Review Paper

Mediated Learning Experience as a Multi-Dimensional Approach in ELT: A Meticulous and Elaborate Taxonomy

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Abstract

This article tries to delineate different aspects of Mediated Learning Experience (MLE) in detail: MLE as a model of learning in psychology, MLE as a dynamic assessment methodology, and MLE as a basis for designing a course. MLE, well-known as Feuerstein's theory, is presented as a model of learning in psychology for enhancing cognitive functioning and problem-solving skills in children with cognitive challenges. Some other studies and scholars such as Poehner (2008) consider MLE as a dynamic assessment methodology because in dynamic assessment, assistance emerges from the interaction between the mediator and the learner. Other studies look at MLE as a holistic and integrative approach which is able to prepare a course. Definition of MLE principles and a meticulous and elaborate analysis of the first five MLE principles in different studies, entitled as MLE Taxonomy, are presented in a table at the end of the article.

Keywords: *Course Design; Dynamic Assessment Methodology; Learning Model; MLE Taxonomy*

ت به ا ری س ه ای ب   یک ر   د   ند بعدی در   ان انگ سی: طبقه بندی قیق و گسترده

در این مقاله سعی شده جنبه‌های مختلف روش تجربه میانجی‌محور شرح داده دوش: .. عنوان . . کدل یادگ. . .ر روانشناسی، یک نوع متد .رز یابی .یا و روشی برای طراحی یک دوره آموی‌شز. تجربه یادگیری م یانجیمحور، م. . . به ..... . .ن، .ک . . .گ. . .ر روانشناسی . .نظور بهبو. عمل .رد ...یی و . ... . حل مسا .ر . .های دا . ا . .. .. . است. ب . .ی... .. مطالعات و دانشمند. . از . .له Pohner (2008) ، تجربه یادگیری م یانجیمحور را نوعی متد ارز یابی .یا .ر نظر میگیرند. چرا که در ارز یابی .یا، یاری و همراهی قر تعامل قن م یانجی و یادگیرنده محقق میـ .s د.گر مطال .ت روش میانجی‌محور را روشی همه عذع و جامع در طراحی یک ع عع آموزشی میشمارند. تع.ف.عازده اصل روش یادگ عع عها   عمحور و همچنن بررسی دق. ق. و بس.ط پنج اصل   . آن در مطالعات مختلف، با عنوان   ..بندی روش تجربه یادگیری م یانجیمحور (MLE Taxonomy) ، در جدولی در انتهای مقاله آورده شده است.

ان ک دی: طراحی دوره، روش) زیابی پو)،   ) یاد))ری)،)یاد))ری(، تا ک))نو)) MLE

Introduction

Mediated Learning Experience (MLE) is one of the various approaches developed by Reuven Feuerstein (2000) and his colleagues for enhancing cognitive functioning and problem-solving skills in children with cognitive challenges such as children with autistic spectrum disorders, Down, fragile X, and other syndromes during the past 50 years. In fact, MLE tries to help children learn to greater degrees than usually expected with appropriate mediation and interactive learning experiences by means of a special type of interaction between a learner and a mediator. Although MLE was pioneered firstly for children with specific needs, it has been applied to different situations such as adult-child interactions, parent-infant interactions, children and their younger siblings' interactions, and even teacher-student interactions in a classroom setting.

There are five essential principles in defining MLE, i.e., intentionality and reciprocity, mediation of meaning, mediation of transcendence, mediation of feelings of competence, and mediation of control of behavior, which their lexical and operational definitions extracted from different articles, are presented in a table at the end of this article.
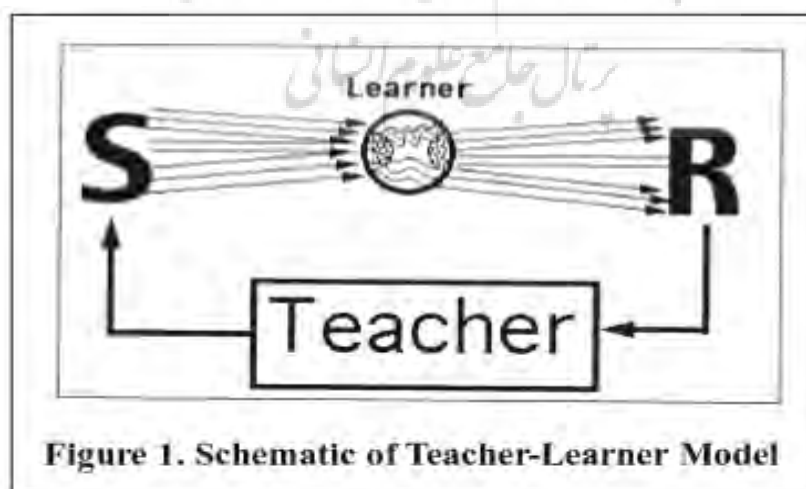
Although some studies and scholars such as Poehner (2008) consider MLE the same as interactionist dynamic assessment because in interactionist dynamic assessment, assistance emerges from the interaction between the mediator and the learner and confine the MLE theory to assessment, some other studies approach the issue from a different angle, that is, MLE as a basis for designing a course. Actually, these studies look at MLE as a holistic and integrative approach, which is able to prepare a course.

