Feuerstein's Instrumental Enrichment

Standard Level Program

Middle School (4^{th}-8^{th}) **– High School** (9^{th}-12^{th})

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About the Program

The Feuerstein's Instrumental Enrichment Program (FIE) is a series of tasks that directly focus on the development of thinking skills. The implementation of the instruments effectively requires a different teaching style called Mediated Learning Experience (MLE). The intention is to improve students' social adaptability that ultimately contributes towards real-life problem solving skills (*as opposed to just content areas*). The paper and pencil instruments are designed to provide student opportunities to develop cognitive strategies and working habits that they can apply to problem solving situations. The various instruments are designed structurally to increase in complexity and abstraction. Students are encouraged to generalize rules and principles that are transferred to a wide range of contexts. Creating insight or "meta-cognition," the teacher mediate transfer of the newly acquired strategies to real life.

Meeting the Common Core State Standards

The Common Core State Standards have been designed to make all students college and career ready in mathematics, science, writing, speaking, and listening. This new integration calls for teachers to prepare students with rich content knowledge and thinking skills that are essential for the complex world we live in. By design, the Common Core State Standards (CCSS) call for higher expectations of problem solving skills versus memorization of facts in students. Many of the top national educational organizations are beginning to call for more rigor, relevance, and results in education. They are focusing on instruction and curriculum reform that affects the four C's – critical thinking, creative problem solving, collaboration and communication - into teachers' daily instruction.

Consistent with the goals of the Common Core State Standards, the primary goal of Feuerstein's Instrumental Enrichment program is to develop thinking and problem solving skills, not just for the test, but for lifelong learning. In order to accomplish this, the teacher needs to provoke students interest and curiosity by asking questions such as "how," "what," "why," and "when" while explicitly focusing on the required thinking skill in a task, such as using logic, comparisons, planning , control of impulsivity, summation, etc .

The difference between the Common Core State Standards and the Feuerstein's program is that students' will essentially develop the thinking skills above and beyond the contexts of the specific instruction area thus creating a wider transfer. It is not the teacher who formulates the students' response, but instead builds on the process of how the student reaches the conclusion. FIE "mediates" the systematic release of critical thinking, development of students' responsibility, and students' understanding and meaning by empowering the students to own their learning.

