

HABITS OF MIND: STRATEGIES FOR DISCIPLINED CHOICE MAKING

ARTHUR L. COSTA,
BENA KALLICK

By definition, a problem is any stimulus, question, task, phenomenon, or discrepancy for which we don't immediately have an answer or solution. We are interested in performance under challenging conditions that demand strategic reasoning, insightfulness, perseverance, creativity, and craftsmanship to resolve a complex problem. Not only are we interested in how many answers individuals know, but also in how they behave when they don't know.

We use the term "Habits of Mind" to mean having a disposition toward behaving intelligently when confronted with problems to which we do not immediately know the answers. When humans experience dichotomies, are confused by dilemmas, or come face to face with uncertainties, our most effective actions require drawing forth certain patterns of intellectual behavior. When we draw upon these intellectual resources, the results that we produce are more powerful, of higher quality, and of greater significance than if we fail to employ those patterns of intellectual behaviors.

Employing Habits of Mind requires a composite of many skills, attitudes, cues, past experiences, and proclivities. It means that we value one pattern of thinking over another, and therefore it implies choice making about which pattern should be employed at which time. It includes sensitivity to the contextual cues in a situation signaling that it is an appropriate time and circumstance to employ this pattern. It requires a level of skillfulness to employ and carry through the behaviors effectively over time. Finally, it leads individuals to reflect on, evaluate, modify, and carry forth to future applications their learnings.

Research in effective thinking and intelligent behavior indicates that there are some identifiable characteristics of effective thinkers. Scientists, artists, and mathematicians are not the only ones who demonstrate these behaviors. These characteristics have been identified in successful mechanics, teachers, entrepreneurs, salespeople, and parents — people in all walks of life.

Habits of Mind

Following are descriptions and an elaboration of 16 attributes of what human beings do when they behave intelligently (see "16 Habits of Mind"). These Habits of Mind are what intelligent people do when they are confronted with complex problems. These behaviors are seldom performed in isolation. Rather, clusters of such behaviors are drawn forth and employed in various situations. When listening intently, for example, one employs flexibility, metacognition, precise language, and perhaps questioning.

16 HABITS OF MIND

The 16 Habits of Mind identified by Costa and Kallick include:

- Persisting
- Thinking and communicating with clarity and precision
- Managing impulsivity
- Gathering data through all senses
- Listening with understanding and empathy
- Creating, imagining, innovating
- Thinking flexibly
- Responding with wonderment and awe
- Thinking about thinking (metacognition)
- Taking responsible risks
- Striving for accuracy
- Finding humor
- Questioning and posing problems
- Thinking interdependently
- Applying past knowledge to new situations
- Remaining open to continuous learning

Please do not think that there are only 16 ways in which humans display their intelligence. It should be understood that this list is not meant to be complete. You, your colleagues, or your students will want to continue the search for additional Habits of Mind by adding to and elaborating on this list and the descriptions (for an example of an additional list, see “13 Habits of a Systems Thinker,” compiled by the Waters Foundation).

1. Persisting

“Persistence is the twin sister of excellence. One is a matter of quality; the other, a matter of time.”

— Marabel Morgan

Efficacious people stick to a task until it is completed. They don't give up easily. They are able to analyze a problem to develop a system, structure, or strategy to attack it. They employ a range and have a repertoire of alternative strategies for problem solving. They collect evidence to indicate their problem-solving strategy is working, and if one strategy doesn't work, they know how to back up and try another. They recognize when a theory or idea must be rejected and

another employed. They have systematic methods of analyzing a problem that include knowing how to begin, what steps must be performed, and what data need to be generated or collected. Because they are able to sustain a problem-solving process over time, they are comfortable with ambiguous situations.

2. Managing Impulsivity

“Goal-directed self-imposed delay of gratification is perhaps the essence of emotional self-regulation: the ability to deny impulse in the service of a goal, whether it be building a business, solving an algebraic equation, or pursuing the Stanley cup.”

—Daniel Goleman

Effective problem solvers have a sense of deliberativeness: They think before they act. They intentionally form a vision of a product, plan of action, goal, or destination before they begin. They strive to clarify and understand directions, develop a strategy for approaching a problem, and withhold immediate value judgments about an idea before fully understanding it. Reflective individuals consider alternatives and consequences of several possible directions prior to taking action. They decrease their need for trial and error by gathering information, taking time to reflect on an answer before giving it, making sure they understand directions, and listening to alternative points of view.