Mediated Learning Experience as a model of learning in psychology

The work conducted by Feuerstein, Rand, and Hoffman (1981), Feuerstein, Hoffman, and Miller (1980), and Feuerstein (1990) suggested two different basic conditions under which learning may occur: direct versus mediated learning, i.e., "learning by direct exposure to sources of stimuli and learning with human mediational assistance" respectively (Paour, 1990, p. 177). In other words, direct learning takes place in a Teacher-Learner Model in which the teacher provides a suitable stimulus such as test, assignment, or question for the learner and then the teacher interacts with the learner (e.g., new assignment, praise, or criticism) based on the response. The Teacher-Learner Model is illustrated in Figure 1:

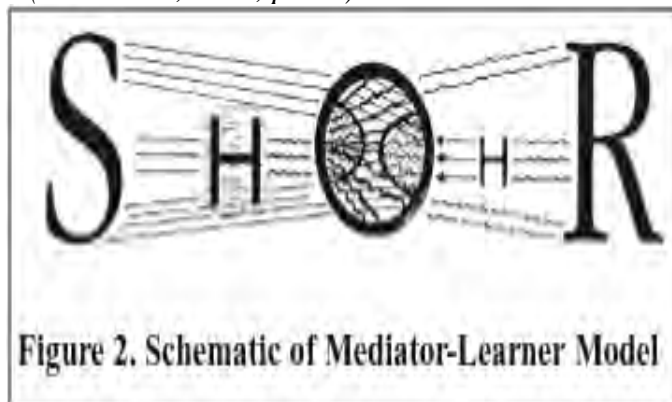**Figure1**
Teacher-Learner Model (Feuerstein, 2000, p.558)

Figure 1. Schematic of Teacher-Learner Model

On the other hand, mediated learning happens in a Mediator-Learner Model in which a warm human being usually an adult or a more competent peer, indicated by 'H' in the figure, interposes himself between the learner and the stimulus and between the learner and the response. The Mediator-Learner Model is illustrated in Figure 2

Figure 2
Mediator-Learner Model (Feuerstein, 2000, p.558)

Figure 2. Schematic of Mediator-Learner Model

As an explanation, in direct, non-mediated learning, the child directly interacts with his environment in a haphazard fashion. This interaction can take the form of experimental manner, observational learning, trial and error, and stimulus-response conditioning. Actually, "in this type of learning, the child remains trapped in the here-and-now situation, unable to interpret the world or to construct meaning in a way that will allow him to see connections between events, situations, and individuals" (Poehner, 2008, p. 54).

Unlike the learning through direct exposure to stimuli, MLE involves intervening of a well-intentioned, experienced, and active human being (parent, teacher, or more competent peer) who interacts with the child and "selects, changes, amplifies, and interprets objects and processes to the child" (Kozulin, 1998, p. 60). Actually, the intentioned adult mediator filters and focuses the stimuli, orders and organizes them, selects and emphasizes their meaning, and regulates their intensity, sequence, and frequency. The mediator creates temporal, casual, and spatial relationships among stimuli to link them to previous and future stimuli. Ultimately, when the learner experiences mediated learning interactions and learns to develop an internal model of the world in which different aspects of experience are meaningfully related, he functions as an autonomous individual and thinker and he will spontaneously interact with things actively rather than passively.

