Dynamic Assessment and Mediated Learning

Assessment and Intervention for Developing Cognitive and Knowledge Structures

An Alternative in the Era of Reform

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Two assumptions guide this monograph. The first is that a successful transformation of our families, schools and communities ultimately must rest upon deeper sentiments and understandings which form a new view of the nature of the human being and the person the human can become within a successfully transformed society. The second is that the deepening crisis in our families, schools and communities will continue until we as a society can identify a comprehensive new approach to public policy which can project both direction to the search for new solutions and force to the efforts that are required to achieve them.

The California Association for Mediated Learning represents a cross section of professionals and parents in academic and applied settings who combine an interest in the scientific and applied development of mediated learning theory, as a tool for exploring a new view of the human being, with a dedication to the construction of sound public policy for schools, communities and families.

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An Alternative in the Era of Reform¹

Within the context of a brief overview of both national and California
efforts to restructure schools in general, and special education in particular, this
monograph sets forth the principles, from philosophy to practice, of an approach to
school-based and family-supported education constructed around the concepts of
mediated learning for cognitive and knowledge structure development. The
monograph includes a special emphasis upon practical information to show how
this model can be used for primary prevention (screening), secondary prevention
(pre-referral environmental intervention) and tertiary prevention (assessment and
post-assessment case management) in accordance with California's Strategic Plan

The National Movement for Reform

The national movement for school reform draws on two sources of
information, one providing documentation of the problems and one providing new
ideas and initiatives on how to overcome them. A brief summary of the background
to the current situation in both general and special education is provided below.

General Education

In its influential 1983 report, The National Commission on Excellence in
Education observed in A Nation at Risk:

“[The] frustration ... cuts across ages, generations, races and political and
economic groups. More and more young people emerge from high school
ready neither for college nor for work. This predicament becomes more
acute as the knowledge base continues its rapid expansion, the number of
traditional jobs shrinks, and new jobs demand greater sophistication and
preparation” (p. 12).

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In almost every big city The Carnegie Foundation for the Advancement of Teaching (1988) found high dropout rates, low morale and school leadership “crippled in a web of regulations” (p. xi)\(^2\). Findings of the Carnegie Council's Task Force on Education of Young Adolescents (1989)\(^3\) underscored that while the risks faced by all young people are compounded for the poor, for members of racial or ethnic minorities and for recent immigrants (p. 26), the nation's educational problems cannot be ascribed merely to inner city conditions of poverty, drugs, or inequitable paths to opportunity in the mainstream:

“That half of our nation's youth is at serious or moderate risk is cause enough for alarm. But even among those at little or no risk of damaging behaviors, the pervasiveness of intellectual underdevelopment strikes at the heart of our nation's future prosperity. American 13 year olds, for example, are now on average far behind their counterparts in other industrialized nations in mathematics and science achievement.” (p. 27).

A National Assessment of Educational Progress (NAEP) concluded that students are deficient in higher order thinking skills at every grade level (1985).

The failure of conventional methods and current systems to meet even traditional goals of education is exacerbated by the transformation of the US economy from an industrial era requiring skills and repetition to a technological and information age that places a premium on thinking ability and adaptation to swiftly evolving bodies of knowledge.\(^4\) To be effective over time, new approaches and new instructional programs must address educational outcomes necessary to a productive and competent citizenry in the 21st century. In addition to basic academic skills which have been the bedrock of education, educators and planners now emphasize the need to restructure schools to enable them to help students also develop thinking skills, flexibility, openness to skill modification, ability to work in groups and skills to problem solve human relationships. The 1990 National Education Goals, for example, called for “sweeping, fundamental changes in our education system (to enable people) to think for a living, adapt to changing environments (and) continually learn and develop new skills.” (p. 1). Experts agree that education in school and support at home in the coming epoch will determine children's prospects for successful vocational and social adaptation to an

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\(^2\) “At a Chicago high school only 10 percent of the entering tenth graders were able to read effectively. ... In a Houston elementary school, half the students had to repeat a grade because of unsatisfactory academic progress. ... Only 229 of the 1,918 students at one Los Angeles high school scored at grade level in reading.” (Carnegie Foundation for the Advancement of Teaching, 1988, p. xiii).

\(^3\) The Carnegie Council is a program of Carnegie Corporation of New York.

\(^4\) “The world is being rapidly transformed by science and technology in ways that have profound significance for our economic well-being and for a democratic society. ... (In the emerging society) work will require much technical competence and a great deal of flexibility; not just one set of skills acquired early and essentially good for life, but adaptability to an evolving body of knowledge and new opportunities calling for greatly modified skills.” (Carnegie Council on Adolescent Development, 1989, p. 12).
unprecedented degree. Yet, as the surveys and studies have shown, the urgent need to restructure schools and support families comes at a time of widespread predication within schools, families and communities alike.

“As a nation, therefore, we face a paradox of our own making. We have created an economy that seeks literate, technically trained, and committed workers, while simultaneously we produce many young men and women who are semi-illiterate or functionally illiterate, unable to think critically and untrained in technical skills.” (Carnegie Council on Adolescent Development, p. 29).

**Special Education**

Studies of regular education, as the above, and others,\(^5\) imply extraordinary risk both to individuals and to our society at large. The findings for special education compound the risk even further. Controlling for changes in the overall population of children, the percentage of the population served as learning handicapped during the decade from 1976-77 to 1986-87 increased by 19.2% (Department of Education, 1988). In the year 1986-87, in the largest single group, nearly 2,000,000 students (43.6% of those with an identified learning handicap) were identified as “learning disabled.”\(^6\)

The problem with the tremendous growth in special education has been the persistent inability of researchers to demonstrate treatment validity for conventional assessment paradigms such as the I.Q. tests (Reschly, 1988; Witt & Gresham, 1985). Indeed, rather than supporting the practices that have been associated with the growth of special education, the weight of the empirical evidence has long caused investigators to call the referral to, assessment for, and service delivery in special education into question (e.g. Dunn, 1968; Ysseldyke, Thurlow, Graden, Wesson, Algozzine & Deno, 1983; Algozzine, 1985; Gartner & Lipsky, 1987; Skrtic, 1991). Other researchers have similarly failed to obtain empirical support for the special education construct, especially in the area of the mildly handicapping conditions, finding instead ineffective outcomes based on traditional

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\(^6\) The magnitude of absolute increases in the use of all handicapping conditions overlays evolving patterns of relative usage of individual categories. The latter reflect change over time in assessment practices. Over the past several decades, the use of the categories of learning disabilities (LD) and social/emotional disturbance (SED) have gone up while usage of the educable mentally retarded label generally has gone down. The cumulative effect of both the absolute and relative changes can be substantial as illustrated by the following data: In Pennsylvania, the number of students receiving services under the learning disabilities label went from 5,500 in 1972 to 75,000 in 1987. During the same time, programs for those labeled socially/emotionally disturbed grew from servicing 3,200 to 15,000 students. Programs for the educable mentally retarded serviced 47,600 students in 1972 and 29,000 in 1987 (Task Force on the Education of Students with Disabilities, 1988).
special education assessment, diagnostic and eligibility criteria (e.g. Algozzine, 1985; Forness and Kavale, 1991; Reschly, 1980, 1988).

