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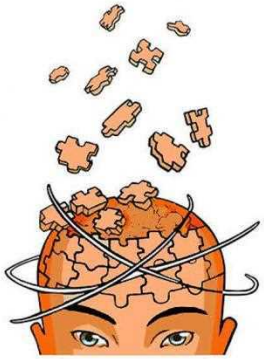
3 How RESEARCH Improves Understanding

3B LESSON

There's an Intricate Engineering Approach



"The engineer, and more generally the designer, is concerned with how things ought to be – how they ought to be in order to attain goals, and to function."

Herbert Simon, one of the most influential social scientists of the 20th Century. (1916 – 2001)

This lesson explains in detail how the wisdom and guidelines of emotional intelligence compare with engineering. If we can think like engineers, we have a better chance of overcoming the subtle intricacies and malfunctions that cause our minds to fail us. Like engineering requirements, we must learn to apply intricate structural disciplines that strengthen the overall performance of our minds.

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CONSIDERING THE CONNECTION WITH ENGINEERING

In engineering as well as other sciences, there are certain absolute rules and laws that cannot be ignored. In 1B Lesson, we briefly discussed the need for similar guidelines to better manage our emotions. In this lesson, we further explain the connection with engineering, and suggest that you consider the many parallels to enhance your own understanding and reaction to emotions.

According to *The Evolution of Useful Things* by Henry Petroski, "A common trait among engineers and inventors is disappointment with inefficiency. They revel in solving problems and pursuing innovation. Engineers are supreme optimists because they believe they can create and contribute something of value to the world." Engineering our minds, psychologically, involves embracing similar optimism: believing that we CAN develop healthier and more efficient minds that, in effect, will enhance our lives and relationship with others and the world.

Mechanical engineers must pay close attention to certain detailing for assuring that their equipment is working properly. Similarly, emotional intelligence requires that we heed particular detailing about how our complex minds are operating to assure healthful function. Many endangerments in life come from remaining oblivious to possible problems and accepting too much inefficiency. An engineering approach often requires tough yet important struggles to ward-off problems. To make sure that our minds are working well, we must learn to accept healthy requirements that ward-off problems, such as:

1. Taking precautionary measures
2. Seeking wise direction
3. Following helpful guidelines
4. Scrutinizing the quality of our thoughts, communications, and behavior
5. Participating in training and therapies that help us improve mind operation

"Some of us learn control, more or less by accident. The rest of us go all our lives not even understanding how it is possible, blaming our failure on being born the wrong way."

B.F. Skinner, one of the leaders of behaviorism. (1904 – 1990)

Considering EI's connection with engineering reminds us *that we must attain similar comprehensive understanding to apply the important disciplines that improve the quality of our mind's operation. Without challenging ourselves, we are apt to take the easier route, leaving us with similar consequences to building much of anything without applying engineering requirements.*

ENGINEERING THE COMPLEXITIES OF MIND OPERATION

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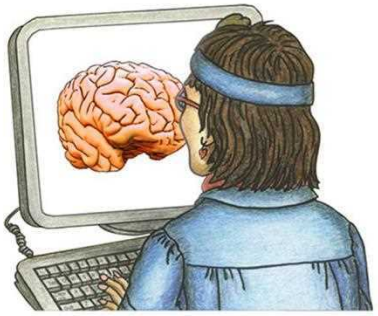
By taking a magnified look at how the human mind is hard-wired, we may see its inadequate design, at least from an emotional standpoint. Emotionally intelligent judgment is one of the most complex aspects of our thought process to monitor and interpret correctly. Yet we must rely on this extremely under-educated and thus, unstable aspect of our thinking for the most important guidance relative to our health and well-being.



In other words, at the same time that we are making some of our most important decisions that affect our well-being, our thinking is susceptible to subtle, yet powerful and endangering emotional forces that can distort our reasoning. We may recognize how these forces exaggerate or misdirect our reaction to physical feelings, such as hunger, drowsiness, itching, and even dizziness. But do we recognize how these forces affect our thoughts and actions? Unfortunately, we may too often only realize or admit such misdirection or exaggerations in hindsight.

