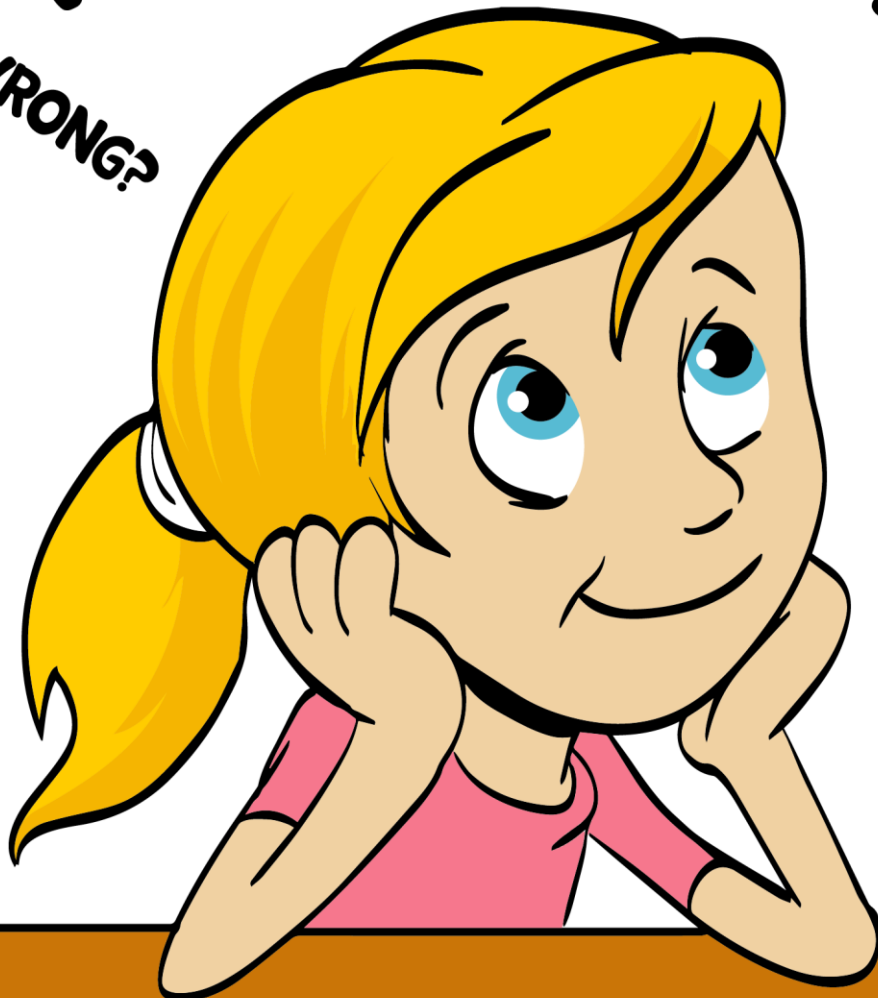


CRITICAL THINKING

Scientific Skepticism

WHY?
WHAT?
HELPFUL?
RIGHT?
WRONG?



CRITICAL THINKING: SCIENTIFIC SKEPTICISM

GOALS

1. Recognize the principles of Critical Thinking in scientific skepticism and the problem-solving process.
2. Determine the progress of Critical Thinking in the evolution of effective leadership.
3. Integrate critical thinking principles into leadership practices.
4. Question the need and understand the process for consultant involvement.
5. Increase awareness regarding the concept of due process and “at-will” employment.

KEYWORDS FOR APPLICATION

1. Critical Thinking—Definition and Process, Recognition, Teaching
2. Scientific Skepticism
3. Problem-Solving Process
4. Effective Leadership Process
5. Reasoning and Logic
6. Origin of Thinking
7. Degree of Confidence
8. Impact of Existing Brain Patterns
9. Knowledge Management
10. Organizational Management/Skill Management
11. Abstract Critical Thinking
12. Concrete Thinking
13. Abstract Thinking
14. Dualistic Thinking
15. Conceptual Thinking
16. Holistic Thinking
17. Cognitive Biases
18. Due Process
19. “At-Will” Employment
20. Consultant/Consultation
21. Critical Thinking Walks
22. Heuristic Biases
23. Cognitive Biases
24. Confirmation Biases
25. Probability
26. Risk Management
27. Dependent Events
28. Nurse Administrator (DON)
29. Nurse Leader (RN)
30. Boiling Frog Effect

DEFINITION OF CRITICAL THINKING

A simple analysis of the Critical Thinking process involves an analysis of facts to form a judgment.
HOWEVER—THINKING IS NOT AS SIMPLE AS YOU THINK!

Critical thinking sounds like a simple procedure until Steven Novella, MD's scientific explanation of "Thinking." This academic neurologist from Yale School of Medicine gives us scientific information that complicates thinking. As the president and co-founder of the New England Skeptical Society, a nonprofit educational organization dedicated to promoting the public understanding of science, his approach to the *Science of Critical Thinking* added a dimension to the Critical Thinking process as stated herein.

COGNITIVE BIASES & SKEPTICISM

Nobel prize-winning physicist Richard Feynman wrote it clearly in 1985, "The first principle of Critical Thinking is that you must not fool yourself --and you are the easiest person to fool!" Cognitive bias is related to a pattern of deviation in judgment whereby our inferences about other people and situations occur *illogically*. The involuntary way of thinking produces inaccurate distortions of people, surroundings, and circumstances. Therefore, we tend to draw on our subjective social reality to form our perceptions. However, it is like wearing blinders when we consider only our thinking.