The National Association of School Psychologists (NASP) recognized the complex school situation in its unanimously adopted 1985 policy statement, Advocacy for Appropriate Educational Services for All Children, where the association noted:

“Access to special education must be assured for handicapped children who need and can benefit from it ... children are being inappropriately diagnosed and placed in special education because of (a) lack of regular education options designed to meet the needs of children with diverse learning styles, (b) a lack of understanding, at times, of diverse cultural and linguistic backgrounds, and (c) inadequate measurement technologies which focus on labels for placement rather than providing information for program development ... It is not a benign act to label as “handicapped” children who are low achievers but are not, in fact, handicapped, even when this is done in order to provide them with services unavailable in general education.” (NASP-NCAS Position Statement, 1985).

In developing its recommendations, NASP called for provisions to prepare students for higher expectations through effective instructional programs; maximizing instructional options within the general education systems; and the development and piloting of alternative service delivery models.

In 1986, Madeline Will, U.S. Department of Education Director of Special Education, criticized the current framework of special services as fragmented and consisting of parallel systems that inhibit communication and collaboration. Consistent with NASP's recommendations, Madeline Will (1986) advocated expansion of support systems for regular class teachers, increased instructional time, and new instructional approaches - now commonly referred to as the Regular Education Initiative (REI; see also Heller, Holtzman & Messick, 1982).

In 1990, the report of The National Commission on Testing and Public Policy reinforced the emerging trend with a strong report calling for cessation of the use of assessment as a gatekeeper, limiting opportunity, in favor of assessment as a gateway to assist in the development of human potential.7

The weight of the expert opinion is calling for a move away from a paradigm in which school failure is presumed to be child failure and where the diagnosis of child deficits is enmeshed with assumptions of stable individual differences considered largely insensitive to educational influences (Jensen, 1990, 1990).

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7 In doing so, the Commission embraced a position which a sequence of investigators have called for from the time the young testing movement, early this century, shifted its initial emphasis upon selection towards the controversial goal of classification (Feuerstein, 1970; Feuerstein, Miller, Rand & Jensen, 1981; Jensen & Feuerstein, 1987; Kamin, 1974; Lippman, 1922; Ysseldyke, Reynolds & Weinberg, 1984).
1992a; Kovaleski, 1988; Cobb, 1992; Reschly, 1992). Reformers, instead, call for an emphasis upon outcomes where the passive acceptant approach associated with the stable individual differences paradigm can give way for an active modification approach to make required investments in children with learning problems (Jensen & Feuerstein, 1987; Ysseldyke & Thurlow, 1992). The shift towards outcomes-based education places the focus of school programs and operating structures around attaining outcomes of significance, asking what knowledge, skills and orientations students will need to lead successful vocational and social lives in the 21st century. Rather than fixing time, and allowing inferior outcomes, this approach fixes outcomes allowing time for mastery to vary (Cobb, 1992; Spady, 1992). The National Center on Educational Outcomes (NCEO) emphasizes that educational outcomes should be appropriate for all students and be free from bias in gender, culture, race and other characteristics of the diversity of students. The NCEO proposes that educational outcomes reach significantly beyond achievement (the typical emphasis) and include literacy, self-dependence, social responsibility, contribution, satisfaction and physical health.

### Attention to Reform in California

In California, reform in special and general education was fueled in large measure by the Larry P. decisions (Larry P., 1984), forcing alternative assessment for African-American children being considered for special education, and by concerns with the over-representation of ethnically and linguistically diverse children in special education. The concern, first for reform and then for more radical restructuring, grew in direct proportion with the continued inability to document benefits within the current structures of special education, especially for the mildly handicapped, and with rising evidence that larger numbers of general students, especially low SES and culturally diverse, were being underserved.

The California Department of Education (CDE) recognized and responded to these issues with initiatives both reflecting and aiding the growing reform movement in the nation. Thus, the Framework for Special Education Reforms and Services for the 1990's (California Department of Education, 1990a) calls for “A partnership between general education and special education ... to restructure education programs to successfully meet the needs of students for whom conventional educational methods have failed” (p. 4). CDE's Strategic Plan for Special Education calls for partnerships with general education, with parents, community members, and institutions of higher learning (California Department of Education, 1990b). Paralleling national concerns about reform, Patrick Campbell, CDE's Director of Special Education, proposed that less priority be placed on eligibility with more being directed toward the design and delivery of interventions within the regular classroom, with support from needed special education personnel and other specialists (e.g., psychologists, resource specialists, speech and language therapists). The delivery system that now serves as California's stated goal for special education emphasizes primary prevention through early screening,
secondary prevention through a broad spectrum of school-, classroom-, family- and student-centered interventions and tertiary prevention in the form of assessment with strong links to instructional planning and case management (California Department of Education, 1990b; see also Winget, 1991).

**Dynamic Assessment and Mediated Learning**

From its early manifestation in the work of Vygotsky (1934) and Rey (1934), the idea that observations of the deliberate stimulation of processes of learning can yield information of use for instruction and student development has evolved in a number of directions all of which rely, in some measure, on the cognitive revolution in psychology (e.g. Feuerstein, Rand, & Hoffman, 1979; Brown & French, 1979; Campione & Brown, 1985; Jensen & Feuerstein, 1987; Frederiksen, Glaser, Lesgold & Shafto, 1990; Haywood & Brown, 1990; Jensen, 1992a). The investigation of learning under such 'dynamic' auspices is now rapidly proliferating as scientists explore the challenges, pitfalls and potentials of this new paradigm (Lidz, 1987; Jensen, Feuerstein, Rand, Kaniel & Tzuriel, 1988; Feuerstein, Klein & Tannenbaum, 1991; Haywood & Tzuriel, 1992; Reschly & Wilson, 1990) and its varied implications in related fields (Shlechter & Toglia, 1985; Day & Borkowski, 1987; Valsiner, 1988; Byrne & Berry, 1989; Morrison, 1991; Resnick, Levine & Teasley, 1991).

For purposes of this monograph, one of these frameworks was selected for discussion and illustration. The model selected was M. R. Jensen's (1992a) Modifiability Enhancement Theory; a “change” model for cognitive and knowledge structure development. This model was selected because its emphasis upon sound theory, technical adequacy, clear definitions and operationalized constructs makes it a promising tool for practice and research alike. The model provides careful attention to the mechanisms whereby learning is presumed to take place and is applicable both to school-based and to family-supported learning.

**Modifiability Enhancement Theory in Relation to the Strategic Plan for Special Education**

Within the limitations of our own critical examination of currently available knowledge, we judge the specific goals of California's Strategic Plan for Special Education (1990) to be sensible and well-reasoned interpretations of the sometimes ambiguous and always complex data that characterize the field of education. The purpose of this document is not to evaluate the Strategic Plan but is, rather, to address the question: If we know where we want to go with special and general education restructuring — how do we get there? How, in other words, can the broad aims of restructuring be translated into a comprehensive model to enable teachers and other school and community professionals to identify and operationalize a set of constructs to enable them to help schools, families and
communities to become or remain effective, nourishing and healthful environments?

The model presented here was not constructed after the emergence of the national reform movement, nor was it designed to suit the California Strategic Plan for Special Education. The impetus to present and examine Jensen's model for cognitive and knowledge structure development derives solely from its apparent face validity vis a vis the emerging consensus regarding the needs and goals of restructured educational systems.


Paradigm

Once commonly accepted, paradigms have the peculiar quality of being able to frame ordinary experience without leaving a trace in consciousness. Their influence can be so pervasive that their existence is never felt and paradigms, as a consequence, are very difficult to change. Perhaps they owe their resiliency to the fact that a paradigm change, in a sense, is a fundamental change in what we regard as self-evident.