Therefore, a central construct of MLE is mediation. Skuy (1997) explains:

The mediator serves as a go-between; as a connecting and enriching link between separate elements – between the child and his cultural heritage, between child and environment, and between various aspects of the environment. Moreover, in serving as a link between historic reality, on the one hand, and present reality, on the other, the mediator facilitates and promotes the links or connections between the historic and the present themselves, as the child integrates both of these (p. 120).

Structural Cognitive Modifiability
The ultimate goal of mediated learning interactions is involving and enhancing the learner's cognitive functioning and abilities, and enabling him to function as an autonomous thinker and individual and to learn how to learn. The belief that it is possible to intervene in the development of human cognitive abilities has been formalized as Feuerstein's theory of Structural Cognitive

Modifiability (SCM) (Poehner, 2008). In fact, MLE is the central construct of SCM (Skuy, 1997). As an explanation, the quality of mediated learning experiences undergone by an individual affects the extent of modifiability of which that individual is capable. Put another way, "a basic assumption of SCM is that an individual's level of cognitive functioning is directly linked to the quantity and quality of mediated learning experiences (MLE) he or she has received" (Feuerstein et al. 1985, p. 50).

SCM theory considers human being's cognition as an open and modifiable system rather than as a closed and fixed one. In other words, "modifiability is defined as a structural modification in the cognitive functioning of the individual departing from the expected developmental course" (Kozulin, 2002, p. 11). Actually, according to SCM theory, human cognitive abilities are not determined purely by genetic or neurophysiological background, but rather they can be developed in a variety of ways depending on the quantity and quality of mediated learning interactions received by the learner. As an explanation, SCM theory believes in "modifiability" and "autoplasticity" of individual's cognitive functioning rather than immutability and stability (Feuerstein, Rand, & Rynders, 1988, p. 62). Feuerstein and his colleagues do not believe in the predictability of learners' future functioning based on their present performance and they argue, "the predicted destiny may not materialize if powerful intervention takes place" (Feuerstein et ale, 1988, p. 83).

Feuerstein prefers the term *retarded performers* rather than *retarded individuals* because he emphasizes that the individual's performance is retarded and needs modification due to lack of appropriate interaction with people and objects in the world. Actually, he believes in three categories of retarded performers: *culturally deprived*, *biologically different*, and *culturally different*. Of course, the culturally deprived individual has been born in a community, has lived among other people, and has been exposed to a culture but his culture has not been mediated to him in a sufficient or adequate manner (Kozulin, 1998). The lack of mediation results in not extending the individual's attention beyond the here-and-now situation by the adult. As an explanation, the culturally deprived individual will not be able to plan, to formulate and test hypotheses, to relate the current and historic reality, and to compare similarities and differences in subsequent learning situations both in and out of school.

Feuerstein and his colleagues explain the relationship between mediated and direct learning and the essential importance of the former for the latter in the following way:

> It is our contention that MLE provides the organism with instruments of adaptation and learning in such a way as to enable the individual to use the direct-exposure modality for learning more efficiently and thus become modified …On the other hand, the individual lacking MLE remains a passive recipient of information and is limited in his capacity for modification, change, and further learning through direct exposure…(Feuerstein, Krasilovsky & Rand 1978, p. 206).

While biologically different individuals such as children with Down syndrome do not show the dramatic improvements as much as the other two categories, they are responsive to many Feuerstein's mediated learning interactions and capable of very high levels of cognitive functioning. This opinion is supported by several success stories about individuals benefited from Feuerstein's cognitive education program such as a young mentally retarded boy who finally earned a PhD in psychology (Feuerstein et al., 1988).

The third category of retarded performers, i.e., culturally different are usually among immigrant populations and ethnic minorities. Relating the representations of the world learned at home with those presented in the school is difficult for them due to divergence between the dominant culture and their own. In fact, these individuals need more mediated learning interactions than usual to adapt themselves to new situation.

After several decades of work with different populations, especially individuals labeled as mentally retarded or learning disabled, Feuerstein concluded that not all these children exhibit poor performance for the same reasons and many of these poor performances can be improved by mediated learning interactions. He suggested that an individual's cognitive modifiability could be measured through analysis of mediator-learner interactions during an intensive mediation session in which the mediator or assessor provides as much mediation as possible – dynamic assessment (DA). Therefore, MLE is the very heart of DA (Poehner, 2008). As an explanation, the mediator or assessor engages in a task with a learner, observes the leaner's responsiveness to mediation, and changes the type of mediation accordingly to diagnose and to measure the learner's potential for cognitive change and modifiability. Two important components of cognitive change diagnosis are the degree of learner's change and the amount and the type of the mediation required to result in that change.

