

Mediating the Development of Character Through Mediated Learning Experience

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How Do We Evaluate Character?

Webster's dictionary defines character as "the peculiar qualities impressed by nature or habit on a person, which distinguish him from others." We use this as a working definition and propose that a person's character may be elaborated by considering four related components:

Knowledge.

Knowledge helps us to make sense out of our sensations. Knowledge resides in the brain; inside of our skulls. Knowledge may be considered at several levels of abstraction. Useful knowledge consists of relationships among concepts having predictive power. Sometimes knowledge is formalized (academic knowledge); other times it is experiential and empirically formulated.

Know-How

Know how is manifested in doing something. Know-how enables a person to convert knowledge into action; to make something happen (mostly) outside of our skins. While knowledge may be compartmentalized into narrower and narrower domains, know-how always involves the applications of skills. Knowledge tends to be analytic; know-how tends to be synthetic.

Wisdom

Wisdom involves taking into account, ahead of time, the consequences of an action. While knowledge enables us to understand and know-how enables us to do, wisdom helps us to decide when, where and whether to do it in the first place.

Values

Values are used when we weigh different courses of action. For most of us, most of the time, values are only implicitly involved. Whenever we make a choice, we depend upon our system of values. We have to decide what is worth doing.

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These four characteristics *knowledge, know-how, wisdom and values* define what we mean by *character*. It is well understood that these qualities develop throughout life and that they are a combination of genetic endowment and life experiences. What is less well known is the relation of these components to one another and that there are now methods available to help someone change these characteristics. The methods for doing so are the main subject of this paper.

Behavior and the Brain

We understand from clinical practice and modern methods of brain research that all of these characteristics are the result of *structures in the brain*. These structures are built through *learning*. We equate learning to the creation of structures in the brain.

Of critical importance is how learning occurs. The development of values and wisdom derives from the acquisition and practice of problem solving, for in problem solving people are faced with choices. If the problem solving pertains to issues in the 'real' world, and not an artificially defined world of the classroom, the choice among alternatives requires the explicit consideration of values. Excessive participation in problem solving only in a classroom environment, will develop a strong sense of *academic* values, which do not always translate easily to 'real life' situations.

We observe that as the level of education rises, the attention of the instructors shifts. Thus, in kindergarten and the first few grades, teachers focus their attention on development of values and wisdom. Children are taught to share, to control their tempers, to consider the consequences of what they might do. Teachers and parents agree that this 'socialization' is a pre-requisite to further learning.

From the early grades through middle school, attention shifts to the development of know-how. Children are expected to know how to read, to know how to write, to know how to do elementary arithmetic, to know-how to speak and to know how to behave. They are expected to know how to attend to their personal hygiene (up to and including birth control). The emphasis is usually on *how* to do something, and only secondarily upon *why* and seldom on the logical or scientific basis underlying know-how.

At the higher levels, especially at the level of the University, the emphasis shifts strongly to the acquisition and extension of knowledge. Universities concentrate upon *disciplines* and emphasize specific contents to be mastered by students.

Social Development and Vocational Education

Vocational education is generally thought of as emphasizing the first two aspects of character, *knowledge* and *know-how*. In some areas related to professions, as for example nursing or public health, issues of *wisdom* and *values* do receive attention while the students acquire their knowledge and know-how. In vocational education people are sometimes taught how to behave in the social situations they expect to encounter. But these questions are not the main issues in technical and vocational education. Of course technical and vocational education should not be conceived so narrowly as to produce graduates who are technically proficient but otherwise are a social menace, as was the case in Nazi Germany. Our thesis is that social attributes may be developed naturally and easily within the context of technical education by using the insights available to us through Feuerstein's Mediated Learning Experience. To do so answers the question: To what ends will the knowledge and skills be directed?

The Theory of Structural Cognitive Modifiability

In MLE a learner is involved in an experience while a mediator helps the learner to extract from that experience generalizations which will be useful in other contexts.