The most productive method of *solving a thinking problem* is known as *skepticism (uncertainty)*. Using the techniques of skepticism helps us to avoid the pitfalls of thinking. Skepticism involves hesitation, questioning, doubting, and suspicious distrust. Learning to use *skepticism and rational inquiry* will help nurses and nursing leaders see information more clearly and hopefully arrive at the truth.

We often wonder why people change their minds. However, we often do not give people credit for understanding the need to change their minds due to personal skepticism, which causes an appropriate change of thought or direction. Politicians are criticized for making changes in a direction and process—could they have experienced skepticism? Intelligent people know when to question themselves and hesitate to understand their behavior by pursuing Critical Thinking endeavors.

The Critical Thinking process we often use is influenced by what our upbringing tells us is right or wrong, correct or incorrect, true or untrue—or some other relative dichotomy. It includes our acquired communication skills, reasonableness, logic, rational thinking, emotions, memories, and recognized behavior patterns.

INSIDE AND OUTSIDE VIEW OF PROBLEMS/SITUATIONS

We all think regarding the "inside" view versus the "outside" perspective. It means that when we approach problems/situations, we use our "inside" view (past impressions, experiential outcomes) to determine what we *think* will be the outcome(s). However, when we are involved in the problem/situation, we experience the "outside" view, which usually includes many more complications, conditions, stumbling blocks, etc., than we thought possible. The "outside" view piles on the things we did not expect but are products of the reality of the world. Through the learned optimism of our

“inside” view, we proceed optimistically with life. Through our ultimate “outside” view, we often see the problems/situations as they exist in the outside world. Perhaps, through a combination of the “inside” view and an “outside” perspective, our thinking could be more realistic and ultimately provide us with practical outcomes---an outcome of problem-solving and Critical Thinking.

An example of an “inside” view/perspective would be purchasing a home considering the monthly payments, which we believe affordable. However, with the “outside” view after purchase, the furnace stops working, the garage door does not go up and down, the water pipes need replacing, and you lost your job! See how the realities of the “inside” view differ from the “outside” view? To think critically through similar situations, these differences (inside and outside considerations) allow more realistic decisions through Critical Thinking. It is all a matter of perspective.

Now—let me share what leaders are usually not taught when doing the Critical Thinking aspect of their job. So, with a nod to Paul Harvey, here is THE REST OF THE STORY.

CRITICAL THINKING AND ITS EXPECTATION FOR SUCCESSFUL EMPLOYMENT

Over the past approximately thirty years, Critical Thinking aims to arrive at conclusions as true as possible through reasoning and logic.

If we understand Critical Thinking science concepts, we are more likely to meet numerous supervisors’/superiors’ stated job requirements. True leaders have verbalized and expect their staff to think critically as one of the *most important elements for successful employment*.

WE ARE OUR BRAINS

We are our brains because we use this organ to make decisions every day and for every purpose. This most complicated organ can think, feel, infer, believe, calculate, remember, induce, and deduce. This magnificent organ does everything that we know as THINKING.

In science, however, there is no thinking that brings about absolute certainty or evidence. There is no fundamental right and wrong; there are only *degrees of confidence*. Even though we seek information, in reality, it is always incomplete. It is a JOURNEY OF PROCESS to gain empirical (gained from observation or experience) knowledge—NOT A DESTINATION. In other words, we learn as we go, as we experience, and our brains take in information, reorganize the data, and cause us to make conclusions. It is the same idea as intuition—the leader with the most experience usually has the most subconscious cues to be more intuitive than the new leader because you learn as you go.

Knowing Critical Thinking means that many of our fundamental beliefs are simply outcomes of no more than just brain usage. As a result, our opinions are often flawed. We often construct what we see, hear, feel, and experience into a narrative that meets our *desired or already-established* assumption instead of making an assumption and proving it by what we see, hear, and experience.

IMPACT ON THE BRAIN BY EMOTIONS, MEMORIES, PATTERNS

As sensitive human beings, everything taken into our senses is filtered through our ego (self) and emotional needs. We want to feel good, feel wanted, and be right. However, the thinking that is the outcome of our ego and personal needs is not always true-- it can be false. We might feel better by responding to *our needs*, but doing so often produces fallacious thoughts and feelings. Therefore, making Critical Thinking errors is inherent as we seek our comfort, love, and self-esteem.

The memories we have in our brains can also be flawed. Memories are altered and fused to make the picture that *we want to see*. We often hold that false belief through our delusions or false beliefs against all evidence. As a result, our memories often lie to us, and—they are often highly unreliable.

Seeing brain patterns is an ordinary happening for humans. If a person is crying, walking the floor, muttering angry words, we often put the behaviors together to represent what we think is wrong or experienced. We have learned many thousands of patterns in our life that we believe give us answers and reasons. We have learned these patterns through knowing our behavior, what the action means to us, and validation through experience with others. We then easily project onto others' behavior regarding what the observed behavior most likely represents to us. We often see patterns that are not there and pick up on cues that we *think* tell us what is wrong. Therefore, we believe we are thinking critically.

CRITICAL THINKING, RECOGNIZING BIASES, AND THE SEARCH FOR TRUTH

If you are sure that you know the absolute truth, the causes, or the reasons for behaviors, then your Critical Thinking through a scientific approach is *OVER*. Be comfortable with uncertainty due to the many limitations of human intelligence. Be flexible and open to new ideas and information. Regularly update tentative conclusions as you receive new ideas and information. Universal Entropy says that everything changes. Nothing ever stays the same!

Critical thinking is a rigorous process used to handle the complexities of the world. It is compelling content and present in every scientific method. The process is empowering! If you truly understand the ebb and flow of information you constantly receive through the process of Entropy (constant universal change), your Critical Thinking will forever be active. The search for truth never ends. Recall the saying—"The Truth Is Out There" ---Well, it is out there somewhere in an ever-changing format called **Entropy and by the influences of our personal biases (prejudices/preconception/ prejudice)**.