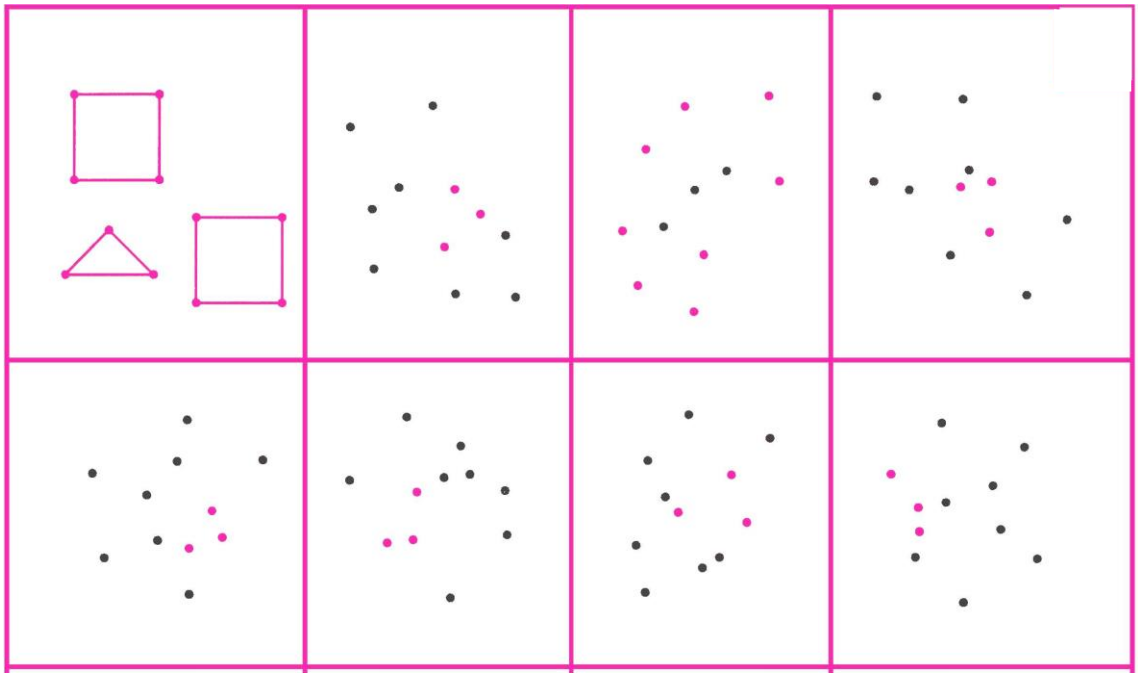
Organization of Dots

Organization of Dots provides students' with practice in projecting virtual relationships through tasks that require a student to identify and outline given figures within a cloud of dots. The projection of a potential relationship requires that the students search for meaning among otherwise separate phenomena. Through repeated practice and successful completion of progressively more difficult exercises, the instrument encourages task-intrinsic motivation and activates a variety of cognitive functions.

- Definition of the problem.
- Selection of dots that are relevant to the figure that is sought.
- Planning behavior.
- Hypothetical thinking.
- Use of logic.
- Comparison of projected figure to the model.
- Summative behavior.

Sample Task

For the given geometric shapes the student must reorient and transform the dots within frames that are differently arranged.



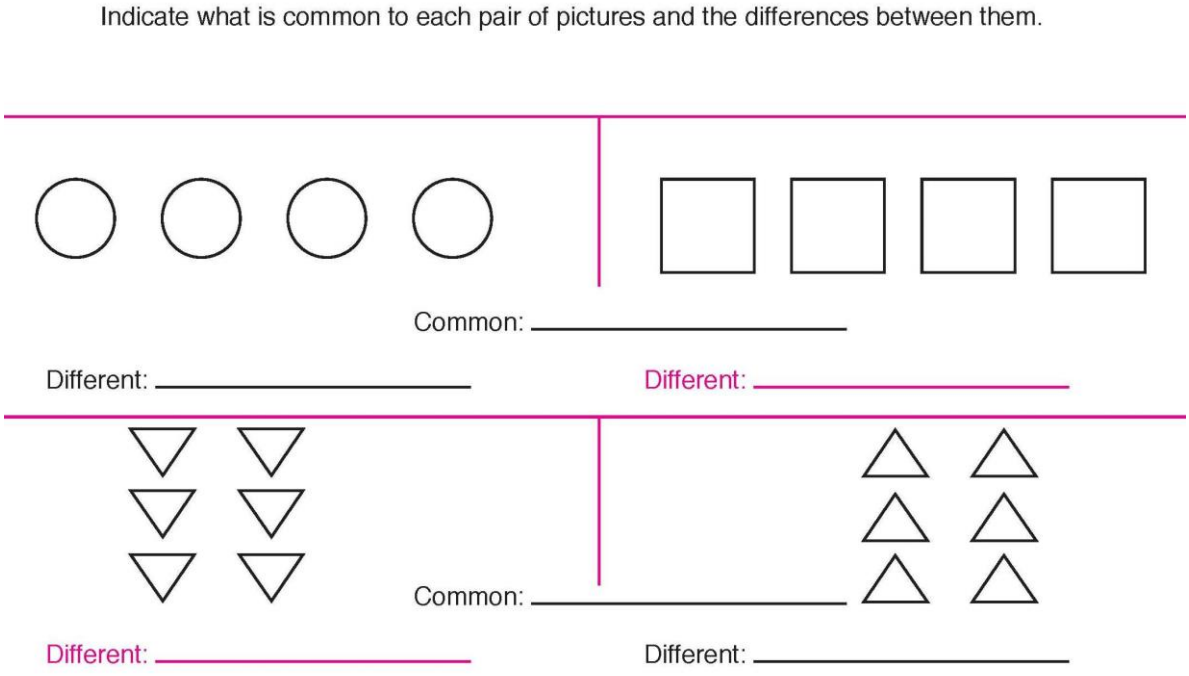
Comparisons

Comparisons increases the students' ability to differentiate between parameters of comparison and develops critical thinking involved in comparative behavior. The instrument provides concepts, labels, and operations with which to describe similarities and differences. From Comparisons students learn to organize and integrate separate and distinct bits of information into coordinated and meaningful systems. The instrument helps build students' feelings of competence and independence by enriching the repertoire of attributes by which they compare objects and events.

