

Introduction

Putting Feuerstein's IE Program Into Practice

What are the building blocks of efficient thinking? How can teachers use subject teaching to promote cognitive development? How can parents or caretakers teach children thinking skills within the home? How can thinking skills promote interpersonal development, enhance creativity, and facilitate multicultural awareness?

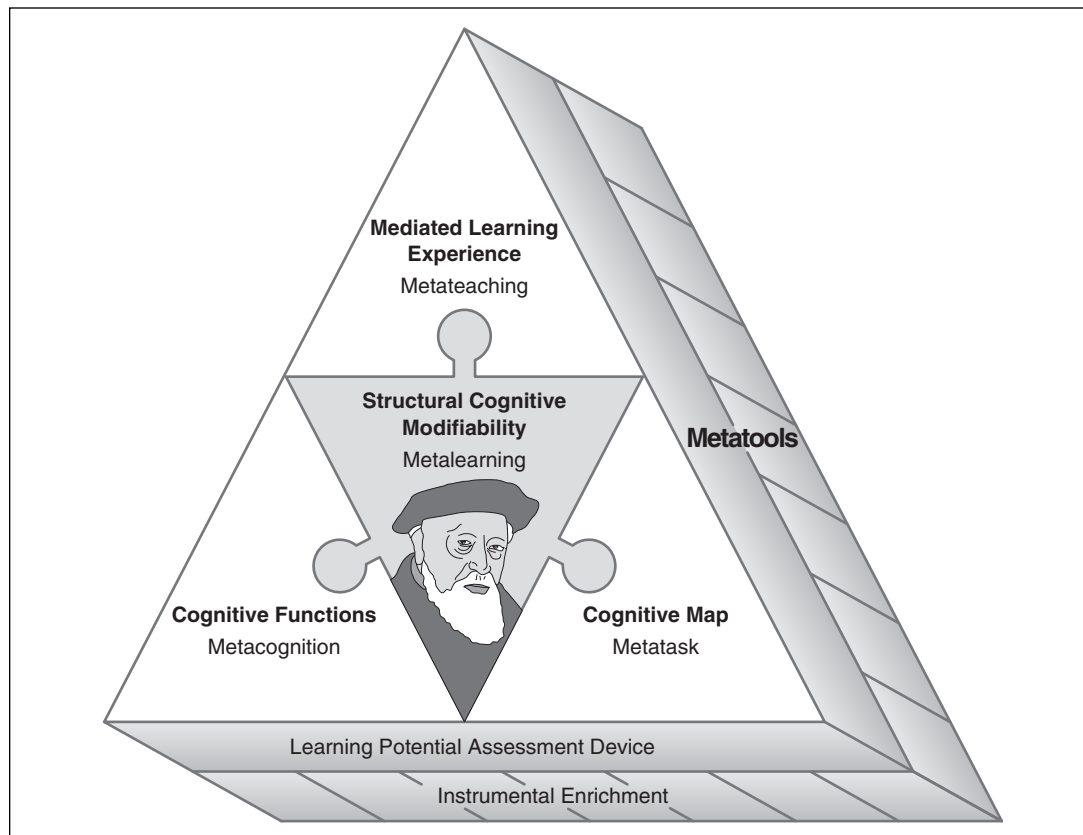
This book attempts to answer these questions by bridging 14 thinking skills from Feuerstein's (1980) Instrumental Enrichment (IE) program to both formal and informal learning settings. Feuerstein's theory behind IE is initially outlined in this introduction to provide a framework for discussing each of the 14 cognitive operations. These 14 thinking skills are then described in the subsequent chapters of this book, and examples are provided of bridging these thinking skills to a range of different contexts.

WHO IS FEUERSTEIN AND WHAT IS HIS COGNITIVE THEORY?

Reuven Feuerstein is an internationally renowned Israeli professor of psychology and a scholar in the field of child development. Through his work with individuals who are low functioning and disadvantaged, he developed innovative methods of testing and teaching. In common with other contemporary psychologists, he rejected the notion that people are born with a certain intelligence that remains fixed and static throughout life. In contrast, he proposed that learning occurs through ongoing interaction with others within a social context and that it is this interaction that facilitates change and modifiability in our cognitive processes.