MLE as a dynamic assessment methodology

Standard assessment tools will not help instructors to propose the conditions under which students can be assisted to make progress (Cioffi & Carney, 1983). As a matter of fact, "dynamic assessment challenges conventional views on teaching and assessment by arguing that these should not be seen as separate activities.but should instead be fully integrated" (Poehner, 2008, p. 5). This integration occurs as intervention is embedded within the assessment procedure in order to interpret individuals' abilities and lead them to higher levels of functioning (Lidz & Gindis, 2003).

The unification of assessment and instruction is rooted in Vygotsky's (1978) sociocultural theory especially the notion of zone of proximal development (ZPD). In fact, ZPD is defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). As an illustration, Vygotsky's sociocultural theory is based on two crucial levels of development: first, the actual level where an individual is expected to perform mental activities without help from a more capable peer. Second, the potential level of development at which the individual is expected to perform beyond his/her actual level provided that s/he is given the relevant help. In other words, dynamic procedures emphasize students' potential for learning and explore ways to bring about those potentials whereas static assessment focuses on students' current knowledge.

Lantolf and Poehner (2004) call two general approaches of dynamic assessment implemented by DA researchers depending on the kinds of delivered mediation, interventionist, and interactionist. The mediation delivered in interventionist and interactionist DA changes from standardized hints to dialogic interaction respectively. Interventionist DA favors a standardized approach to delivering mediation in which all hierarchically arranged and predetermined sets of hints are given to the students in case they cannot give the right answer to a test question. In fact, "interventionist DA remains closer to certain forms of static assessment and their concerns over the psychometric properties of their procedures" (Poehner, 2008, p.18).

On the other hand, the interactionist DA is not in line with any standardization in DA procedures. As an illustration, according to Poehner (2008) "interactionist DA follows Vygotsky's preference for cooperative dialoging. In this approach, assistance emerges from the interaction between the mediator and the learner, and is therefore highly sensitive to the learner's ZPD" (p.18). As a matter of fact, Poehner (2008) considers MLE the same as interactionist DA and the most comprehensive approach to DA because Feuerstein realizes Vygotsky's vision of creating a single educational activity that involves co-constructing a ZPD with learners in order to promote development. The researcher is going to present some studies, which regard MLE as interactionist DA in this part:

Tzuriel (1996) studied a sample of forty-eight kindergarten children and their mothers from low-, medium-, and high-socio economic status (SES) levels. In this study, Tzuriel investigated a) the relationship between SES and MLE in mother-child interactions b) the differences in MLE interaction patterns in free-play versus structured situations, and c) the prediction of cognitive performance by MLE processes using the Children's Analogical Thinking Modifiability test (CATM). The whole study lasted one week, the Preteaching test was administered on the first day, and the Teaching phase and Postteaching test were given in another session during the same week. Mother-child interactions during the Teaching phase were videotaped for thirty minutes (fifteen minutes in each situation) and were analyzed by OMI scale. The results showed that MLE interaction scores were positively related to SES level, and higher in the free-play than in the structured situation. In addition, CATM scores were significantly predicted by the Total MLE or by MLE specific criterion scores in the structured situation.

Another study considering MLE as dynamic assessment is a research carried out by Klein, Zarur, and Feldman (2003) that tried to explore teaching behaviors of forty preschoolers (five-year-olds) and their effects on their toddler siblings (three-year-olds). The children were visited at their homes and they were supposed to teach their younger siblings how to play with two puzzles and two lotto games. All play interactions were videotaped and were analyzed using the observing mediational interaction (OMI) scale. The average time of siblings' interaction was thirty minutes. Twenty-seven minutes of the interaction were coded. The frequency of teaching behaviors (*focusing, affecting, encouraging, expanding, and regulating*) in preschooler interaction was found to be related to the younger siblings' success on the games. Girls were found to receive less teaching behaviors than boys did.

