

INVESTIGACIONES

AWARENESS OF THINKING AND FEELINGS AS A NATURAL PROCESS FOR EVERY LEARNER: IMPLICATIONS FOR GUIDANCE

CONSIDERACIÓN DE LA COGNICIÓN Y DE LA EMOCIÓN EN EL APRENDIZAJE: IMPLICACIONES PARA LA ORIENTACIÓN

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ABSTRACT

Thinking is a natural process. There are various cognitive processes that occur in the three reciprocal phases of Beginning Awareness and Organization, Critical and Creative Thinking, and Meta-cognitive Processes. Individual's thinking and feelings are continually co-joined and impact each other in a reciprocal fashion. Awareness of "who" one is as a learner impacts "how" one learns. "How" one learns and teaches is reliant on awareness of "what" one thinks and feels, which forms belief and value systems. There are common social and societal realities that encompass and transcend one's culture. We consider these are basic issues to address in Educational Guidance.

Key words: learning, thinking, feelings, cognition, meta-cognition, beliefs, educational guidance.

RESUMEN

Pensar es un proceso natural. Existen varios procesos cognitivos en las tres fases recíprocas de: Inicio de la Conciencia y Organización, Pensamiento Crítico y Creativo, y Procesos Meta-cognitivos. Las creencias y los sentimientos de un individuo se entremezclan continuamente influyéndose de forma recíproca. La consideración de "quién" soy como aprendiz influye en "cómo" se aprende. "Cómo" se aprende y se enseña depende de la conciencia sobre lo que uno piensa y siente, lo cual conforma sistemas de creencias y valores. Hay algunas realidades sociales comunes que engloban y trascienden a la propia cultura. Estos temas son relevantes en la Orientación Educativa.

Palabras clave: aprendizaje, pensamiento, sentimientos, cognición, meta-cognición, creencias, orientación educativa.

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Introduction

This paper introduces a perspective regarding cognition and meta-cognition occurring simultaneously. This is explained as being evident in pre-language through formal language acquisition situations with citations from Brandt (1999), Damasio, (1994), Dewey (1933), Gazzaniga (1998), and other authors who have conducted research on learning as it involves comprehension, with respect to one's attention, orientation, memory and problem solving, pre-language cognition, and creating meaning from life experiences. The term *cognitive reciprocity* is introduced to explain the exchange among and between the aforementioned comprehension words.

Additionally, the definition of the term *Cognitive Collective* is provided. This is the joining of *thoughts, ideas, opinions, judgments and feelings* being reciprocally imposed. Connected one to the other these partially identify *who* one is as a learner and teacher. Just as thoughts, ideas, opinions, and judgments impact one's feelings, so too do feelings impact individual's thoughts, ideas, opinions, and judgments. This reciprocity of influence may bring about changes in each of the aforementioned terms and/or emotions. These changes affect all aspects of the human condition. The delineation of the process of thinking as vital to understanding what occurs during the transformation from cognition to meta-cognition is also explained. How one thinks and questions concerning "why" one has cognition and whether cognition occurs prior to meta-cognition are answered and complete this article.

"How" and "why" do we develop learner's thinking, especially when their minds are awake? The latter portion of that question seems easier to address with the "why" being concretized in the concept that at the core of learning there needs to be cognition, and as educators, bringing cognitive awareness, critical and creative thinking, as well as the meta-cognitive process to students is to the benefit of human-kind. This is a "truth" the authors have come to accept, because an informed, if you will, "thinking" population, impacts individuals, as well as whole populations' collective reasoning, which in turn, influences everyday happenings and belief-systems on home, community, state, national, country, and world planes. Then, the "how" of developing thinking comes into focus, once one is part of the ongoing school experience or following that, the authors' question what can be provided to open the mind to cognitive development? Perhaps the first step is to know what cognition and meta-cognition involve. These definitions and their ramifications on development of these skills are addressed in the remainder of this article.

"What" is Cognition and "Why" Do We Have Cognition?

There has been a multitude of conversations and perhaps as many articles written regarding the topic of cognition. Additionally, there appears to be a major definition that cognition is the process and/or processes that occur and are labeled, "thinking". Meta-cognition refers to this process at the higher and highest levels. This article deals with cognition, which is an everyday term that equates with thinking. However, cognition in the finite sense refers to the ability of the brain to process, store, retrieve and manipulate information. These are commensurate with the ability of a person to respond to stimuli and interface with everyday life-experiences.