With the growth of the reform movement, models contending to be a genuine, or the genuine, paradigm change in education appear with increasing frequency. In the midst of a period of experimentation and change, it is impossible to identify those perspectives which ultimately may bring about the shift in thinking that generates the best reforms. What each model can do to help achieve reform, however, is to make the fundamental changes in thinking, which it implies, as explicit as possible.

The model discussed in this monograph sees the most fundamental change in thinking, which is implied by its philosophy, as a shift from an emphasis upon the invariant in human behavior to an emphasis upon the flexible and modifiable. This paradigm shift from stability models to change models generates other important shifts in thinking which are embedded as assumptions within the
architecture of modifiability enhancement theory. Three important shifts are described below.

A. From *closed system* to *open system* models. Models that emphasize the invariant tend to conceptualize phenomena within systems that are believed to be largely impervious to the effects of variation in other systems. The use of I.Q. tests to classify and place students in environments with reduced expectations is an example of a *closed system' model (see von Bertalanffy, 1968). On the other hand, theories that emphasize the modifiable tend to conceptualize phenomena within systems that are seen to be relatively open and sensitive to variation in other systems. This produces models that emphasize context and, thus, broadly speaking, culture. For example, viewing the structures that govern human intellective functioning as *open systems', Modifiability Enhancement Theory assumes that the human brain, and especially the neocortex, requires systems of symbols rendered meaningful by culture in order to construct and regulate human experience and behavior (Jensen, 1992a). In a formulation consistent with this view, Geertz (1973) observed “We are, in sum, incomplete or unfinished animals who complete or finish ourselves through culture” (p. 49).

B. From *product* to *process* orientation. The shift in emphasis from the invariant to the modifiable is associated with a shift in the perception of scientific knowledge as stable products that generate laws of being to the perception of knowledge as dynamic processes that identify laws of becoming. In education, as in other social and life sciences, invariant laws of nature and stable products have not produced effective outcomes. The social sciences need their own paradigm. Change models may be better suited to guide human growth in complex interrelating systems.

C. From a passive acceptant to an active modification approach. A paradigmatic shift from models of stability to models of change generates a major shift in attitude towards the modifiability of human functioning and adjustment. In education, the evidence is strong that stability models tend to be associated first with the classification and then with the passive acceptance of lower levels of functioning. The typical educational response involves a change in the learner's environment to accommodate the given, and presumably irreversible, level of functioning (Jensen & Feuerstein, 1987): Reductions are made in the complexity and abstractness of instruction along with the expectations for achievement. Change models approach understanding of the learner in terms of the modifiability of factors that may contribute to lower levels of functioning. The recommendations of such models, therefore, reflect an 'active modification approach' where investments are designed to overcome or bypass the obstacles that prevent the learner from reaching expected outcomes (see also Feuerstein, Haywood, Rand, Hoffman & Jensen, 1986).
Modifiability Enhancement: Cognitive and Knowledge Structure Development

Drawing upon mediated learning theory (Feuerstein, 1970; Feuerstein & Rand, 1974; Feuerstein & Jensen, 1980; Feuerstein, Jensen, Hoffman & Rand, 1985) Modifiability Enhancement Theory (MET) is representative of the shift that the cognitive sciences and knowledge engineering are bringing about in the developmental, pedagogical and educational sciences. Modifiability is seen as a capacity which can undergo both increase and decrease. Programmatically, the emphasis of the model is upon the systematic enhancement of modifiability. The construct is defined as the capacity to deal with situations requiring new modes of functioning by widening or transforming existing cognitive, motivational and personality structures in order to acquire and apply new knowledge structures.

In the MET model, knowledge structures are seen to achieve a high degree of uniqueness, or specificity. The higher the specificity the lower the likelihood of generalization between them. Knowledge structures are, for example, the ability to navigate at sea, prepare steaks, build a house, troubleshoot electrical circuits, grow roses, parent an infant, or perform brain surgery. Knowledge structures are proposed in MET to be formed by a mechanism identified as proceduralization whereby the factual knowledge base of any given content area is knitted together with cognitive functions and energetic components. Thus knitted together they form a set of organization and control processes that enable the efficient collection, transformation and communication of information within that content area.

The full theory description consists of four parts each one dealing with a different aspect of modifiability enhancement: Part I identifies components of cognition, motivation and personality that contribute to modifiability (`What'); Part II describes the mechanism of modifiability enhancement (`How'); Part III describes the steps involved in a structural change in functioning (`When'); and Part IV describes how changes in cognitive structures become embedded within knowledge structures (`Where'). Each of these aspects is briefly introduced below following a general discussion of the model and its relation to traditional approaches.

General Characteristics

In its philosophy, goal and purpose, MET represents a radical break with the emphasis upon eligibility determination which has been the purpose of traditional models in school psychology. The focus of case management using MET is on coupled phases of assessment, program planning, implementation, monitoring and outcome evaluation. As a strategy, MET provides options for a continuum of services but `refocuses upstream' (Harris, 1992) seeking to carry out as much work as possible within regular classrooms, the family and the community.
The model emphasizes new roles for school psychologists and teachers including the central role of ‘mediator’ (see below). It calls for a number of new skills including the ability to recognize and identify cognitive components in situations of varying contextualization. These range from de-contextualized, or so called ‘content-free’, materials to re-contextualized learning opportunities embedded in rich and meaning-centered curricula. Figure 1 provides illustrative examples of cognitive components necessary for academic success in a

![Figure 1: Examples of Cognitive Components Necessary for Academic Success in a Third Grade Math Word Problem](image)

**Intellecitive Factors**

1. Verbal tools and concepts (e.g. 'same', 'different', 'each', 'fewest')
2. Selection of relevant cues (size versus texture of balls, constant versus large size of boxes)
3. Systematic exploratory behavior (information must be gathered in an orderly way)
4. Use of multiple sources of information (need for simultaneous mental operation on 3 balls, 3 boxes, size and volume)
5. Interiorization (need to internalize the components of the problem in order to manipulate them mentally)
6. Sequencing (the balls have to be ordered by size as a prerequisite for establishing the relationship between the volume and number of balls and the constant size of the boxes)
7. Hypothetical thinking (need to conceive of and operate according to a non-existent state of affairs)
8. Search for and establishment of relationships \( (V \times N > k) \), \( V = \) volume of balls, \( N = \) number of balls, \( k = \) constant size of boxes
9. Search for cause-effect relationships (increases in volume lead to decreases in number of balls)

**Non-intellecitive Factors**

10. Self-esteem (Untreated, inefficient cognitive functions produce a sense of lack of capability to generate desirable outcomes and poor self-esteem. Feelings of competence and expectations of success may be so low that little or no effort is put into solving a problem.)

Linda has three large boxes all the same size and three different kinds of balls as shown at left. If she fills each box with the kind of balls shown, which box will have the fewest balls in it?

A. The box with tennis balls
B. The box with the golf balls
C. The box with the rubber balls
D. You can't tell

moderately contextualized third grade math word problem. Figure 2 provides an example of a decontextualized task offering more direct access to cognitive components of functioning. The overt requirement of the task in Figure 2 is to connect the dots in each frame to recreate the model figures shown to the left. Cognitive components of functioning which can be observed and remediated with the help of this task include, among others, systematic exploration, mental representation, hypothetical thinking, establishment of relationships and use of logical evidence. Skills required of the professional using the MET model include the ability to alternate work between components of cognition, motivation and content knowledge. The professional develops these components, establishing connections between them, moving back and forth along the parameter from decontextualized to recontextualized environments.