- Ability to keep in mind a great number of parameters during the process.
- Making a plan that will take into account the complexity of the tasks.
- Use of hypothetical thinking and hypotheses testing to evaluate the alternative response.

Sample Task

Given different abstract geometric shapes (*of varied orientation, shading and size*) similarities have to be identified.



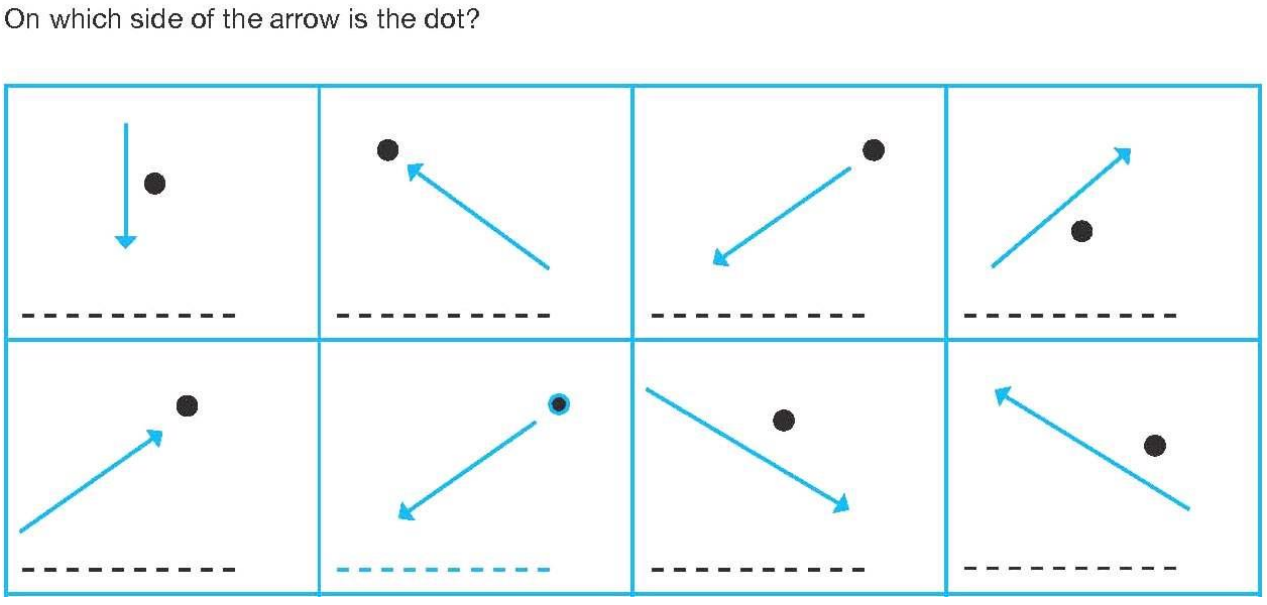
Orientation in Space I

Orientation in Space I addresses the poor articulation, differentiation, and representation of space that may result from an inability to detach oneself from one's own body position as a reference. It deals with a relative system of reference for localizing objects in space and in relation to one another. As a result of their experience with these tasks, students discover why there are differing points of view in the perception of an object or experience and how to give consideration to an opinion that is different from their own.

- Definition of problem when no instructions are given.
- Hypothetical thinking: "*If . . . then.*".
- Use of logic to solve tasks for which the information is not directly provided.
- Comparison as a strategy for checking one's work.
- Internalization of the relationship between the elements of the system of reference.

Sample Task

A frame with a dot and an arrow in it are given. Subsequent frames contain either a dot or an arrow; the student has to reason where the arrow could go.