The other study conducted by Klein, Raziel, Brish, and Birenbaum (1987) attempted to identify cognitive performance difficulties of three-year-old very low birth weight (VLBW) subjects and to investigate the relationship between styles of paternal interaction with these children and cognitive performance difficulties. Forty-two infants born weighing less than 1.5 kg., their siblings, and a normal control group were compared in this study. All subjects were tested individually on a series of cognitive measures of language, reasoning, memory, and visual-motor integration. Following the evaluation, parents of the VLBW children were instructed to work with their children and their siblings on the test items that were difficult for them. The interactions between the parents and their children were observed and were analyzed using criteria of MLE. In a nutshell, the basic criteria of MLE were found to be a powerful measure in predicting children's cognitive performance, significantly more than their birth weight.

Lidz, Bond, and Dissinger (1991) focused on stability of mother-child interactions in three consecutive ten-minute tasks: two structured teaching tasks, and one free play situation with a standard set of toys, as rated by the Mediated Learning Experience (MLE) Scale. The pre-school children were first tested with the McCarthy Scales, a cognitive functioning test. Within a week following McCarthy Scale administration, twenty-two mothers were videotaped in interaction with their child to determine the relationship of cognitive functioning to the MLE components. In conclusion, the component of *transcendence* correlated positively with the McCarthy Perceptual-Performance score and the *reciprocity* component correlated negatively with the McCarthy Perceptual-Performance score.

Another study regarding MLE as dynamic assessment is a study carried out by Skuy et al. (2002) to determine whether Feuerstein's MLE would improve the Raven's matrices (Learning Potential Assessment Device matrices) scores of African versus non-African university students. Seventy African and twenty-eight non-African first year university psychology students volunteered to participate in the study.

At the first day of the study, Raven's pretest was administered for the whole group. At the eighth day, mediation training on the Variation II of the Learning Potential Assessment Device (LPAD) was conducted for three hours with the help of three psychologists and six postgraduate psychology students. Raven's posttest was administered for the whole sample in day eighteen as a near transfer test. The representational Stencil Design Test was administered as a far transfer test (assessment of learning potential) in day twenty. The whole study was carried out over a twenty-day period (day 1, day 8, day 18, and day 20), so MLE is an interactionist dynamic assessment rather than a basis for a program. Briefly then, both the African and non-African groups improved over the baseline on the Raven's compared to the control groups, with significantly greater improvement for the African group.

Seabi and Amod (2009) studied the effects of mediated intervention on a sample of twenty Grade 5 learners, namely, Individual Mediation (n = 10) and Group Mediation (n = 10). The Raven's matrices (LPAD matrices) were administered as pre-test and post-test. Indeed, post-test was administered one week after the intervention. Both the testing and intervention lasted over a two-week period. The Set Variations B-8 to B-12 of the LPAD was used as intervention. The Group Mediation participants just received a three-hour intervention phase whereas the Individual Mediation participants were exposed to intense mediation (intervention), that is, one-to-one interaction, two to four hours in a week. As a conclusion, significant improvement in scores only within the Individual Mediation participants was revealed.

In a similar study, Seabi (2012) investigated the effects of MLE intervention on sixty-seven participants' (experimental = 28, control = 39) cognitive functioning. Raven's matrices were used as pre-test and post-test. One week after administering pre-test phase (day 1), the Set Variations II B-8 to B-12 was used as the one-to-one mediation task for experimental group lasting thirty to forty-five minutes (day 8). The Raven's matrices re-administered to all the participants a week after the intervention. Actually, the whole study took place over a two-week period. Significant improvement within the experimental group on the Raven's matrices is shown at the end.

MLE as a basis for designing a course

As it mentioned before, some studies approach MLE as a basis for designing a course. A few of them looking at MLE from this different angle are elaborated here:

One of the most important studies that consider MLE as a basis for course design is research conducted by Schur et al. (2002). In fact, they implemented *Thinking Journey* or the Experimental Astronomy Curriculum (EAC; Schur, 1998, as cited in Schur et al. 2002) in a group of low-functioning students in the ninth grade of a public school in Jerusalem. Constructivism and MLE were explored as the basis of this astronomy curriculum, i.e., *Thinking Journey*. Indeed, the teaching styles of this curriculum were based on MLE principles.

