

Students are then given examples of statements about food that use specific literary elements -- metaphor, simile, alliteration, and hyperbole, and asked to create their own describing their favorite food(s). See Appendix 2.4.

**Visual Poetry**

I use Chris Van Allsburg’s *The Z Was Zapped: A Play in 26 Acts* to introduce students to the idea of what I call visual poetry, similar to concrete poetry. The book consists of alliterative sentences illustrated with images of letters in various stages of distress. For example page 3 says: *The B was badly bitten*. It faces a page showing a large B with a ragged bite missing and the muzzle of a large dog retreating behind the curtains of the stage. Students are asked to choose up to three words from the display board to depict as visual poems. See Appendix 2.5
To prepare students for the actual writing, I have them revisit the poems and love letters introduced at the beginning of the lesson. They note that the writers in each case are addressing someone. In order to follow that model, they will have to use personification to compose a love poem or letter to their favorite food. There are a number of excellent resources for examples of poems about food. These include: *Food Fight: Poets Join the Fight Against Hunger with Poems to Favorite Foods* (Rosen 1996), *The New Kid on the Block* (Prelutsky 1984) and Pablo Neruda’s *Ode to Common Things* (1994). (Appendix 2.6)

Students then draft the love poem or letter. It must be written in first person and express their love for a favorite food. The question inevitably comes up: Can I write a piece expressing hatred for a particular food instead? The answer is: Of course. If this lesson is presented early in the year (Thanksgiving), I use *The Teacher and Writers Handbook of Poetic Forms* (Padgett 2000) to familiarize students with various poetic structures besides the sonnet, the ode, and the quatrain, which are included in the prewriting stage. If the lesson is presented later in the year (Valentine’s Day), then a quick review of forms is usually necessary. Students are allowed to choose their own form. They are also given the option to imitate a specific poem, such as Shakespeare’s Sonnet xviii, which is more difficult than it initially sounds. As noted earlier, true imitation of a structure, whether it is a poetic form or a scientific procedure, requires concentration and discriminating perception. In the late 1970’s, Torrance theorized that imitation and elaboration may be seen as stepping stones to creative outcomes. Both of these processes require careful observation. Elaboration, in particular, requires a change of perspective. Reviewing the form of a friendly letter is usually necessary for those students who choose that
form. The other requirement for the piece is that they use three of the five types of figurative language discussed in the lesson: metaphor, simile, alliteration, hyperbole, and onomatopoeia.

In the revision stage, students work in writers’ response groups to help each other revise the drafts. Before beginning however, I have them perform this quick revision exercise. They are asked to remember the last time they ate at their favorite restaurant, and what they ordered there. Very quickly, they write a description of their entrée as it might appear as the featured item on the menu, including the price. Then I ask: What if the price of this item were doubled? How would they need to change their original description to justify this jump in price? With this freshly in mind, they tackle the task of revising their drafts checking the requirements for figurative language as well.

After making any necessary changes, writers’ response groups meet again to edit. The revision and editing processes give students the opportunity to move between Kris’ primary process thought -- “free-associative, analogical, and concrete…facilitating the discovery of new combinations” and his secondary process thought which is “abstract, logical, and reality-oriented” (Martindale 138). When the poems or letters are completed, they are combined with the visual poems to create a display.

Although the idea of loving food is not that radical, the idea of expressing that love in the same way one would express love to a person is not logical. It provides a shift in perspective that produces creative results while providing students with opportunities to “play” with words. The wordplay becomes a tool or opens a new aspect of language and its uses: “A poem makes you aware of language so that even in prose you can enjoy using words more because you know what tricks they can do and what they cannot do.” (Eve Merriam, 1916-1992). The combination of the
visual poetry and the figurative language of the poems circumvents Michalko’s assertion (51) that words can be limiting. In essence, poetry and the shift in perspective it allows does provide students with another language.
Lock # 3: Follow the Rules

“If you follow all the rules, you miss all the fun.”

Katherine Hepburn, 1907 -2003

Von Oech (Whack 61). begins his discussion of this lock with the story about Alexander the Great, who in 333 B.C. arrived in the Asian city of Gordium to establish winter quarters. He is told the legend of the “Gordian Knot”: that whoever can untie this strangely complicated knot will become the king of Asia. After studying the knot for a time, he is stymied by his inability to find the ends so he can attempt to untie it. Then he is struck with an idea: he takes out his sword and slices the knot in half, unraveling it. Asia is fated to him. Alexander made up his own rules about how to untie the knot; he wasn’t blocked by conventional wisdom.

Human beings instinctively seek order. We look for patterns in almost everything. Think about literary genres, the various types of scientific classifications – the periodic table, biological taxonomy, etc. , or the constellations in the night sky. Although systems and rules are important (we mentioned everyone making up their own traffic rules, or physicians not following protocols for medical procedures), sometimes creativity and innovation can be blocked simply by the inability to see beyond the idea; “it’s always been done this way”.

Another example von Oech uses is that of the typewriter keyboard. It was originally planned in its current design because on the original manual typewriter certain letter keys got stuck together when pushed rapidly in sequence. In an attempt to slow typists down, engineers developed an inefficient configuration. The letters “O” and “I”, the third and sixth most frequently used letters in the English language had to be depressed by relatively weak fingers – thus solving the problem (Whack 66). Beginning with electric typewriters, then word processors
and computer keyboards, and now telephone keypads, that is no longer an issue, but has anyone seriously considered reconfiguring the keyboard in a more practical way?

It is important at all times to remember that “creativity is a process… [we do not] trip over a creativity that somebody left lying around” (Plebius 1). This process always contains these three elements: taking things apart, putting things together, and keeping things the same. Rules provide a framework or launching ground, “without rules there cannot be exception, and without tradition there cannot be novelty” (Csikszentmihalyi, “Systems Perspective” 315). A zealous adherence to the rules also perpetuates the “expert syndrome” (Clegg and Birch 7) which is dangerous in regard to creativity because being an expert “depends on knowing a lot about how things have been before…too often being an expert means tunnel vision when faced with the new”. There is also the old idea that you must first know and understand the rules before you can be discriminating enough to know how and when to break them for the best result. And, if the new creation or innovation is to be understood, some vestige of, or bridge to the “old” or traditional must be visible in some way.

Denise Shekerjian in *Uncommon Genius* (1990) profiles MacArthur fellow Peter Sellars who has shaken up the perspectives of New York theater audiences by “marrying Handel to the Middle East crisis, Mozart to Saturday Night Live, Shakespeare to Detroit” (105). While reviewers of his productions do not agree on whether he is sophomoric and gimmicky or a genius, Sellars himself is unperturbed. He is very serious about his intense reliance on metaphor and its power to jar audiences “out of tired, jaded, petrified preconceptions” (106). He sees it as an enrichment of our modern-day vocabulary. The everyday images we encounter are “packaging devoid of meaning…to get an image to *mean* something again…To have power and
resonance…that provokes a genuine reaction from people is very hard work” (106). This shift in perspective, which many experts seem to agree is a critical part of the creative process, opens the mind to something new, startling and important.

One area in which “breaking the rules” can be the most fun (and least dangerous in a classroom) is art. Think for a moment about the evolution of art over the centuries. While art is a very nebulous concept and encompasses a very large body of various works (the online version of the Random House Dictionary lists 16 definitions of the noun, art) it has seen revolutions caused by some bold, even outrageous, creators. If, as George Bracque (1882-1963) said: “The function of art is to disturb” there is a long line of artists, musical, literary, and others, whose “disturbances” have affected not only their milieu and the domain, but have created ripples in popular culture as well.

One of the goals of a humanities curriculum is to give students exposure to the fine arts and also to the consideration of art as a reflection of culture. One technique I use to give students exposure to many different styles and media is an activity that requires them to revision illustrations in picture books.

**Revisioned Art**

One of the comprehensive projects undertaken in my classroom is the creation of an original illustrated short story. Over time, I have realized that the story itself seldom presents overwhelming difficulty for my students, but often the illustrations do. This activity was born of the necessity to get the students to loosen up and take risks with the illustrations they create for this project.
Before starting the project we take a look at the basic design principles: balance, emphasis, contrast, rhythm, movement, pattern, and unity. Students are given basic definitions and shown examples of the use of each principle in various forms of art: sculpture, painting, textile, glass, etc. (Brommer 1).

We begin with a study of the art in picture books. I have a collection in my classroom of over one hundred picture books and students are encouraged to bring a favorite or favorites from home if they wish. Students choose three picture books; they then fill out a survey form with information about their selections: title, author, illustrator, and publication information (Appendix 3.1). Then they are asked to take a closer look at the illustrations. They are given examples of various types of drawings and examples of the use of various media. Roadrunner’s Dance (Anaya, 2000) with illustrations by David Diaz is used as an example of Mexican folk art with brightly painted images in acrylics. Although Harlem (Myers, 1992), Math Curse (Scieszka, 1995) and There Was an Old Lady Who Swallowed a Fly (Taback, 1997) are all examples of collage art, the presentation is very different in each. Taback’s book is an excellent example of American folk art; Lane Smith, the illustrator of Math Curse, uses the nightmarish qualities of surrealism; and Christopher Myers (Harlem) combines mixed media collage with ink drawings to give emphasis and contrast to his illustrations. The idea is to give them a lot of examples of a lot of different styles and media. This gives them some background information so that they can identify the style of the images: realistic, cartoon, folk art, impressionistic, surrealistic; and the medium: ink, watercolor, collage, acrylic, etc. In order to make this as unintimidating as possible, they are allowed to make a best guess if they cannot find specific verifiable information. They are also asked to identify what, specifically, drew their attention to each book.
that they selected for this exercise. Then they are asked to choose their favorite of the three to make a short presentation to the class sharing the information on their survey form.

The next step is to have them choose one book whose illustrations they find particularly intriguing and/or attractive. This will be the subject of their revisioned art project which consists of two parts. Part one is research on the book: author and illustrator, art style and medium, and other collaborations and awards, if any. (Appendix 3.2) Part two is research on a specific style of art or a particular artist (Appendix 3.3). Students then choose an illustration from the book and reconstruct it in that specific style or using the technique of that particular artist. Resources such as *The Essential History of Art* (Payne, 2000) and *Painters: Masters of Western Art* (Vaughn, 2001) provide myriad examples of both styles and artists as well.

The last stage of the project is a presentation in which students share the research on the book, and then exhibit both the original illustration and their reinterpretation of the art. The purpose of this activity is to give them the opportunity to break all the rules; their own imaginations (and school appropriateness) are the only limitations. It gives them some background knowledge (shallow, but a beginning) and many examples to draw from when they plan the illustrations for their own book. One of my favorite examples of this project is the reinterpretation of an illustration from *Eloise* (Thompson, 1955) in the style of Frida Kahlo. There is the image of Kay Thompson’s intrepid and irrepressible heroine with a crown of flowers and the characteristic eyebrow over a withering scowl.

I always find it interesting that many students are initially reluctant to tackle this assignment. They want to be reassured that their reinterpretations are “okay”. Breaking the rules
does make us uncomfortable, but new ideas and innovation require the sacrifice of the tried and true. As Picasso said: “Every act of creation is first of all an act of destruction.” What often has to be destroyed first is our own tunnel vision and affinity for the comfortable and the known. Of course, as with the idea of play, students have to be guided to make responsible choices about when and where to break the rules, and to what purpose. This is tied to the part of the definition of creativity that pertains to usefulness or utility, “a perceptible product that is both novel and useful as defined within a social content” (Beghetto 225).
**Lock #4: Be Practical**

“The human mind likes a strange idea as little as the body likes a strange protein and resists it with similar energy.”