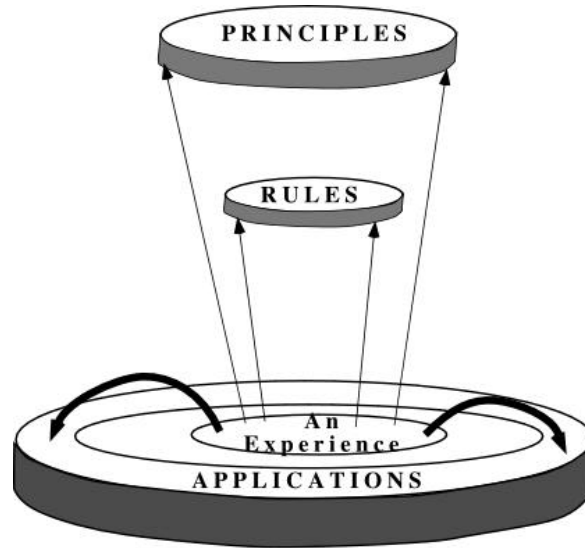


Figure 1. Transcending the experience²

Figure 1 suggests that a particular experience may contribute to learning in three different ways.

1. By using the same methods in somewhat different applications (lateral translation)
2. By recognizing rules useful in other applications, but which on the surface will not look like the experience at hand.
3. By recognizing universal principles. (For example, the principle of conservation of matter or of energy, "there is no free lunch")

While the four characteristics, *knowledge*, *know-how*, *wisdom* and *values*, provide a framework for evaluating a person's character along four different dimensions, they are less useful for helping a person to change any or all of them. When we attempt to convert our knowledge of these characteristics into action, we find that they must be considered together. A suitable vehicle for forcing this combination is an investigation into the process of problem solving. Wisdom and values come into play only when the brain is engaged in solving certain kinds of problems, when the questions posed are:

- "What shall I do next?",
- "What do I want to do?"
- "What will be the consequences to me and the people I care about?"

² Figure 1 has been adapted from a similar diagram by Dr. Meir Ben-Hur. We thank him for showing us this way to explain transference and transcendence

What we are saying is that if a person is engaged in socially focused problem solving, the experience will be generalized and if the experience is transcended through Mediated Learning Experience the lessons will be used in other domains of life.

The Key to Problem Solving in All Domains is Cognitive Modifiability

Whenever a social or technical problem is to be solved, certain patterns of thought are invoked. These include:

1. Generating alternatives
2. Weighing the options on some value system
3. Analyzing the consequences
4. Applying knowledge and know-how to implementation

Consider first technical problem solving:

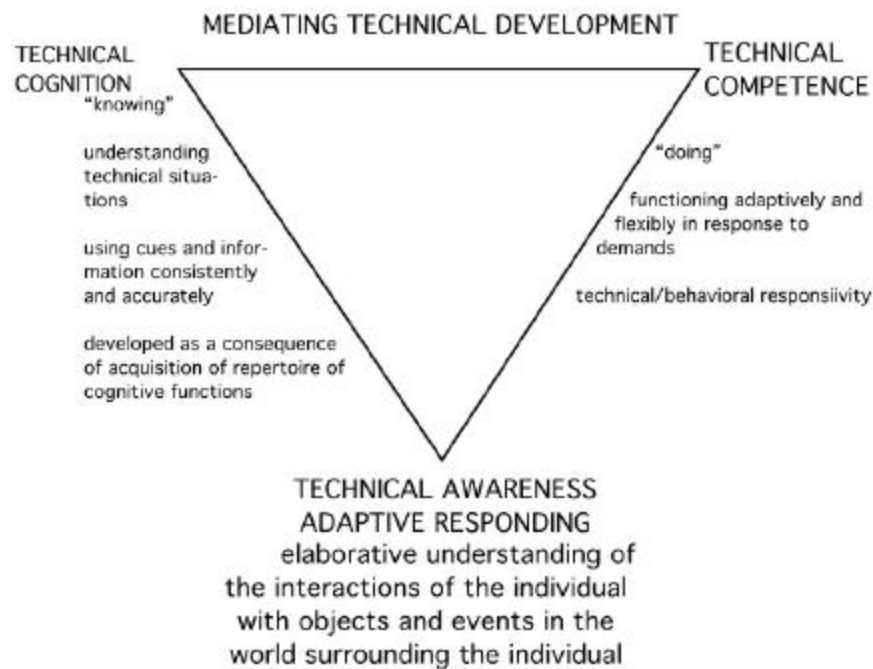


Figure 2: Technical Competence

Compare the above diagram with a representation for social problem solving:

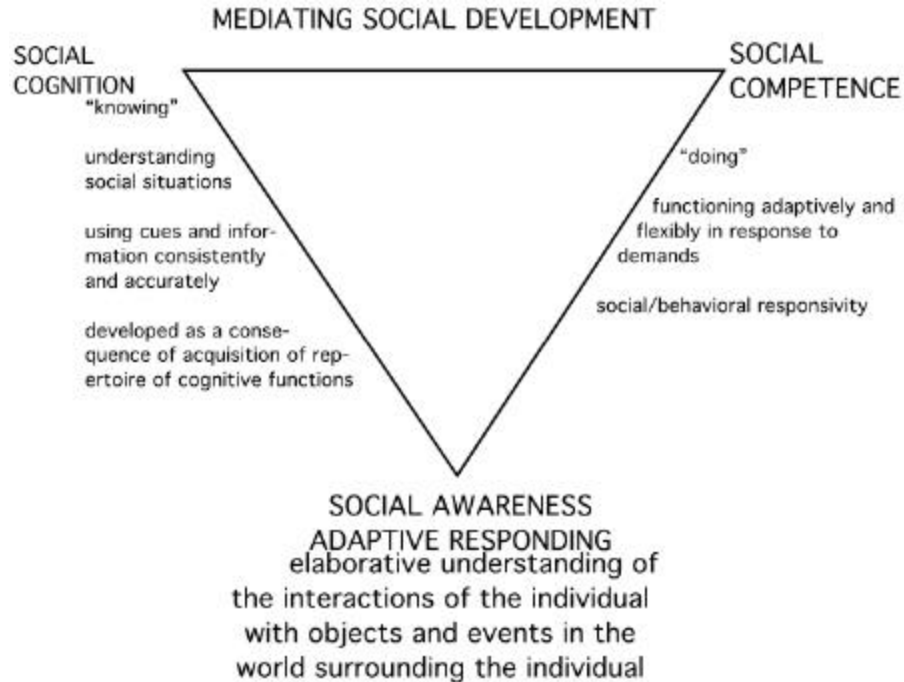


Figure 3: Social Competence

When couched in the terms appropriate for cognitive science, it is seen that the two sets of cognitions (social, technical) are essentially the same. This means that at the appropriate level of abstraction, experiences with one may be carried over to experiences with the other. This observation is at the heart of MLE.

The Role of Problem Solving

The qualities of the characteristics of wisdom can be operationalized as values and character. Can they be observed? Do they have behavioral manifestations that can be specified, and thus open to manipulation, calibration, and change? From the cognitive perspective the answer is clearly yes, we are speaking of what generally is referred to as social behavior. What is considered as appropriate social behavior reflects socially agreed upon good judgements applied to situations. Goodness is ascribed according to a variety of dimensions, which generally agree with one another--exhibition of sensitivity and empathy toward others, accurate estimations of situations to which the individual is exposed and expected to respond, productive and enhancing (for self and others) behaviors which enable the meeting of needs, and the like. It is also usually inferred that such behavior is reflective of positive values, knowledge of social situations, the ability to act upon such knowledge and the ability to judge when and when not appropriate. These aspects, as in any other area of human activity, are primarily learned as a consequence of interaction with the world of stimuli and people, and not (as was thought in generations past) a matter of moral (a.k.a. "genetic") endowment.

As suggested in Figure 4, below, when a person solves a problem, there are at least three categories of cognition to be considered:

1. The knowledge required, specific to the problem
2. The approach to solving problems

3. The mental operations required for solving problems

Note that the latter two categories are *general*. This is why problem solving, when properly mediated, provides the basis for *transcendence*. Humans must *learn* these approaches and mental operations. They are not born with them. Of course, if the people solving the problem do not find it meaningful and helpful to them, they will not learn much from the experience.