The EAC or *Thinking Journey* was implemented in experimental group (n = 16) three hours per week during thirty weeks comprising the academic year while the control group (n = 16) was exposed to the conventional Earth studies curriculum. The students in experimental and control groups were tested before and after *Thinking Journey* and the conventional Earth studies curriculum as pre-test and post-test, respectively. Ultimately, positive change in the experimental group students' conceptualization of Earth, improvement of their astronomy knowledge, enhancement of their general scientific knowledge and development of their cognitive functioning and problem-solving abilities were indicated.

Another prominent study that regards MLE as a basis for course design is research carried out by Tzuriel, Kaniel, Zeliger, Friedman, & Haywood (1998). Actually, they implemented *Bright Start* program (Haywood, Brooks, and Burns, 1986, 1992 as cited in Tzuriel et al. 1998) in a group of socioeconomically disadvantaged kindergarten children. Indeed, "in *Bright Start*, as in several other structured cognitive curricula, quite special teacher-learner interactions,

characterized as 'mediated learning,' constitute a critical element; in fact, the success of such curricula undoubtedly depends on the teachers understanding and implementation of the principles and techniques of mediated interactions with the learners" (Tzuriel et al. 1998, p.2).

Two of *Bright Start*'s seven cognitive small group units were applied for three months. Each small group was composed of five to six children. The small group units were taught three times a week, each session for a period of twenty minutes, for a total of sixty minutes per week for experimental group (n = 25). The control group (n = 26) received a skill-based but not cognitively oriented program using the same procedure of three times a week, for a total of sixty minutes per week. Both static and dynamic tests as pre-test and post-test were used to evaluate the effectiveness of the program. In conclusion, the experimental group improved their performance on cognitive tasks and showed a higher level of task-intrinsic motivation than did the control group.

Haywood, Brooks, and Burns (1985) used another MLE-based curriculum known as the Cognitive Curriculum for Young Children (*CCYC*) to stimulate the cognitive development and intrinsic motivation of two groups of preschool children. The sample composed of 27 handicapped and 48 high-risk children exposed to *CCYC* for a period of one year and 44 high-risk comparison children exposed to non-cognitively Project Head Start program. The *CCYC* contains five major components: the mediational teaching style, the small-group cognitive units, the cognitive-mediational method of behavior management, the parent-education component, and ancillary services. The small-group units are eight, each designed to address a basic aspect of the cognitive functioning of preschool children, taught in small groups of 3-5 children, lasting about 15 minutes.

The children in both groups were tested before and after the program on the McCarthy Scale of Children's Abilities (a General Cognitive Index), and specific scores on Verbal Performance, Perceptual Performance, Memory, and Motor abilities as well as the Stencil Design Test. As a result, the handicapped and the high-risk *CCYC* groups outperformed on the General Cognitive Index compared to the control group. The high-risk *CCYC* children revealed significant improvement on three of the four sub-scales of the McCarthy (Quantitative, Perceptual Performance, and Memory), and the handicapped outperformed on all four.

Seabi, Cockcroft, and Fridjhon (2009) investigated the effects of mediated learning experience, peer collaborative learning, and tutor support on 111 first year engineering students' intellectual functioning and academic achievement. Raven's matrices and the Organizer and Mid-year and end-year examinations as pre-test and post-test were run to measure intellectual functioning and academic achievement respectively. The mediation group was exposed to five weeks of intervention in which the lecturer mediated the engineering concepts to the participants while the peer and tutor groups received peer and tutor support respectively. Briefly then, the results revealed that intervention based on MLE principles was more effective not only in enhancing students' intellectual functioning but also improving their

MLE principles

Feuerstein has explained that not just every interaction between a teacher and a learner or an adult and a child can be considered as MLE. To distinguish MLE from other interactive experiences, Feuerstein et al (1988, pp. 61- 62) proposed 11 MLE principles. In this part, all 11 principles are listed and defined. All but the first three definitions are taken from Feuerstein et al (1988). The first three principles are defined according to Isman & Tzuriel (2008, pp. 547-548).

1. Intentionality and reciprocity - a mediator's intentional efforts to change the child's perception, processing, or response. Intentionality alone is insufficient unless accompanied by

reciprocity. Reciprocity is observed when the child responds vocally, verbally, or non-verbally to the mediators' behavior.

