

Cognitive Literacy: A 21st Century Imperative for Education and
Community Revitalization

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I. Introduction

“Learning flourishes when we take what we think we know and offer it as community property among fellow learners so that it can be tested, examined, challenged, and improved before we internalize it.”¹ (Shulman, 1999, p. 12)

This quotation summarizes the intent of this paper and its theme, Cognitive Literacy. The creation of the term cognitive literacy is not an attempt to create a new theory or program. Rather, it is proposed to suggest a way to facilitate the understanding of a theory that articulates the practical reality of human intelligence and its function and power in the individual. Professor Reuven Feuerstein’s Theory of Structural Cognitive Modifiability and Mediated Learning Experience provide the elements to articulate these phenomena.

II. Being Human: What does it mean?

“For human beings nurture is our nature.”² (Gopnik, Meltzoff, Kuhl, 1999, p.8)

“The self is not so much a substance as a process in which the conversation of gestures has been internalized within an organic form. This process does not exist for itself, but is simply a phase of the whole social organization of which the individual is a part.”³ (Mead, 1934)

The challenge of defining and assessing the need for cognitive literacy emanates from the nature of the human self. The self is a cognitive process for humans. George Herbert Mead and Lev Vygotsky elaborated on the relationship of the human mind and the human self to social development. Jean Piaget’s research provided a detailed understanding of how humans think and learn. Reuven Feuerstein’s work synthesizes and clarifies major ideas of the theories of the aforementioned scholars and contributes a methodology of the practical application of his theories through systems of assessment, teaching, and the strategic organization of the environment.

George Herbert Mead and Lev Vygotsky were not acquainted and were not known to have worked together (Kozulin, 1999). Yet, their ideas on the development of self are strikingly similar. Both Mead and Vygotsky argue that self and mind arise from the social process. Both concur that language is the primary vehicle through which the mind and self emerge from the social process. From this dynamic, the nature of being human is seen as an inseparable, yet changing process between the individual and society. The relationship between the individual and society is rooted in and sustained by the intergenerational transmission of its past, its values, beliefs, customs, routines, etc. This process of transmission is generally known as culture. The development of culture is rooted in the need to survive. “The capacity for culture is part of our biology and the drive to learn is our most important and central instinct”⁴ (Gopnik, Meltzoff, Kuhl, 1999 p. 8).

Humans grow and develop through change processes. Piaget describes these processes as adaptation. Piaget’s research on human development focused on the relationship of the behavioral and physical in the development of cognition. He elaborated on: 1) the ideas of structure and function as important elements in the development of human behavior and human intelligence and 2) the components of structure (schemata) and function--organization and the process of adaptation which is comprised of assimilation and accommodation. Piaget defines intelligence as a dynamic and continual process of the organization and reorganization of structure that is inclusive of previously built structures.

Mead and Vygotsky did not exchange dialogue. However, Vygotsky and Piaget did dialogue during Vygotsky’s short life. The research of Piaget and Vygotsky confirm that children’s thought and behavior are qualitatively different from that of adults. Piaget’s observation of his children’s development and that of others revealed the self-important quality

unique to children: the cognitive development of children occurs from their engagement in play.

Piaget proposed that when a child engages in play the action becomes internalized and transformed into cognitive operations. (Kozulin, 1998) However, Piaget believed that a child's acquisition of thought and language developed after interaction with physical objects.

Vygotsky's research on children's cognitive development identified the child's interaction with objects is only one aspect of a child's cognitive development within the realm of the social and historical context of a child's world. Vygotsky extended Piaget's thesis through his acknowledgement that parents play a major role in infusing sociocultural meaning into the individual child's cognitive development.

Both Vygotsky and Piaget acknowledged the systemic nature of concepts and operations in a child's thought process. Piagetian theory highlighted two ideas, one of a group of operations and one of developmental stages. He argued that a single operation does not exist because the inherent propensity of operations is to form systems. Developmental stages are marked by its own structural and operational characteristics of schemata. Vygotsky's thesis contends that mental growth depends on the cooperation between cognitive functions and the changing relations between them. Moreover, cognitive functions form an interfunctional system that contributes to psychological development through mutual mediation.