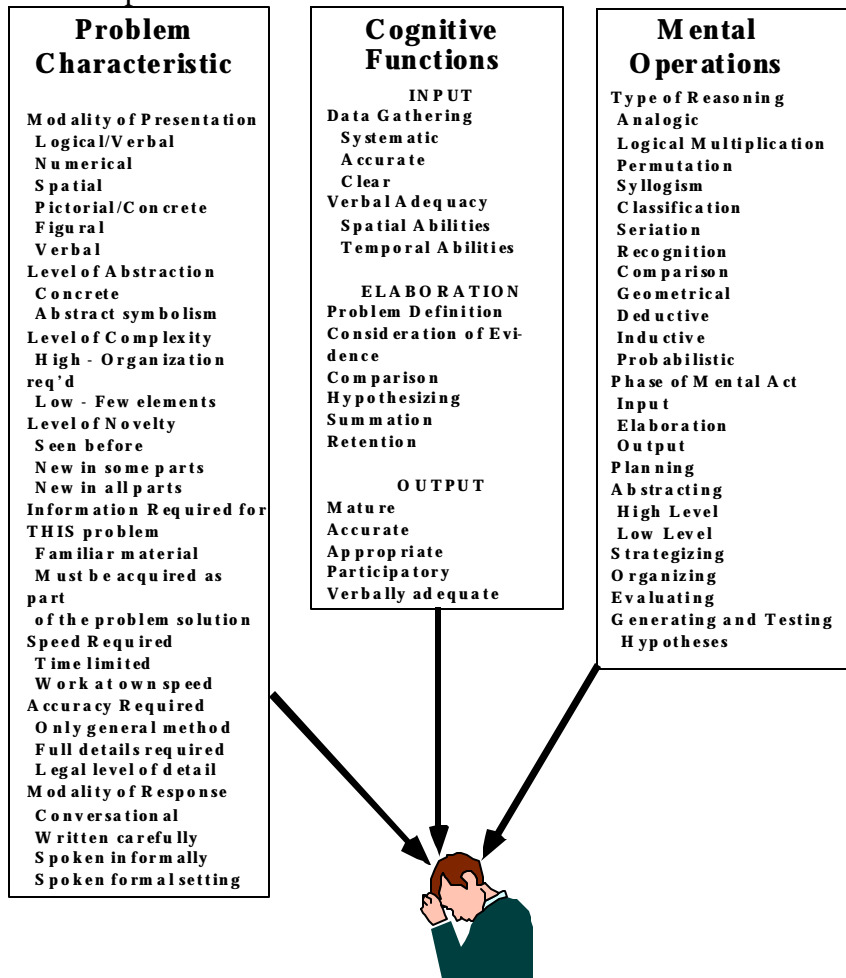


Figure 4: Elements Invoked in Problem Solving

Of critical importance is how the learning occurs. The development of these four attributes derives from the acquisition and practice of problem solving. Problem solving skills derive from a range of experiences, which have several levels of awareness and complexity in the human repertoire. They may be simple information processing and response modalities, but ultimately for the full functioning of the human being, will require learning to use higher mental processes.

Behavior and the Brain

There is abundant evidence that this acquisition is not determined solely by native intelligence, and can be modified significantly by experience. We are on a new frontier of understanding the role of behavior and the neurophysiological structures related to it.

One of the positive outcomes of the new neuroscience is, as Professor Reuven Feuerstein has summarized, "behavior shapes the brain as much as the brain shapes behavior." Demasio (1994) in a provocative book titled *Descartes' Error*, marshals evidence on the relationship to neurocortical functioning and the affective/emotional aspects of social behavior. He summarizes thusly:

Somehow, there were systems in the human brain dedicated more to reasoning...in particular to the personal and social dimensions of reasoning...something in the brain was concerned specifically with unique human properties, among them the ability to anticipate the future and plan accordingly within a complex social environment; the sense of responsibility toward the self and others; and the ability to orchestrate one's survival deliberately and at the command of one's free will (p. 10).

Daniel Goleman, in his best selling book *Emotional Intelligence* (1995) assembles evidence for the intimate linkage of external experiences to the neurophysiological stratum of emotional development, social values, and affective behavior. He supports Feuerstein's contention that there is little justification for any dichotomy between cognitive and biological causes for behavior, and for the distinction between "intellectual" aspects of behavior and the affective realm. He demonstrates how each is affected by the other, and how each is amenable to modifiability.

Brain research is strengthening the growing conviction that there is little justification for distinguishing between cognitive (or learning) processes and affective (emotional/motivational) processes. Goleman reviews the studies of Kagan on temperamental and personality differences in infants and very young children, and quotes him concluding "that some traits are harder to change than others, due to neural chemistry, but that no human quality is beyond change" (Goleman, 1995, p. 223). Feuerstein has referred to some behaviors as due to more "hard wired" aspects of functioning, closer to the neurological etiology, but well within the range of modifiability. Goleman concludes from reviewing studies on neural functioning under various conditions of medication vs. psychotherapeutic interventions that emotional re-education (Goleman's term) "has the same effects on changing neurochemical reactions in the brain as does medication" (p. 225).

This offers important opportunities for affecting change, not only on the cognitive aspects of functioning, but on the clearly inter-related social and behavioral levels as well.