There are four areas of cognition and these include (Helen Hayes Rehabilitation Hospital, 2000; Schiering, 2003):

1. Attention: The ability to focus on a specific stimulus without being distracted;
2. Orientation: the ability to be aware of self and certain realities and facts of the present;
3. Memory: the ability to recall information or experiences from the past;
4. Problem solving: the ability to understand a problem, generate solutions and evaluate the generated solution.

The co-joining and delineation of thoughts, ideas, opinions, and judgments, are referred to as *cognitive reciprocity* and include the four areas or functions of cognition, as listed and defined above.

The authors believe that we have cognition in order to function as thinking, feeling, human-beings with others of our species. Since the human race is continuously in the act of existing or being, it stands to reason that part of this involves acknowledgment of cognition. In order to interact the processes that occur are referenced as, thinking. Whether this starts with beginning awareness through the use of one's senses or involves examination of stimuli, or simply a serendipitous situation, there is thought involved. Why do we have cognition? We have it because it is part of the human condition that bridges geographical locations and time, which predisposes purpose or definition (Schiering, 2003). It simply is part of our being humans.

Memory Acquisition and Memorization as part of Cognition

A portion of cognition involves memory and memory may be initialized prior to birth, as evidenced in studies conducted, that attend to recalling smells and sounds introduced initially during a mother's pregnancy. Having this as background information, the authors note that numerous studies have revealed that memory, which is exhibited through awareness or recognition is at the very beginning stages of cognitive development and, in fact, may occur before birth. As Kase (2000) and Yount (1996) relate, respectively:

1. Even before birth, cognition, in the form of memory occurs,
2. Patterns of neurons called 'engrams' simultaneously activate memory, and,
3. Sound and smells are recognized from the womb as evidenced later in newborns, when they are "experimentally" presented with these sounds and smells.

"Each of these concepts, resulting in 'formation-of-memory' becomes, therefore, part of cognition, as memory influences the 'Cognitive Collective' (co-joining of thoughts, ideas, opinions, and judgments with feelings) through active reflection" (Schiering, 2003).

How memory works or the question of why one remembers was addressed by Schiering when referencing the idea of storytelling being a viable means for creating memory. She questioned, "What causes one to remember some things and not others? Is this due to the style-of-delivery and the listener's, viewers, or participant's interest in the content material? Does one of these take precedence over the other? First, it seems important to know about memory. Gazzaniga (1998; 10) stated, "Evolutionary theory has generated the notion that we are a collection of adaptations - brain devices that allow us to do specific things... Many

systems throughout the brain contribute to a single cognitive function". Then, understanding how the memory works imposes a major dynamic when referencing the connections between hearing something and that serving as a means for beginning cognitive skill development.

Brandt (1999: 238) states, "The most fundamental things scientists have learned about memory is that we do not store memories whole and therefore do not retrieve them that way either. When we remember something we actually reconstruct it by combining elements of the original experience". Neuroscientist Antonio Damásio (1994) explains that a memory "is recalled in the form of images at many brain sites rather than at a single site". "Therefore, it would seem very plausible that for a person delivering information and the one listening, viewing, or participating in it, in order to substantiate a 'memory' of it; that it is of primarily and fundamental import for recombining the elements" (Schiering, 2003: 553). Dewey, (1938) believed and promoted an experientialist philosophy that encapsulated a progressive organization of curriculum with perspectives centered on understanding of certain life events being common in all cultures. These include birth, death, success, failure, tradition, and love. Therefore, when relating information, such as telling a story, there's a subliminal understanding that, "People can only address, perceive particulars, configure generalities, respond through emotions and interpret what they find to be important in their life experience" (Schiering, 2000: 5).

Telling a story or delivering information in a teaching situation for learning purposes has relevance to individuals, sans the aforementioned common cultural topics, and will bring about a connection to the presented material so it serves as a motivational component, create memory resulting partially from one's delivery style, and provide for immediate and later reflection, for *within* lesson comprehension. The story and/or information becomes part of the listener's experiential past and he/she may draw upon this for future decision-making, problem solving, and possibly self-actuating; hence the cognitive/meta-cognitive process has been twice addressed.