Humans are very complex, multidimensional organisms who have the ability to change through making the decision to change. In other words, a person can, of his own volition, choose to embark on a different course. Human beings are inherently social by virtue of the fact that each is a product of two parents. From birth, humans are physically dependent on others for their survival and cognitively dependent to develop the necessary thinking processes to navigate through the culture and environment.

III. The Problem of the Dual Human Paradigm

“It is probably true quite generally that in the history of human thinking the most fruitful developments frequently take place at those points where two different lines of thought meet. These lines may have their roots in quite different parts of human culture, in different times or different cultural environments or different religious traditions: hence if they actually meet, that is, if they are at least so much related to each other that a real interaction can take place, then one may hope that new and interesting developments may follow.”⁵ (Heisenberg in Capra, 1983)

This quotation brings to mind two issues people and societies over the globe must address as citizens of the twenty-first century: technology and humanity. These issues hold at least two lines of thought that emerge as the technological innovations humans created leave many people feeling incompetent and confused about their own identity as human beings. Why would technology appear to be so harmful when so many individuals, organizations, and businesses have profited so much from its features of efficiency and effectiveness?

In general, what mechanisms do humans possess to cope with or confront challenges to our perceptions, values, routines, etc., especially in these rapidly changing times? What is the purpose of the human self? Neil Postman, author of The End of Education (1995), argues that humans have an intrinsic need to make meaning in and of their existence. He suggests that this need may be summarized as the creation of narratives: “Without a narrative, life has no meaning. Without meaning, learning has no purpose”⁶ (p. 7). Humans as social beings generate narratives as a societal collective.

Fritjof Capra, in The Tao of Physics (1983), explains that for western civilization, the pursuit of scientific research and innovations has been a major narrative of our societies. This way of making meaning of the world emanated from sixth century B.C., where philosophy, religion, and science were not separated. With the birth of modern science around the fifteenth century AD, a separation between philosophy, religion and science had been established. Philosophical thought was predominated by the notion of a dichotomy of spirit and matter.

Through the explorations of Galileo, noted as the father of modern science, Rene Descartes and his further separation between mind and body, and Isaac Newton's mechanistic view of the world, modern science was firmly established (pp. 7-9).

The philosophy of Rene Descartes had a tremendous influence on the Western culture and thinking in general. His famous statement "Cogito ergo sum—I think, therefore I exist", (p. 9) had been interpreted by western civilizations, according to Capra (1983), that the mind and body are separate entities. Humans see themselves as discrete egos existing inside of their bodies, with the mind being given the futile task of controlling the body. This belief in fragmentation and separation, according to Capra, has lead the western mind to a state of continual confusion of the relationships of the individual, social processes, and the natural environment. As a consequence, individual and collective narratives become distorted and confused and people see themselves as separate from other people and the natural environment. Capra further contends that the basic reason for current social, ecological, and cultural crises emanate from this idea of separation (p. 9). For western civilization, technology has become the major narrative or even "god" (Postman, 1995, pp. 9-10). As a child prodigy of modern science (science-god), technology has emerged as a formidable contender for the mind and soul of humanity across the globe. Technology has emerged as a mighty mystical secular phenomenon to the average person. Technological innovations that emanate from the electromagnetic spectrum—lasers, ultrasound, cell phones, satellites, CAT scans, microwaves, remote control, etc. may be both a blessing and a curse to humanity. The question is however, can a real interaction take place between the creator (man) and the created (technology) such that "new and interesting" [productive and healthy] developments may follow?