William I.B. Beveridge, scientist, writer 1908-2006

Because the locks are related, the arguments that support their dismantling are similar as well. Practicality can be seen as both cause and corollary of following the rules. But, according to von Oech (*Whack* 73), this is the lock that can be opened quite easily with the question: “What if? He begins by asking the question: What if gravity stopped for one second every day? What kinds of adaptations would human beings have developed? What about other life forms on Earth? What would happen to land surfaces and bodies of water? How would this affect buildings and furniture? What about transportation systems and food?. You can see that by asking one such question, a huge number of others are generated.

As humans we have the unique capacity to “symbolize our experience; our thinking is not limited to the real and the present” (*von Oech, Whack* 73). This capacity allows us to anticipate what might happen, and therefore to create contingency plans; we can project our thinking into the future. Also, since our minds are not bound by real world limitations, we can imagine possibilities which have no parallels in reality as we know it. While we may need to follow certain rules in order to survive (literally and figuratively) in society, our imaginations have no such restrictions. Students do need to be cognizant that *useful* is a stipulation used in most definitions of creativity, but when practicing the creative process, practicality should be the last condition applied to our ideas.
There are two general strategies that von Oech suggests which are easily applied in the classroom. The first is to consider how others would approach the problem. He is speaking specifically about either famous people, or a practitioner of a specific discipline. In the first case, it is helpful to provide students with biographies of famous people in all fields of endeavor and to explore with them the concept of following a line of thought. We know (or can find out fairly easily) for example, that George Washington was vehemently opposed to the idea of a monarchy as a form of government and refused most passionately the offer to become king of the newly independent United States. Following that line of thought, how would he have approached the problem of monopolies in the 19th century? How would Mother Teresa have looked at the problem of inequitable resource distribution across the globe? What assumptions would these people bring; what restrictions would they ignore?

In the case of practitioners in a discipline, it is related to the idea of cross-fertilization discussed in the chapter on Lock #6: “That’s Not My Area”. What expertise would these disciplinarians bring to the problem? What discipline-specific skills could be applied or tweaked to clarify or resolve the dilemma?

Sometimes it might be a matter of just thinking from the perspective of the opposite gender. How did male and female perspectives shape the growth of western settlements? How might American society have been different if women had been given the right to vote in 1787? These questions definitely open discussion and allow student imaginations to contemplate many new questions and answers.

The other strategy that von Oech suggests is the idea of “stepping stones” (81). These are ideas that seem completely ridiculous or far-fetched, but can then be used as the means to an end
that actually solves the problem. He tells the story of the city in the Netherlands that had a trash problem. Certain sections of the city were becoming eyesores because people refused to use the trash receptacles. The sanitation department came up with several practical solutions, including doubling the fine for littering, to no effect. Then someone came up with the idea of trash receptacles that paid people (literally) when they put trash in the container. The idea went from punish the litterer, to reward the law-abider – the problem definition was changed. This solution was very impractical because although it would probably work, the expense was prohibitive. Someone else at the meeting however used the money reward as a stepping stone and suggested a different type of reward -- laughter. The trash receptacles were fitted with sensing units that activated a tape recorder that told jokes every time trash was deposited in the container. Different trash cans told different jokes: shaggy dog stories, bad puns and snappy one-liners, and the jokes were changed every two weeks. Very soon the city was clean again. Just because the initial idea isn’t quite workable, it doesn’t mean that it can’t serve as a bridge to another idea that is.

The Great Divide

This activity is meant to get students to look at Texas: its regional differences and issues and the distribution of economic resources. In 1845, when Texas became the 28th state of the United States, it retained the right to divide into as many as five states at any time. It retains that right to this day. How practical would it be to exercise that right? What if the land area we know as Texas divided into several smaller states? With a partner, students are required to divide Texas into at least two states, and up to as many as five. They must designate state boundaries and provide a rationale for those as well as for the designation of each state capital. After figuring out the population distribution in each state, they have to project the effect on representation in
Congress. What will be the legislative priorities and regional issues of each state? What are the economic resources available in each state and on what is each economy currently based? Each state must have a state flag, seal and motto as well as a state tree, flower and bird. Students are then required to look at their division through the perspectives of: a political scientist, an economist, a sociologist and an advertising executive whose job it is to develop a campaign to encourage tourism. What would be some of the consequences, advantages, disadvantages, related problems or dilemmas that would result from this scenario? The final activity is to present their vision to the rest of the class. Afterwards we debrief: What unresolved problems were made evident by this projection? How do population density and resource distribution affect various parts of the state? Do they affect the state as a whole? Would the citizens of Texas benefit from the division into several smaller states? How do regional issues need to be addressed to benefit the citizens of the state? (Appendix 4.1)

It is evident that this “What If?” exercise allows students to look at Texas differently and provides interesting ideas that can act as stepping stones to deal with real problems created by regional differences and uneven resource distribution.
Lock #5: Play Is Frivolous

“What, then, is the right way of living? Life must be lived as play.”

Plato, philosopher

Von Oech (92) says that “necessity may be the mother of invention, but play is certainly the father”. Informal surveys of when people get creative ideas reveal that while many people need a creative shove -- they create when presented with a problem, a breakdown, a need or a deadline, “an equal if not greater number get their ideas in the opposite situation” (92). Ideas come when they’re “playing around”, when they’re not focused on any particular problem, or on themselves. When we assume a playful attitude, our defenses are down and we’re more open to new ideas. When we play we’re less concerned with following the rules, or being wrong, or being practical. Many people very strictly separate play and work, denying themselves some of their very best ideas and results. Playing involves experimentation, taking risks, reevaluating. When we play, we use the “explorer and artist roles” (von Oech, Whack 2) to discover and rearrange knowledge and resources.

One of the products of play is fun. When people are having fun, they are enthusiastic about what they are doing and the result is that they are more productive. Enthusiastic people exhibit playfulness and intensity; “these are the ones who generate new ideas” (94).

Von Oech gives the example of the Moebius Strip, a topological idea discovered in the late 1950’s by Augustus F. Moebius, a German mathematician. It was originally conceived as an object of play. It is made by taking a long strip of paper, twisting it once and connecting the ends. The resulting strip has only one side which can be proven by making a continuous
unbroken line with a pencil or pen. When cut in half, a Moebius Strip becomes twice as long.

Over the almost 60 years since its invention, its practical uses have included: conveyor belts that wear equally on both sides, electrical resistors that function more efficiently, and cassette cartridges that play twice as long. Ten years ago, chemists were trying to reshape molecules into the shape of Moebius strips, when split, they would get bigger.

Csikszentmihalyi, in *Beyond Boredom and Anxiety*, talks about “flow” which he describes as the “crucial component of enjoyment” (11), the “holistic sensation that people feel when they are acting with total involvement” (36). When a person experiences “flow”:

“...action follows action according to an internal logic that...needs no conscious intervention from the actor. [There is]... a unified flowing from one moment to the next, in which he is in control of his actions, and in which there is little distinction between self and environment, between stimulus and response, or between past, present, or future” (36).

Play, it seems, is the ultimate “flow” experience, but it can be found in other activities as well. His study included surgeons with rock climbers and chess players. Its relationship to creativity can be clearly seen in what Csikszentmihalyi describes as its definitive characteristics. In “flow”, there is a “loss of ego, self-forgetfulness, and loss of self-consciousness” (42). The actor feels that his/her “skills are adequate to meet environmental demands... [This] reflection is an important component of a positive self-concept” (44). Finally, the experience is “autotelic, [having] no goals or rewards external to itself” (47). “Flow” appears to be a “perspective from which people evaluate everyday life and from which they gain impetus for social change” (139).

This study further suggested that everyone experiences “microflow” activities, “trivial automatic acts in everyday life that appear to be important, not only because they are enjoyable in themselves, but because they sometimes facilitate involvement with more structured acts”
(139). Csikszentmihalyi seems to be saying that we need to play in order to be able to work at optimum levels. His informal experiment with flow deprivation suggested that all work and no play really did make Jack, or Jill dull indeed, it “lessened alertness” (165-6).

So, at the very least, it seems that play is necessary to maintain levels of alertness and enthusiasm. But there have been great thinkers who used play as part of the work process. Albert Einstein had a favorite uncle, Jakob who reframed the mathematical problems he gave to his nephew as “a game about hunting…he taught Einstein to approach problems as play rather than work…Consequently, Einstein focused on his studies with the intensity that most people reserved for play” (Michalko 22). This attitude of play, this use of imagination served Einstein well. “Because Einstein could fantasize about space and time, he was able to join his childlike wonder with his scientific expertise in his search for new theories and new ways to understand the universe” (Michalko 248).

Two other highly creative people who acknowledged the importance of play are Walt Disney and Hans Christian Andersen. In Creative Encounters with Creative People (1984), Janice Gudeman profiles the lives of twenty-two creative and highly successful people including Andersen and Disney. One of Disney’s first creative ventures was painting animals on the side of his family’s barn with tar at the age of six. An aunt gave him a pad of drawing paper and a box of pencils and the rest is history. He founded an entire empire on play, discounting negative criticism and assembling a team of experts in engineering, architecture, sculpture, and special effects to create “imagineers”.
Andersen, awkward and shy as a child, contented himself by daydreaming, playing with a puppet theater made by his father, and making up stories for the puppets to act out. His legacy is a world in which anything is possible.

**How Can Play be Structured in the Classroom?**

One of the negative and oxymoronic aspects of the fantastic technology instantly available to students today is that they very seldom have to exercise their imaginations. Video games, movies, reality television, and even music videos leave very little to be imagined. There have even been recent legislative attempts to restrict or outlaw the use of teacher-directed guided imagery exercises in the classroom. Regardless, it usually doesn’t take a lot of encouragement to get students in play mode. For my students, it isn’t that they lack the ability to play; it is more that they need to harness the ability for more productive outcomes.

**How Flexible Are You?**

The following strategy is quite simple and can be used in a number of ways. Small groups of students (4-5) are given large sheets of butcher paper. In the center of the sheet each group is directed to place the same idea, topic, or phrase. Each student has a marker and is directed to spin off ideas that are connected to the center idea, topic, or phrase. This does not include categories or subgroups, but connections -- even obscure ones. (See model Appendix 5.1).

For example: If the words *Civil War* were placed in the center of the space, students might spin off immediate connections such as: Abraham Lincoln, supply lines, *Gone With the Wind*, English textile mills, cotton, Ulysses S. Grant, Army camel experiment, etc. Each of these
“spinoffs” should, in turn, inspire other connections, and so on, and so on... Students are encouraged to add connections anywhere on the sheet, and also to begin to move around the room to add associations.

Some more “out of the box” connections might be: human rights, the Constitution, or the Holocaust. Linked to human rights might be: slavery, sweat shops, illegal immigration, child labor laws, etc. Spinning off illegal immigration might be world economy, citizenship, Emma Lazarus, national security, etc. Students “play” with the connections for about 10 to twelve minutes, then they look at the results of the webbing. Most see associations that might have been difficult to make in other circumstances; even more importantly, the webs engender further connections and many, many questions. Not all the questions have to be dealt with immediately, but they can be recorded in a journal to be examined at a later time. Often the web is displayed or kept as a reference until that unit of study is complete. This is one of my favorite responses to the question: Why do we have to study history; what does it have to do with my life, right now?

When used as a web for literature, it helps students to see links to other works, but also to the concept that literature takes snapshots of life. It presents, in microcosm, truths about the common experience of being human. This is something I feel is crucial in the face of the modern paradox that the world is both incredibly smaller due to technology, but individuals can be so much more isolated.
Lock # 6: That’s Not My Area

“Lovers of wisdom must open their minds to very many things indeed.”