NOW—WHY IS IT IMPORTANT FOR YOU, AS THE LEADER OR EDUCATOR, TO KNOW AND RECOGNIZE BIASES IN YOURSELF AND OTHERS? BECAUSE:

A LEADER/EDUCATOR IS HIRED TO LEAD—AND BECAUSE YOU ARE HIRED TO LEAD, YOUR LEADERSHIP ROLE IS INTENDED TO BE MORE THAN JUST AN ORGANIZATIONAL DECISION RELATED TO EMPLOYMENT OR STUDENT RETENTION, CONVENIENCE, BOARD TESTING SUCCESS, OR ORGANIZATIONAL INVESTMENT. YOU ARE HIRED AS A LEADER/EDUCATOR BECAUSE YOU ARE CONSIDERED TO BE SPECIAL—THAT MEANS YOU SHOULD KNOW "THINGS" THAT OTHERS MIGHT NOT KNOW OR UNDERSTAND. YOU ARE THE MENTOR, GUIDE, TEACHER, AND INTELLECTUAL DIRECTOR TOWARD ALL POSITIVE OUTCOMES. KNOWING HOW TO RECOGNIZE, TEACH, ENCOURAGE, AND PROMOTE UNBIASED

CONTRIBUTIONS & DECISIONS TO THE WORK SETTING WILL HELP TO ASSURE YOUR EFFECTIVE ROLE IN CREATIVE, ACCURATE, AND ULTIMATELY A GOAL FOR ALL CONCERNED. THIS ABILITY IS CRITICAL THINKING!

RECOGNIZE BIASES AND CALL ATTENTION TO THEM WHEN YOU HEAR OR SEE THEM. GUIDE OTHERS TO INCREASED CRITICAL, UNBIASED, AND THE NEED FOR ONGOING CHANGES IN LOGICAL THINKING!

IT IS A COMMON HUMAN TENDENCY TO BE BIASED AND NOT CONSIDER PROBABLE OUTCOMES. HOWEVER, THE RECOGNITION OF BIASES AND CONSIDERATION OF STATISTICAL PROBABILITY AS A PART OF A THINKING PROCESS ADDS A NEEDED DIMENSION TO A CONTINUAL AND THOROUGH REVIEW PROCESS.

TO USE THESE SKILLS IN THE PROCESS OF CRITICAL THINKING MIGHT BE THE SAVING FACTOR IN SAVING LIVES AND A LEGAL CHALLENGE.

HEURISTIC BIASES

We tend to want to use subtle and powerful personal “shortcuts” in our thinking and problem-solving called *heuristics* that, by definition, tend to bias our thinking in specific ways. It is a way to simplify a complex world! These shortcuts could cause false conclusions.

Our worse bias is a bias that we are not aware of possessing! A “heuristic” (personal thinking shortcut) will point out an area of *personal interest* that, by itself, is causing a distorted pattern of thinking that decreases the process of Critical Thinking. Heuristic thinking is VERY prevalent during the decision-making process!

It is exciting and necessary to recognize heuristic behavior in yourself and others as the leader maintains a sense of logic to organizational decisions. The leader who is “controlling” and lacks professional flexibility often will use heuristics to make unnecessary quick decisions that fail to consider more specific Critical Thinking patterns. An example might be hearing the words, “We have always done it *that way*”!

COGNITIVE BIASES

Cognitive bias is when a person takes the path of least resistance or a mental shortcut in thinking rather than a formal logical way of thinking. It affects the way we argue and the way we think. Cognitive Biases mean *limiting* personal rules by which we make decisions and solve problems becoming our main area of interest. This type of thinking produces *illogical results*. Our shortcut may be accurate much of the time—but, the outcome *could* be dangerously flawed. There is an effort to find a simple meaning of things and the need for the world to make sense and have meaning. Remember—a cognitive bias is a first mental approximation of your perceived truth but may not be strictly true. It might not ultimately result in the best decision! It takes extra energy to step out of this limited thinking into more logical ways of thinking.

Some Examples of Cognitive Biases are--

“Anchoring” -- This causes you to focus on one prominent feature or person. One decision or judgment is often the single feature that will determine final choices. It oversimplifies the decision-making process but provides the “anchoring” bias for making a decision. Impressive—the *first* number (1-2-etc.) we encounter tends to give an anchor bias to our latest thinking on any subject, subconsciously, in a way that we are unaware of. Identifying the anchoring bias in ourselves and others will increase our critical thinking awareness and abilities beyond just one prominence into a realm of more realistic alternative considerations. (This focus on one prominent feature of a potential employee, employee evaluation, and an employee termination process is often the reason for employee retention, promotion, hiring, and firing.)

“Availability” -- This causes a leader to assume that if the potential employee can think of an *example* regarding the one selected topic, that example must be representative and supportive of the prominent feature or person. That example (in their way of thinking) gives credence, so the decision must be right! (Notice how often during the hiring interview, the potential employee is asked by someone to provide an example(s) of what they have done to be a success in some selected behavior(s).)

“Exemplars” -- These are vivid and dramatic examples—more so than just “availability heuristics.” These examples have a much more significant influence on your judgment and decisions—and even more than statistical information or an arithmetical rate. Sometimes, just a story about a prominent feature or person is enough to significantly influence your judgment and decisions. (Watch the behavior of a group to witness the “WOW” factor). Also, this is known as the “halo effect” (if there is a good/positive example) and a “devil effect” (if there is a bad/negative example.)