Just like the two pigs that took the easier route in the *Three Little Pigs* story from 1B Lesson, we can too subtly decide to take an easier route, even though such action places us in harm's way. Can you think of times when you failed to protect yourself mainly because you didn't want to be bothered with the pain of extra effort? Perhaps remembering this analogy will help you react more wisely.

We, no doubt, have a better chance of applying engineering disciplines and learning from these experiences when we understand what we are dealing with. A few engineering-type equations might suggest that:

1. If you make poor choices, you should expect poor results.
2. If you want to achieve an A, you cannot apply an F quality effort.
3. You cannot expect that ignoring wise guidelines will strengthen healthy habits.

As students of EI, we must examine our actions like engineers and recognize that inefficiencies are potential opportunities. By applying an engineering-type aptitude, we improve our decision-making process. However, we would not expect people to apply for engineering jobs who hadn't received adequate training. To apply such an aptitude, we still need to learn more about engineering the complexities of the mind.

Considering the engineering complexities of mind operation reminds us *of the effort required for the "engineer-minded" pig in the fairy tale to go the extra mile and to accept the smarter choice. Yet opening our minds to a more "engineering-enhanced" manner of thinking doesn't just naturally happen. Mustering the strength to overcome poor emotional habits and adhere to engineering-type requirements involves accepting harder choices necessary for achieving wiser results. Thus, extra effort is required to overpower anyone's too relaxed mentality.*

"Not to have control over the senses is like sailing in a rudderless ship, bound to break to pieces on coming in contact with the very first rock."

Mahatma Gandhi, Preeminent leader of Indian nationalism. (1869-1948)

ACCEPTING THE POWER AND DEMANDS OF ENGINEERING

Educating engineers is the way developing countries become industrial powerhouses. The field is information intensive with a number of core competencies required for any engineering degree. Similarly, we can train the mind to become a psychological powerhouse by adding the core competencies of healthy mind development to our education programs. Unleashing such power would no doubt create a more highly civilized society in any country!

Engineers are concerned with safety, ethics, and moral principles. They look at issues realistically, and as problem solvers, creating or inventing the most efficient tools for attaining practical solutions to persistent problems. When a society educates children and adults about the ways our minds fail us, we surely can raise the standards of human behavior. Better understanding about healthy mind development enhances our chances for taking the intricate yet necessary engineering steps to mitigate persistent social problems.

To recognize the subtle emotional instabilities of our thinking process, we need to observe and question our thoughts and actions. Lesson 4C will provide a more intensive investigation. By doing our own internal research, we can learn to answer the following questions:

1. What needs to be improved?
2. What guidelines and practices do I need to follow to accomplish improvements?
3. What efforts are required to muster the necessary effort and strength to improve?

The real life story of Helen Keller illustrates the power of engineering. Helen became deaf and blind at 19 months of age due to a serious illness. In spite of her afflictions, Helen learned tremendous knowledge that made her very famous.

In early childhood, however, Helen had free reign to do as she pleased. Then, at age seven, Ann Sullivan was hired to teach her to be more civilized. The Hollywood film about Helen's life, titled *The Miracle Worker*, depicts the change in Helen's behavior once she understood that Ann was trying to teach her important information about the world around her.

Helen Keller claimed that *"the highest result of education is tolerance"*. If we could just tolerate doing what is more challenging, rather than succumbing to the easier path of resistance, we could much more wisely expand our minds. We do have the power to reduce ill influences that interfere with our doing the smarter thing, just as we know that engineers employ similar power, whether they are involved in constructing a house, a skyscraper, or expansive bridge.

Comparing the concerns and power of engineers reminds us *how similar emotional intelligence is to engineering. Both require us to develop an in-depth understanding and to monitor the quality of operation, as well as to practice necessary disciplines involved. We no doubt have the power to raise the standards of human behavior by applying disciplines that consider causes and consequences, similar to the task of engineers.*

ARE WE THINKING BY NATURE OR DESIGN?

We all know the importance of avoiding bad habits that adversely affect our well-being, yet the human mind is sometimes not inclined to opt for the path toward more sophisticated behavior, e.g. doing things efficiently, sharing fairly, or compromising with others. Our minds do not automatically detect such wisdom or find it easy to evaluate these behaviors correctly, even after mastering the knowledge of these ideals. When emotions are involved, our thought processing is still prone to misinterpretations and nature's deception.