Heraclitus c. 535-c.475 B.C.

Specialization in the times in which we live might be considered necessary for survival. According to von Oech “each second our nervous system is bombarded with 100,000 bits of information” (Whack, 102). These words were published in 1998, before the almost universal accessibility of cell phones and the technologies that were thus brought, literally, to our fingertips, and how many generations of the personal computer have come and gone in those ten years? But if we assume, for the sake of argument, that even this relatively low number of “hits” to our system do occur, how would we survive without the ability to filter out irrelevant and non-essential information? Specialization in this sense is a definite benefit. In another sense, in order to be effective on the job, it is helpful, even necessary, to narrow the field in order to acquire expertise – which – according to Clegg and Birch – is “one of the prime commodities we have to sell” (7).

The problem occurs when we become so closed off to other areas that we either don’t understand or don’t even attempt to understand the scope of a problem as it presents itself. By taking in a bigger picture, solutions often present themselves from unexpected sources.

One of the resources that von Oech provides is a list of well-known and highly useful devices all of whose origins are connected to nature. One example is a snake whose thermoscopic vision can detect a 0.002 degree Celsius temperature gradient. Observation and study of this natural phenomenon led to infrared photography. Someone, who was doubtless initially very much irritated by the tenacity of the Burdock burr’s hooked spines, used that attribute as the basis for a commercial fastener (Whack 111).
In organizations, productivity and the ability to respond quickly to problems can be hampered by the concept of “that’s not my area”. This is evident even in education when teachers who may be “experts” (there’s that word again) in their content areas do not see the need to be reading and writing teachers as well. Every field requires basic reading and writing skills: but each discipline requires subtle shifts in the application of those skills. Teachers cannot, if they want to be successful (a moot point with the high-stakes accountability factor), ignore the need to teach students how to use those skills as applicable to the coursework they are teaching. That would make every teacher a reading teacher and every teacher a writing teacher – an idea that many educators fight vehemently. “That’s not my area” is their battle cry. They fail to see that by teaching those skills they only help students exhibit their knowledge in the content area effectively and properly in discipline-relevant ways.

Every year the MacArthur Foundation grants fellowships in the amount of $500,000 each to 25 people who meet the following three criteria: “exceptional creativity, promise for important future advances based on a track record of significant accomplishment and potential for the fellowship to facilitate subsequent creative work” (macfound.org 1). Denise Shekerjian wrote *Uncommon Genius* (1990) after interviewing 40 of these individuals in an attempt to discover what traits or habits these people with widely varied talents and interests had in common. One of this year’s (2008) recipients, Rachel Wilson, is an experimental neurobiologist who teaches at Harvard Medical School. The object of her research? Fruit flies -- more specifically, the sense of smell in fruit flies and its “connection with the sense of emotion and memory…why it seems to be such a visceral and emotional sensory modality” (Wilson, interview 1). Eventually the electrical activity from the individual brain cells in the olfactory systems will be compared to
that which occurs in the senses of hearing and taste. Her question is whether “different parts of [the] brain are highly specialized for the tasks they perform or is the brain a bunch of useful matter and you can just plug all kinds of information into it willy-nilly, and it will kind of do the right thing” (1). The application may be artificial noses that can “detect and discriminate between large numbers of odor molecules in the air…help[ing] with environmental protection and medical diagnosis…Lung cancer patients have a characteristic fingerprint of odors in their breath which can be detected by a machine, not so well by a doctor” (2).

Without the “explorer’s attitude…that wherever you go there are ideas to be discovered” (von Oech, Whack 112), and the admonition from former MacArthur fellows to “stay loose” (Shekerjian 32) how do such seemingly disparate ideas come together?

**Discipline Frames**

Dr Sandra Kaplan uses what she calls discipline frames to facilitate the shift in perspective that is necessary to accomplish the “cross fertilization” (von Oech, Whack, 104) that is often critical in solving a problem. These discipline frames have various forms and are often used to help students organize thinking using the methods, skills and language of a particular discipline. (Appendix 6.1)

An activity that my students participate in late in the second semester when we study contemporary Texas is an examination of emergency preparedness in the community. Using a variation of the discipline frame developed by Dr. Joyce Juntune, students are asked to consider a list of possible emergencies or disasters such as: school violence, extreme weather conditions, infrastructure collapse, and others. (Appendix 6.2) They are required to choose a scenario and
place the problem in the center of a multi-perspective discipline frame. (Appendix 6.3) The next step is to choose various perspectives from which to study the same problem. For example: in the event of extreme storms which cause massive flooding and wind damage, students might choose to look at the problem from these perspectives: FEMA, the mayor and/or city manager, a meteorologist, a city engineer, local emergency agencies, and health officials. Each of these perspectives will have different initial reactions to the problem. But as students begin to contemplate the questions each would ask and the expertise and input each would bring to the resolution of the problem, they also see connections and interactions that might not otherwise have been immediately apparent.

It is vital to help students understand the paradox that while specialization is necessary in order to handle existing information efficiently, new ideas are not generated by that attitude. Defining a problem too narrowly and always depending on “experts” closes us off to the possibilities that exist outside of “our” area.
Lock #7: Don’t Be Foolish

‘An idea that sometimes drives me hazy: Am I or are the others crazy?”

Albert Einstein, 1879 -1955

I remember Allen Funt’s 1960’s television series Candid Camera; it invariably had scenes such as the ones with which von Oech begins his discussion of foolishness. He describes the man who finds the waiting room of his doctor’s office full of people nonchalantly sitting in their underwear. Within twenty seconds, he too discards his clothing. Or, the woman who after waiting patiently for the elevator in her office building finds when the door opens that everyone is facing to the rear. Without hesitation, when she gets on, she faces to the rear as well (Whack 114).

Fear of appearing foolish fuels conformity, as these scenes demonstrate. Conformity does have its place in the thousands of rituals we perform every day so that society runs efficiently -- everything from standard word pronunciation to driving on the proper side of the road. But “new ideas are not born in a conforming environment…when everyone is thinking alike; no one is doing much thinking” (Whack 117).

“Ask a fool what he thinks” directs von Oech as he enumerates the function of the classical fool who was “part actor…part poet, part philosopher and part psychologist” (118), and whose primary function in the courts of kings and pharaohs, emperors and tyrants was to “whack” the decision-maker’s thinking out of its usual patterns. Rulers are often surrounded by many levels of advisors who -- let’s face it -- are “yes men” (or women). Disagreeing with the person in charge could have dire consequences -- but not for the fool -- who had license to
parody every proposal and “shatter the prevailing mindset…putting the issue in a fresh light and forcing the king to re-examine his assumptions…improve his judgment, and protect himself from groupthink” (Whack 119).

The obvious parallel is the contemporary comic. People like Whoopi Goldberg, Bill Maher, Lewis Black, Chris Rock, Stephen Colbert, and the entire cast of Saturday Night Live play the fool’s role in our society. “Rulers” from presidents to Congressmen (and women) governors, mayors, ministers, authors, studio executives – anyone “in charge” is open to scrutiny and lampoon. Astute and critical observations are often easier to accept when clothed in the raiment of humor. Making fun of something “challenges the rules that give that ‘something’ its legitimacy and perhaps allows you to think of an alternative” (Whack 125). It is connected to the idea of the “sacred cows” (69) and following the rules all the time.

In The Act of Creation (1964), Arthur Koestler discusses at great length the relationship of humor to creativity. He asserts that “humor is the only domain of creative activity where a stimulus on a high level of complexity produces a massive and sharply defined response on the level of physiological reflexes” (31). He means laughter, which “serves no apparent biological purpose; one might call it a luxury reflex” (31). Humor in Koestler’s view is an excellent example of his theory of bisociation “to join unrelated, often conflictual information in a new way” (Berquist 1). Why do we perceive a joke as funny (when we get it)? The punch line forces us to look at the topic in a different way -- “the perceiving of a situation or idea in two self-consistent but habitually incompatible frames of reference” (Koestler 35) at the same time -- bisociation. Koestler also believes that humor is essential to the creative process. He has produced what he calls a triptych in which “the Sage is flanked by the Jester and the Artist on
opposite sides” (27). This personifies: “comic expression -- ha-ha!; objective analogy --aha! (Eureka!); and poetic image -- ahhh!!” (27).

In school it is crucial to use humor judiciously. Humor of all types from the sublime to the ridiculous to the absolutely inappropriate is not difficult to find in the middle school, particularly. One test or technique that can be applied to activities and products in this area is what Dr. Joyce Juntune calls “the three U’s: unusual, understandable, and useful.” The understandable and useful criteria are the ones that help to keep the humor meaningful.

Humor in History

An interesting way to look at historical events and figures is through the lens of satire or parody. To provide a knowledge base, students are asked to choose an American humorist to research. (Appendix 7.1) The list ranges from Benjamin Franklin to Bill Cosby, from Mark Twain to Erma Bombeck. The research consists of finding several written pieces by this comic/author to analyze in order to be able to imitate her/his style. (Appendix 7.2) Their research should also note such things as: influences on American humor, the vocabulary, or language of the discipline of humor, the rules for telling a joke, and what elements of bias, prejudice, or discrimination does humor contain? (Appendix 7.3) At the conclusion of their research, students express their perspective on a topic of their choice, by imitating the style of the comic/author that they researched.

A related activity is to brainstorm a list of famous comedy teams such as: Abbott and Costello, Laurel and Hardy, the Marx Brothers, the Three Stooges, Martin and Lewis, and Burns and Allen. Students form groups of the appropriate number and research the routines of one of
these teams. Then, the groups choose an historical event and satirize it using the perspectives and techniques of the comedy team. The option to perform as a “solitary act” such as Bill Cosby or Garrison Keillor is another option.

Another activity that very much appeals to students is an in-depth study of *MAD* magazine. After deconstructing the various elements that the contributors to *MAD* employ to exercise the power of satirization, students can use these elements to produce a *MAD*-like magazine to showcase their perspectives on current events, or (more difficult) the perspective of a particular group regarding an historical event. They might choose the perspective of the Tejanos when Santa Anna decided to teach those arrogant and recalcitrant Texians a lesson in 1836. Or, they might take a satirical look at the Second Continental Congress.

Another way to connect humor and history is through the study of editorial cartoons. A Google™ search for editorial or political cartoons will provide myriad resources. Google™ images will display over 150,000 examples including Pulitzer Prize winners, and of course the local and online newspapers are also available. Students are also provided with resources to give them details about cartooning, and then they create cartoons strips or editorial cartoons commenting on current or historical events.

Humor is a powerful tool and fertile ground to sow creative seeds, for after all the “fool” is supposed to “whack” thinking, with impunity. Humor is “the reverse gear for your mind” (von Oech, *Whack* 136). Even if it does not *solve* the problem, it makes you see things differently, which is the beginning of the creative process.
Lock #8: Avoid Ambiguity

My professional experience with gifted students has spanned 23 years, eleven of them in middle school. Having spent a large part of my career sputtering that middle school was hazardous duty, within a year I had changed my mind. There is something both frightening and beautiful about the changes that take place in students during these three years. Through observation, like Oprah, there are certain things that I know. Students begin to struggle with the issue of absolutes, moving from the child’s perspective that issues, events, characters, and people are good or evil, right or wrong, black or white. Many also begin the difficult process of examining themselves, making mindful decisions regarding the formation of their own character. They begin to question authority, the necessity of formal education and have little compunction about letting their teachers know when they find classroom practices and activities boring. As adolescents they are moving constantly along the spectrum between over-sensitive self-centeredness and genuine awareness and concern for other people and larger social issues. Many struggle with perfectionism and its powerful partner, procrastination. Their self-image and self-esteem are tied together; they are absolutely sure that if they cannot immediately do something well, they are stupid and will never be able to do it. They are unaware of how much they are changing and how these changes affect their perceptions, and therefore their interactions with other people and their environment. If, as C.S. Lewis said, “We read to know we are not alone”, literature is an avenue that allows students to examine the lives and interaction of characters and hold these examples as mirrors to their own lives and situations. Neil Postman in The End of Education suggests the image of the “fallen angel’…human beings make mistakes. All the time. It is our nature to make mistakes… [But] we are [also] capable of correcting our mistakes”
(Postman 67). For gifted students the notion that we must make and learn from our mistakes, our “failures”, and our imperfections is a difficult and frightening one. One of the main purposes of the following lesson is to introduce a little ambiguity into that notion, perhaps rendering it easier to deal with.