“Escalation of Commitment” is a personally intense and escalated commitment to a thought or situation. It occurs when there is an over-influence in our lives of a previous commitment—even if the commitment is a losing proposition. In our minds, it becomes the easiest path of acceptable thought. However, it requires an intensity to that commitment that must be maintained, no matter how “crazy” it may be. Remember that Entropy says that all things are destined to deteriorate and never last forever without effort, regardless of the power or our escalated commitment. True leaders have an open mind regarding the need for change, which encourages creativity and logical thinking—therefore, no intense escalation of commitment. Successful leaders and employees are to have an open mind to *new ideas and ongoing growth*.

“Representativeness” -- There is an assumption that all causes must resemble effects. Let us say that more education must equal more expertise, and more hours worked must equal more skill, or age must equal maturity. Be careful—often, the two do not support each other! If an *effect* is emotionally charged, it is assumed that the *cause* is emotionally charged, also. It is not necessarily so!

“Effort” -- There is often a higher value placed on items if they require more significant effort to obtain. Examples: If it took you three years to meet the criteria for obtaining or affording a new device/machine, that item is usually considered more valuable. If you have worked ten years to become the leader, that position (somehow) has a higher value than being hired as a 20-year old new leader in that same position.

CONFIRMATION BIASES

Confirmation Bias is one of the most pervasive biases in our thinking. It is one of the most important to understand because it has to do with our *belief system*. This bias has us accept information and events that we feel support our beliefs and interpret them favorably when we believe something. We confirm our beliefs or find errors to dismiss the belief. If we *believe* in the information or event, we accept it as “good.” If we do *not believe* in the information or fact, we look for potential flaws that enhance our non-belief to dismiss the belief. It causes a thorough investigation of our perceived data to what we have determined and what we believe *is a meaningful and reliable conclusion*.

Some Examples of Confirmation Biases are--

“Toupee Fallacy” -- This says that if we notice just one man wearing a toupee, we are biased in our decision, and our belief system means that we can reliably confirm the recognition of all men who wear a toupee. (But, how about all the men who wear a toupee that we do not notice?) When trying to do rational thinking—the unrecognized portion of toupee-wearing men is not part of the considered data—therefore, this review is biased.

“Confirmed Religion” is a part of a personal religious belief system and is biased toward other religious belief systems.

“Congruence Bias” -- There is a tendency to test our theories about specific things but not test alternative theories. This bias leads people to hold firmly to their conclusions that have no statistical basis in reality. (Ideally, to test a theory, there must be several hypotheses in addition to our own—perhaps different hypotheses from other members/employees.)

“Exposure Effect” -- This is a bias related to familiarity. The more familiar we are with things or people/persons, the more favorably we tend to rate the things or people/person. It is why many organizations only advance employees from within the organization. Nepotism also causes this effect due to family and friend exposure.

“Choice Supportive Bias” -- There is a tendency to downgrade the second item/person on a list of considerations. For instance, when it comes to deciding between two items/people and selecting our first choice, we tend to increase our positive assessment of the first choice and downgrade our second choice assessment. Another interesting factor is that when the *first choice is unavailable, the second choice is often skipped over, and the original third choice becomes the item/person of choice*. Is this because the second choice had already required the mental effort of downgrading, causing the third choice to be selected?

“Fundamental Attribution Error” -- This is when there is a tendency to explain another person’s actions according to their personality traits while downplaying the situational factors. Conversely, we tend to justify our behavior with situational factors and downplay our personality traits. For example, if our employee forgets to lock the door, we might claim they are forgetful (personality trait). However, if we fail to lock the door, we might argue that we could not find the keys, not that we are forgetful.

“Optimism Bias” -- We love wishful thinking regardless of our logic and evidence. So, we seek magical and possibly implausible outcomes. In other words, we are positively optimistic. An example might be that some people seek treatment for ailments even though there is no proof that the treatment works.

“Barnum Effect Bias” -- In general, there is a tendency to interpret vague and general descriptions to be more highly accurate than specific statements. We look for examples to support what we are being told. Then, we take those examples and use that information as confirmation that these vague descriptions are accurate. An example is an astrological chart.

COMMON-SENSE PROBABILITY AND ITS USE IN PROBLEM-SOLVING

The concept of probability is concerned with an abstract approach and ideas that identify--

1. A degree of risk that something will happen in a given situation--(and)
2. A relationship existing between two characteristics (variables) and not if one factor causes another factor--(and)
3. A probability of predicting an event.

When we determine a risk, we measure the degree of likelihood of loss or unsuccessful outcome. In some organizations, this is called Risk Management. With the use of probability science, optimal results are more likely. You can base the information on a full set of data or a random sample.

Why should a leader be concerned with the concept of determining risk or probability? Because there is risk involved in everything we and others do. By identifying high risks that tend to interrupt quality, we can prevent errors and maximize positive outcomes. Identification of risks and their resolutions are determined by recognizing reasonable probabilities and not a statistical formula.

In the process of considering expectations, we have two choices—

1. Leaders can try to manipulate *organizational outcomes* (a terminal approach and outcome) OR
2. Leaders can manage *employee behaviors* that will ultimately produce a positive administrative result (a process approach and effect).

In each case, leaders anticipate others’ responses or ongoing happenings through strategic Critical Thinking and confidence in observed behaviors and simple generalized statistics.

Analyzing controlled statistical data is a mathematical skill and the most common approach in determining positive terminal and long-term outcomes. However, collecting statistical information requires a statistician to carry out all aspects of the study. Relying on leadership intuition and learned effects by experiencing and watching employee behavior and trends is the most common (and most natural) approach in determining risks and, thereby, methods that help assure positive ongoing processes that produce positive organizational outcomes. One system (terminal or process) is not exclusive of the other, and it is best to intertwine them into an intrinsic pattern for success.

