BEYOND SMARTER

Mediated Learning and the Brain's Capacity for Change

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EDUCATION

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CHAPTER 1

The Role of Thinking in Learning

The first question that we address in this chapter is: Is thinking so important that we should be intensively concerned about it, and does it require significant changes in methods of education? Our answer is affirmative. As a society we are facing the needs of populations and new and demanding conditions of life that require the structuring of thinking and its development. Later in this book we will define and describe what we mean by thinking. But for now, let's take an overview. Many individuals from diverse cultures find themselves chained to restrictive ways of thinking, have limited options for adaptation, and possess meager resources to initiate life-sustaining changes.

We can even say this about those societies and situations that provide all of the modern advantages and conveniences, including—as a particularly salient example—the many children who come from affluent homes and seem to lack nothing. Yet these children demonstrate a low level of functioning. We will define intelligence at this early point in our discussion as the ability to think adaptively in response to changes in our environment. It has a decisive impact on human beings' ability to choose, to plan ahead, make decisions in a rational manner, and to organize the data they gather and possess in an order of priority. These abilities are required today more than ever because human beings find themselves confronted with decision crossroads that were not previously faced. In the past, many children and adults were confronted with externally determined decisions, a limited range of choices, and much simpler and straightforward variables from which to choose. Today, a person has to decide for him- or herself in the face of a multitude of choices. It has been said that the modern person is exposed to more stimuli in a 24-hour period than medieval man was exposed to in his entire lifetime. Therefore, one must be equipped with the tools required in order to decide upon and differentiate among numerous and almost overwhelming options. If one is not conscious of the need for these tools and the ability to use them, one is likely to reach decisions from emotional drives and impulses that do not always work to one's benefit, or to the benefit of the community in which one lives. The development of thinking and the development of the orientation toward it constitute a most important educational objective—today more than ever.

IS COGNITION IMPORTANT? AND IF SO, WHY?

In response to the first question we have raised, we have identified ten reasons why cognition represents a needed focus on learning for the present and future of human development (Feuerstein and Falik, 2000). These reasons apply to learning both in the educational context and throughout life.

1. Perception is irreversible; cognition is adaptive and changeable.
2. Cognition permits the individual to control the environment at ever greater distances from the immediately perceived and experienced. This means that with cognition, one does not have to directly experience an object or event, but can "think about it" and deal with it from a distance. This expands greatly one's options in dealing with the world.
3. Cognitive processes help us to decide what to focus on, when to focus, and in what ways to focus. This is very important if one is presented with too many or conflicting stimuli that attract our attention.
4. Cognitive processes help the individual to organize and sequence the great amount of information that comes into the system, enabling planning, decision making, and bringing order to potentially diverse and disconnected experiences.
5. Cognitive processes transform the data that is gathered into mental structures to be reframed or elaborated later. As we think about what we have experienced, we can adapt our experiences to new conditions and use them in ways beyond or different from the original exposure.
6. Cognitive processes generate new information not limited to what is derived from existent sources of information. This is yet another example of the necessary distance one needs from direct experiences.
7. Once conceptualization occurs (structures created through cognitive processes) it can be communicated to others. Sharing experiences and understandings becomes an important aspect of cultural transmission and adaptation.
8. Cognitive processes enable access to the affective—emotional-attitudinal dimensions of human experience—what is commonly referred to as motivation. This moves human experience into the important aspects of why we do what we do, and the deeper meaning of our experiences, and energizes positive movement in human growth and development.
9. Cognitive processes are in a constant state of animation, producing consciousness. Meaningful adaptation to the world requires that one has an awareness of the need and the motivation to change, often in the face of potential stress or conflict.
10. Cognitive processes enable recognition of conflicts, acceptance of dissonance, and generation of productive conflicts that expand consciousness and initiate activity to address them.

Thus, these cognitive processes that we have just described are necessary components for our students to respond to our age of rapid change. Units of behav-

CHAPTER 4

Modifying Intelligence

Thus far we have raised three basic questions. The first is the question of the importance of intelligence, which represents all the cognitive aspects of our behavior. The second question deals with the possibility of modifying intelligence. Finally, the third question addresses the preferred ways the desired modification can be produced.

We answered the first question, hopefully convincingly, that intelligence is so important that we would wish to intervene to modify it, and we explained its importance through its being the force and the inclination existing in us to modify ourselves to adapt to new situations.

Now we address the second question and maintain that intelligence *is* modifiable. In fact, there is ever-increasing evidence that intelligence (as well as other human states and the neurophysiological structures in the brain) is clearly modifiable, despite its having a long and well-articulated history of being considered as innate and possessing important hereditary components. To reiterate our earlier arguments in this regard, we do not reject the hereditary components but consider them as not having the last and final word.