Students use art and poetry, the epigrams of Heraclitus, and a very simple version of Carl Jung’s concept of *persona* and *shadow* to first examine the duality of their own natures and then those of the two main characters in Karen Hesse’s *Witness*. The strategies also help them to form schema that allow them to examine the “shades of gray” between the extremes in any situation or character.

**Heraclitus**

*In Expect the Unexpected (Or You Won’t Get It)*, Roger von Oech presents Heraclitus’ ambiguous epigrams with strategies for their use in “whacking” pedestrian thinking in the “real” (corporate) world. Several of the thirty insights can be particularly applied to this venture of examining personal and character duality.

The first step is to provide students with a list of Heraclitus’ “whacks” (Appendix 8.1). We discuss these, briefly. In fact, it is probably better not to discuss the epigrams at length. The ambiguities of the statements stir curiosity and interest. It is helpful to provide some information (such as there is) on Heraclitus himself. Students usually find it interesting that he was such an apparent misanthrope and supporter of war: “War is the father of all and king of all. He renders some gods, others men; he makes some slaves, others free” (von Oech 6).
Absolutes in the Animal Kingdom and Literature

The lesson itself starts with pictures of stereotypical villainous creatures from the animal kingdom: wolves, snakes, bees, sharks, gorillas, etc. Start discussion which focuses on the negative perceptions of these creatures. Discuss that these negatives can be stereotypes which are, by definition, one-sided, dichotomous and perpetuate either-or thinking.

Next, I read Tony DiTerlizzi’s *The Spider and the Fly*. This version of Mary Howitt’s 1829 cautionary tale is beautifully illustrated in black and white and shades of gray. It features a wickedly debonair spider who, in the end, captures and eats a naïve little fly, who says she recognizes her danger but acts as though the opposite were true, and can only bemoan (after the fact, in ghostly form) her foolishness. Of particular interest is the epilogue by the “spider” who clearly makes no apologies for his “nature”.

This story captures the essence of spider as “monster”, an image perpetuated by fiction and film portrayals such as J.R.R. Tolkien’s Shelob in *The Lord of the Rings* and J.K. Rowling’s Aragog in *Harry Potter and the Chamber of Secrets*. But, are there other ways to look at the story? Are spiders ever helpful? In what ways?

The counterpoint, which I read next, is *Sophie’s Masterpiece: A Spider’s Tale* by Eileen Spinelli. This is the story of a misunderstood and unappreciated artist. This book could not be more opposite from *The Spider*… right down to the delicate pastel illustrations by Jane Dyer. Sophie, whose beautiful webs are destroyed by the landlady, a sea captain boarder and the cook in the boarding house in which she lives, finally finds appreciation for her opus, an exquisite baby blanket that she weaves for an impoverished young pregnant woman. Sophie finishes the
gift right before she dies. Sentimentality aside – the story does provide students with another, opposite, view of the spider.

Now we compare the two portrayals. We begin with the differences in the illustrations, particularly the light/dark contrast. We discuss the elements of truth in each.

Some possible discussion points:

- Spiders are ruthless, not cruel.
- They are hunters, who kill to eat, not for sport.
- They keep certain insect populations in check.
- Spider webs are engineering triumphs, mathematical wonders, and under certain circumstances, quite beautiful.
- Webs have been and can be used for medicinal purposes – as bandages.

**Heraclitus, Again**

Now we venture back to Heraclitus. Which, if any, of his insights can they relate to the two texts? Some examples:

#15 “Things love to conceal their true natures.”

Although at the end DiTerlizzi’s spider does not apologize for being a hunter, throughout the story he represents himself as a genial host, concerned with his future dinner’s comfort.

#12 “Many fail to grasp what is right in the palm of their hand.”
In Spinelli’s *Sophie*, the landlady, the sea captain, and the cook, blinded by stereotypical notions of spiders, fail to see the beauty and utility of Sophie’s artistic creations.

And hopefully, #9 “Lovers of wisdom must open their minds to very many things.”

Perhaps the wise way to look, not just at spiders, but at most situations and people is with an open mind, taking in as much information as possible before making a judgment.

**Opposites**

The next step is to discuss the idea of opposites as they relate to character traits. What opposites are portrayed by the spiders in the two stories? Some examples: ruthless/kind; selfish/selfless; destructive/creative; arrogant/determined. Students now have an opportunity to use an organizer to chart opposites. (Appendix 8.2 is an example; Appendix 8.3 is a blank.)

Students also receive two blank charts. After discussing the sample, as a class, we complete a chart for one of the spiders in the stories. (Incidentally, this activity can serve multiple purposes. It also gives students an opportunity to identify and use various grammatical and literary structures -- more on that later.)

Now that they have two examples, students complete charts for themselves. Emphasize during discussion that students are scrutinizing and reflecting upon opposite characteristics in their personalities, not making value judgments about “good” or “bad”.

This step of the process is often uncomfortable for students. Middle schoolers are not often given to self-examination or reflection. But it is an important task, particularly for gifted students who struggle with the psycho-social issues of perfectionism and procrastination and the
recognition that they are organically “different” in a social institution that values conformity and compliance.

**Mask and Shadow**

When they have finished the organizer, we have an extremely simplified discussion about Carl Jung’s concept of the self. (Figure 4). We talk about only two of his five major components: the *persona* and the *shadow*. Very simply, the *persona* is the part of our personality that we “present to the outside world…it is a mask” (Pettifor 2).

The *shadow*, then, is “the receptacle for all that we have for one reason or other disowned” (Pettifor 2-3). It is necessary to make clear that we disown things that are not valued by people that we are around. Therefore “a person who grew up in a family in which level-headedness prevailed…and art-making [was] not given much value may discover artistic aptitude hiding in the shadow…There are treasures here…buried in muck”(Pettifor 3). (Appendix 8.4)

From my observations, gifted adolescents tend to categorize in extremes. I cannot emphasize enough the importance of not assigning a necessarily negative value to the *shadow*. These characteristics, though usually hidden, still influence perspective and behavior. They can even be hidden strengths.
A Poem in Two Voices

Now, students use the Opposites chart to create a two-voice poem, literally “giving voice” to both the persona, or mask, and the shadow. Note the multi-purpose aspects of this activity (Figures 5-6). Students use specific nouns, defining adjectives, and strong verbs, infinitive, participle, and gerund phrases. They must also include at least three examples of figurative language: metaphor, simile, personification, and hyperbole. During the writing process, they also participate in already established writer-response groups, collaborating as writers to revise and edit each others’ work. (Appendix 8.5, 8.6)

The Mandala

After the students finish their poems, they are ready for the final step in this introductory phase. They design and create a mandala to illustrate the images described in their poems. (Appendix 8.7) When completed, individual poems and mandalas are displayed together.

Witness

Students are ready, now, to read Witness by Karen Hesse. While the novel contains a wealth of material to engender many and varied discussions, it particularly lends itself to the Jungian concepts of persona and shadow and opportunities to apply several of Heraclitus’ insights. The novel is set in a small Vermont town in 1924. The Ku Klux Klan is trying to establish a presence in the town, and targets two families: one black, the other Jewish, both consisting of a widowed father with a single daughter. The novel examines the issues of racism, hypocrisy, and taking a stand against evil from multiple first-person perspectives. It is written as a series of monologues with almost no narrative, divided into five acts. It is particularly effective
to read the book aloud, allowing students to act it out as a readers’ theater. The book takes eight to ten days to read.

As they read, students take notes about the character traits of the protagonist, Leonora Sutter, and the primary antagonist, Merlin Van Tornhout. This note-taking activity can be initially modeled with Act I simply by having students make a two-column chart labeled Persona and Shadow, and monitored thereafter.

When students have finished the novel and completed their notes, briefly revisit their work with the picture books and the poem/mandala activity. Segue into the next part of the lesson by telling the story: “The Scorpion and the Frog”. (Appendix 8.8) Afterwards, discuss the following ideas:

- Is it true that “nature” cannot be changed?
- Is “human nature” unchangeable?
- Introduce Postman’s idea of the “fallen angel” (Postman 67) – flawed humans, capable of redemption.
- Do the notes they took about Leonora and Merlin show traits in opposition?
- Do either, or both, change their natures in the course of the story?
- In what way(s) have they “conceal[ed] their true natures” (von Oech, Expect the Unexpected 12-13), and to whom?
- Which other of Heraclitus’ “whacks” can be related to the novel?(5, 10, 18, 23, 25,28, 29[at least])
Now students complete an Opposites Chart for either Leonora or Merlin by analyzing, evaluating and generating images from their notes. (Appendix 8.9)

Students then follow the same procedures to create a two-voice poem and design and create a mask rather than a mandala for one of these two main characters. The masks can be fashioned from papier maché and divided in some way in half. The number of images portrayed on the masks remains the same as for the personal mandalas they created for the first activity. As before, poems and mask, when completed, should be displayed together.
Lock #9: To Err is Wrong

“A man’s errors are his portals of discovery.”

James Joyce 1882-1941

Related to the ideas of practicality, rule-following, and being foolish is the idea that to err is wrong. If we were perfect and committed no errors, we would not be human, we couldn’t learn, and life would be extremely monotonous. Since being perfect is an impossibility, if we allow the idea that committing error is wrong – shameful, dire, appalling – we paralyze ourselves and accomplish nothing. It is a curious irony, but without mistakes, we would never learn anything; we would have no standards or parameters by which to judge progress.

As infants and young children, we learn to walk, to talk, to read, to write, and we do so by committing many errors, yet we keep trying. What is more, we are applauded for our efforts. In school, however, beyond the fundamental level, instead of receiving praise and encouragement, punitive consequences for committing error begin to accumulate. The educational system has an extremely harsh standard of failure. Children are expected to “get it right” at least seventy percent of the time. Anything below that number is considered unacceptable -- even shameful. Current accountability standards penalize everyone from the school districts to the students themselves for failure to attain inflexible goals, which actually change every year and eventually reach into the ninety percent range in all content areas. School teaches students that it is crucial to be right as often as possible, that there is only one right answer (the one that goes on that answer sheet) and that mistakes must be kept to a minimum, or eliminated altogether. Where does creativity fit in this scenario? Nowhere. And the result of this kind of thinking is a vicious circle that makes students dislike school, which increases what Ernst
Kris calls “stringencies” (Chessick 2), stress which further inhibits the thinking process, which causes further error and more punitive consequences -- usually remediation, which makes students dislike school, and there we are -- back at the starting point. Students caught in the circle do not develop intrinsic motivation because they do not enjoy the tasks they are participating in; they are being coerced.

This is related to Teresa Amabile’s metaphor about the maze with multiple exits that correspond to various possible solutions to a problem. She feels that the extrinsically motivated problem-solver will “rely on more conventional, less creative exits from the maze because they are not involved enough in the task to search for novel exits. Intrinsically motivated individuals…are more likely to spend time looking for alternative solutions because they enjoy the task” (Collins and Amabile 303).