A Common-Sense Positive Approach to Understanding Employee Probability—

The probability of determining employees’ future positive behavior is determined by knowing that employees *usually do what works best for them at any given point in time*. The reason can be personal or altruistic. This human behavior (good or bad) tends to repeat itself. It is a universal concept that explains most human/animal behaviors.

There is a high probability that the behavior repeats itself because it has worked best or favorably for the employee at another given point in time. One might ascertain the likelihood that past personal work success will breed future work successes through similar behaviors, or past personal work mistakes or misbehavior will breed future work mistakes or misbehavior. Once negative work behavior is recognized, there will be a better understanding of the behavior. Then, there can be a leadership plan and agreed-upon employee goals to hopefully improve the situation. Leadership guidance is necessary if past mistakes or misbehavior are redirected to be possible areas of employment success.

On a positive note and supportive of leadership success, there is something that increases positive employee behavior. High positive possibilities of future successful goal attainment and expected positive response of employees are *often pre-determined by a leader's past successful leadership strategies. Successful strategies are positive thinking, leadership confidence, rewarding positive employee behaviors, and a respectful attitude about employees' positive worth and abilities. The leader also tends to learn what works when directing their staff. Suppose the leader recognizes and rewards positive employee behaviors that have previously produced positive employee behaviors and success in their work. In that case, there is a high probability that these same positive behaviors by employees will continue if supported by the leader. It is known as positive reinforcement. It encourages employees to do or continue to do the positive actions that work for them.*

Every employee has something that "works" in a positive way for them—the job of the leader (on a positive note rather than problem identification) is to determine what positively "works" for that employee.

IDENTIFYING THE CORRECT/RIGHT/MAIN PROBLEM

A leader's approach to resolving a problem or correct action does not always require numbers and calculations, just observation and common- sense. A group process is often used to identify the correct/right/main problem.

Step I: Identify the correct/right/main problem.

Enhance the process of non-biased critical thinking. First, make a list of the problems. Note that the one problem to be considered "the main problem" (if resolved) will usually solve some or most of the remaining problems—known as "Dependent Events." A Dependent Event often relies on or is caused by another event/problem. Therefore, there is a high probability that if the "main problem" is identified, a high number (or all) of other listed issues are automatically resolved. The decision to identify this problem can be a personal leadership decision or a group decision.

Conversely, the problems are known to be "Mutually Exclusive" if there is a high probability that one problem's resolution does not affect the other problem(s) identified.

Step II: Determine the most likely action choice(s) to resolve the correct/right/main problem.

OTHER CONSIDERATIONS WHEN TEACHING EMPLOYEES THE CONCEPTS OF CRITICAL THINKING

When a leader confronts an employee about anything, recent research tells us that the leader can expect the confronted employee to hold onto their current beliefs even more strongly as an outcome of the confrontation. However, the confronted employee might not understand that their perception of a situation changes from time, experience, and recent happenings. Entropy has occurred! Universal Entropy causes everything to change! Nothing ever stays the same—not even our perspective of a situation or happening. Therefore, the confronted employee’s memory and feelings about a belief are most likely *scientifically* flawed. Most often, an employee’s perspective meets the employee’s ego and self-esteem needs.

Confront an employee about negative behavior. *Encourage and teach* the confronted employee to think critically about their own more relevant *positive* (not negative) actions. Recognizing their positive behaviors will, sometimes, help to decrease negative beliefs and behaviors. The leader can then understand, confirm, and support the positive aspects rather than emphasize the negative behavior.

The request that encourages an employee to consider their positive behavior is for the leader to request the confronted employee to “Tell me (preferably in writing) why or how I might be wrong in my perception of your negative behavior/perceived problem.” Personal evolution to a correct and positive Critical Thinking approach (in all of us) is an ongoing and changing process that is *teachable*---but not easy. We all tend to be personally offended by what we perceive to be inaccurate or incomplete information regarding our perceived negative behavior.

To help alleviate some of these feelings, some leaders require a written self-evaluation of the employee’s job description as a requirement *before* a leader’s job evaluation occurs. These self-evaluations encourage positive comments about the self. A final employee and leader review of the mutually completed job description evaluation is usually required to complete this assignment.

CRITICAL THINKING IN ORGANIZATIONAL MANAGEMENT

Knowledge Management (KM) became a recognized concept that started in 1999. The idea involves capturing knowledge in the organization and applies it regarding developing and sharing information. The idea most frequently focuses on the understanding that promotes the organization’s mission and goals while making the most of knowledge gleaned through critical thinking activities. It is often present during “Think Tanks,” where employees share ideas that promote or deter goals.

Computer data also captures data. Most recently, the capture of medical data (knowledge) through electronic/computer devices in the health care field (instead of a written document) is the most critical factor in researching medical data through the sharing of patient information. This cumulative knowledge promotes decisions to increase life longevity and certain drugs and therapeutic regimes’ effectiveness.

The Brain Injury Association in New York encourages critical thinking as it moves a person from concrete to abstract thinking --e.g., Why is Sally late? (concrete) to why people are often late (abstract). People with conceptual, critical thinking skills can use *transference of knowledge* to different situations. It removes a person from the here and now to a reflection on events and ideas. This teaching is helpful for nurses in the learning of general concepts related to nursing care in a variety of situations.

Dualistic thinking is when a person can understand two opposing concepts—e.g., good and evil, right and wrong. Facts and figures/numbers represent this level—not abstract concepts that require transference of knowledge to different situations. This teaching helps nurses recognize two or more optional nursing behaviors to determine the most accurate/best of the options presented.