3. Listening to Others — With Understanding and Empathy“

“Listening is the beginning of understanding. ... Wisdom is the reward for a lifetime of listening. Let the wise listen and add to their learning and let the discerning get guidance.”

—Proverbs 1:5

According to Stephen Covey, highly effective people spend an inordinate amount of time and energy listening. Some psychologists believe that the ability to listen to another person, empathize with them, and understand their point of view is one of the highest forms of intelligent behavior. Being able to paraphrase another person’s ideas, detecting indicators of their feelings or emotional states in their oral and body language, accurately expressing another person’s concepts, emotions, and problems — all are indications of listening behavior (Piaget called it “overcoming egocentrism”).

Peter Senge and his colleagues suggest that to listen fully means to pay close attention to what is being said beneath the words. Generative listening is the art of developing deeper silences in yourself, so you can slow your mind’s hearing to your ears’ natural speed and hear beneath the words to their meaning. This is a complex skill requiring the ability to monitor one’s own thoughts while, at the same time, attending to the partner’s words. Honing this behavior does not mean that we can’t disagree with someone. A good listener tries to understand what the

other person is saying. In the end, he may disagree sharply, but because he disagrees, he wants to know exactly what it is he is disagreeing with.

4. Thinking Flexibly

“If you never change your mind, why have one?”

— Edward deBono

An amazing discovery about the human brain is its plasticity — its ability to “rewire,” change, and even repair itself to become smarter. Flexible people are the ones with the most control. They have the capacity to change their minds as they receive additional data. They engage in multiple and simultaneous outcomes and activities, draw upon a repertoire of problem-solving strategies, and know when it is appropriate to be broad and global in their thinking and when a situation requires detailed precision. They create and seek novel approaches and have a well-developed sense of humor. They envision a range of consequences.

13 HABITS OF A SYSTEMS THINKER

The Water Foundation has identified 13 Habits of a Systems Thinker.

- Seeks to understand the “big picture”
- Observes how elements within systems change over time, generating patterns and trends
- Recognizes that a system’s structure generates its behavior: focuses on structure, not on blame
- Identifies the circular nature of complex cause and effect relationships, i.e. interdependencies
- Changes perspectives
- Surfaces and tests assumptions
- Considers an issue fully and resists the urge to come to a quick conclusion
- Considers how mental models (i.e., attitudes and beliefs derived from experience) affect current reality and the future
- Uses understanding of system structures to identify possible leverage actions
- Considers both short- and long-term consequences of actions
- Finds where unintended consequences emerge
- Recognizes the impact of time delays when exploring cause and effect relationships
- Checks results and changes actions if needed:, “successive approximation”

Flexible people can approach a problem from a new angle using a novel approach (deBono refers to this as lateral thinking). They consider alternative points of view or deal with several sources of information simultaneously. Thus, flexibility of mind is essential for working with

social diversity, enabling an individual to recognize the wholeness and distinctness of other people's ways of experiencing and making meaning.

Flexible thinkers are able to take a "macro-centric" perspective. This is similar to looking down from a balcony at ourselves and our interactions with others. This bird's-eye view is useful for discerning themes and patterns from assortments of information. It is intuitive, holistic, and conceptual. Since we often need to solve problems with incomplete information, we need the capacity to perceive general patterns and jump across gaps of incomplete knowledge or when some of the pieces are missing.

Yet another perceptual orientation is "micro-centric" — examining the individual and sometimes minute parts that make up the whole. Without this "worm's-eye view," science, technology, and any complex enterprise could not function. These activities require attention to detail, precision, and orderly progressions.

Flexible thinkers display confidence in their intuition. They tolerate confusion and ambiguity up to a point, and are willing to let go of a problem, trusting their subconscious to continue creative and productive work on it. Flexibility is the cradle of humor, creativity, and repertoire.

5. Thinking About Our Thinking (Metacognition)

"When the mind is thinking it is talking to itself."