If error is to be considered synonymous with failure, then that term should be put in some perspective. The story von Oech tells is that of Boston Red Sox first baseman, Carl Yastrzemski, who in 1979 became the fifteenth player in baseball history to reach the three thousand hit plateau. Responding to the media hype that surrounded him for the week prior to the accomplishment of that goal, Yastrzemski said: “In my career, I’ve been up to bat over ten thousand times. That means I’ve been unsuccessful at the plate over seven thousand times. That fact alone keeps me from getting a swollen head.”(Whack 156). Sports figures aren’t the only ones who need to keep failure in perspective, authors have it tough, too. John Grisham’s first novel, A Time to Kill (1989), was rejected by 28 publishers, and the first edition of Chicken Soup for the Soul (1993), was rejected by more than 30 publishers.
If you look at most human endeavors, the balance of successes and failures is almost always tilted to the failure side. Oil companies dig an average of ten wells before they find oil -- even with the help of geological surveys and data. ‘Working’ actors are turned down for parts 29 out of 30 times when auditioning for commercials. Successful “players” in the stock market make money on only two out of five investments (Clark). Thomas Edison, who is remembered primarily for the invention of the light bulb “failed” in his attempts to find a viable filament 999 times; his perspective was that he found 999 ways that didn’t work, but he persevered, and that thousandth attempt was the one that “succeeded”.

This aspect of creativity has to do with the personality traits that some researchers such as Frank Barron (1968, 1969), Teresa Amabile (1983), and Hans Eysenck (1993) have noted. These include such things as: persistence, self-motivation, drive, intentionality, and risk-taking. Denise Shekerjian (Uncommon Genius, 1990) talks about taking on risk in her interviews with MacArthur fellows. One, Deborah Meier, who has started a succession of innovative (and successful) schools in some of New York’s poorest, toughest neighborhoods, says: “risk is a part of change, and change is what new ideas are all about” (24).

Errors help us to change direction. When things are going smoothly, there is no reason to think about what we are doing, actions and procedures become automatic. But because we are human, we seem to operate on the function of “negative feedback [which] means that the current approach is not working and it is up to you to find a new one…”[which] we find by trial and error, not by trial and rightness” (von Oech, Whack 160). Walter Kitundu, a 2008 MacArthur fellow, is a “multimedia artist, composer and builder who creates hybrid instruments out of turntables and strings…”[he has] blown up a couple of turntables in the process of building new things, but these
have always been great learning processes; I call it trial and terror” (Kitundu 2). Terror of making mistakes is not the same thing – at all.

All the locks that von Oech talks about: being foolish, practicality, following the rules, being logical, avoiding ambiguity, and the others dovetail into this lock, because making a mistake is the ultimate fault, the definitive reason that people will not take the risks involved in creative thinking. One very simple technique to combat “fear of error” is to model making mistakes -- and surviving. My brain works about five times faster than my hand, so when I write things on the board, or the overhead, I invariably make a mistake (sometimes several). Students have two reactions: they take great delight in pointing out the mistake(s), or they will correct me quietly, almost apologetically. My reaction to both is the same: I bring attention to it, making sure that everyone in class sees it, thank the person who pointed it out -- and fix it. Then we move on. I have to admit, it took me a while to figure this one out. It is difficult to admit to students that we are fallible human beings, too. But, admitting that fallibility makes it easier for them to admit it too. I am also a great believer in the concept of: don’t fix the blame; fix the problem. If the error can be corrected, what have we learned?

This is another difficulty with cultivating creativity in classrooms: the design of current curriculum is largely based on evaluation by means of irrelevant and artificial measures. There is neither the time for, nor the confidence in, trial and error as a method of problem-solving. Excessive emphasis on basic concepts does not even consider complexity or changes in conceptual frameworks. Societal values (including frequent and ruthless evaluation) dictate that activities that do not produce concrete results and extrinsic rewards are not good investments of time. Personal learning that enhances growth -- learning that is self-directed and intrinsically
motivated -- is not encouraged by the fear that accompanies the necessity of keeping error to a minimum and meeting artificial standards. The condemnation by the system for failure to meet such standards does not engender growth -- or creativity.

**Revisionist History -- or Literature**

This is a relatively simple strategy that makes conjectures about how different decisions in history or literature might have turned out; no harm, no foul. “Mistakes” don’t matter. At various times in the study of Texas history, students are asked to speculate about other possible outcomes of various historical events. What if Sam Houston had lost (or been killed at) the Battle of San Jacinto? Students are asked to follow that line of thought into the immediate future at the point of the revision, to some other point in history, or in some cases, to the present. An effects wheel or web helps students map their thinking, and again to see, as thinking progresses, connections that might not have been evident before. (Appendix 9.1)

Sam Houston was a man whose entire life revolved around Texas and its affairs and well-being. His vision allowed the creation of policy that attempted to integrate the indigenous people into the evolution of the Republic and the state in a dignified and humane manner. He tried to reduce Texas’ debt and facilitate the transition of Texas from an independent Republic to a valuable asset of the United States. Had he lost the Battle of San Jacinto, he would more than likely have been executed as a traitor by Santa Anna. Texas would have been lost to Mexico. Although it is possible that the United States would have eventually challenged Mexico for at least a portion of the area -- to fulfill its goal of Manifest Destiny -- there is very little chance that the state would have developed as it has.
As students develop a scenario of possibilities stemming from this change in history, they have to work through mistakes. Taking Houston out of the picture changes numerous things. While stringing together many possible events, they make mistakes in chronology, in outcomes of related incidents, etc. But they persevere, and the results are fascinating. An excellent resource for this activity is *What If?™ The World’s Foremost Military Historians Imagine What Might Have Been* (Robert Cowley, 1999). I refer (in part) to the essay by Ross Hassie titled: “The Immolation of Hernan Cortez” (121-138), among others.

The strategy can be applied to literature as well. In the spring students read *Shane* (Jack Schaefer, 1949). After completing the novel, they are asked to project three to five years into the future and explain what has happened to the characters – particularly the mysterious Shane. Their speculations are presented in a series of letters, originating from Shane and exchanged at least twice with one or more members of the Starrett family.

Hypothetical situations provide safer venues for “mistakes”, but offer endless opportunities for creative thinking. Speculation about those other outcomes and a presentation of the reasoning that supports them provides student with opportunities to practice intellectual courage. Courage is one of the factors that support risk-taking, so now we begin to create the opposite of a vicious circle -- a fulfilling one, perhaps?
Lock # 10: I’m Not Creative

“What concerns me is not the way things are, but rather the way people think things are.”

Epictetus, philosopher ca. 55–ca. 135

This lock exemplifies the basic premise of the self-fulfilling prophecy. It is also, I feel, the crux of the entire point that von Oech is trying to make with his metaphor of locks. And, it is the one that pertains as much, if not more, to the teacher as it does to the student. As teachers, we are the instructional leaders in the classroom. We are the models, not only for scholarship, but for intellectual curiosity, personal integrity, perseverance, work ethic, and intellectual courage.

Brown and Moffett (1999) discuss the necessity of a paradigm shift in education to make it more applicable to a society which is no longer primarily preparing an industrial workforce. The Newtonian model of knowledge -- that it is linear, composed of discrete bits of information, that nature is predictable and controllable, and that cause and effect are closely linked in time and space -- has outlived its efficacy. It must be replaced with the “New Science” paradigm: that learning is non-linear -- a dialogical process of making meaning, information is the primary connection force, humans are partners with, not masters of, nature, and cause and effect is often not easily analyzed or predicted (26). “New Science” refers to “breakthroughs in quantum physics and related disciplines that have reshaped the ways scientists are viewing the predictability and stability of our physical universe” (6).

Disorder can be a source of order…and growth is found in disequilibrium, not in balance. The thing we fear most in organizations – fluctuations, disturbances, imbalances – need not be signs of an impending disorder that will destroy us. Instead, fluctuations are the primary source of creativity…the most chaotic of systems never goes beyond certain boundaries; it stays contained within a shape that we can recognize as the systems’ strange attractor…Throughout the universe, then, order exists within disorder, and disorder within order.

Margaret Wheatley, Leadership and the New Science, 1992 (quoted in Brown and Moffett 21)
The authors’ research emphasizes the idea that “heroic schools realize the relational and interactive nature of learning… [it is comprised] of the purposeful construction of personal and collective meaning sparked by the search for imaginative answers to compelling questions” (30).

A fascinating idea to contemplate as it applies to education is that of the “strange attractors…archetypal basins of attraction that define and give form to what may appear as chaos and anarchy…seemingly random and chaotic elements ultimately find some outlying structure and order that superimposes stability on a seemingly out of control system” (53). If we believe that the most significant learning occurs “on the edge of chaos, we view disorder, unpredictability, and confusion with a different mindset” (24).

Planning for and allowing creative processes in the classroom is complicated in part because as teachers it is often difficult to relinquish the illusion of control. It can be particularly difficult when administrators are more interested in that illusion than in what is going on in students’ minds and spirits as they construct meaning from the information we present to them and expect them to interact with and use.

Why should teachers encourage and model creativity in their classrooms? Creativity – generally -- is noisy, it’s messy, its results and products are unusual and difficult to classify. Creativity takes time -- for planning, for production, and for reflection. Creativity requires the teacher to let go of some control and the student to step up to take responsibility -- for both processes and products. Creativity requires changing old habits and familiar and comfortable routines. Creativity requires taking risks, overcoming obstacles, navigating detours, looking foolish, accepting ambiguity, playing with possibilities, breaking rules, being illogical, realizing
that there are multiple right answers to most questions, making odd and interesting connections among contents and fields, having a sense of humor, making mistakes, and overcoming fear.

All of these processes are quality ingredients for making a productive, well-adjusted, resilient person who is flexible, can cope with change, and is open to new ideas and points of view. If the goal of education is to prepare students for a future no one can predict, how better to prepare them? Some will have more facility than others, but not everyone can play tennis like Maria Sharapova, either. Those are benefits to the students. What are the benefits to the teacher?

What can be more important to a teacher than to watch children think, consider, and engage with each other and the content at hand? Schools are preservers of knowledge – that is part of their function. They should also be crucibles, testing grounds for new ideas, places in which students grasp what is known, and then transform it.

Sir Ken Robinson (Out of Our Minds: Learning to be Creative 2001), speaking at a TED (Technology, Entertainment, Design, sponsored annually by the Sapling Foundation) conference in February of 2006, made this bold statement: “Creativity is as important in education as literacy, and we should treat it with the same status.”

He comments on the idea that our education system was created in the 19th century to “meet the needs of industrialism, which for the future won’t service.” He advocates a new idea of “human ecology” in which we stop “mining minds [only] for a particular commodity and reconstruct our conception of the richness of human capacity.” The incorporation of creativity into the school setting requires systemic change. But “top down” change takes too long. This transformation can begin immediately with a change in the resolve of teachers, working in their classrooms every day.
Every change involves loss: “Every act of creation is first of all an act of destruction” (Picasso). This type of change almost requires a leap of faith. But giving students the tools to problem-solve, to create order out of chaos, and not to fear change is putting that faith in them. Educating the whole being prepares children for the future -- “one that we will not see, but they will, and it is our job to get them there” (Robinson). We have to trust the process. We have to remember that we can’t have the product without the process.

Another oft-quoted line by Picasso is the one about every one being born an artist -- that the problem is to remain an artist after growing up. Csikszentmihalyi echoes this concept in a discussion about curiosity: “children are naturally curious…they have to learn not to be…the educational process stifles the curiosity with which all of us begin to experience the world” (quoted in Nickerson 411). It seems apropos to apply to teaching the first article of the Hippocratic Oath: do no harm.