Conceptual thinking is the ability to identify patterns or connections between seemingly unrelated objects. It enhances creativity. Administrators use this type of thinking to expand ideas and methods of administration. For example, have you ever looked at an item that is not intended to have a face and see a face in the object (Pareidolia) or see patterns or connections in unconnected data? (Apophenia). In 1976, NASA sent Viking I and Viking II to Mars. The images on Mars appeared to show a face in the rocks. These were patterns of unrelated objects.

Holistic thinking has to do with recognizing the *interconnectedness* of forms, systems, trends, and objectives. It is a putting of things together. It is the opposite of analyzing, which involves breaking down a more extensive network into its detail. This interconnectedness of symptoms often results in a diagnosis or a need for a specific nursing behavior.

What does all of this mean to the facility/organization or nursing practice and adequate functioning? First, let us realize that an organization's employees are—and they do MAKE UP-- the very facility/organization itself. Second, the employees' thinking patterns can either stagnate the thinking and progression of the facility/organization or enhance and move a facility/organization through difficult times and onto greater heights.

Mentally aware of employees' thinking patterns allows administrators to pick and determine who to select for different committees or do specific jobs. Holistic thinkers are good at efforts to unite employees for a cause. Analytical and abstract thinking employees are good at determining the cause of problems and perhaps setting goals. Having employees with the ability to know how to capture knowledge and apply that knowledge to promote goals is good.

The smart and critical thinking leader *picks and chooses* employees and committee members with specific talents to move an organization forward. It is *knowing the essential thinking talents* of employees that is a challenge for the administrator!

Understanding and using employees effectively because of their Critical Thinking abilities separate the exceptional leader from just a leader who works on administrative survival fringes.

LEADERSHIP PROCESS AND THE RELATIONSHIP TO CRITICAL THINKING

The leadership process, as a scientific methodology, must recognize the professional realm of leadership. It is vital to have a sound and a recognized body of knowledge. A true leader is no longer known as a person elevated to a leadership role as a convenience or just because of longevity. The professional leadership role is on the threshold of one of the most profound leadership knowledge formation movements. No longer should any nurse/person be placed in a leadership role because they are just "faithful" to their position. A nurse/person should have the intellectual skills to perform, knowing the theory behind their decisions. To JUST DO is not enough—to **understand why** you do what you do, is divine!

First-- Leadership process includes the following dynamics of Critical Thinking: (Nursing Process)

1. **Assessment:** What is the stated chief complaint/problem? Is the basis of understanding related to memory or an ego problem? Is the problem stated as current or past? Does it involve intuition? Has this problem ever existed before, and to what extent? If so, how was this similar problem resolved last time successfully? (Read the document on intuition by this author.)
2. **Objective:** What do you, as the leader, see, hear, feel, or observe in your assessment regarding the stated problem?
3. **Name of the Problem:** Label the problem as an outcome of the assessment and the actual content. Communication skills by the leader and the person identifying the problem are essential.
4. **Goal(s):** State and write what will improve once the problem is resolved. Use the RUMBAS criteria of (R) Reasonable/Logical, (U) Understandable/Comprehensible, (M) Measurable/Quantifiable, (B) Behavioral/Observable, (A) Attainable/Achievable, and (S) Specific as an acronym to encourage a thorough critical thinking approach.
5. **Plan:** State and write a procedure or process to resolve the problem. To help assure success, use the RUMBAS criteria (again). When a plan is written, it should go from simple behaviors to more advanced complex behaviors. It is a plan of progressive steps of the process and human behavior.
6. **Implement the Plan:** Communicate expectations and related accountability to follow the plan.
7. **Evaluation:** Determine the extent of the implementation of the presented plan. Again, assess what needs to be changed to *meet* the goal if the goal is not met.

This process is dynamic. That is, it is ongoing, and all aspects of critical thinking are going on constantly. Needed changes to any part of the leadership process could occur according to new information. Don't be afraid to change your mind as a leader—it is a critical thinking product and outcome!

Second-- Leadership process is known as Evidence-Based Leadership:

Leaders are encouraged to make informed critical thinking decisions by learning from what other leaders have researched and have learned, as published by Duke University.

1. Ask structured questions about the problem.
2. Acquire the information you receive about the problem using structured open-ended questions that cannot be answered by a simple “yes” or “no” but require a verbal, more extensive verbal response.
3. Appraise all information regarding the problem for validity and reliability. That is, does it measure what it purports to measure (validity) and, if measured, again and again, would yield the same results? (reliability)
4. Apply the best evidence you acquire to the critical thinking process.
5. Evaluate information after performing critical thinking skills by doing a self-audit and peer assessment.

BOILING FROG EFFECT

As a result of critical thinking and the universal process of Entropy (everything changes—nothing ever stays the same), new administrative changes will need to occur occasionally in a facility/organization.

Changes can be traumatic for some employees. The comment is sometimes heard, “You just learn to do something, and then they change it!” Yes—it can be disruptive for the employee seeking comfort, repetition, and predictable behaviors!

However, consider this analogy: Put a frog directly into boiling water, and it will jump out immediately. Put a frog in tepid water and warm the water slowly (incrementally) to boiling, and the frog will remain in the water—even until it dies. The metaphor is clear as an outcome of Critical Thinking.

1. Use a slow adjustment to new job expectations and performance. Changes are most tolerable to employees if done over a reasonable amount of time and in an orderly, meaningful manner. The effective method in which changes occur requires employees to know the facility/organization’s goal(s) and find personal meaning in the incremental changes that meet the goals.
2. “If you cannot take the heat, get out of the pot! (some say kitchen). It applies to staying or going as an employee within the organization—the Jump or Adjust Syndrome.

CONSULT OR NOT TO CONSULT

Sometimes we want to be told what to do. Who better to inform us than a carefully determined consultant—we think!