Overall, the model calls for knowledge and skill in the use of mediated learning techniques for assessment, intervention, and for student and parent counseling, expertise in the assessment and development of cognitive and knowledge structures, knowledge of instructional design and knowledge of classroom pedagogy, peer-groups and family systems. An important element includes skill in the use of culture and cultural differences as instruments for mediating learning experiences (see also below).

**Position in School Work and Relationship to Evaluation and Achievement Testing**

In the MET model, cognitive and knowledge structure development (C&KSD) is considered to be an essential part of the “work” (see Schlechty, 1990) that teachers and other trained school professionals carry out with their students. The work consists of both assessment and development through instructional and case management, preferably within rich and meaning-centered curricula (see Figure 3). Framed as the development of cognitive and knowledge
structures, the C&KSD model addresses both the 'enabling outcomes' that prepare and support the learning process and the 'educational outcomes' that result from schooling (see Ysseldyke & Thurlow, 1992). For purposes of outcome evaluation the proposed model adapts easily to the use of portfolios and 'authentic' forms of assessment but work in C&KSD does not depend upon any one particular method of outcome evaluation. Work in the area of C&KSD, also, does not require that a traditional assessment program be in place (see Figure 4). In other words, in comparison to traditional school psychological services, use of the concepts, instruments and techniques of cognitive and knowledge structure development can be initiated pre-referral, at the time of referral, and post-referral/post-placement. Thus the MET model is independent of traditional assessment programs.

**Figure 3: Integration of Three Dimensions of Success**

A Method of Inquiry, Decision Making and Service Delivery for Cognitive and Knowledge Structure Development

Adopting the paradigm of change models outlined above, MET is designed to enable teachers and other school professionals to ask questions, study answers
and implement solutions for students with a wide range of needs for cognitive and knowledge structure development.

Reschly and Wilson (1990), rephrasing Hammill and Larsen (1974), have posed a series of important questions aimed at cognitive processing measures:

“(a) Do discrete cognitive processes exist and can they be measured? (b) Do the cognitive processes underlie achievement? (c) Are learning problems caused by deficits in cognitive processing? (d) Can deficient cognitive processes be improved through interventions? and (e) Do improved cognitive processes translate into improved classroom learning?” (pp. 444-445).

As a model which emphasizes contextualism and change, the MET model argues that categorical answers to questions like the above should not be expected. In other words, learning problems may be caused by underdeveloped cognitive processes in some students and not in others. Improved classroom learning may result from improving cognitive processes for some students but not for others. Discrete cognitive processes might exist for some students and be measurable but, conceivably, not for others. The point that the theory makes is that we need concepts, instruments and techniques that enable school professionals and others
(e.g. neuropsychologists) to ask, explore and answer useful questions such as those posed by Reschly and Wilson (1990). Modifiability Enhancement Theory enables the school professional to ask and probe a large number of such useful questions to get information about how best to overcome the problems that a learner faces.

**Selection of the Framework of Dynamic Assessment: Some Observations About Validity and Reliability**

Following a careful examination of the available alternatives, MET considers the framework provided by dynamic assessment and mediated learning to be the most appropriate for work in the area of cognitive and knowledge structure development. This framework enables careful consideration of the unique issues that each learner presents. When used by an experienced professional, it is seen to offer the best means of laying down, pursuing and adjusting an optimal course for cognitive and knowledge structure development. MET argues, in sum, that diagnostic monitoring in a dynamic framework is more likely to yield accurate inferences regarding the production of change in the student's functioning than are alternative methods.

Because the dynamic approach, unlike static testing, involves a trained professional, who actively attempts to locate and find ways to overcome sources of difficulty, issues of validity and reliability other than those associated with the standardized psychometric approaches are encountered:

We can measure either the properties of stability or the properties of modifiability but never both at the same time. Moreover, we can define and achieve valid and reliable measurement within both stability and change models but the concepts of validity and reliability can not be made comparable between these models. For example, it would invalidate stability models to intervene during testing much like it would invalidate change models to catalogue passively responses to standard questions fielded in standard ways. Awareness of the “complementarity” between stability and change models is a prerequisite to understand that both models, although they do so in different ways, can ensure valid and reliable measurement.” (Jensen, 1992a, p. 67).

It appears likely that failure to realize the “complementarity” between stability and change models has added confusion to the occasionally spirited debate surrounding dynamic assessment (e.g. Buchel, de Ribaupierre & Scharnhorst, 1990; Hoy & Retish, 1984; Haywood & Brown, 1990; Reschly, 1990). While important aspects of the validity and reliability of change models have yet to be examined,

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8 The relationship between stability and change models of human functioning may be perceived as closely analogous to the relationship between particle and wave models of light that Niels Bohr expressed in the principle of complementarity [see, for example, Pais, 1991]. Bohr understood complementarity to imply a fundamental incomparability. The word “complementarity” is easily misunderstood to imply that models related to each other by this principle supplement or complement each other. (Jensen, 1990, p. 67 & p. 70).
clarifications of the change model paradigm (Jensen, 1992a) are enabling promising new approaches to be evaluated in research now being conducted on the MET model at Delphi Health & Science and the National Center for Mediated Learning, Atlanta (see also below).

Modifiability Enhancement Theory: A Brief Overview

Of the many different forms of validity that are relevant to dynamic assessment and mediated learning, none is more so than treatment validity. However, since treatment validity is a product of the steps that lead to its achievement, important aspects of validity and reliability appear at each point where information is collected and used to foster growth and change. As always, clear theory and researchable procedures are prerequisites for model development. The following sections provide a brief overview of the four core elements of MET.

Part I: Components contributing to modifiability

Three major components form the architecture used in MET to describe, assess and enhance human modifiability. (A) Cognitive functions, such as systematic exploration, planning and strategies for inferential thinking, contribute intellective capacity to human functioning. (B) Motivational factors, such as a need for mastery, a desire for novelty or the presence of aspirations, determine the propensity of the individual to engage in mental acts and supply them with energetic support. (C) Personality traits, such as self-confidence and optimism, are seen in MET to determine aspects of manner and style related to cognitive and knowledge structure development.

In accordance with the intended use of the model, the components included can all, at least under conditions of mediation, be supported by experience and brought under some degree of volitional control (e.g. the stream of consciousness, investment in the perceptual process, evoking from memory). Variables included are sensitive to change and thus able to contribute to the enhancement of functioning. About one half of the variables included in the MET model have been carefully investigated by Feuerstein and his colleagues with the help of the LPAD (Feuerstein, Haywood, Rand, Hoffman & Jensen, 1985; Jensen & Feuerstein, 1987). Additional variables have been investigated with techniques now under development at Delphi Health & Science (e.g. Jensen, 1991a). All variables included in the model have an established history of research in the literature. No claim is made that the 45 cognitive variables included in MET represent an exhaustive list of proximal variables for modifiability enhancement. The only claim made is that they represents a useful list of areas which school and other professionals dealing with cognitive and knowledge structure development may want to investigate.

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9 Modifiability is typically higher for cognitive than for motivational variables and higher for motivational variables than for personality traits. However, observations or tests of the manifest level of functioning are generally not useful predictors of modifiability within any of the structures of the learner.
Overall, MET enables the professional to explore such areas as knowledge representation, inference mechanisms, memory-based reasoning, lexic functions, mathematical functions, roles of motivation, decision making, use of feedback for self-regulation and many others. Additional examples of the three types of proximal elements of modifiability enhancement included in MET are shown in Figure 5.