Referencing cognition with memorization and memory, Bogner (2007) asked, "What leads to this memorization? What level of cognitive complexity comprises the engrams or memory traces that underpin the recollection of, let's say, the 50 states? Is it the *repetition* of information? Is it knowledge of something about the state, *referencing* varying facts about the state perhaps learned by traveling there, or is it knowledge of an event that took place in that state; say the fact that the first 13 colonies were settled by the English and as such they're located on the Eastern Seaboard?

Bogner examines these ideas of making connections through the *referencing* technique when his daughter was going through this memorization learning task. He assisted her by making varying connections that served as the memory traces that led to a recollection of each state. "For memorization of some it was the states' mere physical shape. Ohio looks like an "O" or the "V" shape of Vermont. For others it was a reliance on other collective memory that was recalled and compared and contrasted in more complex cognitive ways. Remember when we traveled to Colorado? It's right next to Kansas (where we were living at the time). The simple task of memorization of the 50 United States of America depicts the variation of richness between the complexity of memory traces (engrams) and the varying levels of cognitive processes that lead to their formation, much more than what we would expect in the classic perceived *rote task* of memorization through *repetition*.

Bogner continues with, “The standard trick of a 19th Century memorization genius was to place each thought (such as a list of 100 names) in a room associated with an object. For example, the name, Beard, would be associated with the bureau with the shaving cup for Beard or the name, Collins, by the collar on the bureau, and etcetera. This type of memorization wasn’t based on *repetition*, but the complex cognitive process of identification of patterns, comparisons and contrasts, and development of a sorting mechanism. This is much the same as creating memory from a heard story in that one’s mind creates associations to assist in retaining the information.

Bogner (2007) has provided an example of the varied interconnection between simple and more complex cognitive processes that result in the formation of memory and relates that cognition is a natural process that begins at the earliest stages of life. He states, “As a process, cognition or thinking includes memorization and meta-cognition or higher ordered thinking in that it involves problem solving and includes the learner knowing about his or her own thinking processes. Cognition occurs in complex and interconnected ways depending upon the situation, the complexity of cognitive processes varying with the individual’s collective life experience”. The authors’ maintain that learners of all ages operate at all levels of cognition. Subsequently, while we think of memorization being reliant on *repetition* of material, it appears that making connections by referencing experiences is just as viable a means for retaining information and creating memory. “Therefore, it’s postulated that it’s incumbent on the learner and those assisting in the learning process to create linkages where none may formally or previously exist and also provide repetition of these connections if necessary” (Schiering, Buli-Holmberg, Bogner, 2007).

The idea of memorization, which is oftentimes possibly perceived as a different from of memory acquisition than storytelling, and creating an experience for memory to occur appears to be partially flawed. The authors concur with the idea of memory acquisition relying not only on what is to be memorized, but the manner in which the material is perceived. In this as other instances, style-of-delivery is as important as the connectedness of the material to the learner, and the ability to form memory from newly presented information. All of these require cognitive skills ranging from beginning awareness to reflection for culminating self-actualization, whether this is for testing purposes or retention for future problem solving situations.

Cognition, Memory, and Comprehension

Backtracking a bit and revisiting cognition as thinking, and memory as storing and then recalling and retrieving of thoughts, the role of comprehension is addressed in that it’s the ability to understand something or have knowledge about something, as demonstrated in one’s verbalizations in response to a situation or in taking action that demonstrates understanding/ knowledge. Subsequently, it seems to be of tremendous importance that, “cognition is recognized through ‘comprehension’ and may or may not be verbalized, but be demonstrated in three applications, which include:

1. Literal: Fact-based evidence of comprehension;
2. Applied: Comparison and contrast comprehension, resulting from making connections to one’s own experience, or other read material, and;

3. Implied: Inferential comprehension, based on context or illustrative material being presented in oral, visual, tactile, or kinesthetic formats” (Schiering, 1998).

As addressed earlier, “Thinking/cognition is recognized through ‘comprehension’ to produce understanding. This is the cognitive process” (Allport, 1937). As the authors have related, thinking/cognition to produce literal, applied and implied comprehension are direct by-products of cognition and include: attention, orientation, memory and problem solving. “Cognition therefore relates to the meta-cognitive perspective because in solving a problem learning occurs and is a receptive, meaning-making, and active orientation” (Li, 1996). Learning involves conceptual change-modifying one’s previous understanding of concepts so that they become increasingly complex and valid (Abbott, 1994).