Professor Reuven Feuerstein, an Israeli cognitive psychologist presents a powerful and far-reaching paradigm with the capacity to provide the needed tools for continued human nurturing, problem solving, and decision making. Feuerstein's Theory of Structural Cognitive Modifiability (SCM) and Mediated Learning Experience provide the means by which humans can gain a greater sense of identity and empowerment. Feuerstein's Theory of Structural Cognitive Modifiability emanates from a belief system that characterizes the fundamental human nature of being human is to be modifiable. For modifiability to be realized, humans need to be acknowledged as open systems that can be meaningfully modified by an intervening environment. (Feuerstein, Rand, 1997 p. 5). Feuerstein differentiates between modifiability and change. He contends that modifiability more fully describes the transformative nature of the individual—his personality, thinking ability, capacity and general level of competence, whereas changes within the individual often do not culminate in long lasting transformation (p. 7).

Feuerstein takes a very proactive and aggressive stance on modifiability. Everyone needs modification at some point in his/her life. To actively engage in the process of modification, one must confront his/her belief system. One must believe that a person who needs modification can be modified, that belief must extend to oneself, and just importantly, one must see that society, public opinion are modifiable and must be modified. Feuerstein operationalizes Mead's thesis on the relationship of mind, self, and the social process. He states "the individual's modifiability passes through the 'filter' of social conditions. Modifiability of cultural attitudes, social practices, and norms, as well as general public opinion, is always a lengthy process"⁷ (p. 7).

In the SCM theory, the terms structural and cognitive describe the quality of the transformations that occur during the modifiability. First, the modifications are structural in nature. Cognitive or psychological structures (memory, perception, intelligence, motivation, etc.)

are comprised of a strong coherence between the entire structure and its components. The components are interdependent. Structures are characterized by the tendency to be transformed or alter its ways of functioning. Another quality of structures is their ability to behave in a self-regulating and self-perpetuating manner.

Secondly, the modifications occur at the mental level—they are modifications to the structure of the cognitive process. Feuerstein's (1998) definition of cognition includes the basic mental functions of a person such as perception, memory, thinking and learning. Feuerstein describes cognition: 1) as critical to human activity and to adaptation processes; 2) as sociocultural aspects of an individual's life such as socioeconomic status, educational level, and occupation, especially in our contemporary, high technological world, as very demanding of a person's cognitive functioning; and 3) as the flexibility of cognition and its accessibility for environmental intervention. Feuerstein refers the cognitive subsystem of the human organism as the "royal avenue" to access and modify other psychological subsystems (p.11).

Feuerstein's SCM theory is actualized and operationalized through his theory of Mediated Learning Experience (MLE). MLE is a quality of human interaction whose outcome is structural cognitive modifiability. Humans learn through direct experience and MLE. MLE is the primary modality through which an individual gains access to his own psychological development. "MLE is the determinant responsible for the development of the flexibility of the schemata that ensures that the stimuli that impinge on us will affect us in a meaningful way. MLE produces the plasticity and flexibility of adaptation that we call intelligence"⁸ (p. 75). According to Freeman (1997), Mead states that the development of the human self is a cognitive process (p. 124). The cognitive process is grounded in social experience. One primary function of MLE is the intergenerational transmission of culture. Culture is defined by Feuerstein as a

process, not an event or series of events. The transmission of culture through MLE is a critical element in the development of flexible cognitive structures, which in turn establishes the process of intellectual development or intelligence. Intelligence is defined as the process by which humans are modified (Feuerstein, 1980, pp. 7-8). The idea of intelligence as a process is also supported through Mead's notion of the reflexivity of self—the ability of self to become an object to itself through the internalization of the social process (p.124) as a gestalt. Abraham Heschel (1983), translates Mead's idea of self-reflexivity at a cognitive level through his characterization of reflective thinking or metacognition as one's ability to “watch one's intellectual self in action (p. 6).”

Freeman (1994), suggests that it is through the first MLE criteria of intentionality/reciprocity that characterizes cultural transmission and initiates its purpose and features to the child as the vehicle to become a member of the social group (p.124). The culture provides a framework that delineates and describes how the community organizes the world and the individual's role in the community. MLE is comprised of a total of twelve criteria. The first three are labeled as the universal criteria—intentionality/reciprocity, transcendence and meaning. These three are mandatory for the existence of an MLE. The other nine criteria are labeled under two categories: the situational specific criteria—feelings of competence, regulation and control of behavior, sharing behavior, individuation/psychological differentiation, goal seeking/setting/achieving, and challenge, novelty and complexity, and the orienting belief system criteria—awareness of the human being as a changing entity, search for an optimistic alternative, and a feeling of belonging (Falik, 2000, p. 317).