### Part II. The mechanism of modifiability enhancement

MET theorizes that the mechanism involved in the formation of the ability to widen and transform existing cognitive and knowledge structures is a variant of the theory of mediated learning experience developed by Feuerstein (1970) and investigated by him and his colleagues (Feuerstein & Rand, 1974; Feuerstein & Jensen, 1980; Feuerstein, Hoffman, Rand, Jensen, Tzuriel & Hoffman, 1986; Feuerstein, Rand & Rynders, 1988; Feuerstein & Feuerstein, 1991).

In mediated learning, the student is no longer exposed directly to sources of information. An intentioned, affectionate and initiated adult, usually a parent or a teacher, interposes him or herself between the environment and the learner to function as a “mediator.” In this role, the parent or professional constitutes a powerful filter for the child, intercepting and altering stimuli before they reach the systems of the learner. Among many other activities, the mediator schedules and frames the appearance of stimuli, selecting them according to purposes and goals, grouping them by attribute, imbuing them with meaning, evoking some no longer sensorially available and strengthening others through repetition.
Mediated learning theory argues that by deliberate and sensitive efforts of mediation it is possible to enhance the modifiability of learners by fostering specific changes in the ways in which children construct and act upon their experience. Mediated learning experiences may produce internalized cognitive dispositions and motivational propensities for which children previously may have had no perceptual basis or need: The new dispositions and propensities facilitate the development of autonomy and self-regulation in knowledge acquisition and application. Parents, teachers and other school professionals are all believed to be able to function, or learn how to function, as mediators within the context of their specific relationship with a child. Moreover, as qualitative characteristics of human interaction, mediated learning experiences can be provided across content areas, languages of communication, ages and levels of intellective functioning. Figure 6 illustrates the steps presumed to be involved in modifiability enhancement.10

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10 “Mediated learning theories generally presume that variables encompassing the range of known and suspected genetic, neuro-biological and environmental risk factors all may influence the child's capacity and propensity to learn. Whether and how critically they in fact will do so is theorized to depend principally upon the extent to which they succeed in interfering with the provision, or reception, of [MLE].” (Jensen, 1992a, p. 57).
MET considers the following five characteristics to be necessary and sufficient for mediated learning experiences to take place (see, however, also Feuerstein & Feuerstein, 1991):

1) **Intentionality-Reciprocity** — Establishes bond between mediator and learner and sensitizes learner to mode of functioning in need of mediation.

2) **Transcendence** — Orient learner to goal of producing new and generalized cognitive disposition for use across range of different knowledge structures.

3) **Mediation of Meaning** — Undergirds new component of functioning with insight-supported need system to use it.

4) **Mediated regulation of behavior** — Places new component of functioning correctly within broader sequence of mental acts of which it becomes a part.

5) **Mediation of a feeling of competence** — Ensures supply of motivational support for learner to attempt to function in new and initially unfamiliar and often difficult ways.

**A Special Education Example of Mediated Learning**

At the time of referral 'KC', a girl, was 14 years of age and in a special school for learning disabled and slow learning students. Described as restless, disorganized, anxious and, occasionally, aggressively defiant, KC had a history of medication for emotional difficulties and hyperactivity beginning at age 3 (Tofranil). A neuropsychological evaluation found a pattern of 'diffuse cerebral dysfunction', a Full Scale IQ on the WISC-R of 55 (VIQ/64; PIQ/54) and achievement levels much below expectancies for her age. KC was evaluated with the LPAD (e.g. Feuerstein, Haywood, Rand, Hoffman & Jensen, 1986; Jensen & Feuerstein, 1987).

Using the framework of dynamic assessment in conjunction with the techniques of mediated learning, KC was found to have difficulties in spatial orientation, conservation of constancies, precision and accuracy, comparative behavior, interiorization, strategies for hypothesis testing and planning behavior. Yet, the provision of mediated learning experiences in these areas of KC's cognitive structure showed a high degree of modifiability in many of the above functions. Figure 7 illustrates the results obtained on the Complex Figure Drawing (Osterrieth, 1944; Rey, 1941; see also Taylor, 1961) before (copy and memory) and after (copy and memory) mediation and at free-recall 24 hours later.

The results obtained before mediation were consistent with the large mass of available evidence regarding KC's low level of functioning. Yet, modifiability of
Figure 7: Clinical Case Illustration of Dynamic Assessment and Mediated Learning
many of the functions mentioned above was very high. Case management involved placement in a residential school near the home to enable KC to model herself on normal children and counseling for parents and teachers to assume the role of mediators. At four year follow-up, KC was pursuing a vocational education in a regular setting. That summer she also worked as a camp counselor for youngsters with learning disabilities.

**Part III. Properties of structural changes**

The literature distinguishes between changes in a learner's functioning that affect performance in a circumscribed area (task-bound skill enhancements) and changes that allow the learner to approach also unfamiliar or previously inaccessible tasks more efficiently (structural changes). Ideally, school-based intervention programs should produce structural changes in learners. The inability of many programs to do so has been the subject of both frustration and useful theoretical speculation among practitioners and researchers alike. Much attention has focused on whether cognitive and thinking skills are better trained as a separate subject, to be bridged into the curriculum, or whether better results accrue from embedding such training directly within the content areas where children need to acquire knowledge and skill.

Rejecting an either-or approach to this question, the general view of MET is that any change in functioning must be supported with the properties it is desired to have. The framework of a dynamic interaction between mediator and learner provides the means (relationship, concepts and materials) for the construction of a structural change in functioning. Using these resources, the professional and learner form a partnership where the mediator helps the student to acquire new modes of functioning. In MET, the mediator has at his/her disposal a wide range of instruments, or tools, ranging from decontextualized measures, that afford a high degree of control over specific cognitive structures, to recontextualized measures that afford a high degree of control over specific knowledge structures.

Especially for mildly handicapped and lower functioning students, who often have experienced failure and frustration in academic skill-areas, it is often advantageous initially to shift to the use of decontextualized tasks. Since these tasks are largely unfamiliar, they increase the mediator's ability to bypass motivational factors which otherwise might block the access the mediator needs to examine and remediate cognitive functions that contribute to the student's academic failure (see the math example in Figure 1). In dynamic assessment both the relationship and materials used are designed specifically to enable the mediator to help the learner to achieve structural changes in functioning.

Figure 8 labels the steps which MET presumes are involved in the construction of a structural change (Jensen, 1990; 1992a; see also Feuerstein, Rand, Jensen, Kaniel & Tzuriel, 1987). Figure 9 provides an illustration of these steps for a student who relies excessively upon perception, as opposed to thinking, to
determine reality (insufficient interiorization). As the mediator and student move through the illustrated steps, connections with decontextualized tasks are broken. In step 5, new modes of functioning are extracted from the particular circumstances that surrounded the development of their acquisition (step 1), retention (step 2), switch-on capability (step 3) and switch-off capability (step 4). In step 5, new modes of functioning are undergirded by rule-based contingencies. Step 6 supplies new modes of functioning with insight derived from their rediscovery and application in different areas or knowledge. At this point the new mode of functioning is ready for proceduralization (step 7) within the learner's knowledge structures (see below).
A Regular Education Example of Mediated Learning

The cognitive contribution to learning difficulties is not apparent to most youngsters who experience them. Their persistence is likely to be attributed to other causes either within the learner (e.g. “I am stupid.”) or in the learner's environment (e.g. “Nobody likes me. I can't please anybody.”). Over time such problems may erode a student's self-esteem and result in low self-confidence. These problems, in turn, can give rise to a large number of difficult behavior problems in both school and home.

The most overt, or pressing, symptoms in these cases are the behavioral problems which often are identified as the cause for referral. The emotional problems related to low self-esteem and poor self-confidence are typically not far below the surface. School based responses to these issues are commonly (a) behavior management; or (b) placement in SED classes for students with social or emotional problems. Neither of these solutions addresses the core issues for many students whose problems are cognitive in origin.