We are encouraged that perceptions regarding the nature of the biological factors and contributions have changed. Biologists and neurologists are presenting amazing data regarding the plasticity of the nervous system. Each day new research comes to light showing the flexibility and adaptability of the neural structure. It appears that even the chromosomal elements that were considered to be the stronghold of heredity are changing significantly, and that there occurs between them interaction that is liable to be very significant from the standpoint of the modification processes.

We now move to the position that sociocultural interaction is capable of causing a significant structural modification in the human being through the provision of mediated learning experience (MLE), even when the basis is biological-genetic and chromosomal. That is to say, we do not mean simply a quantitative change, or some behavioral additions, but a modification of the very structures responsible for the functioning of human beings.

CHAPTER 5

Mediating the Learning Experience

Mediated learning experience (MLE) is different from learning through direct exposure to stimuli. To illustrate this argument, we invite you to join us in a tour of a science museum, a tour that is rather exceptional because during it we shall not be looking at the exhibits but at the visitors. Reuven Feuerstein made the original tour with the late Professor Frank Oppenheimer, who founded the Exploratorium in San Francisco. Oppenheimer built it according to the didactic principle whereby it is sufficient for a human being to be in direct sensory contact with stimuli—visually and tactilely—to learn and become modified. Feuerstein's position, expressed to Oppenheimer in the course of the tour and discussed in more detail later on in this and following chapters, is different: To derive benefit from experiences a human mediator is required who will mediate the stimuli to the learner.

DIFFERENTIATING DIRECT LEARNING EXPERIENCE FROM MEDIATED LEARNING EXPERIENCE

To start with, let us observe Allan and his mother; afterward, we shall join William and his family.

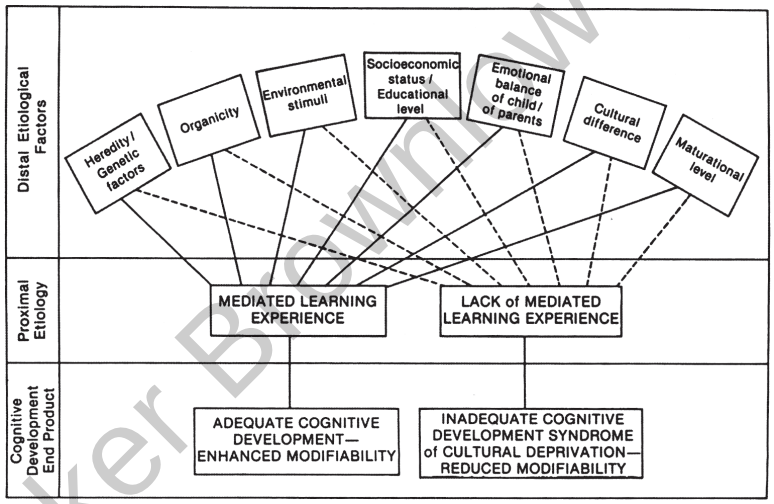
> Allan walks around the big hall of the science museum. He runs from one exhibit to another, presses, moves, touches, pulls, looks, and runs again. His mother has long since stopped running after him. She hears his loud cries and is happy to see her son occupied with the world that unfolds before him and enthused by it. Once or twice she attempts to explain to Allan what is happening in front of him—how the ring was drawn to the magnet, for example—but he is far more interested in creating events rather than in understanding them.
>
> If we draw nearer to Allan and observe his activity, we shall very soon notice that his interaction with the exhibits is confined to sensory-physical activity only, whereas his thinking functions, necessary for comprehending the exhibits, are practically not involved. Even though

It is worth noting here an additional phenomenon of an absence of mediation that derives from emotional disturbances of parents who are not capable of mediating and of not being responsible for the future of their children. This was not the case in Evelyn's experience, but it can occur in other situations.

INTERNAL BARRIERS CAUSING THE ABSENCE OF MEDIATION

We now proceed to the second group of barriers that prevent human beings from receiving or benefiting from mediation. Let us first point out that human beings' development depends on two types of factors, as shown in Figure 8.1:

Figure 8.1. Distal and Proximal Factors of Differential Cognitive Development



- *Distal factors* (distant, indirect)—those that influence development but do not directly or inevitably influence anticipated outcomes.
- *Proximal factors* (close, direct)—those that determine directly the anticipated and desired outcomes.

Why are there people whose learning ability and whose modifiability is in some way impaired? Many distal causes of their condition can be adduced—