...to be sure, the brain remains plastic throughout life, but not to the extent seen in childhood. All learning implies a change in the brain, a strengthening of synaptic connections. (For example) the brain changes in patients with obsessive compulsive disorders show that emotional habits are malleable throughout life, with some sustained effort, even at the neural level (Goleman, 1995, p. 227).

The Focus of Mediation

If it is indeed true that behavior can shape the brain, then what is the mechanism and process for doing so? The necessary parameters and functional dimensions of mediated learning experience (MLE) have been described in a variety of sources (Feuerstein and Feuerstein, 1991; Falik, 2000), and subjected to considerable research as to relevance and outcomes (cf, Emerson, 91; Leal Klug, 97; Lidz, Bond, & Dessinger, 90; Tzuriel, 1997, Zambrana-Ortiz & Lidz, 1994). However, describing the interactions necessary for mediating behavioral change, or the *how* of the process, is not sufficient. One must also be able to identify and work with the *what* that is to be changed. Here MLE is linked to a description of the necessary functions, which the individual must acquire and use in his/her interactions with the world of objects and events. Feuerstein's delineation and description of Cognitive Functions (1979,1980) serves as a basis for intervention, as they identify the relevant information that must be taken in and processed, the internal elaboration of that information for meaningful and deeper understanding, and appropriate responding through communication and related behavioral responding.

Bridging Cognition and Social Behavior

The connection between learning and behaving (for the purposes of this paper-- exhibiting wisdom in implementing what has been learned) occurs in the establishment of two qualities, and their interaction with one another. The first is the quality of **social cognition**. This concept refers to not only knowing how to respond in conformity to the demands of a situation, as important as that is, but also to the cognitive and socio/emotional processes that underlie it. The individual must be able to read situations accurately (gather the relevant information, place it in time and space, use cues and information consistently and accurately -- see again Figure 2), and understand the meaning and relationship of events to which he or she is exposed. This is the *knowing* level of socialization. The second quality that must be acquired is **social competence**, or the *doing* level. Here the individual must respond to the ever changing demands of the environment, function adaptively and flexibly, assess success or failure, assess the meeting of needs of self and others. The fulcrum around which these processes join and operate is that of social awareness, reflected in abilities to adaptively respond, understand the meaning of responses, move forward to subsequent encounters with a level of learning and purposiveness...that is, experience productivity, generativity, spiritual enlightenment, and interpersonal responsiveness.

Dimensions of Social Cognition

Using Feuerstein's delineation of the cognitive functions, according to the three phases of the mental act (input, elaboration, and output), Falik (2000) has constructed a parallel description of social/behavioral functions according to the same dimensions. They are presented here to illustrate the range and nature of what must be acquired to demonstrate adequate social cognition, and focus our discussion of ways in which to mediate for the development or acquisition of those qualities of wisdom and character to which we refer.

Dimensions of Social Cognition

(contribution of the cognitive functions to the development of social learning)

Input Phase Learning

1. Focused attention on relevant details in the environment (clear vs. blurred and sweeping perception)
2. Exploring environments with purpose, control, gathering consistent information (systematic vs. impulsive exploration of situational experience)
3. Repertoire of verbal tools to attach to experience (precise and accurate vs. impaired receptive verbal tools and concepts)
4. Awareness of “where” one is in physical space in a social interaction (well developed vs. impaired understanding of spatial concepts)
5. Awareness of “when” things occur, the sequence and order of events experienced (well developed vs. impaired understanding of temporal concepts)
6. Perceiving the similarities in the essential properties of an object or event in spite of changes in peripheral aspects (well developed vs. impaired conservation of constancies)
7. Precise and accurate gathering of relevant data, precise scanning and describing what is taken in (presence or absence of need for precision and accuracy)
8. Attending to multiply occurring events at the same time and in the same or similar but not identical situational contexts (well developed vs. impaired capacity to consider multiple sources of information)