— Plato

Occurring in the neocortex, metacognition is our ability to know what we know and what we don't know. It is our ability to plan a strategy for producing what information is needed, to be conscious of our own steps and strategies during the act of problem solving, and to reflect on and evaluate the productiveness of our own thinking. Probably the major components of metacognition are developing a plan of action, maintaining that plan in mind over a period of time, then reflecting back on and evaluating the plan upon its completion. Planning a strategy before embarking on a course of action assists us in keeping track of the steps in the sequence for the duration of the activity. It facilitates making temporal and comparative judgments, assessing the readiness for more or different activities, and monitoring our interpretations, perceptions, decisions, and behaviors.

Metacognition means becoming increasingly aware of one's actions and the effect of those actions on others and on the environment, forming internal questions as one searches for information and meaning, developing mental maps or plans of action, mentally rehearsing prior to performance, monitoring those plans as they are employed. It involves being conscious of the need for midcourse correction if the plan is not meeting expectations, reflecting on the plan upon completion of the implementation for the purpose of self-evaluation, and editing mental pictures for improved performance.

6. Striving for Accuracy and Precision

“A man who has committed a mistake and doesn’t correct it is committing another mistake.”

— Confucius

Embodied in the stamina, grace, and elegance of a ballerina or a shoemaker is the desire for craftsmanship, mastery, flawlessness, and economy of energy to produce exceptional results. People who value these qualities take time to check over their products. They review the rules by which they are to abide; they review the models and visions they are to follow; and they review the criteria they are to employ and confirm that their finished product matches the criteria exactly.

To be craftsman-like means knowing that one can continually perfect one’s craft by working to attain the highest possible standards and pursue ongoing learning in order to bring a laser-like focus of energies to task accomplishment. For some people, craftsmanship requires continuous reworking. Mario Cuomo, a great speechwriter and politician, once said that his speeches were never done — it was only a deadline that made him stop working on them!

7. Questioning and Posing Problems

“The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advances.”

— Albert Einstein

One of the distinguishing characteristics between humans and other forms of life is our inclination and ability to find problems to solve. Effective problem solvers know how to ask questions to fill in the gaps between what they know and what they don’t know. Effective questioners are inclined to ask a range of questions. For example, They request data to support others’ conclusions and assumptions through questions such as, “What evidence do you have?”

They pose questions about alternative points of view:, “From whose viewpoint are we seeing, reading, or hearing?”

They inquire into causal connections and relationships:, “How are these people/events/situations related to each other?”

They pose hypothetical problems: “What do you think would happen if ...?”

Inquirers recognize discrepancies and phenomena in their environment and probe into their causes: “Why do cats purr?”, “Why does the hair on my head grow so fast, while the hair on my arms and legs grows so slowly?”, “What are some alternative solutions to international conflicts other than wars?”

8. Applying Past Knowledge to New Situations

“I’ve never made a mistake. I’ve only learned from experience.”

— Thomas A. Edison

Intelligent human beings learn from experience. When confronted with a new and perplexing problem, they will often draw forth experience from their past. They can be heard to say, “This reminds me of . . .” or “This is just like the time when I . . .” They call on their store of knowledge and experience as sources of data to support, theories to explain, or processes to solve each new challenge. Furthermore, they are able to abstract meaning from one experience, carry it forth, and apply it in a new and novel situation.

9. Thinking and Communicating with Clarity and Precision

“I do not so easily think in words . . . after being hard at work having arrived at results that are perfectly clear . . . I have to translate my thoughts in a language that does not run evenly with them.”

— Francis Galton

Language refinement plays a critical role in enhancing a person’s cognitive maps and their ability to think critically, which is the knowledge base for efficacious action. Enriching the complexity and specificity of language simultaneously produces effective thinking. Language and thinking are closely entwined. Like two sides of a coin, they are inseparable. Fuzzy language is a reflection of fuzzy thinking. Intelligent people strive to communicate accurately in both written and oral form, taking care to use precise language, defining terms, correct names, and universal labels and analogies. They strive to avoid overgeneralizations, deletions, and distortions. Instead, they support their statements with explanations, comparisons, quantification, and evidence.

10. Gathering Data Through All Senses

“Observe perpetually.”