Feuerstein developed his theory around this learning interaction that he called *mediated learning experience* (MLE). He believed that through MLE the learner develops efficient thinking skills that he described as the *cognitive functions*. Efficient cognitive functions can be developed through manipulating the learning task—which Feuerstein refers to as the *cognitive map*. These three aspects of his theory—mediated

learning experience, cognitive functions, and the cognitive map—form the operational tools or techniques that can be used to ensure that cognitive modifiability, or change in the learner, occurs. These concepts can be illustrated in the form of a triangle—where at the heart of the triangle lies the belief that all people are modifiability or open to change (structural cognitive modifiability). Change or modifiability can occur through using the three techniques of MLE, cognitive functions, and cognitive tasks. This can be illustrated in the diagram of the Feuerstein triangle where each of the three points of the triangle relate to the triad of the learning process—the teacher, the learner, and the task. The teacher guides the learning interaction through using the criteria of MLE in interacting with the learner. Through this interaction, change occurs in the learner’s cognitive functions. The mediated interaction and changes in thinking relate to analyzing and adjusting the learning task using the cognitive map.



Note: These concepts are explored in depth in *Mediated Learning—Teaching, Tasks, and Tools to Unlock Cognitive Potential*, Second Edition, published by Corwin, and which is the sister publication to this book. In addition, these are detailed in the appendixes, which provide the full list of the criteria of MLE (Appendix A), the cognitive functions (Appendix B), and the cognitive map (Appendix C).

As illustrated in the diagram above, the core of the Feuerstein triangle is the theory of structural cognitive modifiability—the belief that all individuals have the potential to change and learn. This change occurs during an MLE focusing on the thinking skills (cognitive functions) of the learner and adjusting the learning task using the cognitive map.

MLE consists of 12 criteria describing the learning interaction. These are outlined in detail in Appendix A. The three essential elements of MLE are intentionality and reciprocity (focused learning), meaning (purposeful learning), and transcendence (bridging learning). Mediating these three criteria in any learning interaction are necessary to promote the development of critical thinking skills. The remaining 9 criteria are used in different ways in different contexts to enhance learning. Examples of these are provided within the bridging illustrations in the following chapters. Using MLE in the learning interaction involves thinking about teaching or *metateaching*.

The cognitive functions are grouped according to three phases of thinking—the input (taking in stimuli), elaboration (thinking through the problem), and output (communicating a response) phases. These are presented in table form in Appendix B. The list of cognitive functions provides useful descriptors of thinking and can be used to better understand and help the learner who might experience difficulties with a task. Examples of these are provided within the bridging illustrations in the following chapters. Thinking about thinking involves *metacognition*.

The cognitive map is a tool used to assess a task or leaning experience and break it down into component parts in order to assess where a learner might be experiencing difficulty. It provides four layers of analysis: the content or subject matter of the task; the modality or language of presentation of the task; the level of abstraction, novelty, and complexity of the task; and the cognitive operations required by the task. The cognitive map is explained in Appendix C. It is a useful tool for analyzing a task and then, by altering the layers, providing different and alternative approaches to solving the task for the learner. Manipulating the dimensions of a task provides multiple ways to approach the learning experience. Examples of these are provided within the bridging illustrations in the following chapters. Thinking about how to adapt the learning experience involves a *metatask* analysis.

The goal of the Feuerstein approach is to facilitate autonomous and independent learning. This goal can be achieved, according to Feuerstein, by using the three techniques illustrated in the triangle. Structural cognitive modifiability (or change) is achieved by using the criteria of MLE to re-mediate cognitive functions through adapting the task using the cognitive map. Thus by using the right task with the right kind of interaction, cognitive development and change can occur for the learner.

These techniques form the basis of the Feuerstein approach on which his two programs (*metatools*) are based. The first program is an assessment package developed by Feuerstein called the Learning Potential Assessment Device (LPAD). This program provides dynamic assessment of an individual's potential to learn through MLE. The second program developed by Feuerstein is the thinking skills program of Instrumental Enrichment (IE)—which is the subject of this book. The two programs can be conceptualized as being the products or applications of Feuerstein's theory. Both of these programs have as their core the belief in structural cognitive modifiability. Both programs rely on MLE to develop the cognitive functions of the learner through manipulating the task using the cognitive map. The link between these two programs to the theory can be illustrated as in the diagram above, where the theory and techniques form the Feuerstein triangle, and the programs are the products that align with these.

WHAT IS IE?

Feuerstein's IE program makes use of pencil-and-paper exercises to develop thinking skills. The IE program consists of 14 instruments that introduce the different thinking skills or cognitive operations. The "instruments" are tools that provide enrichment in thinking in the 14 areas. In this book, each of these thinking skills is described and then bridged or applied to both formal and informal learning context. Links to research using IE are described throughout each of the chapters.

What are others saying about IE?