Another critical function of MLE is to correct deficient cognitive functions. Feuerstein explains that when a person is deprived of his culture there is also a lack of MLE. In turn, the

lack of MLE results in impaired cognitive functioning. It is through the confrontation of deficient cognitive functions that one is enabled to understand oneself as a learner and as capable of learning. Feuerstein's explanation of the role of cultural identity in the development of cognitive functions supports Mead's (1934), concept of mind. "Mind as constructive or reflective or problem-solving thinking, is the socially acquired means or mechanism or apparatus whereby the human individual solves the various problems of environmental adjustment"⁹ (p. 125). Feuerstein emphasizes the role of cultural transmission through MLE as: 1) fundamental to the preservation of identity at the individual and group levels and 2) fostering the cognitive, affective, and emotional investment toward the future (Feuerstein, 1990 pp. 92-93).

As a result of technology, brain research in education and psychology (Bransford, Brown, et. al, 1999; Gopnik, Meltzoff, Kuhl, 1999; Jensen, 1998) demonstrate the amazing plasticity and flexibility of the brain in human learning, coping, and survival. However, with all of the knowledge about the brain and mind acquired by western civilization and cultures, too many individuals continue to be ignorant about their own cognitive processes. Access to technology has produced the concept of the global society for the 21st century mind. Martha Coulter (1996), states that in spite of the impressive technological gains made in even in prosperous countries such as the United States, the number of people suffering from poor health care, a lack of nourishing food, and social dysfunctions are increasing (pp. 349-350). Across the earth, families are faced with the uprooting of their culture because of wars and natural disasters. Over and over, the proverbial question remains: what or who can save us from ourselves? Or maybe a more poignant question is: What are our narratives?

IV. On the Idea of Cognitive Literacy

The answer to the aforementioned statement lies in the understanding of the power of human beings as creators, decision-makers and problem solvers. We are challenged to be reflective thinkers. Feuerstein's theory and systems of practice give humans the tools needed to effectively enable one to become reflective thinkers through structural cognitive modifiability.

“Human modifiability is not only a belief but also a challenge and a responsibility.”¹⁰

(Feuerstein, 1997, p. 11)

The label cognitive literacy is offered a metaphor for a paradigm that encompasses Feuerstein's empowering theories of structural cognitive modifiability, mediated learning experience, with regard to the relationships of the development of self and mind within the social process. The idea of cognitive literacy is an attempt to provide a narrative that leads to what Heschel (1983), describes as “radical self-understanding”. “Radical self-understanding must embrace not only fruits of thinking namely the concepts and symbols, but also the root of thinking, the depth of insight, the moments on immediacy in the communion of the self with reality”¹¹ (p. 8).

Cognitive literacy is delineated as a spiraling, cyclic process of four emergent phases: 1) awareness; 2) internalization; 3) realization; and 4) application. The following details of the phases are not exhaustive. Rather they represent a characterization of what may occur in the development at each step.

1. Awareness—I am conscious of who I am.

I acknowledge the existence of my belief system, I believe that I am modifiable. I develop as a result of a sociocultural process through mediated learning experience. I recognize myself as a thinking, and reflective person capable of caring for others as well as myself. I am aware that I possess a transcendent nature—I am not just body and mind. I believe that because I have a transcendent nature I am capable of being more than I now am.

2. Internalization—I have and can make meaning in and of my life.

My cognitive functioning is consciously developed. I understand myself as an open system—there's no limit to my growth. I am intrinsically motivated to pursue my goals. I have an internal drive to seek out and complete learning tasks, because they are of value. I appropriate the psychological tools necessary for my continued growth and development. I understand the relationship of my rational self to my intuitive self. I am a part of my culture and community.