Analytic Perception

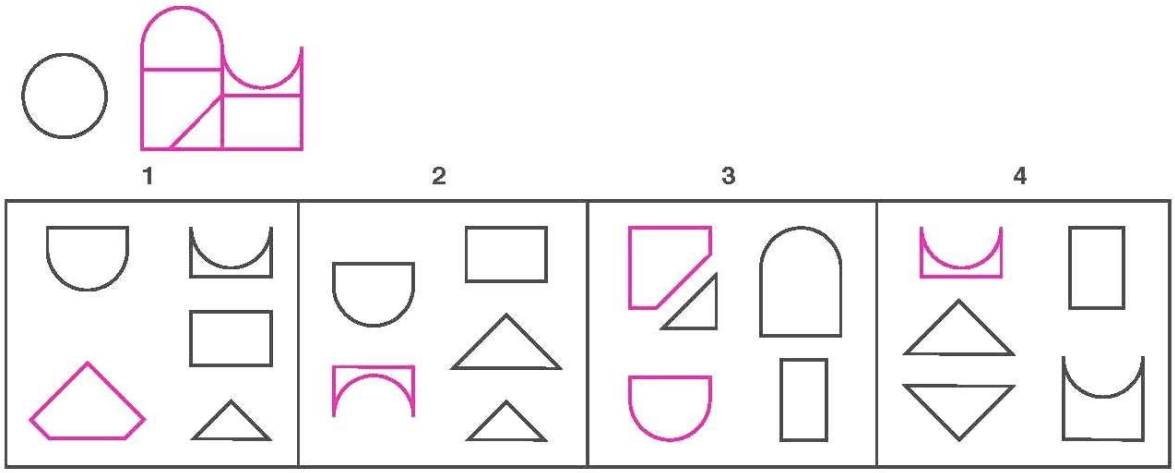
Analytic Perception enhances students' ability to differentiate (divide a whole into its parts) and integrate (join parts into a whole). Adaptation to the world depends upon the flexibility to alternate between these two perceptual processes. As a result of their experiences with the tasks in this instrument, students begin to differentiate between inner and outer sources of reference. They are then able to form and discriminately use internal referents to process information and to structure and restructure their varied life experiences.

- Comparison to the model.
- Establishment of relationship between parts and between the parts and the model.
- Categorization of parts according to their shapes and colors.
- Visual transport of parts to the model.

Sample Task

Given a wide variety of abstract shapes, the student has to choose which combination fits together like a jigsaw to complete a specific outcome.

In each of the following exercises you are given a model. Choose the box which contains all the parts that make up that design and write its number in the circle provided.



Categorization

Categorization is based on successful comparison, differentiation, and discrimination. This instrument helps students develop the flexibility and divergent thinking necessary for categorizing and re-categorizing of the same objects into different sets as the principles and parameters of categorization change with new needs and objectives. In categorizing, students' moves from establishing relationships among concrete items to projecting relationships among concepts.

- Comparison of certain similarities and differences.
- Selection of relevant information.
- Summative behavior.
- Projection of relationships.
- Determination of cognitive categories.

Sample Task

Students' have to categorize objects into a schematic classification system.

CLASSIFICATION OF FEELINGS - I

Below is a list of feelings. Classify them according to their type and their value.

Subject of classification: FEELINGS

Principles of classification: Type (1) Physical (2) Mental
Value (1) Positive (2) Negative

faithful	lonely	ashamed	nauseated	secure	proud	longing
worried	remorseful	pained	serene	compassionate		dizzy
fatigued	offended	alert	thirsty	envious	hungry	satiated
bored	hopeful	cold	bashful	betrayed	anxious	tolerant
strong	rested	weak	comfortable	warm		energetic

Numerical Progressions

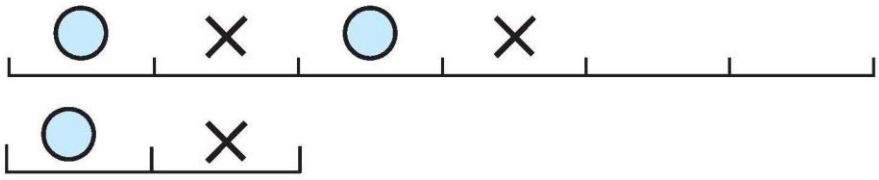
Numerical Progressions helps students search for deduced and induced relationships between separate objects or events. Students draw accurate conclusions regarding the rules and formulae of progressions as the instrument increases their ability to compare, infer, and reason deductively and inductively. This instrument mediates precision, discrimination, and a willingness to defer judgment until all of the elements have been worked out in determining a common rule for a progression.