2. Mediation of meaning - interactions in which the presented stimuli possess affective, motivational, and value-oriented significance. The stimuli are imbued with importance, value and worth, and not presented with a neutral approach devoid of affect.

3. Transcendence - interactions in which the mediator goes further than the immediate and/or concrete needs of the children and tries to reach for goals that are beyond the specific situation or directly related to the original activity.

4. Mediation of feelings of competence - offering various forms of assistance to help the learner to successfully complete a task previously perceived as too difficult and interpreting to him the meaning of his success.

5. Mediated regulation and control of behavior - regulation of the child's impulsivity and attention in ways that lead to the child gradually taking on more and more responsibility for the control of his own behavior.

6. Mediated sharing behavior – involves the mediator communicating to the learner her own orientation to the task, her perception of its demands, reactions to problems that arise, and feelings at various stages of task completion while also attempting to elicit the child's feelings and perceptions, emphasizing the joint nature of the interaction.

7. Mediation of individuation and psychological differentiation – emphasizes the learner as an individual with thoughts, feelings, and abilities that may be different from but can certainly complement those of others.

8. Mediation of goal seeking, goal setting, goal planning, and achieving behavior – proposing and perceiving goals; planning specific actions, including the achievement of sub-goals that will lead to task completion; using representational modes of thinking; and execution of problem-solving strategies.

9. Mediation of challenge: The search for novelty and complexity – attempts to mediate an activity the learner has already mastered will not produce the feeling of competence described above and may lead to boredom and frustration. MLE tasks should target what the learner is not yet capable of doing independently.

10. Mediation of an awareness of the human being as a changing entity – the core of Feuerstein's SCM theory, the belief that all human beings are modifiable.

11. Mediation of an optimistic alternative – related to the above, the insistence that individuals can be more than their present abilities suggest.

A meticulous and elaborate analysis of the first five principles in different studies, entitled as MLE Taxonomy, is presented in the following table:

Principles	Examples	Isman & Tzuriel (2008)	Lebeer (1995)	Klein, Zarur, & Feldman (2003)	Seng (2003)	Klein (1988)	Tzuriel Et al. (1998)	Klein & Alony (1993)	Tzuriel (1996)
Intentionality and reciprocity (Focusing)	1. Handing an object to a child (in case of an observable response from the child)	✓		✓		✓			

	2. Verbally focusing a child's attention (in case of an observable response from the child)	✓		✓		✓	
	3. Making a visible effort to change the child's behavior and the environment			✓		✓	
	4. Using the colorful charts, bright red and blue weighing machines, fruits, and various objects				✓		
	5. Presenting objects, sounds, light, etc. to substitute or modify stimuli		✓				
Mediation of meaning (Affecting or Exciting)	1. Making known to the learner the significance of the interaction by asking "why we are learning this?"	✓			✓		✓

	2. Verbal experiences of affect, classification, or labeling and valuing the child's or adult's experiences	✓		✓		✓	✓	✓	✓
	3. Facial gestures such as opening of the eyes and mouth or paralinguistic expressions such as a sigh or scream of surprise	✓		✓		✓	✓	✓	✓
	4. Mediating affect by letting a puppet 'lead the series'		✓						
Mediation of transcendence (Expanding)	1. Going beyond the actual experiences by teaching strategies, rules, principles	✓	✓	✓	✓	✓	✓	✓	✓
	2. Promoting inductive and deductive reasoning		✓	✓				✓	
	3. Asking the child to compare what is the same and what is different		✓	✓				✓	

Mediation of feelings of competence (Encouraging)	4. Noting strategies for short- and long-term memory		✓	✓				✓	
	5. Clarifying spatial and temporal orientation		✓	✓				✓	
	1. Organizing the surroundings to supply opportunities for success of the child	✓	✓		✓		✓	✓	✓
	2. Verbally or gesturally rewarding the child by saying 'good', 'wonderful' or clapping hands and smiling	✓	✓	✓		✓	✓	✓	✓
	3. Explaining to the child why a certain behavior was rewarded	✓					✓	✓	✓
Mediation of control of behavior (Regulating)	1. Matching the task requirements with the child's capacity and interests			✓		✓		✓	
	2. Analyzing the task	✓	✓		✓		✓		✓

components						
3. Arousing awareness to task characteristics and suitable responses	✓	✓		✓	✓	✓
4. Modeling of self-control	✓				✓	✓

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