When examined in a dynamic framework, the opportunity emerges to unconfound the cognitive from the behavioral and emotional components of a learner's functioning. The need for this level of analysis may be obscured by the overt behavioral or emotional signs of difficulty but such an analysis, if undertaken, often yields rapid, concrete and important benefits. These issues are well illustrated by the case of `Tommy.'

'Tommy' was assessed at age 13 in response to the concerns of his teachers and parents with his poor academic performance and behavior problems both at school and at home. Tommy had been diagnosed as hyperactive and had been treated unsuccessfully with pharmacological means before work was initiated for cognitive and knowledge structure development. Dynamic assessment using the techniques of mediated learning identified the following areas as targets for this work:

- Mediated development of interiorization to avoid an over-reliance on concrete sensorial experience as the determinant of reality and relevancy.
- Mediated development of the need to search for and establish relationships to help Tommy's overcome episodic grasp of reality.
- Mediated development of goal seeking behavior to enable Tommy to identify criteria by which to render his behavior purposeful.
- Mediated development of goal achievement to enable Tommy to subordinate on-going behavior to plans and timelines.
Mediated development of a search for cause–effect relationships enabling Tommy to overcome the repetition of ineffectual behavior and failure to learn from experience.
Through mediating learning experiences directed at the above areas, Tommy was able to acquire and apply new cognitive and knowledge structures in personal, social and academic areas of functioning. The work was accomplished over a five month period during which Tommy received individual help one hour a week. The parents received some counseling as well. At follow up eight months after the termination of this work Tommy volunteered:

“I was lazy; low self-confidence. I didn't like myself at all. I thought everybody was too good for me and they were so great and I was a terrible person and how could I please anybody. I figured since I had such a low-self confidence, if I was going to be down, then everyone else had to be down too. I was kind of mean. I figured if I didn't like myself I wasn't going to like other people anymore. So now I like myself and started to be friends with a lot more people and I've got a lot more friends and stuff. The other problem I had was grades. I've turned around from being a D-F student to an A-B student in a matter of one half to a year. In high school I am going into average classes. With my grades before, I would be going into lower classes but now I'm going into average classes like everyone else. Basically, I've just turned my life around. I'm living a different lifestyle – a lot better lifestyle. ... I've just made a big change in my life.” (reproduced with permission)

Part IV. Proceduralization: Embedding changes in cognitive structures within knowledge structures

To be useful, new modes of cognitive functioning must be integrated both with other modes of cognitive functioning and with factual information. MET theorizes that the yield from this process of integration, or proceduralization, is in the form of knowledge structures. As conceived in the model, knowledge structures represent much more than the concepts and relationships that constitute the purely factual information of a given content area (e.g. equations, mechanics, nutrition, health). In the formation of knowledge structures, the factual information, or declarative knowledge, is knitted together with cognitive functions and motivational factors to form organization and control mechanisms that enable the learner not just to apply information in static situations but also to regulate arousal, evoke from memory, recognize patterns, use inference mechanisms and make decisions to troubleshoot situations, overcome obstacles and solve less familiar problems.

Specifically, MET theorizes that the proceduralization of knowledge structures is akin to the acquisition of expertise through a relationship wherein an intentioned mediator (parent, caregiver, teacher or other school professional) nourishes the learner's transition from novice to expert approaches to problem solving (Jensen, 1991b). In addition to concepts and relationships ('facts'), mediation is used with new and unfamiliar content areas to help the learner to acquire rules for the collection, transformation and communication of information
('syntax and grammar') along with instruments to maneuver within the new knowledge base ('cognitive tools'). These include, for example, mechanisms to search the presenting features of problems, select relevant information, instantiate specific conditions, infer cause-effect relationships and verify solutions, see also Schmidt, Norman, & Boshuizen, 1990; John-Steiner, 1985). The mediation enables the learner to begin to build mental representations based upon the overt characteristics of problems and to use cognitive tools to transform and act upon these.

As mediation is internalized (see Figure 6, Step III) the learner is increasingly able to acquire experiential knowledge from exposure to real problems in the content area. MET considers the acquisition of experiential knowledge to be an integral part of mediation for cognitive and knowledge structure development. As students acquire more and more experience, their knowledge structures evolve in a manner that enables them to function with increasing efficiency. Drawing on the work of Schmidt, Norman, & Boshuizen (1990) the MET model theorizes that experts are not simply better at doing what novices do but that experts conceptualize and reason differently. For example, shortcuts in reasoning may ensure that only case-relevant information is activated; simplified mental models, or scripts, may evolve to cover whole classes of problems and similarity judgments and pattern recognition may provide the expert performer with quick and efficient ways to deal with a widening range of familiar problems.

The Teacher as Mediator

Mediation of students' cognitive and knowledge structure development is possible with many different approaches in the classroom such as thematic teaching, whole language learning, case based reasoning and such specific programs as Dimensions of Learning (Marzano, 1992), Tactics for Thinking (Marzano & Arredondo, 1986) and Instrumental Enrichment (Feuerstein, Rand, Hoffman & Miller, 1980). The factor which perhaps most significantly distinguishes mediational approaches from other models is the quality of the interaction that the mediating teacher establishes with his or her students. Research has shown that it is the quality of the interaction that affects how a child learns more so than the actual teaching of any particular skill or content (e.g. Bernstein, Hans & Percansky, 1991; see also Lidz, 1991).

For school based learning, the MET model advocates thematic teaching in a rich, authentic and meaning centered curriculum. The thematic teaching approach is especially suitable to the purposes of cognitive and knowledge structure development because it provides options for the teacher/mediator to engage and re-engage students in multiple problem-solving situations while maintaining motivation. Language arts and curricula can all be tied together as the class shifts from one aspect of an overarching theme to another (see example below).
Schlechty (1990) identified a number of classroom components likely to be found in the school of the 21st century. These components also capture the orientation of the mediated learning classroom for cognitive and knowledge structure development: In this classroom the emphasis is upon the production rather than the reception of knowledge; curricula are not ends in themselves but instead provide the ingredients for the work that takes place; curriculum richness and texture are emphasized over scope and sequence; and teachers function as guides, coaches and facilitators rather than dispensers of information (see Schlechty, 1990).

The mediated learning model for cognitive and knowledge structure development is consistent with a large and growing body of research literature which shows that better outcomes are associated with a replacement of drill-and-practice instruction and rote learning (Moll, 1991) with the teaching of skills in the context of a meaningful relationship between teacher and student (Collins, Brown & Newman, 1989; Brown, Collins & Duguid, 1989; Feuerstein & Jensen, 1980; Haywood, 1987; Rogoff, 1990; John-Steiner, 1985); teacher modeling (Allington, 1991), connections to meaningful applications, use of good examples and analogies, teaching for meaningful understanding, explicit promotion of student self-monitoring, gradual transfer of responsibility for learning from teacher to student (Wang, 1992; see also Wang, Haertel, & Walberg, 1990) and parallel treatment of process and content (Deloria, 1989). In a recent review of the research on mediated learning Greenberg (1992) concluded:

“The use of a mediation approach with both cognitive processing variables and subject matter content appears to be helpful and perhaps crucial to improved performance in both cognitive functioning and academic functioning.” (p. 24).