- Use of relevant tacit cues like index (the place of a number in the progression).
- Finding relationships between the elements of the progression.

Sample Task

Students' have to deduce relationships between numbers, given schematic view and some inserts.

1. Continue the progression of the shapes.



The progression is composed of two shapes which repeat themselves in a fixed order:
This is the formula of the progression.
This formula is composed of two parts, or units

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2. Here the formula consists of three units.

Fill in a progression based on this formula.

Family Relations

Family Relations requires students to use a system of relationships to link separate beings and categories and emphasizes the necessary and sufficient conditions for inclusion in and exclusion from categories. The exercises in Family Relations demand precise use of language in encoding and decoding relationships and require inferential thinking, analytic thinking, and deductive reasoning to justify conclusions based on logical evidence.

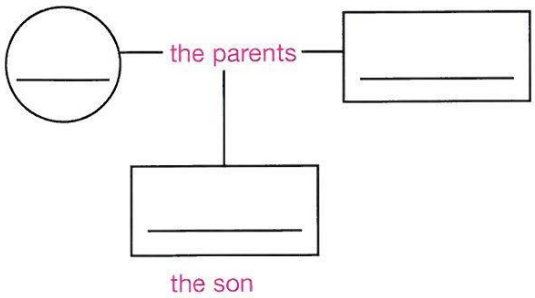
- Definition of problem in order to determine what one is being asked to do.
- Using only information that is relevant.
- Comparison between elements and relationships to determine similarities and differences.
- Bearing in mind a number of distinct essentials and the relationships among them.
- Hypothetical thinking and the use of logical evidence to justify one's conclusions.
- Seeking the links and bonds that unite separate entities.

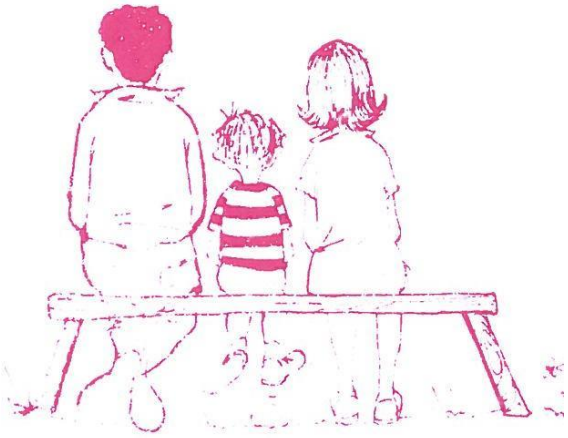
Sample Task

Information about family members are given in three forms: list, schematic diagram, and logic. From varied pieces of information student have to work who's who.

Ann and Joseph had a son. They called him Dan.

1. Here is a diagram of the family.
   Write the names in the proper places.





Temporal Relations

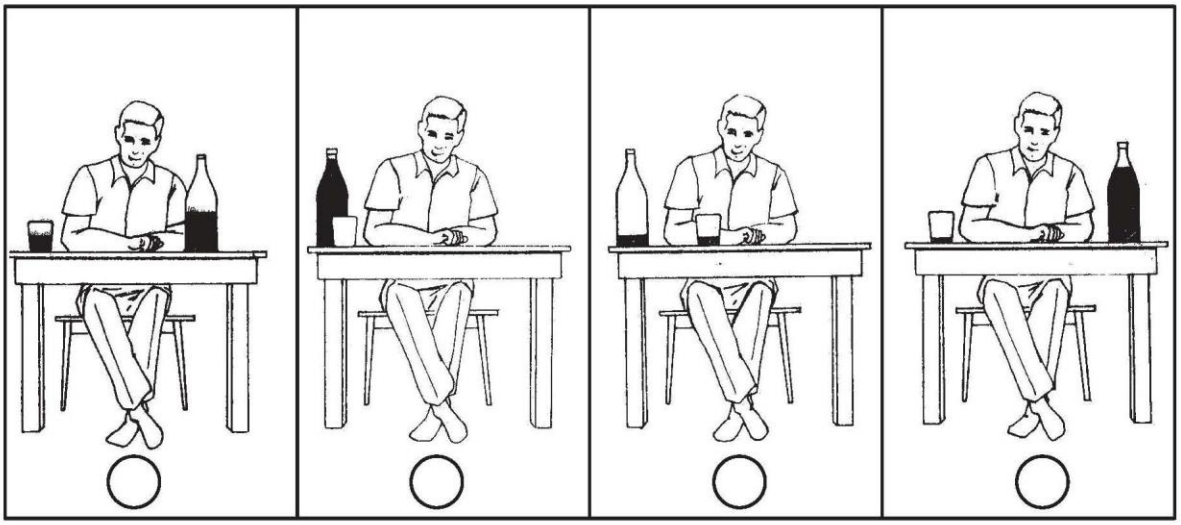
Temporal Relations develops students' ability to use concepts of time to describe and order their experiences. An adequate orientation to time is important to relational thinking and is acquired through mediated learning experiences. Without an awareness of the continuity of time and its ordered succession and of the rhythm of events, students' make use of their past to predict, anticipate, plan, and prioritize future events. Temporal Relations helps mediate relationships of time (related to space) and use precise concepts and relationships.