— Henry James

The brain is the ultimate reductionist. It reduces the world to its elementary parts: photons of light, molecules of smell, sound waves, vibrations of touch — which send electrochemical

signals to individual brain cells that store information about lines, movements, colors, smells, and other sensory inputs. Intelligent people know that all information gets into the brain through the sensory pathways: gustatory, olfactory, tactile, kinesthetic, auditory, visual, Most linguistic, cultural, and physical learning is derived from the environment by observing or taking in through the senses. To know a wine it must be drunk; to know a role it must be acted; to know a game it must be played; to know a dance it must be moved; to know a goal it must be envisioned. Those whose sensory pathways are open, alert, and acute absorb more information from the environment than those whose pathways are withered, immune, and oblivious to sensory stimuli.

Furthermore, we are learning more about the impact of arts and music on improved mental functioning. Forming mental images is important in mathematics and engineering; listening to classical music seems to improve spatial reasoning. Social scientists solve problems through scenarios and roleplaying; scientists build models; engineers use cad-cam; mechanics learn through hands-on experimentation; artists experiment with colors and textures; musicians learn by producing combinations of instrumental and vocal music.

11. Creating, Imagining, and Innovating

“The future is not some place we are going to but one we are creating. The paths are not to be found, but made, and the activity of making them changes both the maker and the destination.”

— John Schaar

All humans have the capacity to generate novel, original, clever, or ingenious products, solutions, and techniques—if that capacity is developed. Creative individuals try to conceive problem solutions differently, examining alternative possibilities from many angles. They tend to project themselves into different roles using analogies, starting with a vision and working backward, imagining they are the objects being considered. Creative people take risks and frequently push the boundaries of their perceived limits. They are intrinsically rather than extrinsically motivated, working on the task because of the aesthetic challenge rather than the material rewards. Creative people are open to criticism. They hold up their products for others to judge and seek feedback in an ever-increasing effort to refine their technique.

12. Responding with Wonderment and Awe

“The most beautiful experience in the world is the experience of the mysterious.”

— Albert Einstein.

Efficacious people have not only an “I can” attitude, but also an “I enjoy” feeling. They enjoy figuring things out by themselves and continue to learn throughout their lifetimes. They find beauty in a sunset, intrigue in the geometry of a spider web, and exhilaration at the iridescence

of a hummingbird's wings. They see the congruity and intricacies in the derivation of a mathematical formula, recognize the orderliness and adroitness of a chemical change, and commune with the serenity of a distant constellation.

13. Taking Responsible Risks

“There has been a calculated risk in every stage of American development — the pioneers who were not afraid of the wilderness, businessmen who were not afraid of failure, dreamers who were not afraid of action.”

— Brooks Atkinson

Flexible people seem to have an almost uncontrollable urge to go beyond established limits. They are uneasy about comfort; they “live on the edge of their competence.” They seem compelled to place themselves in situations where they do not know what the outcome will be. They accept confusion, uncertainty, and the higher risks of failure as part of the normal process, and they learn to view setbacks as interesting, challenging, and growth producing. However, they are not behaving impulsively. Their risks are educated. They draw on past knowledge, are thoughtful about consequences, and have a well-trained sense of what is appropriate. They know that not all risks are worth taking! It is only through repeated experiences that risk taking becomes educated. It often is a cross between intuition, drawing on past knowledge, and a sense of meeting new challenges.

14. Finding Humor

“Where do bees wait? At the buzz stop.”

— Andrew, age six

Another unique attribute of humans is our sense of humor. Laughter transcends all cultures and eras. Its positive effects on psychological functions include a drop in the pulse rate, the secretion of endorphins, and increased oxygen in the blood. It has been found to liberate creativity and provoke such higher-level thinking skills as anticipation, the identification of novel relationships, visual imagery, and analogy. People who engage in the mystery of humor have the ability to perceive situations from an original and often interesting vantage point. Having a whimsical frame of mind, they thrive on finding incongruity and perceiving absurdities, ironies, and satire; finding discontinuities; and being able to laugh at situations and themselves.

15. Thinking Interdependently

“Take care of each other. Share your energies with the group. No one must feel alone, cut off, for that is when you do not make it.”