"Instrumental Enrichment is most simply described as a strategy for learning to learn. It uses abstract, content-free, organizational, spatial, temporal and perceptual exercises that involve a wide range of mental operations and thought processes. The aim of the Feuerstein Instrumental Enrichment (FIE) program is to change the overall cognitive structure of the (impaired) performer by transforming his passive and dependent cognitive style into that characteristic of an autonomous and independent thinker." (Feuerstein & Jensen, 1980, p. 401)

"The overall aim of the Instrumental Enrichment exercises is to turn children with a reduced ability to be modified—to learn and adapt—into much more flexible and reflective operators in the world. By changing and enriching a child's structure of thinking, Instrumental Enrichment makes him/her more receptive to stimuli and experience, and increasingly able to cope with new conditions and situations confronting him/her in life and, of course, in school." (Sharron, 1987, p. 96)

Children's reactions to IE:

"It's brilliant for your brains."
 "It helps you not to be impulsive—before I used to rush into things."
 "It helped me not to be frightened of new things."
 "It helped me to think."
 "It helped me do my other lessons."

(Sharron, 1987, p. 95)

Teacher's reactions to IE:

"It gives me insight into the process underlying students' thinking."
 "It shows how to ask questions and accept there is more than one answer."
 "More of this enrichment is needed."
 "It should be introduced at High School."
 "I have found different and alternative ways of looking at and doing things . . ."
 "It has helped me try more approaches to problems, rather than just focusing on answers."

(Skuy, Lomofsky, Green, & Fridjhon, 1993, p. 92)

THE AIM OF THIS BOOK

The aim of *Bridging Learning—Thinking Skills to Unlock Cognitive Potential* is to elaborate and bridge the thinking skills presented in Feuerstein’s Instrumental Enrichment (IE) program. This book is a companion to Feuerstein’s IE program, providing an explanation of what each of the 14 thinking skills are, why they are important, and when and where they could be used. The book then offers suggestions for transcending these thinking skills into both formal and informal learning areas. Bridging the thinking skills into formal settings includes examples of classroom situations and specific subject content, to show how school experiences can be used to mediate thinking skills. In informal learning areas, examples are given where everyday activities in the home and community situations can be used to teach thinking skills to promote interpersonal development, enhance creativity, and facilitate multicultural awareness.

THE FORMAT OF THIS BOOK

The format for all 14 chapters of *Bridging Learning—Thinking Skills to Unlock Cognitive Potential* is the same. Each chapter deals with one thinking skill/cognitive operation. The outline for each chapter is as follows:

An introduction to the thinking skill, linking to the Feuerstein IE instrument and explaining the logo or symbol for the IE instrument.

A description of the thinking skill, noting *what* it is, *why* it is important, and *when* and *where* it is used.

A cognitive conundrum that provides a controversial comment or counter argument relating to the instrument.

A list of examples that bridge the thinking skill to *formal learning contexts* with examples from the school setting and curriculum.

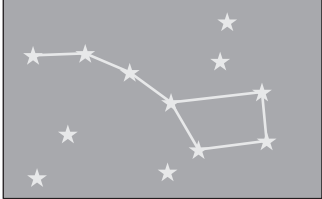
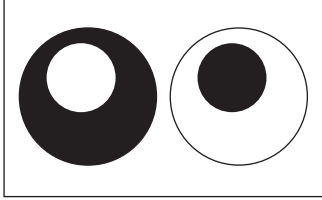
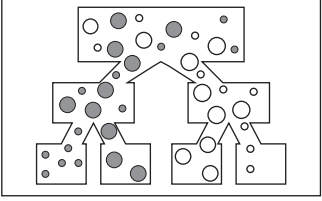
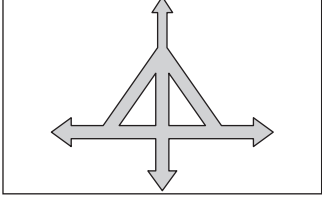
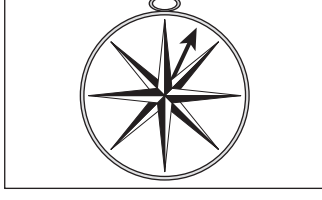
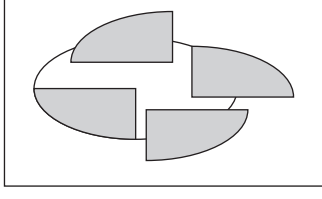

A list of examples that bridge the thinking skill to *informal learning contexts* with examples from the home, community, or counseling contexts.