The delineation of the process of thinking is vital in understanding what occurs during the transformation from cognition to meta-cognition. The result of this conceptual change that modifies one’s previous comprehension is a result of more complex thinking, or the higher order thinking that’s referred to as meta-cognition. The differences between cognition and meta-cognition rests on the concept of the latter involving higher-order thinking that focuses on “problem-solving, preceded by reflection for gaining insight, as well as the learner knowing about his or her thinking processes (conscious awareness), and the ability to control related strategies by planning, choosing, and monitoring his or her thinking” (Schiering, 1998; Glatthorn, 1995; Wilen & Phillips, 1995).

Examining this idea of problem solving being part of the meta-cognitive process, it should be noted, requires generative-knowledge, which is awareness of material to solve problems (Ennis, 1985), and knowledge being constructed when students restructure or replace existing conceptions (Blank, 1997) are essential components of meta-cognition. Students revealing and reflecting upon the status of their conceptions and problem solving techniques, how they know what they know, is the meta-cognitive element (Schiering, 1998). “This meta-cognitive element is then linked to learning as people develop skills that are genuinely transferable and connected to reflective intelligence and affected by self-awareness beliefs about one’s abilities, clarity and strength of learning goals, personal expectations, and motivation to learn” (Abbott, 1994). Furthermore, connecting learning to cognition and then to meta-cognition was described by Bruer (1993):

The cognitive process as it relates to meta-cognition involves patterns and relationships, emotions, the need to make sense, intrinsic interest, formal and informal learning, history dates, and even mathematical formulas. One’s way of enacting these processes defies logical structure since so much is based on individual perception (p. 36).

Another example would be that cited by Bogner (1990) in reference to Dewey’s concept of solving a problem being part of meta-cognition, (How We Think... dissertation p. 177) (LW, 8: 185) when he states:

Thinking begins as soon as the baby who has lost the ball that he is playing with begins to foresee the possibility of something not yet existing —its recovery— and begins to forecast steps towards the realization of this possibility, and, by experimentation to guide his acts by his ideas and thereby also test the ideas (p. 185).

Therefore, making connections from past experience is a progressive orientation that results in meta-cognition (Schiering, 1998; McTighe & Lyman, 1988). This is an awareness

and action through thinking and occurs as the equivalent to going back and then forward to examine assumptions or structures in a person's natural proclivity (Fogarty & McTighe, 1993). With this understanding there are continual connections made between what was and what is and/or may be in the future, decisions are reached through reflections on experiential situations that have impacted the learners/thinkers life. This is done as comprehension exists as a by-product and/or direct connection to memory being utilized. "There is not a separation in cognitive and meta-cognitive reality, but a melding of doing and being, for the formation of comprehension" (Schiering, 2007).

Perhaps by looking at the idea of comprehension as being a result of memorization also provides one to more adequately examine the connection between cognition, memory, and comprehension. As stated earlier, the authors believe that "making connections regarding movement in thoughts backward and forward to form comprehension requires thought processes". This is diametrically opposed to the rote memorization that is oftentimes experienced by learners as necessary preparation for tests requiring feedback of knowledge, and/or what has been learned. As Freire, (1998) states in, *Pedagogy of Freedom* "Intellectuals who memorize everything, reading for hours on end, slaves to the text, fearful of taking a risk, speaking as if they were reciting from memory, fail to make any concrete connections between what they have read and what is happening in the world, the country, or the local community. They repeat what has been read with precision, but rarely teach anything of personal value. They speak correctly about dialectical thought, but think mechanistically. Such teachers inhabit an idealized world, a world of mere data, disconnected from the one most people inhabit". Subsequently, comprehension resulting from cognitive awareness including realizing, acknowledging, classifying, comparing and contrasting, with comprehension as the ending goal is not realized. There needs to be addressed the creation of memory instead of memorization for comprehension to occur or even be substantive. There needs to be the reality of cognition and memory being present, simultaneously, or with one affecting, and having effects on the other for understanding.