A consultant, by definition, is a person who gives professional or expert advice. It is someone who knows increased information about the subject/object we are exploring through our critical thinking filters.

Following are some guidelines to consider before making the expensive move to pay a person for their understanding and perspective of a situation.

There have been sharp observations by this observer (author) where leaders and business groups have chosen a consultant to give advice. The advice can be helpful; however, a painful outcome says that the consultant is not adequately informed about the need or situation’s intricacies. The lasting learned residual from these experiences is: “BE CAREFUL.” Before making a decision to use or not to use a consultant, consider the following:

1. Is there someone in the community or area that can help with the need, or can reassignments be made in the facility/organization so that the problem/question can be addressed by those who know the problem, situation, and ability to solve the problem/question?
2. Does this consultant know more than the individuals experiencing the problem/question?
3. What evidence do you have that this person is the best consultant to help you solve a problem/question?

4. Is the money you will be spending worth the information you think you will get from the consultant?
5. Will the money you spend to acquire a consultant be worth the strain on any part of the project's needs or budget?
6. Does the consultant understand your specific problem's dynamics, personally, or is the information you will be getting from a consultant's experience from another happening in another geographical situation with different norms, cultures, and history?
7. How much money will it cost to transport the consultant to and from on-site locations?
8. Will this consultant speak positively on your behalf without deferring to political correctness or saying what will make them (consultant) look good in the eyes of others rather than telling the truth?
9. Do you need a signed contract with specifics to protect the accuracy of the consultant's contribution and the intended length and goals of the consultant relationship?
10. Do you need an agreement that will allow immediate withdrawal from the consultant's contract for any reason?
11. Do you need to state the need for professional or expert advice in the consultant's contract *only* and not intervene in the project process?
12. To what extent do you expect the consultant to maintain privacy during and after the consultation?

The concerns are endless. This observer (author) has seen cases where consultants *who are not involved or had no direct information about a situation are hired to advise*. Long-distance or lack of close physical and geographical location can lead to a lack of insensitivity to a consultant's understanding of the problem/need. At the same time, being too close to a situation in any respect could hinder objectivity.

Other problems might be noted when the consultant can oversee and give direction to the entire process they have recommended. Such allowance to conduct the oversight and direction of employees could lead to the nurse administrative/leader's possible lack of carefully reviewing recommended consultant processes before implementation. The nurse administrator/leader of the facility/organization gives away POWER and control of execution of a process when a consultant is encouraged or allowed to give direction to the process rather than just recommending or advising.

It is not to say that consultants do not/cannot fill a needed advisory role. However, this document does warn regarding the careful consideration of consultant use, limitations, and careful consideration of their fundamental and controlled contributions, which grants them *unprecedented power*.

The critical thinking process relates to dualistic thinking—the possible good and not so good of the entire process. Conceptual thinking occurs when the administrator/leader can take the consultant's information and make a useful connection to applying the knowledge to the facility/organization's unique situations.

CRITICAL THINKING DURING THE EMPLOYMENT AND JOB TERMINATION PROCESS

In the employment situation, due process is a legal principle that respects legal rights, fairness, and treatment owed to any person according to the law. This process involves legal proceedings that are carried out regularly and by established rules and principles. Therefore, the employee must know their due process rights during the employment phase and upon possible employer job termination upon initial employment. Recognizing the connective nature and explaining those due process rights of employment *and* job termination is a form of holistic thinking regarding legal due process.

The due process rule of law in the United States dictates that an employee automatically relinquishes “due process” *upon job termination* if the facility/organization is an “at-will” employer. The “at-will” contract means that an employer can terminate an employee’s employment at any time for any reason, except an illegal one, or *no reason* without incurring employer legal liability. Under this same “at-will” employment understanding/contract, the employee (also) is free to leave a job at any time for any reason with no adverse consequences. It is a mutual understanding that an employer should have with a new employee upon hiring. In other words, regardless of whether *it is or is not* stated by the employer as a verbal understanding or placed in a written contract, the agreement or job contract is *presumed* to be an “at-will” understanding/contract in the United States.

In most Montana situations, an employer’s employment termination can be contested by the employee if the employee completes a job probation period. It provides a good reason in Montana’s State for an employer to have a substantial job probation period in place, in writing and known by the employee. The leader/employer needs to know and understand the probationary period. The job retention past that stated period is carefully considered. The leader also has a responsibility to do frequent feedback and job compliance evaluations related to the job description to ensure an acceptable degree of job description compliance during the probationary period.

It behooves an employee to clarify the “at-will” intentions before signing an employment contract.

This forward critical thinking process provides leaders with the stated need to be forthright with employees regarding their continued employment intentions past the probationary time. It requires employees to enter the employee scene with a clear understanding of the working relationship with a facility/organization.

TEACHING NURSING STUDENTS CRITICAL THINKING SKILLS

What do you do with a student who passes the nursing course entrance test with a relatively high score in the sciences that have been proven the best predictor of nursing academic success and performs poorly in nursing courses? The measure of “poorly” often has to do with a student’s ability to think critically. Thinking critically is a process required of nurses to think through the nursing process and make nursing decisions to maintain, improve, and even save lives. No wonder the National League of Nursing puts a high priority on critical thinking skills!

Suppose a student is warned at the beginning of their academic nursing courses that there is a *high expectation* of critical thinking participation, ability, and accuracy in applying those skills in their educational situation. In that case, we all should understand that students (and children) most often perform in a manner of expectation—and the expectation is without question. Nursing students have a

reason to succeed to meet their self-imposed goals. It is appropriate for a nursing instructor to require classroom intellectual critical Thinking. It includes requiring students to practice writing critical thinking multiple-choice tests, taking multiple-choice tests, and defending their multiple-choice answers. There are many ways to teach critical thinking as an important intellectual skill to carry out the correct understanding of nursing science. Also, challenge critical thinking in the clinical areas.