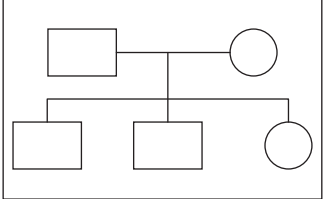
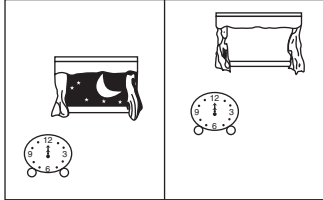
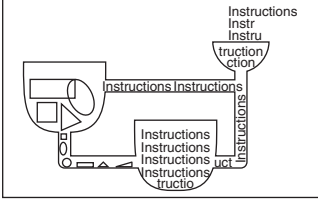
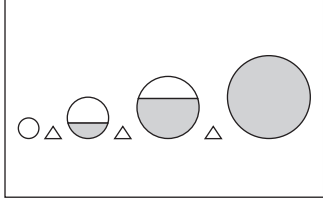
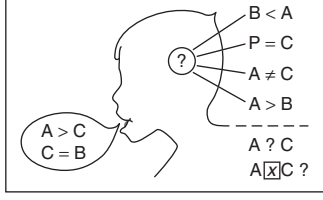
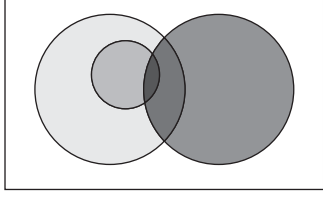
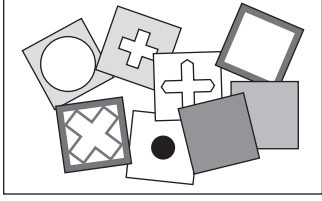
An example in practice showing application to a range of contexts including the home, school, or community.

An outline of how the thinking skill is integrated with Feuerstein’s theory of *mediated learning experience*, the *cognitive functions*, and the *cognitive map*.

A window to *International Research on Cognitive Education* where examples are provided from the literature outlining research projects using IE in a variety of contexts, countries, and with different population groups.

Final quotations are presented for an overall metacognitive reflection on each chapter.

<i>Thinking Skill</i>	<i>Feuerstein's Instrument</i>
<p>Organization Chapter 1 covers Feuerstein's instrument of ORGANIZATION OF DOTS, which involves creating order out of discrete and unconnected items by linking, structuring, and connecting items.</p>	
<p>Comparisons Chapter 2 covers Feuerstein's instrument of COMPARISON, which involves finding similarities and differences between items according to relevant and appropriate criteria.</p>	
<p>Categorization Chapter 3 covers Feuerstein's instrument of CATEGORIZATION, which involves grouping elements according to appropriate principals and placing items into particular classes or groups.</p>	
<p>Relational Orientation in Space Chapter 4 covers Feuerstein's instrument of ORIENTATION IN SPACE I, which involves understanding that one's relative position in space depends on an internal reference system—the direction that one is facing.</p>	
<p>Cardinal Orientation in Space Chapter 5 covers Feuerstein's instrument of ORIENTATION IN SPACE II, which uses the cardinal points of the compass—North, South, East, and West—as the reference system to orient oneself in space.</p>	
<p>Analysis and Synthesis Chapter 6 covers Feuerstein's instrument of ANALYTIC PERCEPTION, which involves the skill of breaking a whole into its parts and putting the parts together to make a whole.</p>	
<p>Problem Solving Chapter 7 covers Feuerstein's instrument of ILLUSTRATIONS, which involves identifying that something has gone wrong (disequilibrium), analyzing why it has gone wrong, and finding solutions to make it right (restoring equilibrium to a system).</p>	

<i>Thinking Skill</i>	<i>Feuerstein's Instrument</i>
<p>Relationships Chapter 8 covers Feuerstein's instrument of FAMILY RELATIONS, which focuses on inferring, understanding, and explaining the connection between two or more people or groups and their involvement with each other.</p>	
<p>Temporal Concepts Chapter 9 covers Feuerstein's instrument of TEMPORAL RELATIONS, which involves having an understanding of the concept of time.</p>	
<p>Instructions Chapter 10 covers Feuerstein's instrument of INSTRUCTIONS, which relate to the two reciprocal processes of encoding (giving) and decoding (receiving) information.</p>	
<p>Progressions Chapter 11 covers Feuerstein's instrument of NUMERICAL PROGRESSIONS, which focuses on identifying rules that govern the repeated patterns that occur between events.</p>	
<p>Transitive Relations Chapter 12 covers Feuerstein's instrument of TRANSITIVE RELATIONS, which focuses on transferring information from two pairs of items to a third pair.</p>	
<p>Syllogisms Chapter 13 covers Feuerstein's instrument of SYLLOGISMS, which focuses on syllogistic reasoning, where from two given premises that have a common middle term, a third premise—called the conclusion—is deduced.</p>	
<p>Scaffolding Chapter 14 covers Feuerstein's instrument of REPRESENTATIONAL STENCIL DESIGN, which focuses on the cognitive operations involved in mentally reconstructing an event or outcome by looking at the end product.</p>	

Source: Adapted from Feuerstein, R., & Jensen, M. (1980). Instrumental enrichment: Theoretical basis, goals and instruments. *Educational Forum* 44(4), 401–423.