Learning, learners, Meta-cognition, and Problem-solving

A scrutiny of learning may first be addressed with the idea that "the learning process is organic as opposed to being mechanical, because we're human beings. Organic demonstrates a building from; recreating what has been to what is present in the 'now'. Learning being organic in nature can be equated to a seed becoming a plant in that patterns are formed which are complex and cyclical, as opposed to mechanical, which demonstrates a linear progression" (Bogner 2007). "A learner is one who learns and problem solving is part of the learner's meta-cognitive process which revolves around the identification of the problem, and its meaning, for the person who is solving the problem" (Schiering, 1998). Other factors enter into the thinking process, which include collaborative and comparative components. "Additionally, a comparison to similar and different problems is followed by causes of the problem in the three areas of, identification, comparison/contrast, and projections, which correspond to, respectively, what is the problem, how does the problem compare to other problems, and does the problem impact on one's life now and/or later?" (Glatthorn, 1995).

What the learner exhibits cognitively, in the aforementioned, is a system of classification for the purpose of planning and finding a solution to the problem. In this sense, meta-cognition is domain dependent as it is *instantiated* (firmly grounded) in a context or lear-

ning task (Tobias & Everson, 1995). Abedi and O'Neil (1996) defined learner's meta-cognition as consisting of strategies for planning, monitoring, or self-checking cognitive/affective strategies, and self-awareness. The thinking processes incorporated for problem solving, as explained by Fine (1997) then subdivide into the following categories:

- a) perceptual interpretation,
- b) classification,
- c) evaluation,
- d) explanations,
- e) intent assessment,
- f) communication
- g) action,
- h) actualizing,
- i) judgment,
- j) summarizing, and
- k) comparison to past personal, read, or shared experience.

Other definitions of meta-cognition include it being a set of skills and strategies one uses in monitoring and modifying how one learns and that thinking refers to the knowledge and control people have over their own thinking and learning activities (Cates, 1992). Further defining meta-cognition, information acquisition and problem solving as involving memory acquisition for deciding, and the preceding components of orientation and attention to a situation, the authors think it is important to realize how information is acquired for solving problems. We've already stated that "how" one acquires information is through style-of-delivery and relevance to one's life experience for memory acquisition and retrieval. These factors are vital as creating memories and recalling them becomes a natural occurrence and part of the 'Cognitive Collective'. It is also important to know that information can be acquired when a student's thought process is circumspect following the introduction and identification of a problem in three questioning forms:

- a) What I don't know,
- b) What I think I know, and
- c) What I want to know (Olsen, 1995).

"This gaining of knowledge concerning the problem solving techniques produces self-efficacy—a control over one's thinking and subsequently is part of the meta-cognitive process in producing one who self-actuates— goes forward and takes action to address the situation at hand" (Schiering, 1998).

Additionally, learning is a social experience. It involves interaction between and among learners as meanings are shared. Information is exchanged and problems are solved in a cooperative manner (Glatthorn, 1995). As Olsen (1995) stated in the simplest of terminology, "The ability to learn requires thinking about one's own thinking. This is meta-cognition, and it is essential in a world of continuous change" (p. 134). Schiering (2000) further explains that, "Meta-cognition is the ability of one to examine a situation, reflect on past similar or dissimilar situations that have relevance to the one being questioned, and bring that information forward to solve a problem or address the circumstance in the present or near future".

The forms of learning are a combination of examining one's thoughts, ideas, opinions, judgments and feelings. Learning is subjective and personal, inasmuch as it relates to Trigwell's (1997) phenomenological theory, which is the study of perceptual experience in a purely subjective format. It is also a descriptive or classificatory account of any event, circumstance, or experience that is apparent to the senses —the phenomena of a given body of knowledge, without any further attempt at explanation (Vermunt, 1995). "This phenomenological theory can be both summative and formative, as there is a non-objective analysis of experiences, with interpretations of the world being the foundation upon which this theory resides and forms the basis for learning —how does one feel about the experience?" (Schiering, 1998).

Defining the Cognitive Collective Terms

As previously explained, the Cognitive Collective is a combination of the *Reciprocal Thinking Phases* and *Reciprocal Feeling Phases*. It is substantiated in the educational learning theory that we are thinking, feeling human beings. To relate that I think, and therefore I am, is simultaneously connected to I feel, therefore I am. Our thoughts, ideas, opinions and judgments impact our feelings and emotions just as easily as our feelings and emotions impact our thoughts, ideas, opinions, and judgments. "Either the thinking 'us' or the feeling 'us' can cause change to occur in the thinking or feelings responses one has to various stimuli or situations" (Schiering, 2003). Subsequently, there is reciprocity in the Thinking Phases and reciprocity in the Feeling Phases for within group and between group definitions. The following is an explanation of the terms within the Reciprocal Thinking and Reciprocal Feeling portions of this educational theory.