3. Realization—I am empowered and dynamic.

I can influence and contribute to the culture and social process of mankind. I realize that culture is dynamic and multidimensional—I can contribute to culture making. I am a valued part of the culture making process through modifiability and mediated learning experience. I realize that through my intentional interactions with my internal and external environments, I become more aware of my transcendent self.

4. Application—I can use it, share it, learn and grow from it.

I make conscious use of cognitive functioning. I make daily use of psychological tools. I use self-mediation to problem solve and make decisions. I am able to mediate others. I have the ability to assess the socio-cultural situation, problem solve and make effective decisions. I am an active participant in my own growth and learning and in the growth and learning of others. I am an effective role model to others.

This process of cognitive literacy is designed to yield a continuing deepening of understanding of self and the social process. It enables one to recognize and seek to understand the five beliefs underlying Feuerstein's (1998), theory of structural cognitive modifiability articulated in his book Don't Accept Me As I Am: 1) Human beings are modifiable; 2) The individual I am educating is modifiable; 3) I am capable of modifying the individual; 4) I myself am a person who may—and has to be modified; and 5) Society and public opinion are modifiable and have to be modified (pp. 5-7).

IV. The Need for Cognitive Literacy: A Saga of One School's Struggle

“Free human dialogue, wandering wherever the agility of the mind allows, lies at the heart of education. If teachers do not have the time, the incentive, or the wit to provide that; if students are too demoralized, bored or distracted to muster the attention their teachers need of them, then that is the educational problem which has to be solved...”¹² (Roszak in Postman, 1995, p.27).

Managing the proliferation of technology is one of the major challenges people face today. Another more fundamental challenge is education. This saga depicts the cognitive reality

of an inner-city elementary school's need for Feuerstein's theories and systems of practice. The story will be limited to the work of the 2000-2001 school year only. Although work has been done with the school for the past three years, this year has been the first year of work at the whole school level.

The school is located in a large urban area in Midwest United States. Decay and growth characterize the environment surrounding the school. The community is changing its housing and economic bases. The housing projects which are homes for many low-income families are being razed; new, more expensive homes are being built. Only a selection of former housing project residents will be invited to move in. The others will have to find some place to live on their own. The school is minimally maintained by the Board of Education and is in danger of closing within the next few years. Inside of the school, the halls are not well lighted. However, there are well-designed bulletin boards with children's work on them. Most of the classrooms are well lighted with help from the sunlight flowing through the windows. The school is currently undergoing asbestos and lead-based paint removal.

The school enrolled a little over than 300 students, from kindergarten through eighth grades this year. The student ethnic population is 98% African-American, 2% Mexican and less than 1% European-American. About 96% of the students are from low-income families with less than 1% of the students labeled limited English proficient. Academically 70-75% of the students perform below standards on the district and state standardized tests. Student behavior is a daily problem. Many students are sent to the office for minor problems. About 93% of the students attend school daily. About 8% of the students are chronically truant (2000, State of Illinois School Report Card).

There are a total of 26 teachers and two administrators. At least 18 parents work with the teachers and students in some capacity. The teachers with whom the parents work primarily manage organization and scheduling of the parent's work.

Our focus with the school was to identify students who were gifted or talented and under achieving academically. The school does not have such a program for these students. Our project design included working with parents/families and the school staff with the goal of providing them with the necessary tools to effectively engage the students in rigorous learning experiences. Parents and teachers would be taught the techniques of Mediated Learning Experience (MLE) and receive instruction in Feuerstein's Instrumental Enrichment (FIE) to be enabled to examine and confront one's own cognitive functioning. Later, they would receive training to mediate FIE to students. It was envisioned that cognitive intervention would strengthen and further build school community through thoughtful implementation of the school improvement plan. After a lively discussion with the principal at the end of the previous school year, we were eager to begin.