Figures 10 and 11 provide an example of thematic teaching. The example is from Ms. Trish Doerr's combined 3rd and 4th grade learning handicapped special day class at Meadows Elementary School in Thousand Oaks. The classroom was observed by the first author on February 12, 1992. Figure 10 illustrates Ms. Doerr's map of her lesson as built around the theme of explorers. The mapping provides a picture-at-a-glance of key points of the school day. Figure 11 shows parts of how the work that day was sequenced and anchored in time.

During the course of the day, Ms. Doerr and the class pulled in a broad range of content materials from the language arts, math, science, history and social studies in the context of solving richly contextualized problems. At the same time, the lesson enabled Ms. Doerr to focus on a wide range of cognitive factors including, among others, orientation in space, orientation in time, the role of traces, signs and symbols, role of verbal tools and concepts, need for precision and accuracy, simultaneous use of multiple sources of information, interiorization, mental representation, evoking from memory, comparisons, hypothetical mode of reasoning, transformation of mental representation, inferential thinking, need for
logical evidence, goal seeking, goal setting, goal achievement, summative behavior, search for cause-effect relationships, overcoming egocentric modes of perception/communication and use of feedback for self-regulation. Ms. Doerr's classroom provides an excellent example of how a mediational teaching style may be used to facilitate the combined development of students' cognitive and knowledge structures.
The Parent as Mediator

The best and most accessible resource that parents have to recreate their selves within their progeny is their culture. The mechanism whereby culture may be transmitted from parent to child, from one generation to the next, is believed by a growing number of investigators to involve parent-child interactions that conform closely with the properties of the mediated learning experience. Perceived as a set of qualitative characteristics, mediated learning experience is found in all cultures in the form of intentionality-reciprocity, transcendence, mediation of meaning,
mediation of the regulation of behavior and mediation of feelings of competence (see also Feuerstein & Feuerstein, 1991).

“Through mediated learning, and beginning shortly after birth, the parent may initiate the establishment of propensities to focus, reciprocate, and imitate and foster the development of a sense of task completion through association with the re-establishment of equilibrium. The propensity to reciprocate, for example, can be fostered by making eye contact a condition for interaction and by interspersing periods of silence reflecting a readiness to await the child's response.

“Also the perception of feelings is normally initiated early through mediation. Making herself conspicuous by the way she uses her eyes, voice and gestures the child learns to focus on the mother and to perceive the changes in her appearance as transformations of a constant figure. This creates a sensitivity to change in appearance as an important cue whereby social interactions may be interpreted. The child becomes oriented to intercepting faces and to interpret changes in their expression as a transfiguration related to circumstances.” (Jensen et al., 1988, p. 84).

John-Steiner and Tatter (1983) also emphasized the connection between culture and cognition in the parent-child relationship:

“The prolonged dependence of young children on their caretakers is a basic condition of human life. The adult-child interactions during this period of dependency form the primary social courses for the development of linguistic and cognitive processes. The subsequent mastery of language, extending the meaning and scope of these early exchanges, enables growing children to internalize the cultural knowledge of their communities and reflect on their experiences.” (p. 86).

Summarizing his own work and the literature, Graven (1992) concluded that the emotional development of children requires adult mediation in all of the following areas: attachment, attention, warmth and touch, responsivity, feelings, and excitement-wonder. In addition, Graven (1992) pointed to the central role of adult mediation in children's development of a sense of competence, self-worth, sense of identity, empathy, cultural and social values and positive social interaction.

The dynamic assessment/mediated learning model for cognitive and knowledge structure development recognizes the critical contribution of the parents and their culture in the young person's development:

“Mediated transmission of values is accomplished through a combined energetic and cognitive process. The parent endows certain events or their properties with particular, powerful, emotional energy which produces a
rank order and a basis for establishing priorities among them. The energetic component is most regnant in the creation of this rank order but cognitive components required for discrimination and mental reconstruction are [also] required for the child to internalize such a rank order and turn it into a set of values, preserving and evoking them as guidelines for behavior.” (Jensen et al., 1988, p. 85).

As important as parental mediation may be for children's emotional, social and cognitive development, many factors are known to attenuate or severely disrupt normal processes of parent-child mediation across all population groups. Among these factors are socio-economic hardships, educational philosophies (such as the laissez-faire doctrine) and “... the extreme cultural, vocational, informational and communicational discontinuities in modern society which cause many parents to curtail processes of transmission feeling that their contribution at best will be irrelevant for the child and at worst may even harm the child's chances for adjustment in the future.” (Jensen et al., 1988, p. 83).

Some risk factors for disruptions in parent-child mediation affect some population groups much more than others. The long separation of identity development from learning may have placed all students at a disadvantage. Yet disadvantage is often relative (Secada, 1991) affecting disproportionately those with cultures outside the mainstream. When parents discern that schools do not value their particular culture, they often deliberately withhold mediation of their culture to their children out of concern that such mediation may stigmatize and further disadvantage their children.

In response to the variety of threats to parent-child mediational processes, several investigators have developed programs for parent education (Kopp-Greenberg, 1991; Kahn, 1992; Klein, 1988, 1991; Klein, Wieder & Greenspan, 1987). MET has guided the development of the Parent-as-Mediator (PAM) program for children's cognitive and knowledge structure development (M. L. Jensen & M. R. Jensen, 1992). One component of this program is a parent-child activities workbook (M. L. Jensen, 1992) which describes how parents can use their own culture to turn everyday activities into mediating learning experiences to develop both children's cognitive functions (e.g. systematic exploratory behavior, establishment of relationships, goal seeking and planning) and such non-intellective factors as self-confidence, initiative and curiosity, persistence and responsibility. The premise for the program is evident in M. L. Jensen's preface to parents in this workbook:

“By sharing yourself and your culture, you will be giving your children a most precious gift that only you can give to and one that will benefit them for the rest of their lives.” (M. L. Jensen, 1992, p. 10).
Principles of Service Delivery and Case Management

The dynamic assessment-mediated learning model for cognitive and knowledge structure development is in a fundamental way a model of empowerment not just for children but also for parents, teachers and even the school and its surrounding community (Jensen, 1992b; Jensen & Lefton, 1992). The shift in thinking in change models from closed to open systems applies as much to the perception of the systems that serve the learner as it does to the perception of the learner.

“Schools and other systems that consider those they serve as closed systems tend to be no less closed themselves. ... Closed systems organize themselves so that change is neither expected nor promoted. Individuals within them are exposed to little novelty, homogeneous groupings are created, the level of requirements stay constant and the message communicated is that the individual is not meant to become anything except what he/she already is.” (Jensen et al., 1988, p. 82).

The open system approach advocated in dynamic assessment-mediated learning models provides a framework for structuring classroom and schools as powerful environments for change. Powerful environments anticipate change, intercept it when it occurs, interpret its meaning and amplify it as necessary for the learner. Most importantly, powerful environments then proceed to change themselves to offer opportunities for the learner to strengthen new modalities of functioning through meaningful use while exposing the learner to new opportunities for growth and change.

The MET model advocates such an `open system' approach to the classroom and school environment. With the help of this approach and the empowerment of teachers and support personnel with instruments and techniques for dynamic assessment and mediated learning for cognitive and knowledge structure development, the focus of the MET model is upon the child within regular classrooms. MET provides options for primary prevention through consultation, guided interviews, screenings, and parent information and educational programs. Pre-referral intervention based on problem identification by regular classroom teachers or parents is aided in MET by the Primary Sources Inventory (Jensen, 1991a) which is used to prepare, deliver and assess consultation services in the broad area of cognitive and knowledge structure development. This inventory is supported by advanced information processing and management technology to enable professionals to score, store, review, compare and print information at their convenience. Full fledged assessment for cognitive and knowledge structure development is accomplished by trained examiners using specially prepared instruments or tools.