1. Thoughts: Immediate conscious responses to reflection, which involve memory. Reflection is further defined by Schön (1995) as having two forms, which are reflection "in" action or thoughts occurring now in the present, and reflection "on" action as referencing something that happened in the past. Example: From my experience, I have *thoughts* that focus on learning being multi-dimensional.
2. Ideas: A prediction of future responses or speculation based on one's perspective as a result of reflection. Example: She got the *idea* about good teaching practices from the book on educational theory.
3. Opinions: A combination of thoughts and ideas in that a formulated-concept results. The teachers were asked their *opinions* of the curriculum.
4. Judgments: Concretized thoughts, ideas, and opinions which are impacted by memory, while being based on reflection concerning past experiences. Oftentimes based on one's level of attachment to a situation. Example: My *judgment* is that many teachers are facilitators of learning.
5. Feelings: A sensory and/or emotional response to stimuli that may be a descriptive or classificatory. Example: The water *felt* soft as it slid through my open fingers. Feelings are also defined as being the quality that something has in that one responds in a manner that connotes feeling of an emotional or intuitive nature and/or reflects on something to establish a formed response that is rooted in thought, ideas, opinions and judgments. Example: The music collectively evoked the

audiences' strong *emotion* as the symphony began. Subsequently, feelings and emotions are one in the same and yet can be observed or defined as being co-joined. These then are trans-rational responses to stimuli in that a sensory response to situations occurs at the same juncture as deeply held thoughts, ideas, opinions, and judgments. Feelings and emotions are referred to as "root responses" to stimuli (Bogner, 2007).

Is Cognition Developmental and Does Cognition Precede Meta-cognition?

It seems logical, in the objective pejorative, that cognition comes before or precedes the meta-cognitive processes. The authors Schiering (1998), Buli-Holmberg (2007), and Bogner (2007) comment that one might recognize that this is based on the idea that meta-cognition requires a higher order of thinking. Does it? In pre-language acquisition this might seem applicable. However, on scrutinizing this concept it may also be noted that in instances of pre-language, explaining whether one has cognition or meta-cognition relies primarily on the "interpreter's perceptions" of the utilized cognitive processes. Pre-birth experiences become part of one's memory, as stated earlier as being evidenced after birth in an individual's behaviors (Kase, 2000; Yount, 1996) through the beginning awareness and/or display of "recognizing" (Schiering, 1998). In this instance the authors refer to beginning awareness being demonstrated through such terms as, acknowledging, comparing, contrasting, classifying and realizing.

At this juncture, reference is made to the previously presented terms and their definitions regarding, attention, orientation, and memory, which oftentimes result in the meta-cognitive processes of evaluation, reflection, deciding, problem-solving and self-actualization occurring in one's thinking and action processes. *In some respects this idea of meta-cognition being evidenced at the same time, or in close approximation to cognition is ground-breaking or, at a minimum, differentiation of thought regarding the concept of cognition being simultaneously experienced.* What creates the essential criteria in determining the use of cognition or meta-cognition is the experiential level of an individual. Simply stated, "The more experiences one has, the greater the potential for the meta-cognition processes to exist, or be utilized". (Schiering, Buli-Holmberg & Bogner, 2007) Nonetheless, the authors' agree that even pre-language experiences provide a co-existence of cognition with meta-cognition, if the interpreter is familiar with the processes exhibited through demonstrated behaviors.

Examination of Cognition and Meta-cognition as Simultaneous Processes

How does the concept of cognition and meta-cognition occurring simultaneously happen? Let's first examine the term "developmental" with respect to cognition. The implication from studying Piaget (1977) is that various forms of cognition emerge as a child advances in age. In fact, the word "development" implies a progressive orientation in accordance with the aforementioned Piaget and then, Vygotsky (1978), and Bruner (1986) using the term

“scaffolding” as a metaphor to describe the “building of information” in a developmental fashion. The information-processing concept suggests that as children grow older that their use of learning strategies improves (Flavell, 1985). Once again there is strong implication in thought transference that becomes concretized in the idea that meta-cognition is a higher order of thinking and, therefore, could not happen until a person was at a particular biological-mental-developmental stage. In point of fact, children are looked upon as being those who develop through the assistance of teachers and before that, family members and friends. Subsequently, it seems logical that cognition comes before or precedes meta-cognition.