**A Question of Balance**

I have issues with student desks -- too institutional, too small a work surface, too isolating. I prefer tables, which necessitate chairs. Every year, I have at least one student (usually several) who cannot seem to keep all four legs of the chair on the floor at the same time. These students prefer to balance the chair on the two back legs. The other dilemma is that there is little to no space to keep books, binders, pencil bags, etc. that are not in active use. That means supplies stacked and strewn all over the floor -- another hazard. Several years ago, after reminding a particular student for the thousandth time that there is a purpose to chairs having four legs -- and after he had fallen, again -- I posed a challenge to the class:
Could they design a table with seating and storage that would not take up any more room than the current furniture and that would solve the problem of the chair balancing act? It had to be practical for use in a classroom: no hover desks. Other than that they had no restrictions. The results were varied, imaginative, practical, and fun. The most noticeable common feature the designs shared was color. Several of the designs had a square central pillar that provided storage as well as support. Others had additional cubicles for storage in the seats, similar to piano benches. Most had seating that was attached in some way to the table. One group actually connected to the school district website to find the cost of the tables and chairs in the room. Then, they priced the cost of materials and estimated the labor cost to produce their design. According to their calculations their furniture units were less expensive, more attractive, and very definitely more serviceable than the furniture provided by the district warehouse.

The point was that they took a real problem and found imaginative ways to solve it. Whether the problem presents itself, or is a “mess” that has to be searched out, that is almost always the impetus for creative thinking.

The foremost thought, the constant consideration in the classroom should be exposure to the skills, opportunities to practice, encouragement of efforts, and praise for results. “…Children who are exposed to lots of creative products in stimulating and pleasurable ways are more likely to find something that will genuinely interest them deeply than will children who do not have comparable exposure” (Nickerson 411). When all is said and done, possibly the most useful recommendation is the one von Oech ends his narrative with: “after you implement your idea, give yourself a pat on the back. And then go out and earn another one” (Whack 193).
Conclusion

Many concepts are included in this series of strategies, but there are several enduring understandings that, ideally, will …endure. If we are to access the creative spirit that I agree exists in everyone, we must keep these understandings in mind. First, that almost nothing in life is dichotomous; it is important to look at nuances -- shades of gray. By “viewing the same phenomenon from several perspectives [we may] discover the information buried beneath our preconceived categories” (Langer 133). Next, that wisdom can be found by, as Heraclitus said: “search[ing] inside [one]self”), and by realizing that we must “open our minds to many things”. If our “character is [our] destiny” (von Oech, Whack 227), we can make mindful decisions about how we form that character. Also, that it is important to “discover the usefulness of ‘failures’ and to identify abilities embedded in [our] disabilities” (Langer 136), rather than to try to avoid or deny them.

As humans, students need to be aware that “You can’t step in the same river twice” (von Oech, Whack 203) because “at every moment in a mindful state we are learning…we are changing…we are interacting with the environment so that both we and the environment are changed” (Langer 137). How, then, is it possible to ever be bored? How is it possible to ever be “done” with learning?

And finally, as Postman said, if students can “accept our cosmic status as the error-prone species, therein lies the possibility of redemption. Knowing that we do not know and cannot know the whole truth, we may move toward it inch by inch by discarding what we know to be false” (Postman 67), especially in ourselves. Does it always work? Of course not. But if Postman’s goal is “inch by inch” to reach the truth, mine is child by child to reach awareness and
acceptance of self and the creativity that resides there. Children are capable of so much, but this awareness and acceptance is the first battle to be won. The alternative is captivity, or the withering of that creative spark -- too bleak to contemplate. They would be like Ariel, entrapped by unreasonable expectations, conventional thinking for its own sake, and fear of change, “For that he was a spirit too delicate to act their earthy and abhorrid commands, they did confine him by help of their most potent ministers and in their most unmitigable rage into a cloven pine” (Shakespeare, The Tempest, Act 1, Scene 2).


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APPENDICES
# Prompts for Thinking

| DETAILS | • parts | What are its attributes? |
|        | • attributes | What features characterize this? |
|        | • factors | What specific elements define this? |
|        | • variables | What distinguishes this from other things? |
| PATTERNS | • repetition | What are the recurring events? |
|          | • predictability | What the elements, events, and ideas are replaced over time? |
|          |             | What was the order of events? |
|          |             | How can we predict what will come next? |
| TRENDS | • influence | What are the external factors affecting the information about this topic? |
|         | • forces | What ongoing factors have influenced this topic? |
|         | • direction | What actions affected the development of the ideas about this topic? |
| UNANSWERED QUESTIONS | • discrepancies | What ideas remain unclear or incomplete about this topic? |
|         | • missing parts | What information is still ambiguous about this topic? |
|         | • unclear ideas | What ideas are still unresolved about this topic? |
|         | • incomplete ideas | What information is relevant to this topic but is still unavailable? |
| RULES | • structure | How is this topic structured? |
|         | • order | What are the guidelines or regulations affecting this topic? |
|         | • hierarchy | |
|         | • explanation | |
| ETHICS | • points of view | What dilemmas or controversies exist regarding this topic? |
|         | • different opinions | What arguments could emerge from a study of this topic? |
|         | • judging | What elements can be identified that reflect bias, prejudice, and/or discrimination? |
| BIG IDEAS | • generalizations | What overarching statement best describes what is being studied? |
|          | • principles | Which ideas are best included in this general statement? |
|          | • theories | |
| LANGUAGE OF THE DISCIPLINES | • specialized vocabulary | What specialized language is needed to define and/or describe this topic? |
|          | • names of skills or tasks particular to people working within the discipline | |
|          | • tools used by the discipline | |
| RELATIONSHIPS OVER TIME | • relationship between the past, present, and future | How does the passage of time affect this topic? |
|          | • relationships within a time period | How are the ideas related between the past, present, and future? |
|          |             | How are these ideas related within or during a particular time period? |
|          |             | What perspectives does time provide in understanding this topic? |
|          |             | How and why do things change or remain the same? |
| POINTS OF VIEW | • multiple perspectives | What are the opposing points of view? |
|           | • opposing viewpoints | How do different people and characters see this event or situation? |
|           | • differing roles and knowledge | How viewing from different perspectives help you understand an event, body of knowledge, or set of ideas? |
| INTERDISCIPLINARY CONNECTIONS | • relationships within the discipline | What are the common elements among the topics from the different disciplines? |
|            | • relationships between the disciplines | How does this idea relate to all of these topics across the disciplines? |
|            | • relationships across the disciplines | How do each of these topics across the disciplines contribute meaning to this idea? |

Adapted from Dr. Sandra N. Kaplan, USC
### Iconic Pathways

<table>
<thead>
<tr>
<th>Begin</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>Puzzlement</td>
<td>Questions</td>
</tr>
<tr>
<td>Interest</td>
<td>Passion</td>
</tr>
<tr>
<td>Problem</td>
<td>Solution</td>
</tr>
<tr>
<td>Conflict</td>
<td>Resolution</td>
</tr>
</tbody>
</table>

### Chart 1

![Chart 1](chart1.png)

### Chart 2

![Chart 2](chart2.png)

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Dr. Sandra N. Kaplan, USC
Appendix 2.1

Sonnet XVIII

Shall I compare thee to a summer's day?
Thou art more lovely and more temperate:
Rough winds do shake the darling buds of May,
And summer's lease hath all too short a date:
Sometime too hot the eye of heaven shines,
And often is his gold complexion dimm'd;
And every fair from fair sometime declines,
By chance, or nature's changing course untrimm'd;
But thy eternal summer shall not fade,
Nor lose possession of that fair thou ow'st;
Nor shall Death brag thou wander'st in his shade,
When in eternal lines to time thou grow'st:
So long as men can breathe, or eyes can see,
So long lives this, and this gives life to thee.

Wm. Shakespeare
Appendix 2.2

Earth Trembles Waiting

I wait for his footfall
Eager, afraid
Each evening hour
When the lights fade...

I wait for his voice
To speak low to me—
As a mariner lost
Dreams of harbor, at sea...

I wait for his lips
When the dark falls
Life holds my longing
Behind dark walls.

I wait for his face—
As after the rain
Earth trembles waiting
For the sun again...

Blanche Shoemaker Wagstaff
Appendix 2.3

**Surprise**

You always surprise me. Your last kiss always the sweetest thing I ever tasted; your last word the wittiest, your last smile the most radiant. You don’t know it but I watch you and I cannot believe that there can be such beauty, calm and trusting, and seeming to feel it belongs here. You don’t know it, but I watched you walk down the street yesterday and I was filled with delight, as if I had only just seen you for the first time.

– inspired by a letter by John Keats

**Familiar**

When I first met you, I learned to drink double espresso with five sugars so we could share one cup. You were like bittersweet marmalade, sharp balsamic vinegar, pungent spices, fiery brandy. Your piquant kisses burned my mouth. But now, my darling, you taste like warm bread and honey – sweet, soft, and familiar – and completely nourishing.

– no citation

**Endless**

I want you every way a person can be loved – properly, improperly, devilishly, angelically, wildly, gently. I love the way you always hold me tighter when I say it’s time to go. I love the way your heart gallops wildly when I hold you in my arms. I love the way I always hear something tearing when we part. And I love how the ocean loves the shore, the way the nightingale loves the moon, the way cinnamon loves warm bread, the way God loves the wicked, the way grapes love the wine press, the way a sunflower loves the sun. I’ll never get to the end of this letter. With every word I write I love you more, and then I have to describe it...

– inspired by letters from George Bernard Shaw and Mark Twain

*How to Write Love Letters, Michelle Loric*, 1988
Identify the literary element used in each sentence.

- The morning sun turned the fresh strawberries into rubies glowing in the bowl.
- When she bit the pear, the texture and taste was like sweet sand.
- The aroma of bacon sizzling and popping in the pan was the best thing to wake up to on Saturday mornings.
- The pan of lasagna looked big enough to swim in, holding an ocean of fragrant, spicy, sauce topped by crested waves of bubbly cheese.
- A peck of pickled peppers would perpetuate persistent peptic pain.
Appendix 2.5

MELTED
Ode to the Onion

Onion, shining flask,
your beauty assembled
petal by petal,
they affixed crystal scales to you
and your belly of dew grew round
in the secret depth of the dark earth.
the miracle took place
underground,
and when your lazy green stalk
appeared
and your leaves were born
like words in the garden,
the earth gathered its strength
exhibiting your naked transparency,
and just as the distant sea
copied the magnolia in Aphrodite
raising up her breasts,
so the earth
made you
onion,
as bright as a planet
and fated
to shine,
constant constellation
rounded rose of water
on
poor people’s
dining table.

Generously
you give up
your balloon of freshness
to the boiling consummation
of the pot,
and in the blazing heat of the oil
the shred of crystal
I shall also proclaim how your influence
livens the salad's love,
and the sky seems to contribute
giving you the fine shape of hail
praising your chopped brightness
upon the halves of the tomato.
But within the people's
Reach,
Showered with oil,
Usted
with a pinch of salt,
you satisfy the worker's hunger
along the hard road home.
Poor people's star,
Fairy godmother
Wrapped
in fancy paper,
you rise from the soil,
eternal, intact, as pure
as a celestial seed,
and when the kitchen knife
cuts you
the only painless tear
is shed.

You made us weep without suffering.
I have praised every living thing, oinon,
but for me you are
more beautiful than a bird
of blinding plumage,
to my eyes you are
a heavenly balloon, platinum cup,
the snowy anemone's
motionless dance.