"The empires of the future are the empires of the mind."

Winston Churchill, Prime Minister of the United Kingdom and Nobel laureate who was one of the greatest wartime leaders of the 20th Century. (1874-1965)

Understanding our minds better and applying psychological engineering-type disciplines help to reduce misinterpretations and poor judgments. With too little understanding about emotions and lack of consideration, how many times do we naturally succumb to inappropriate behaviors—premature resignation, exaggerated agitation, and overzealous passion?

How often do we overextend ourselves as we deal with endangering urges like overeating or overspending? How many times do we override important priorities for more interesting and enjoyable considerations?

Without enough attention to monitoring our thinking, we can apply more casual ways of thinking than we realize. Lacking adequate self-monitoring, we can too easily become careless and haphazard regarding the quality of our thoughts and reasoning. Over time, too casual ways of thinking can develop into long-term problems with devastating or even fatal consequences. Just like the children's story, *The Three Little Pigs*, tells us about the plight of the two unconcerned pigs, we too can be so unconcerned that it destroys our lives!

To apply the mind, by design, in healthy ways requires an in-depth understanding of *reverent regard*. We are thinking by design when we remain conscious about the quality of our thinking. As in engineering, emotional intelligence involves realizing the importance of following rules and guidelines to assure that we are managing emotions in a healthy manner.

You will find a list of *Emotional Extremes* as a supplement to this lesson. The supplement's two extremes distinguish an unhealthy, natural aptitude and an engineering-type aptitude. You may find it helpful to consider this supplement when attempting to think by design, rather than by nature.

Fortunately, emotional intelligence not only enables us to recognize how our minds can deceive us, it also helps us to deal with thoughts and behaviors that can be self-destructive and self-defeating. As we learn the value of reacting in more emotionally intelligent ways, we also begin to learn to accept the necessary engineering disciplines that thinking by design requires.

Thinking by nature or design reminds us *how different our minds would react if we could just think like engineers. The more we understand about our emotions, the more conscious we become to qualify our thinking. When we consider thinking by design, we learn that we do not have to resign to casual thinking and ignore healthier options.*

IN CONCLUSION: Engineering Healthy Disciplines

Today's increasingly health-conscious world furnishes a number of resources to assist us in improving both our physical and emotional health. As mentioned earlier, thinking in healthy ways when dealing with subtle, yet powerful, emotional influences requires extreme understanding and scrutiny. As the main architect of the mind, we rely on our emotions for the most important guidance relative to our health and well-being.

As every lesson explains, the need for educating ourselves about this aspect of the mind is critical. The more familiar we become with emotional competencies, as well as the emotional factors that stifle us, the better chance we have for improvement.

Emotional intelligence requires you to know what is worth measuring and to measure it carefully, as well as follow security related rules and guidelines. Without monitoring your thoughts, self-destructive thinking and other emotional afflictions can influence your judgment without your realizing what is happening.

"The well-being of the world largely depends upon the work of an engineer."

Sir William Halcrow, notable English civil engineer of the 20th Century. (1883 – 1958)

When confronted with a choice of taking an easier way out or struggling with a more difficult, yet healthier approach, try to remember the story of the three little pigs. This simple analogy may help you accept the discomfort of challenging, yet healthier and wiser choices. Another helpful tool that can help calm the mind enough to accept wiser choices is a few minutes of deep breathing.

PLEASE NOTE: Remember at this point to continue through 3C Lesson and then read each lesson again from 1A Lesson and begin the suggested activities—before continuing to 4A Lesson.



"In nature, there is no separation between design, engineering, and fabrication; the bone does it all."

Neri Oxman, an American-Israeli designer/professor at MIT Media Lab, where she leads the Mediated Matter research group; known for art/architecture that combine design, biology, computing, and material engineering. (1976 -)

NOTES

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Efficiency is doing things right, effectiveness is doing the right things.

Peter F. Drucker management consultant, educator, and author, whose writings contributed to the philosophical and practical foundations of management education. (1909 – 2005)