Elaboration Phase Learning

1. Awareness of a disequilibrium in a social situation (accurate vs. inaccurate definition of a problem)
2. Selecting, focusing, and acting on relevant information and details in the experienced situation (ability vs. inability to select relevant cues)
3. Assessing the characteristics of various objects and events in experience (ability vs. inability to spontaneously compare)
4. Attending to and retaining multiple sources of information, focusing and accessing several sources simultaneously (broad and wide vs. narrow and limited mental field)
5. Finding relationships between objects and events, organizing, summing, comparing, etc. (meaningful vs. episodic grasp of reality)
6. “Adding up” or grouping various experiences into meaningful categories (ability vs. inability to engage in spontaneous summative behavior)
7. Internalizing and representing, in images, symbols, and fantasy various aspects of experience (ability vs. inability to project virtual relationships)
8. Seeking the reasons, logic, and relevancy of that which is understood in social situations (need for vs. lack of need for logical evidence)
9. Generalizing experience to achieve consistency and continuity leading to “intuitive” responses (ability vs. inability to internalize events)
10. Forming possible assumptions, selecting alternatives to generate responses, using “if..then” thinking (ability vs. restrictions on use of inferential-hypothetical thinking)
11. “Testing” various inferences formed during social interactions for their accuracy, relevance, usefulness (ability vs. impaired hypothesis testing)

12. Setting long-term and short range goals, projecting into the future (the need for vs. lack of planning behavior)

Output Phase Learning

1. Communicating to others effectively, recognizing other's point-of-view (mature vs. egocentric communication)
2. Flexible and available range of responses, in the face of initial difficulty or confusion (participatory vs. blocked, worked through vs. trial and error)
3. Access to vocabulary and verbal labels to express understanding and make connections with others (adequate vs. impaired verbal tools)
4. Formulating and communicating responses that are detailed, and correct, without omissions or distortions (precise and accurate vs. impaired data output)
5. Transposing internally represented mental pictures of an object or event to new situations, developing consistent and coherent responses based on them (accurate vs. impaired visual transport)
6. Delaying and controlling responses until all relevant information has been processed, responding carefully and systematically (appropriate vs. impulsive/acting out behavior)

Mediating Values and Character through Social Cognition: A General Illustration and Specific Examples from Feuerstein's Instrumental Enrichment (IE) Program Lessons

Illustrative Problem Solving--A Generalized Example: A group of high school students is encountered in a shop class. The school is what has been called in some places a "continuation" or an "opportunity" high school--that is, the last stop and final opportunity for students who have dropped out or been kicked out of other high schools. It is their last chance, and most--if not all--have had numerous learning failure experiences. In this school, all students have had IE as a regular and continuous subject--one period a day, taught by all teachers in the school, whether their primary content area is science, social studies, the arts, or shop. But in this instance, it is the shop class, and the task is to identify and fix a broken washing machine. The "team" is found surrounding the target, with one of the members underneath, viewed only by his legs sticking out, and heard through his increasingly loud and profane observations about his inability to move any parts, or see what he is doing. The remainder of the team (3 or 4 young men) is watching, occasionally offering comments, some productive some not, but the general frustration level of the group is palpably rising. Then one of the members says: "Wait, this isn't working. Why don't you come out, and we'll do some planning, like we do in IE...you know, make a plan, gather information, like in Dots, or when we do Analytic Perception." And the frustrated and slightly grease stained kid emerges, the whole group sits in a circle around the machine, and they begin to speculate, review, offer ideas, and the like. There is some taunting and joking, some challenging and deflection of the frustration, but these kids like each other, like the task, and appear committed to trying to solve it. Thinking is taking place. So is socialization. Frustration is going down, good humor is rising...

Which dimensions of social cognition are present in the encounter described above? Much of what can be described is summarized as a reduction of impulsiveness, and a focused awareness of the stimulus situation to which the boys were exposed. These are *input* functions, and require learning how to focus on relevant details, gather consistent information, and develop a functional sense of “where” and “what” needs to be the object of attention. Precise and accurate data gathering, and paying attention to multiple sources of information. They knew they were experiencing a “problem” (disequilibrium), but with the good input functions this was not a reason for escape, but rather for engagement. They knew that if they selected relevant information they could assess the situation more broadly, and find solutions that could be tested out, accepted or rejected. These, among others, are what we define as *elaboration* phase functions, and represent the internalization of problem solving. Finally, one observes a productive communication among the participants, some flexibility in the range of possible responses, and moving toward formulating a response corresponding to the inner mental pictures that are created through the elaboration. This is the manifestation of *output* phase functioning. It is neither excessively cognitive, nor is it clearly affective--but an amalgam of both. And the observer cannot help but feel energized and engaged experiencing it with them.

Specific Aspects of IE Lessons:

It is theoretically possible to derive social competence opportunities from any and every cognitive learning event. For convenience we shall use several instruments used in IE lessons to illustrate how the development of competence also contributes to the development of social cognition. We are sure that those who are familiar with the IE program will recognize many more and perhaps more apt examples than we have chosen here.