The fragrance of earth is alive
In your crystalline nature

Pablo Neruda
Matzo Ball Soup

Douglas Florian

All alone or with a group
I love eating Matzo ball soup.
I will beg, cajole, or stoppp
To be near my matzo ball soup.
Made from matzo, tastes good hotza.
Watch me slurp it, swallow it, burp it.
Every bowlful makes me soulful.
Palest yellow, smooth and mellow.
Soft and mushy, always cushy.
Slightly spicy, starts meal nicely.
Stirring!
Steaming!
Sends me dreaming!
Scheming, screaming!
Give me lotza
Pots and potza
Matzo ball soup!
A PIZZA the size of the SUN

Jack Prelutsky

I’m making a pizza the size of the sun,
a pizza that’s sure to weigh more than a ton,
a pizza too massive to pick up and toss,
a pizza resplendent with oceans of sauce.

I’m topping my pizza with mountains of cheese,
with acres of peppers, pimentos, and peas,
with mushrooms, tomatoes, and sausage galore,
with every last olive they had at the store.

My pizza is sure to be one of a kind,
my pizza will leave other pizzas behind,
my pizza will be a delectable treat
that all who love pizza are welcome to eat.

The oven is hot, I believe it will take
a year and a half for my pizza to bake.
I hardly can wait till my pizza is done,
my wonderful pizza the size of the sun
Appendix 2.6

**Summer, Fall, Winter, Spring**  
*Charlotte Zolotow*

On a shimmering hot summer day  
the foods I love  
are cucumber with dill  
watermelon like the smell of cut grass  
and cold vichyssoise.

On a wild and leafy autumn day  
when the air is turning cool  
I love pumpkins  
roasted chestnuts  
and hot apple pie

And in the softness of spring  
I love leafy salad, slender asparagus  
and cool light custard  
pale as springtime sunlight,  
and as sweet.

On a glistening winter day  
when snow covers the world  
I love hot mushroom-and-barley soup  
steaming eggplant casserole  
and creamy warm cocoa.
Appendix 3.1

Picture Book Study

One way to facilitate exposure to a wide range of art styles and media is to have students make a study of a picture book.

Part I. Survey Activity.

Have students choose three picture books from a selection made available in the classroom. This selection may include titles from the Written and Illustrated by... competition winners. On index cards, students should record the following information:

- Their name
- Title, author, illustrator, date of publication
- Description of the art style, such as: sketch, folk art, surreal, collage, photographic, realistic, etc. If they are not sure, have them make a best guess. A Guide for Analyzing Artwork from the Introduction to the Frameworks might be helpful.
- Identification of the media, such as: pencil, pastel, ink, tissue paper collage, photograph, paint of various kinds, etc. Again, if they are not sure, have them make a best guess.
- A short explanation of why they were attracted to the book (title, cover, illustrations, familiar story, etc.

Have students give a short oral presentation on one of their selections, giving particular attention to what attracted them to the book.

Assessment (for each card)

Name, title, author, illustrator, date of pub. = 50
Art style/art media = 50
Attention getter = 25
Total = 125 (x3 cards)
Oral presentation = 50

ODYSSEY expands existing knowledge.
Appendix 3.2

**Picture Book Study**

**Part II. In-Depth Study**

Have students select a picture book to study in depth. They may choose one from the selection provided in the classroom, or they may bring a favorite from home.

Students will:
- Research the author and illustrator of their book.
- Write a short report on both that includes the following:
  - Biographical information
  - Educational background (undergraduate, graduate, art school)
  - Any information about collaborative relationships
  - Awards
- Identify the art style and media of the book. Note unique features in text style if they appear.
- Choose a specific representation and recreate it in a different art style and medium.
  For example: *Harlem* – the art style is collage, the medium is torn paper and oil or acrylic paint. A student might choose the illustration on page 16 and redo it as a pastel sketch in the impressionist style.

You might also choose to have students make two recreations in different art styles and mediums. This gives students the chance to see how differing styles change the mood of a story, and gives them the opportunity to practice using different mediums.
Appendix 3.3

Art DeCo

(Art Depth & Complexity)

* You may direct students to museum sites on the internet or pull art books from the library to supplement the following activities.

1. Explain to students that the artwork they enjoy in books involves far more than drawing pictures with colored pencils around a page. The types of artwork, variety of media, surfaces, and styles of artwork are endless. What students see on the pages are prints, transferred images from the original surfaces to the pages of the books.

2. In order for students to understand the SYSTEMS of artwork used in books, students need to have a basic understanding of the differing types of two-dimensional artwork. Have the class brainstorm a list of types of two-dimensional artwork they have seen or learned about. Record the responses on a chart tablet.

   Possible responses may include
   - portraits
   - mosaics
   - signs/billboards
   - cartoons
   - frescoes
   - advertisements
   - graffiti
   - sketches
   - realistic
   - caricatures
   - photographs
   - engravings
   - collages
   - genre painting
   - still-lifes
   - folk art
   - book jackets
   - prints
   - landscapes
   - greeting cards
   - book pages
   - posters

3. Now, have students brainstorm a list of media which artists use as well as surfaces on which artists may create their two-dimensional pieces of art. Again, record student responses on a chart tablet.

   Possible responses may include
   - Media
     - paint: oil, watercolor, acrylic, tempera
     - pencils: regular lead or colored pencils
     - pastels: oil, chalk
     - charcoal
     - pen & ink
     - crayon
     - batik
     - cloisonné'
   - Surfaces
     - canvas
     - wood
     - paper
     - vellum
     - papyrus
     - silk
     - walls
     - tile
4. Styles of artwork are governed by their own styles. For example: Rococo uses unrestrained decoration; classic art relies on clear rendering of form, mass, and weight; while cubism treats nature in terms of geometric shapes. Have students brainstorm a list of styles they have seen or heard of. Continue to record responses on a chart tablet.

*Possible responses may include*

- High Renaissance
- Gothic
- Medieval
- Impressionism
- Modern Art
- Dadaism
- Surrealism
- Art Deco
- Baroque
- Rococo
- Cubism
- Neoclassicism
- Byzantine
- Mannerism
- Pointillism
- Abstract
- Romantic Art
- Abstract Expressionism
- Monochromatic
- Realism
- Classic

5. As students move through this frame, they will be preparing for, then beginning.

**Author! Author!** Not only will students be analyzing styles of writing, but they will also be examining artwork in a variety of picture books. As you direct students in examining the artwork in these picture books, have them consider the following:

* The best way to learn how to be artistic is to first learn about art.
* Artwork in books should enhance, emphasize, inspire, or transport the reader, it is not "tagged onto" the page.
* Sometimes the artwork is design rather than illustration. Artwork in books follows consistent patterns.
* Examining the artwork helps us to understand how the artist created it.
* The story, as well as the artist’s intentions, determine the style.

6. Have students use **Art Deco Analysis** as they examine each picture book for its artwork. Additionally, have students try to mimic some of the differing pieces of artwork. Give students opportunities for practice using a variety of media as they mimic different types and styles of art. Remind students that the surface for their artwork for Written and Illustrated By is predetermined since it is part of a book.

When students begin production of the artwork for their **Author! Author!** have them reflect on the different artwork they have seen and mimicked, as well as referring to their **Art Deco Analysis** sheet.
The Great Divide: Texas as Multiple States

When Texas became the 28th state of the United States in 1845, it retained the right to divide into as many as five states at any time in future. It retains that right to this day. What if the government of the state of Texas, or the citizens of the various regions decided to exercise that right? With a partner, you must divide Texas into at least two states or up to the limit of five. Some points to consider:

- Where will the new state boundaries be; what is the rationale for dividing there?
- Designate the state capitol; formulate the rationale for its choice.
- What will be the effect of population density in each state be?
- How will this change representation in the United States Congress; what are likely to be the major concerns or legislative issues for each state?
- What will be the major economic resources for each state, and the source(s) of its current economy?
- Using the perspective of an economist, a sociologist, political scientists, and an advertising executive, speculate on the consequences of such a split in Texas. Think about positive/negative, short term/long term, local/global, and any other effects.
- Design a state flag, seal and motto.
- Designate a state bird, tree, and flower.
- Design a display and present your concept to the class.

Have fun!
**Appendix 6.1**

**Think Like An**

(What are some of the key words used by these disciplinarians? Try to make them relevant to the activities the students are doing)