The MET model maintains the specialty functions of school psychologists, reading specialists, speech and language pathologists, school social workers,
resource specialists and educational diagnosticians. The model advocates greater collaboration between general and special education, and more efficient utilization of existing specialty resources through special education services rather than special education programs: The role of support people is to support the teacher in the classroom environment. Special education programs are used when a child's individual needs cannot be met within a regular classroom environment. The MET model is best seen in this context as a programmatic design for the delivery of a continuum of services to children and families. The design is characterized by a preventive orientation where the intensity of service provision grows with the severity of the need; see Figure 12. As depicted in Figure 12, the objective over
The time of dynamic assessment mediated learning programs for cognitive and knowledge structure development is to shrink and fit more of the triangle within the circle.

In the MET model, parents and children, teachers, support personnel and schools, health-care givers and community based resources are all seen as both providers and users of information who are linked laterally in systems of interconnected processes where each person is able to convert information from lower to higher levels of usefulness. Drawing on research showing that family support programs are more effective than programs aimed at students in isolation (Price, Cowen, & Lorion, 1988) case management using the MET model draws upon an ecological approach that emphasizes the child's development within a context of family and community (see Bronfenbrenner, 1977; Finn-Stevenson, 1992; Zigler & Weiss, 1985). Case management frequently involves collaboration between parents, resource teacher, general education teacher and the learner. Service delivery is systematically monitored and outcomes evaluated using a format where identified problems guide case management. Outcomes are determined within the family and cultural context and may include goals that go beyond conventional outcomes as parents and community resources are brought in to help frame the contexts wherein the child is operating. Performance on regular achievement tests, CBM probes, portfolios, play, demonstrations, observation as well as more direct assessment of students' emerging cognitive and knowledge structures may all at times provide appropriate, useful and measurable exit criteria from service provision.

Culture, Cognition, Mediation, Identity, Diversity and Modifiability

Serving children of diverse cultural and linguistic backgrounds is one of California's and this Nation's most pressing educational, social and economical concerns. Our ability to shift our thinking about the nature and facilitation of human potential for all children will contribute substantially to the future of our society. In this regard the mediated learning model offers some intriguing insights about the relationship between culture and cognition, mediation, identity, diversity and modifiability which may help guide the search for community renewal, family preservation and child development within effective schools. The point of departure for this analysis is in the search for the origins of the phenomenon of cultural 'difference.'

Cultures vary in the contents they extract from the physical environment and in the meanings they attribute to them. Knowledge, experience, linguistic behaviors, values, mores, skills, habits, rules, principles, strategies, and other cognitive repertoires are all closely connected with the phenomenon of culture and its transmission from one generation to the next. The perception of cognition as a culturally and socially influenced phenomenon has been explored by many
investigators (e.g. Vygotsky, 1978; Rogoff, 1990). George Herbert Mead (1934) observed:

“We must regard mind ... as arising and developing within the social process, within the empirical matrix of social interactions. We must, that is, get an inner individual experience from the standpoint of social acts which include the experiences of separate individuals in a social context wherein those individuals interact. The processes of experience which the human brain makes possible are made possible only for a group of interacting individuals; only for individual organisms who are members of society; not for the individual organism in isolation from other individual organisms.” (Mead, 1934, p. 133).

The theory of structural cognitive modifiability (Feuerstein, 1970; Feuerstein & Rand, 1974; Feuerstein, Jensen, Hoffman & Rand, 1985) advanced the conception of learning as a socially and culturally influenced phenomenon by identifying the mediated learning experience (MLE) and its parameters as a critical determinant of human cognitive development. According to this theory, a number of purely qualitative aspects of the interaction between parent (caregiver) and child, such as intentionality, transcendence and meaning, combine to constitute the vehicle, or mechanism, for intergenerational transmission of culture. One result of this is the development of cognitive modifiability:

“The development of modifiability depends neither upon the nature of the culture, its language, and its content nor upon the specific institutions involved in its transmission. The universal elements of mediated learning ... are found in all cultures and may even be considered to constitute a necessary basis for their existence.” (Jensen et al., 1988, p. 69).

In the process of mediation, the child is equipped with a repertoire of modes of functioning for which the child would experience no need without the act of mediation. However, even as mediation generates those structures that enable the individual to change and develop new modes of functioning, the same mechanism also inducts the child into his or her own culture:

“MLE is actually present whenever groups or individuals transmit to their progenies their own past, culture and self. Both implicitly and explicitly the goal of cultural transmission is to ensure the continuity of the existence of the group or individual beyond the biological limitations of life.” (Jensen et al., 1988, p. 69).

The combined effects of exposure to processes of transmission within the child's own culture are therefore twofold: One is the development of modifiability (the capacity to change) and the other is the development of cultural uniqueness and identity. In this view, the more an individual has been exposed to processes of cultural transmission the more culturally unique, articulated, or different, he or she
is: Cultural difference is presumptive of MLE and is a direct function of exposure to one's own and unique culture. Cultural difference implies identity and, conversely, identity implies cultural difference. From this analysis it may be hypothesized that there is a close relationship between the development of identity and the development of the capacity to change:

“When exposed to a new environment, and confronting a need to change, the culturally different individual will ... show a high level of adaptability and capacity to be affected by and learn from the new. ... [This] is due to the development of modifiability which in turn is due to the development among the culturally different of the prerequisites of higher levels of functioning as a result of mediation offered to them through cultural transmission.” (Jensen et al., 1988, p. 70).

The mediated learning model views cultural diversity as an asset in a multicultural, pluralistic society. “The more continuity in MLE processes within diverse cultures the greater the chances that the individual will confront the dominant or any other culture in a useful and efficient way. There is a direct relationship between cultural diversity and learning efficiency ...” (Jensen et al., 1988, p. 86). On this view, the threat to the multicultural, pluralistic society is not its diversity (quite the contrary) but rather issues around equity and other social factors which mitigate against intergenerational processes of cultural transmission.

Schools may become a focal point for renewal and improved circumstances for child and family development in many communities by stressing cultural difference as an asset of learning for all students. In order to realize this potential, “learning style” differences in cultural groups must be credited by the receiving educator. While it is important to note that generalities about any particular culture must be examined within individual situational contexts, patterns of mediation, outcomes and knowledge areas may be gleaned from research and observation across cultural groups and serve as important bases for teachers in their work with many culturally different students. An example of this is provided by Native American learners who often are mediated by proximity, modeling, participation in culturally meaningful ceremonies, and sequences that are used to establish correlations among experiences. Far less typical are question-and-answer interactions, trial and error behavior, cause-effect analyses and the use of high levels of verbal cues (Deloria, 1991: Pepper & Henry, 1989; Philips, 1983). Secada (1991), citing Deyhle (1987), commented that American Indian students at home never put tasks on display before the individual determines that the task is ready yet in most classrooms these students are expected to display the progress of their work while it is in process. Research is available also on “relational styles” among Mexican American students (Ramirez & Castañeda, 1974) and Comer (1988) has discussed how efforts to design effective schools have paid insufficient attention to “cultural incongruities.” Emerson (1991) has shown how the concept of mediated learning experience may be used to assist with identity formation among Native American youth confronting a bi-cultural and bilingual existence.
The dynamic assessment/mediated learning model emphasizes the significance of the transmission of culture for identity formation and learning efficiency. Dynamic assessment and mediated learning provide tools to reach for and affirm the development of identity along with the development of the ability to change. It is the presence of identity which enables change to occur.
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