— Willie Unsoeld

Humans are social beings. We congregate in groups, find it therapeutic to be listened to, draw energy from one another, and seek reciprocity. In groups, we contribute our time and energy to tasks that we would quickly tire of when working alone. In fact, we have learned that one of the cruelest forms of punishment that can be inflicted on an individual is solitary confinement. Cooperative humans realize that all of us together are more powerful, intellectually and/or physically, than any one individual. Probably the foremost disposition in the post-industrial society is the heightened ability to think in concert with others and to find ourselves increasingly more interdependent and sensitive to the needs of others. Problem solving has become so complex that no one person can go it alone. No one has access to all the data needed to make critical decisions; no one person can consider as many alternatives as several people can.

16. Learning Continuously

“Insanity is continuing to do the same thing over and over and expecting different results.”

— Albert Einstein

Intelligent people are in a continuous learning mode. Their confidence, in combination with their inquisitiveness, allows them to constantly search for new and better ways. People with this Habit of Mind are always striving for improvement, growing, and learning. They seize problems, situations, tensions, conflicts, and circumstances as valuable opportunities to learn. A great mystery about humans is that we confront learning opportunities with fear rather than mystery and wonder. We seem to feel better when we know rather than when we learn. We defend our biases, beliefs, and storehouses of knowledge rather than inviting the unknown, the creative, and the inspirational. Being certain and closed gives us comfort, while being doubtful and open gives us fear. The highest form of thinking we will ever learn is the humility of knowing that we don't know.

In Summary

Drawn from research on human effectiveness, descriptions of remarkable performers, and analyses of the characteristics of efficacious people, we have presented descriptions of 16 Habits of Mind. This list is not meant to be complete but rather to serve as a starting point for further elaboration and description.

These Habits of Mind may serve as mental disciplines. When confronted with problematic situations, students, parents, and teachers might habitually employ one or more of these Habits of Mind by asking themselves, “What is the most intelligent thing I can do right now?”

- How can I learn from this? What are my resources? How can I draw on my past successes with problems like this? What do I already know about the problem? What resources do I have available or need to generate?
- How can I approach this problem flexibly? How might I look at the situation in another way? How can I draw upon my repertoire of problem-solving strategies? How can I look at this problem from a fresh perspective?
- How can I illuminate this problem to make it clearer, more precise? Do I need to check out my data sources? How might I break this problem down into its component parts and develop a strategy for understanding and accomplishing each step?
- What do I know or not know? What questions do I need to ask? What strategies are in my mind now? What am I aware of in terms of my own beliefs, values, and goals with this problem? What feelings or emotions am I aware of which might be blocking or enhancing my progress?
- The interdependent thinker might turn to others for help. She might ask, How does this problem affect others? How can we solve it together? What can I learn from others that would help me become a better problem solver?

These Habits of Mind transcend all subject matters commonly taught in school. They are characteristic of peak performers, whether in homes, schools, athletic fields, organizations, the military, governments, churches, or corporations. They are what make marriages successful, learning continual, workplaces productive, and democracies enduring.

The goal of education therefore should be to support others and ourselves in liberating, developing, and habituating these Habits of Mind more fully. Taken together, they are a force directing us toward increasingly authentic, congruent, ethical behavior. They are the tools of disciplined choice making. They are the primary vehicles in the lifelong journey toward integration. They are the “right stuff” that makes human beings efficacious.

This article is adapted with permission from Arthur Costa and Bena Kallick, “Describing 16 Habits of Mind.” Click [here](#) to access the original article. The authors have a new book coming out, *Learning and Leading with Habits of Mind: 16 Essential Characteristics for Success* (Association for Supervision and Curriculum Development, 2009).

Arthur L. Costa, Ed. D., is an Emeritus Professor of Education at California State University, Sacramento and co-director of the Institute for Intelligent Behavior in El Dorado Hills, California. He has served as a classroom teacher, a curriculum consultant, and an assistant superintendent for instruction and as the director of educational programs for the National Aeronautics and Space Administration.

Bena Kallick, Ph. D., is a private consultant providing services to school districts, state departments of education, professional organizations, and public sector agencies throughout the United States and abroad. Her areas of focus include group dynamics, creative and critical thinking, and alternative assessment strategies in the classroom.