Language of the Discipline...

```

Skills of the Discipline
(Activity[ies] that require students to practice the skills of the discipline.)

✓
✓
✓
✓
✓

Methods of the Discipline
(What methods are actually used by practitioners in this field?)
Examples: _______
use the scientific method to _______
_____
use interviews to determine _______

Apply _______ to History

(A short sketch describing a pivotal, famous, infamous, or important person or event in the field.)
Emergency Preparedness

The DIVERSITY of Texas regions and cities presents challenges to people and groups responsible for dealing with emergencies. Choose a city in Texas and an emergency scenario relevant to that area. Research the emergency preparedness plans in place to deal with that scenario.

In the event of a natural catastrophe, how have emergency plans grown and changed in relation to advances in technology?

Possible Scenarios:

Natural or weather-related disasters: flood, tornado, hurricanes

Outbreaks of contagious disease pestilence

In the event of a man-made disaster such as school violence or terrorism, how has technology led to the development of plans to confront these situations?

Possible Scenarios:

Terrorism /Bioterrorism Infrastructure collapse: bridges, highways, buildings

School violence Airline disaster Toxic chemical spills

Train derailment

Brainstorm possible contacts for information: CDC offices, mayor/city planner, hospital administrators, military public information offices, law enforcement offices, etc.

Refer to Interviews (R) Hometown FRONTIERS Packet (R) to prepare for interviews with people in these agencies.

After gathering your research, use the Discipline Frame (R) to examine the responsibility of different entities in the implementation of the emergency plan for your scenario.

Possible:

Meteorologist Mayor/city planner Health officials

Local emergency response agencies: fire and rescue, police, Hospitals

School officials Military officials (may not apply in all areas)

City engineers Insurance companies

National emergency response: FEMA, Red Cross, National Guards
Appendix 6.3

See Through Another Lens

FEMA

Meterologist

Mayor/city planner

City engineers

Health officials

Local emergency agencies

Scenario: Extreme storms cause massive flooding and wind damage.
AMERICAN HUMORISTS

The focus of this unit is the nonfiction humor essay. You will look at individual pieces by the authors below. Some essays may have questionable material, so okay them with your parents first.

Steve Allen    Garrison Keillor
Dave Barry     Jean Kerr
Robert Benchley Steve Martin
Erma Bombeck   Patrick McManus
Bill Bryson    Ted Nancy
Art Buchwald   S.J. Perelman
Bill Cosby     Andy Rooney
Delia Ephron    Jerry Seinfeld
Al Franken      Jean Shepherd
Benjamin Franklin James Thurber
Kinky Friedman  Mark Twain
Lewis Grizzard E.B. White
Familiarize yourself with the following terms and techniques. Use your newfound knowledge to analyze the humor essays you read. What did you find?

**Humor Types**
- black
- blue
- gallows
- political
- situational
- verbal

**Essayist’s Style**
- theme
- subject matter
- diction
- tone
- voice
- rhetoric
- wit

**Humor Techniques**
- allusion
- dialogue
- exaggeration
- foreshadowing
- hyperbole
- irony
- malapropism
- paradox
- parallelism
- parody
- personification
- repetition
- sarcasm

**Humor Formats**
- Anecdote
- Caricature
- Letter
- List
- Memoir
- Parody
- Reflection
- Satire
DEPTH AND COMPLEXITY CARDS FOR HUMOR RESEARCH

Are there rules for telling a joke?

What factors have influenced American humor?

What are the big ideas of humor?

What vocabulary is used by comedians and humorists?

How has comedy changed since the times of the ancient Greeks?

What is a sense of humor? What factors affect its development? How does it change with age?

What elements of bias, prejudice, and/or discrimination does humor contain? Give examples.

How are comedy and humor related? What about comedy and tragedy?

What makes something funny?

What ideas and theories about humor remain ambiguous?
<table>
<thead>
<tr>
<th>Selection Title/Reader</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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### Appendix 7.3

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<th>Style/Technique</th>
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<th>Reader Appeal</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Humorous Quotes</th>
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</thead>
</table>
Appendix 8.1

The Creative Insights of Heraclitus

<table>
<thead>
<tr>
<th>1. The cosmos speaks in patterns.</th>
<th>16. Those who approach life like a child playing a game, moving, and pushing pieces, have the kingly power.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Expect the unexpected, or you won’t find it.</td>
<td>17. Sea water is both pure and polluted: for fish it is drinkable and life-giving, for humans undrinkable and destructive.</td>
</tr>
<tr>
<td>3. Everything flows.</td>
<td>18. On a circle, an end point can also be a beginning point.</td>
</tr>
<tr>
<td>4. You can’t step into the same river twice.</td>
<td>19. It is disease that makes health pleasant, hunger that makes fullness good, and weariness that makes rest sweet.</td>
</tr>
<tr>
<td>5. That which opposes produces a benefit.</td>
<td>20. The doctor inflicts pain to cure suffering.</td>
</tr>
<tr>
<td>6. A wonderful harmony is created when we join together the seemingly unconnected.</td>
<td>21. The way up and the way down are one and the same.</td>
</tr>
<tr>
<td>7. If all things turned to smoke, the nose would become the discerning organ.</td>
<td>22. A thing rests by changing.</td>
</tr>
<tr>
<td>8. The Sun will not exceed its limits because the raging Furies, ministers of Justice, would find out.</td>
<td>23. The barley-wire drink falls apart unless it is stirred</td>
</tr>
<tr>
<td>9. Lovers of wisdom must open their minds to very many things.</td>
<td>24. While we’re awake we share one universe, but in sleep we each turn away to a world of our own.</td>
</tr>
<tr>
<td>10. I searched into myself.</td>
<td>25. Dogs bark at what they don’t understand.</td>
</tr>
<tr>
<td>12. When there is no sun, we can see the evening stars.</td>
<td>27. Every walking animal is driven to its purpose with a whack.</td>
</tr>
<tr>
<td>13. The most beautiful order is a heap of sweepings piled at random.</td>
<td>28. There is a greater need to extinguish arrogance than a blazing fire.</td>
</tr>
<tr>
<td>14. Things love to conceal their true nature.</td>
<td>29. Your character is your destiny.</td>
</tr>
<tr>
<td>15. Many do not grasp what is right in the palm of their hand.</td>
<td>30. The sun is new each day.</td>
</tr>
</tbody>
</table>
### Appendix 8.2  Opposite Chart: Sample

<table>
<thead>
<tr>
<th></th>
<th>I am a(n):</th>
<th>Because I am: (list 3-5) Appropriate adjectives; 1-2 strong verbs</th>
<th>Antonyms of these Adjectives (3-5); strong Verbs 1-2</th>
<th>Therefore I am also a(n): (opposite of first image)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Animal</strong></td>
<td>Dragon</td>
<td>bad-tempered, fiery, impatient, restless, wary, roar</td>
<td>patient, calm, easygoing, tranquil, endure,</td>
<td>Sheep</td>
</tr>
<tr>
<td><strong>Place</strong></td>
<td>Shoe store</td>
<td>colorful, many-faceted, impractical, creative, style, flash</td>
<td>dark, superficial, unimaginative, bore, practical</td>
<td>Corporate boardroom</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Red</td>
<td>fume, demanding of attention, passionate</td>
<td>Quiet, cool, understated, self-assured</td>
<td>Purple</td>
</tr>
<tr>
<td><strong>Number</strong></td>
<td>1</td>
<td>First, aggressive, alpha, no patience, leader, rigid</td>
<td>Compliant, flexible, Team player, negotiate</td>
<td>3</td>
</tr>
<tr>
<td><strong>Shape</strong></td>
<td>Squiggly line</td>
<td>Random, tangential, Spirited, free, meander</td>
<td>Focus, pointed, discriminating</td>
<td>Triangle</td>
</tr>
<tr>
<td><strong>Gem/Mineral</strong></td>
<td>Opal</td>
<td>Inner fire, secretive, Mysterious, delicate, Superstitious, glow</td>
<td>Strong, hard, showy, calculating, Uncompromising, cut</td>
<td>Diamond</td>
</tr>
<tr>
<td><strong>Natural Phenomenon</strong></td>
<td>Thunderstorm</td>
<td>Wild, destructive, Ruthless, rage unrestrained</td>
<td>Peaceful, serene, Restorative, penetrate, soak</td>
<td>Soft rain</td>
</tr>
<tr>
<td><strong>Sound</strong></td>
<td>Scream</td>
<td>Shriil, pierce, Uncontrolled, frustrated</td>
<td>Calm, tranquil, Accept, content, resigned</td>
<td>sigh</td>
</tr>
</tbody>
</table>
### Appendix 8.3  Opposites Chart

<table>
<thead>
<tr>
<th>I am a(n):</th>
<th>Because I am: (list 3-5) Appropriate adjectives; 1-2 strong verbs</th>
<th>Antonyms of these Adjectives (3-5); strong Verbs 1-2</th>
<th>Therefore I am also a(n): (opposite of first image)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal</td>
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<tr>
<td>Place</td>
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<tr>
<td>Color</td>
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<tr>
<td>Number</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Shape</td>
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</tr>
<tr>
<td>Gem/Mineral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Phenomenon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 8.4  The Persona and the Shadow

Conscious

persona

ego

shadow

anima/animus

Self

unconscious

Pettifor 2
A Poem in Two Voices

Psychologist Carl Jung proposed the idea that every human being has certain personality traits or characteristics that he or she present to the world, a mask or persona. Other characteristics are hidden, but may still influence a person's behavior. These characteristics are shadowed and not necessarily easy to distinguish. Although this explanation is monumentally oversimplified, it will help you understand how to organize your poem in two voices.

1. Using your opposites organizer chart, look at the characteristics that you have assigned to yourself. Determine which characteristics usually see sunlight - are part of your persona, and which are hidden or part of your shadow.

2. Write a poem describing both parts of yourself in the first-person. The poem should be arranged in two columns. See example.

3. Your poem must include at least three (3) examples of imagery, or figurative language, such as metaphor, simile, personification or hyperbole.

4. The poem will contain at least one each of the following:
   - Infinitive phrase: to be a team player, to be wary, to show restlessness
   - Participle phrase: showing impatience, thinking in tangents, raging like a thunderstorm
   - Gerund phrase: showing the ability to be a leader, demonstrating the capacity to be practical, burning with inner fire

5. Use as many of the characteristics as you can; try to give the sunshine and the shadow equal time.

6. Follow writers' workshop procedures for 1st and 2nd draft and for edit copies.
Two-Voice Poem Sample

Patient and tranquil, yet burning with inner fire,
I know, like the phoenix knows, that eternity
Is a part of all of us.
And sometimes, waiting is what is required.

But I am also wary and distrustful.
My restlessness fed by disappointment.
Flaring bad temper and impatience can make
People keep their distance.

To be spirited and free is my wish,
Wandering like a meandering freshet
Indulging in random thoughts and actions
Ignoring the voices that whisper "mustn’t".

But I am often the triangular tip
Of a diamond, razor-like and focused
Uncompromising, cold, interested only
In myself.

At times I cannot decide
Should I rage like a thunderstorm,
Wreaking havoc and destruction,
Wild and unrestrained?

Or should I use the steady persistence
Of softly falling rain,
Which alters even mountains and seacoasts
In time?

Living with passion
Is exhausting, like being a lit
Match or a Roman candle.
Don’t just look at me, look at
Life.

Yet the mystery of purple
Shadows beckons as well.
Surrender sweet ... or
Deadly?
Two-Voice Poem

Poem formatted in two columns ______ 25 pts

Includes at least 3 examples of imagery:
Metaphor, simile, hyperbole, personification ______ 45 pts

Contains at least one each:
Infinitive phrase ______ 15 pts
Participial phrase ______ 15 pts
Gerund phrase ______ 15 pts

No significant or non-purposeful mechanical errors ______ 15 pts

Total ______ 130 pts
The Scorpion and the Frog

There was once a scorpion that wanted to cross a river. The scorpion could not swim, and even if it was able to attach itself to a leaf or log, it knew that it would then probably be swept downstream far from its desired location. It came upon a frog sitting on the bank.

"Please," the scorpion said, "won't you carry me across the river on your back?"

"Do you think me a fool?" asked the frog. "If I let you crawl on my back you will sting me."

"That indeed would be foolish of me," said the scorpion, "for if I sting you, you will sink into the river and I will drown as well. Surely you can see that you are perfectly safe, for I have no desire to die."

The frog thought it over for a minute; he had to admit that what the scorpion said made sense. He agreed to let the scorpion climb on his back and to carry him across the river. Midway across the river, the scorpion stung the frog.

Aghast at both the betrayal and the stupidity of the situation, the frog gasped as he began to sink,

"How could you do that? Not only have you killed me, when I was trying to help you; you’ve killed yourself as well. You’re going to drown. Why did you do it?"

"It’s my nature," the scorpion replied.
<table>
<thead>
<tr>
<th>Leonora</th>
<th>I am a(n):</th>
<th>Because I am (3-5) Adj.; 1-2 verbs</th>
<th>Antonyms of these adj./verbs</th>
<th>Therefore, I am also a(n):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Phenomenon</td>
<td>island</td>
<td>Wild, lonely, Shadowed, isolate</td>
<td>Seeking, reach, Friendly, light</td>
<td>sunflower</td>
</tr>
<tr>
<td>Merlin</td>
<td>I am a(n):</td>
<td>Because I am (3-5) Adj.; 1-2 verbs</td>
<td>Antonyms of these adj./verbs</td>
<td>Therefore, I am also a(n):</td>
</tr>
<tr>
<td>Number</td>
<td>1</td>
<td>First, superior Force, aggressive</td>
<td>Confused, stuck, In a rut, going nowhere</td>
<td>8</td>
</tr>
</tbody>
</table>
Note:

Be sure to code the positive effects with a + and the negative effects with a -.

Use one connecting line to code Level One effects.
Use two connecting lines to code Level Two effects.
Use three connecting lines to code Level Three effects, etc.

Be sure to do all Level One effects first, then Level Two effects, etc.
CURRICULUM VITA

Rose Marie De La Cruz – Bechtel was born in El Paso, Texas. The eldest child of Rufino De La Cruz and Carmen Salcedo De La Cruz, she graduated from Austin High School, El Paso, Texas in the spring of 1973 and entered The University of Texas at El Paso in the fall. She received her bachelor of science in education degree from the University of Texas at El Paso in 1978. She has worked for the El Paso Independent School District since the fall of 1978. She has taught both elementary and middle school and in 1986 began teaching in the district’s gifted and talented program. She has written curriculum for the gifted program and created, planned and delivered staff development that provides fifteen hours of the state-mandated thirty hour certification requirement for teachers of the gifted. In 2001, she participated in The West Texas Writing Project summer institute and entered the Graduate School at The University of Texas at El Paso.

Permanent Address:  4812 Hastings Drive
                        El Paso, Texas  79903