Comparisons:

On pages three and four the student is asked to solve the following problems:³

Indicate what is common to each pair of words and the differences between them

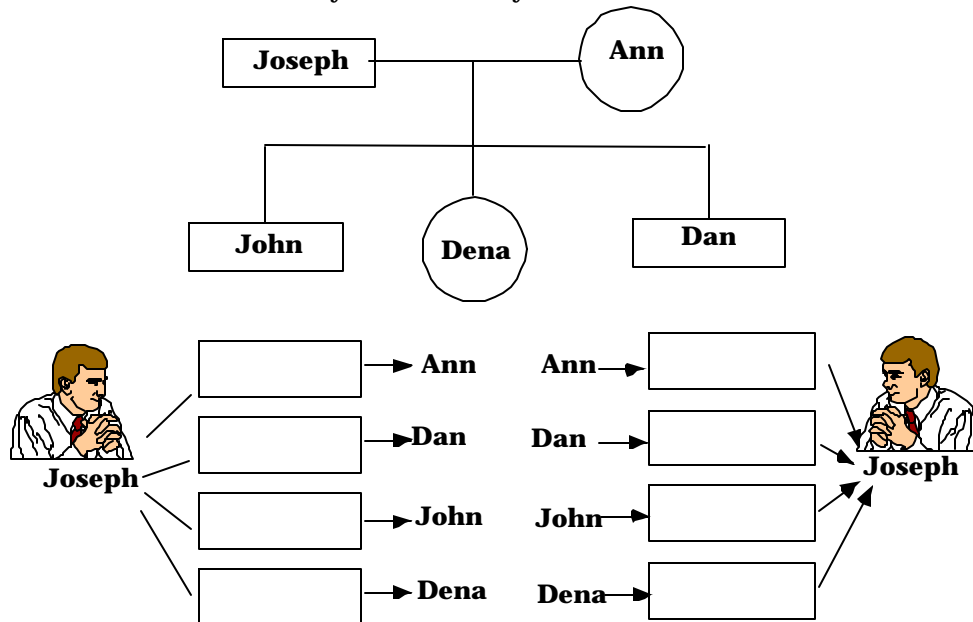
<p>Love</p>	}		
<p>Hate</p>			
<p>Ugly</p>	}		
<p>Wicked</p>			

³ This example is taken from the instrument "Comparisons", part of Feuerstein's Instrumental Enrichment program. © Hadassah Wizo Canada Research Institute, with permission of the copyright owners.

These pairs are presented among others that denote more concrete, discrete, overt characteristics, and the goals of the lesson are to understand the symbolic function of words and differentiate between various potential meanings (connotation and denotation). The differentiation and comparison of words such as those above, compared to such pairs as “Church/Factory,” “Milk/Coca-Cola,” or “Ring/Earring” requires a number of cognitive and affective sensitivities. “Knowing” and “feeling” begin to juxtapose in the awareness of the individual--one must think about essential characteristics, place them in a social and interactive context, and gather a different kind of data. What are shared awarenesses, in culture and in one’s personal experience? As mediation is directed toward these differentiations, values, experiences, variations in time and space begin to be processed and understood. One must seek relationships between objects and events, focus on multiple sources of information, internalizing images, symbols, memories, moving into what can be called fantasies (but in cognitive terms are interiorized virtual relationships). Critical to using such mental manipulations productively and functionally are the ways in which they are conveyed externally--the communication processes that link one human being to another, to share meaningful experiences through responses that are reciprocated and elaborated. One cannot mediate the kinds of thinking and learning posed by these pairs of words without entering a world of deeply socialized experience--involving values, aesthetics, and relative attributes.

Family Relations: In this instrument the learner learns to internalize and represent symbols and images using the most primary of human experiences, the family.⁴:

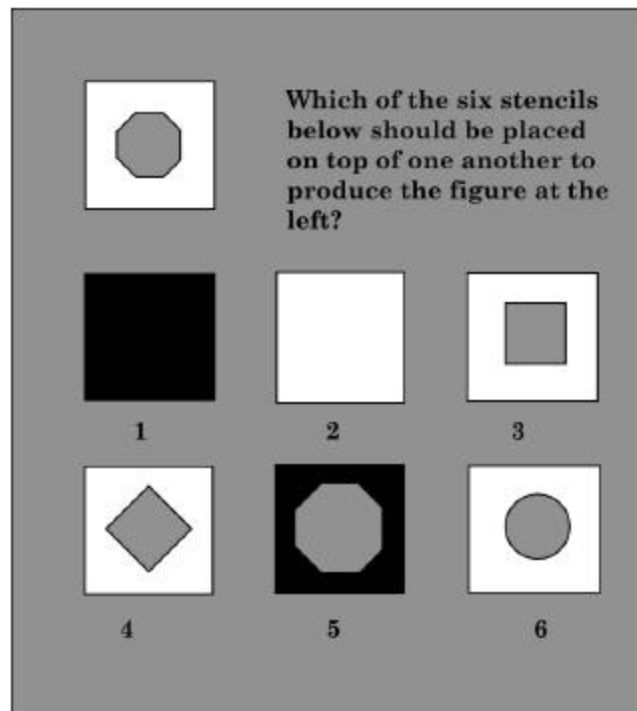
Look at the diagram and write the relationship between Joseph and the members of his family as indicated by the direction of the arrows.



⁴ This example is taken from the instrument "Family Relations", part of Feuerstein's Instrumental Enrichment program. © Hadassah Wizo Canada Research Institute, with permission of the copyright owners.

The goals of the lesson include understanding relationships between individuals in the same system, and understanding concepts of symmetrical and asymmetrical relationships, as they contribute to the totality of a system. However, at deeper and more meaningful levels, to understand a “family” one must think about different relationships the same individual may have, the “reversibility” of relationships, and generalizations from similar experiences. Thus, one learns to think about the sequence and order of events (temporal concepts), the similarities in essential properties of an object or event (a father has that role with more than one member of the family system), and to understand relationships between objects and events (observe the three year old trying to understand that her father is also the son of her grandfather).

Representational Stencil Design: We will use the stencil problem pictured here to illustrate a number of important dimensions of social cognition⁵. The problem is largely one of working at the elaboration and output phases of cognitive functioning.



Like the illustration of the boys and the broken washing machine presented above, the problem cannot be solved by looking at the surface. One must visualize, hypothesize, and use internalized images and information. The temptation to overlook obvious errors is almost irresistible...the only octagon on the stencil sheet is 5 so number 5 “must be” there. However, it has a black border, and the octagon is too large, so it will not work. The only stencil with a large white border has a small circle in the middle, not an octagon. There is a temptation to try to figure out how to use number 5 even though it has the wrong border. The breakthrough comes when one begins to think about overlapping and the construction of complex figures from simpler shapes...how things fit

⁵ This example is adapted from the instrument "Representational Stencil Design", a part of Feuerstein's Instrumental Enrichment program. © Hadassah Wizo Canada Research Institute, with permission of the copyright owners.

together through intersections, which blend experiences into wholes from discrete parts. At the *output* phase, solving this problem requires formulating an internally represented mental picture and transposing it to a new situation. Similarly to trying a new behavior in an unfamiliar venue, bringing images of successful responding into a new and complex situation, assessing its similarities and potential for accommodation. But to do this, one must have a range of *elaboration* functions--finding relationships and organizing them, adding up or grouping various aspects of experience into meaningful wholes (summative behaviors), generalizing experiences so that a world of variation is also viewed as consistent and predictable.

Summary and Conclusions

If the individual is to be fully functioning--focused, efficient, creative, and socially responsible--the cognitive process must be more than the simple acquisition of skills and operations. We choose the concept of "character" to summarize this level of accomplishment, and differentiate it into four hierarchically related concepts: knowledge, know-how, wisdom, and values. In this paper we suggest that knowledge and know-how represent a level of "technical development" in cognitive learning. There is, however, a level of "social development that must be understood and brought into the realm of mediational intervention, which is represented by wisdom and values.

We have shown that these levels are integrated--they are part of the whole cognitive shaping of the individual, and they are rooted in both external experience and the structure of the brain. It is here that an intervention such as Instrumental Enrichment can be seen to provide important learning experiences that foster both the technical and social dimensions of cognition. In order to make explicit the development of social competence, we suggest a delineation of dimensions of social cognition which parallels Feuerstein's Cognitive Functions and illustrate how an amalgam of technical and social competence is mediated through the use of the IE program.

In this way, we reach the ultimate goal of cognitive education: helping the individual to have an intentional purpose to life and learning, to use what is learned to grow and change, and to make personally and socially meaningful that which is learned and produced.

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