Faculty-shared government decisions are one way to determine the extent of teaching critical thinking expectations. However, suppose a nursing faculty are not cohesive enough to make such decisions. In that case, it requires a nursing administrator to set forth as one of the program's policies the type and extent of critical thinking per each course or academic year of study. It could include classroom discussions with attention paid to comments and problem resolutions that would indicate the ability to think clearly. It is also important to teach the type of categories related to answer options that accompany a critical thinking question and requesting student responses relative to why a choice is selected.

Whether you choose as an administrator/instructor to set up creative thinking groups, discussions with the students, or require answering online questions to discuss *why* one answer is better than another, it increases future positive and successful state board student outcomes.

LAST THOUGHTS

***IMPORTANT RECOMMENDATION—DOCUMENT, DOCUMENT, DOCUMENT TO SHOW A RESPONSE THAT IS SYSTEMATIC, THOROUGH, AND ADJUSTMENTS MADE ACCORDING TO OUTCOMES. DOCUMENT THAT YOU USED YOUR CRITICAL THINKING SKILLS TO REASSESS AND MAKE ADJUSTMENTS TO A PROBLEM AS IS APPROPRIATE!!**

***FEW PEOPLE THINK MORE THAN TWO OR THREE TIMES A YEAR! I HAVE MADE AN INTERNATIONAL REPUTATION FOR MYSELF BY THINKING ONCE OR TWICE A WEEK. (GEORGE BERNARD SHAW)**

***CRITICAL THINKING RESULTS IN CHANGE BECAUSE NOTHING EVER STAYS THE SAME. ENTROPY IS THE CAUSE OF CONSTANT CHANGE.**

***CRITICAL THINKING HELPS TO PREVENT THE NEED FOR EXCESSIVE DEFENSE MECHANISMS/COPING**

***MECHANISMS—COMPENSATION, PROJECTION, RATIONALIZATION, DENIAL OF REALITY, REACTION FORMATION, FLIGHT, AGGRESSION, RESIGNATION. THE MOST COMMONLY USED IS RATIONALIZATION. (SIGMUND FREUD) (Read the document on the essence of fear by this author.)**

***"YOU DON'T ALWAYS CONTROL YOUR CIRCUMSTANCES---BUT YOU CAN CONTROL YOUR RESPONSE"! (General James Mattis)**

***SHH—IT IS YOUR SECRET THAT YOU MIGHT BE THE ONLY ONE THAT TRULY KNOWS THE POWER OF "THINKING." HAVE YOU EVER WONDERED WHY POLITICIANS (LEADERS) ARE CRITICIZED FOR CHANGING THEIR MINDS? COULD IT BE BECAUSE THEY HAVE GAINED THE POWER OF CRITICAL THINKING AND RECOGNIZE THE IMPACT OF ENTROPY?**

***SHH—DON'T TELL ANYONE ABOUT YOUR CRITICAL THINKING WALKS TO ENCOURAGE THINKING. FIND OUT HOW MUCH QUIET WALKS HELP YOUR THINKING!**

CRITICAL THINKING QUESTIONS

1. Recall your contract with your employer. Is it an “At Will” contract, or do you have a probationary period?
2. To what extent do you use your critical thinking skills to recognize and document your employment behavior regarding your job description expectations?
3. What are some of the considerations you, as a leader, would require to determine an appropriate consultant?
4. How are the dynamics of Critical Thinking and the Leadership Process similar to the nursing process?
5. What are the similarities or differences between holistic and conceptual thinking?
6. What would/could a leader do to encourage critical thinking and positive attitudes in employees?
7. What could a leader do to determine the significant problem amid many issues?
8. What are two examples of Cognitive Bias?

RECOMMENDED READING

Intuition by this author

Communication by this author

Entropy by this author

Essence of Fear by this author

Hidden Power by this author

Understanding Test Preparation and Application of Multiple-Choice (MC) and Critical Thinking Questions by the author

www.amazon.com/Critical-Thinking-Achieve-Positive

Gawande, A. The Checklist Manifesto, New York, 2009, Henry Holt and Company

https://en.wikipedia.org/wiki/Knowledge_management

MULTIPLE-CHOICE QUESTIONS

1. The goal of Critical Thinking is:
 - A. Determine a scientific definition for Critical Thinking
 - B. Arrive at answers that are true as possible through logic, reasoning, and skepticism
 - C. Use reason and logic to form only explanations that make sense
 - D. Prove that science is not a part of Critical Thinking
2. Regarding Critical Thinking, health care administrators want to hire someone who can:
 - A. Teach a class on Critical Thinking
 - B. Think about solving problems for the first few hours of their shift

- C. Think all of the time critically
 - D. Get the facts straight in an 8-hour shift
3. Much of everyone's fundamental beliefs and memories are:
- A. Flawed
 - B. Accurate
 - C. Changeable
 - D. Reversible
4. Scientifically, no Critical Thinking is absolute. Therefore, we say that Critical Thinking is a:
- A. Easy—not hard
 - B. Fast—not slow
 - C. Certain—not questioned
 - D. Journey—not destination
5. Critical thinking is most likely flawed because of:
- A. Not having enough experience, we ask the wrong questions
 - B. We do not try hard enough to get information
 - C. We depend on our memory to provide the right answer
 - D. Memory, patterns of thinking, ego, and self-esteem

ANSWERS:

- 1. B
- 2. C
- 3. A
- 4. D
- 5. D

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