However, “The previously and generally accepted basic idea concerning cognition predisposing meta-cognition, is not necessarily correct, as some meta-cognitive processes co-exist ‘in’ action with cognitive processes” (Schiering, 2003). In pre-language situations the multi-faceted mind of the child may well be involved in reflection (meta-cognition), but the individual is not able to articulate that, except through observable behaviors, which are responses to a situation. Therefore, the key factor in determining the “simultaneous” cognitive and meta-cognitive processing concept as actually *co-existing*; is reliant in pre-language acquisition through inspection of an individual’s actions in settings that produce stimuli and resultant interpreted behaviors. In post-language acquisition, cognition and some meta-cognition co-existing rely on verbalization through explanation of a situation. Therefore, the key factor in determining the “simultaneous” cognitive and meta-cognitive processing concept as actually co-existing; is reliant in pre-language acquisition through inspection of an individual’s actions in settings that produce stimuli and resultant interpreted behaviors.

Dewey’s example of the baby with a ball illustrates the emergence of meta-cognition in a pre-language child. In this scenario a baby experiments, in a problem solving way, a ball—dropping, then it rolling away to test its motion and eventual recovery. Will an adult retrieve the ball? Can the child retrieve the ball? There is clearly in the pre-language child a testing the environment and problem solving to achieve a desired result, in this case retrieval of the ball. While to some observers this behavior by the child could be seen as more instinctive, to our eyes, this behavior is clearly representative of higher order thinking.

Still, another example would be an experience, which one of the authors had with her pre-language 13-month old grandson. Not much beyond the grunting and groaning phase and considered to be pre-language, he was toddling from the age of 10-months. One Sunday while visiting his grandparents his aunt observed his seeing the upstairs staircase blocked by a gate. Earlier he’d observed his grandpa opening that gate, his favorite dog of the three family pets directly behind him, and his grandpa closing the gate. Sometime later he saw his grandpa, but not the dog come into the family room. Looking for the dog, he toddled through two rooms and saw the gate to the upstairs was still closed. He pushed against the gate. However, he was not able to move it and wanted to get to the dog, who he believed was upstairs. He turned and saw his grandmother nearby. He went over to her as he tugged at her leg until she got up off the couch. He took hold of her index finger in his little hand. Leading her to the staircase he pointed to the gate and pushed it. “So you want to go upstairs?” his grandmother questioned. He responded with what seemed like a pleading look. When grandma pushed the gate open the boy smiled broadly and began taking the steps to get to the dog. Observing these toddler’s actions causes one to realize that the meta-cognitive process of problem-solving was in practice as the pre-language child sought out a solution to getting upstairs when first realizing (beginning awareness) that the steps were blocked with a gate and he wasn’t strong enough to push it out of the way. In fact, his

observable behavior indicated that he had several thinking processes and feeling ones occurring simultaneously. Emotionally he'd often demonstrated feelings of *caring* and *favoring* for this dog during past visits with hugs and holding him. He exhibited critical thinking with *initial decision making* when he tried to push the gate to get upstairs. Feeling *adventurous* and *assessing* the situation, his thoughts led to *analyzing* the problem, which was *solved* when he got his grandma to open the gate for him.

Extending the aforementioned situation and in order to fully embrace this concept of cognition co-existing simultaneously with meta-cognition, one needs to examine the term "development". Perry (1981) relates, "Development is by definition movement". As Bogner (2007) points out, "There is no reference to movement in either a forward or backward direction; just *movement*. Nonetheless, when one sees and/or uses the word, 'development' there is an implied comprehension in educational settings that development means to grow in a linear manner". "Herein lies a conundrum, because to develop is not necessarily to progress from one stage to another in a progressive fashion, but in this instance to develop in that cognition requires, by its very nature to be reflective, which requires movement laterally, as well as multi-directionally" (Schiering, 2007).

Originally, in 1996, Schiering created and later copyrighted (1998) a chart, *Phases of Thinking: Evolving from Cognition to Meta-cognition*. Here, Schiering provided detailed explanation regarding the terms within the chart were being exhibited, experienced, and/or verbalized through explanation, simultaneously, as opposed to progressively/ developmentally, as implied by the word "evolving", which appeared in the chart's title.