Several meetings with the staff were held before school officially opened. The meetings were well attended by the teachers. Only three parent workers attended. The theme of the activities focused on school improvement planning. The idea of using MLE was introduced to the staff as a means to assist them in implementing school improvement goals. In general, the teachers were reluctant to participate. One activity surveyed the participants on the attributes of their ideal school. A companion activity surveyed them on the obstacles that prevented the school from attaining that state. A chart was constructed that compared survey input with observation of parent, teacher, and student behavior from the first two weeks of school. Included in the chart were recommendations on how MLE could facilitate effective problem solving and

decision making. The information was ignored. An MLE class was conducted at the school for staff members who wanted to attend. Of the five staff who began the class, only one completed the class. We recruited students for our after school classes, but we were in competition with other existing Board of Education mandated programs.

From the beginning of the school year until now, our staff members have been present in the school on a daily basis. The knowledge we gained from being in the school so frequently helped us to understand that why were not able to gain the cooperation of the staff and parents in engaging in MLE. We realized that the staff and parents did not see the need to change although they were well aware of and could articulate the challenges and obstacles they faced. They did not see the need to change in spite of the understanding they had of the situation within the school and in the surrounding community. There seems to be an entrenched sense of hopelessness that pervades the school climate. Low expectations for student achievement is a mainstay attitude, even among the students. However, the administrators and the teachers maintain a level of control so that the school is relatively safe.

In January 2001 we were able to conduct MLE classes for parents who worked in the classrooms. We were met with strong resistance from the parents. We had to be persistent and remain focused on our intention, to develop parent leaders. After about five weeks of class, the parents realized that we respected them and they could trust us. We realized that working with these parents was beginning to positively impact the climate of the entire school. This is also the point where we were able to successfully begin Instrumental Enrichment classes with favorable reciprocity from the participant/mediatees.

In analyzing this saga at the cognitive level, we are reminded of the five beliefs associated with the theory of structural cognitive modifiability and Feuerstein's applied system

of the Shaping of Modifying Environments (SME). Feuerstein outlines four attributes of a modifying environment:

1. A high degree of openness with equal opportunity and equal access to society's opportunities such as privacy and respect. Equality is based on universality of human needs and responsibilities;
2. Conditions of positive stress to which the individual needs to adapt. Protective services are used only when necessary;
3. A planned and controlled encounter with tasks that are new thereby producing positive tension between what is known and what still has to be learned. Mediation serves the purpose of increasing adaptive capacity. Environmental conditions must be created that make modifiability essential; and
4. Individualized/specialized/customized instruction and mediation.

To apply the five beliefs of SCM and four attributes of SME stated above to the situation described in the saga requires an understanding of how the social process of the school and the surrounding community has impacted each constituent of the school community. When one compares the requirements of the five beliefs and the four attributes to the featured school saga, it is realized that a tremendous amount of commitment, strategic planning and work must go into just confronting the belief and need systems of the parents, staff and students. The staff has grown accustomed to endless and sometimes mindless Board of Education mandates and not being accountable (to themselves first) for student learning. The parents continue to tolerate less than mediocre education for their children. They also are subjected to the callousness of the housing project administrators and the negative perceptions of school staff. Parents, school staff, students and the residents of the housing projects are all viewed by the larger urban public as incapable of making sufficient progress on their own.

The paradigm of cognitive literacy provides a process by which individuals and groups of individuals can access the cognitive growth mechanisms embedded in Feuerstein's theories and systems of practice. It can also provide a measure of that growth through the characterization of

the phases. This paradigm is an attempt to induce the need of the teachers, parents and students to embrace MLE and FIE.

The usage of the cognitive literacy paradigm in conjunction with the SME attributes can guide our efforts to promote an empowering alternative to the existing conditions of the school community. From the combination of the cognitive literacy paradigm and SME, assessment tools can be created that help to identify the state of the school in relation to achieving cognitive literacy and a modifiable school environment.

The idea of cognitive literacy, I believe, gives the practitioner of Feuerstein's theory and applied systems a vehicle to reach more resistant clients. It can also provide a unifying paradigm for modifiability that can be used across cultures. The cognitive literacy paradigm is a work in progress. It is hoped that the paradigm will expand, be clarified and utilized to determine its validity and value to those who wish to explore it.

Notes

1. Shulman, Lee S. (1999). Taking Learning Seriously. Change, July/August, 11-17.
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