Schiering, collaborating with Buli-Holmberg (2007) and Bogner (2007) respectively and collectively expanded and then re-titled the chart: *Reciprocal Thinking Phases: Cognition and Meta-cognition*. This chart, with three phases and twenty-eight terms within it are operational zed to address cognition, memory, and comprehension for the purpose of focusing on learning goals. These address the questions of thought processes centering on cognition and meta-cognition being co-joined, reciprocal, and simultaneously experienced during everyday "thinking" and "feeling" situations.

"It is noted that regardless of one's cultural mores, geographical location, grade level, gender, or age; there are common social and societal realities that are influenced by the terms in '*Reciprocal Thinking*' and affect our belief systems through our thoughts, ideas, opinions, judgments, and feelings" (Schiering, 1998).

"*Who* we are as learners and *how* we learn are co-joined to reference the thinking and feeling of the Cognitive Collective. This co-joining addresses the question, in a finite sense, of "*What are you thinking*" (Schiering 1998, 2003, Buli-Holmberg 2007, Bogner 2007), and is relevant to guidance counselors when working with their students in the development of meta-cognition and also for exploring their relation to different realities in society. *A Model for Academic and Social Cognition*, takes into account the "now being" concept provides learners and teachers with the opportunity to examine *who* they are as individuals in educational settings, as well as social-societal ones. This is because the *Model* addresses reflective practices and experiential learning and teaching, along with reflection on the mutual exchange of teaching and learning, which forms *who-one-is* of these realities. The *Model* partially rests on the *culture* that is designed to develop thinking and the related learning that goes with it. The figure shows the initial graphic organizer illustration for *A Model for Academic and Social Cognition*.

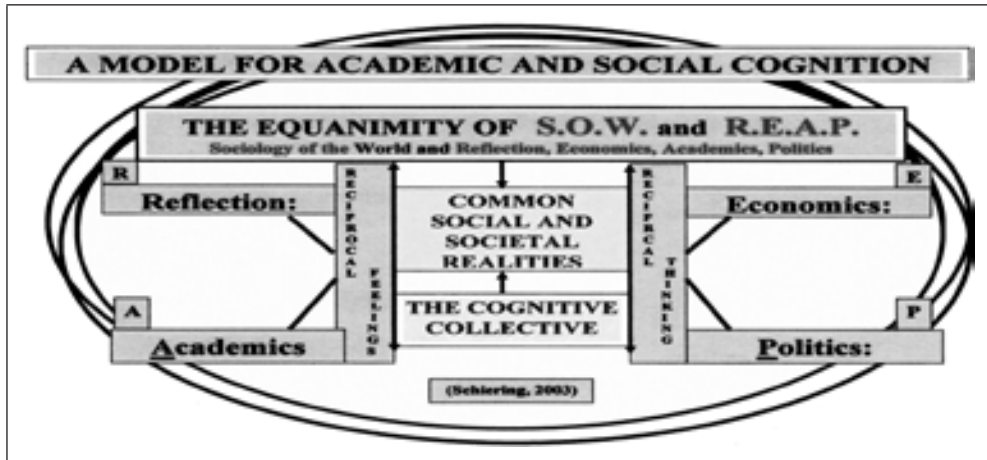


FIGURE 1. Graphic Representation of the Model for Academic and Social Cognition.

The above graphic organizer has the key terms that influence common social and societal realities of the Cognitive Collective.

Concluding remarks

This article began with the concept of the cognitive and meta-cognitive processes being inherent in a “thinking” population. This is for the purpose of collective reasoning, which in turn, influences everyday happenings and belief-systems on the home, community, state, national, country, and world plains. Then an examination of “cognitive processes” was addressed regarding cognition being defined as having components requiring: attention, orientation, memory, and problem solving. This was followed by, “Why we have cognition?” Here it was determined that this is the case in order to function as thinking, feeling, human beings with others of our species. Key factors in this article include: pre-language cognition, the linkages of cognition and meta-cognition and whether one precedes the other, comprehension, memorization and its connection to comprehension with two examples of memorization strategies, and an explanation of the difference between cognition being developmentally imposed and simultaneously imposed, with detail regarding how the later is normatively the case. All of these issues should be taken into account by guidance counsellors when acting as consultants for teachers or working directly with students to enhance their learning process.

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