- Comparison of the temporal characteristics of events.
- Use of relevant cues.
- Hypothetical thinking and use of logical evidence to support hypotheses.

Sample Task

Factual information, related to time, is given in riddle (textual format). Students' have to work out how and when different events occurred.

There is a story hidden in each row of pictures. Place the number 1 in the circle of the drawing that should be first, a 2 for the second, etc. When you are finished, tell the story.



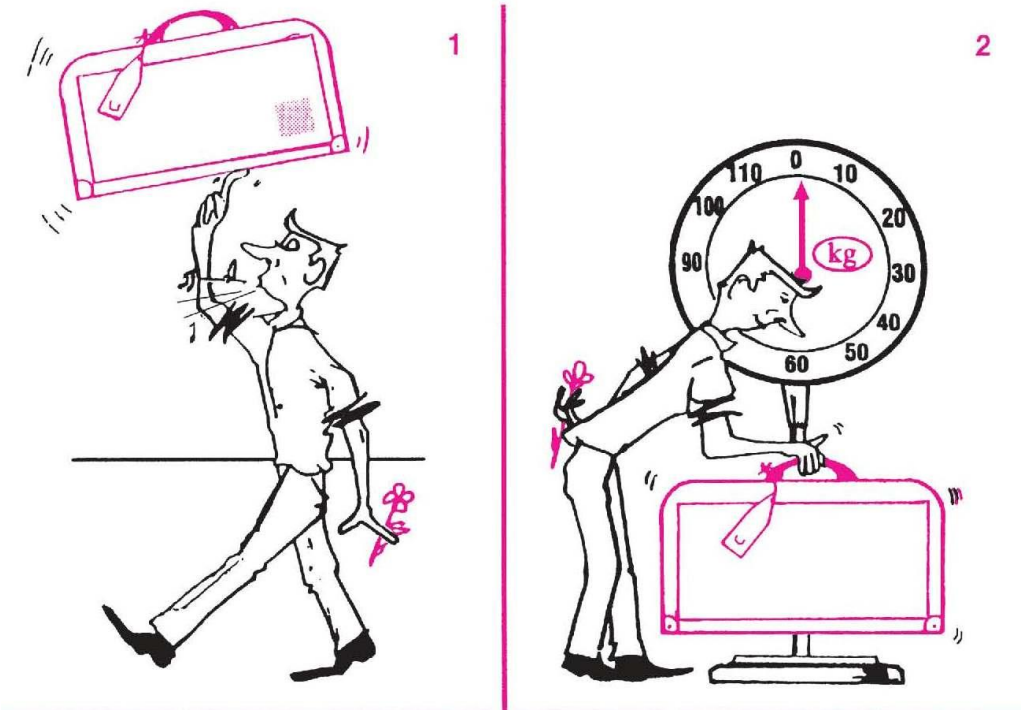
Illustrations

Illustrations presents students' with a collection of situations in which a problem can be perceived and recognized. Students are mediated to offer appropriate solutions to the identified problems. This instrument mediates students' ability to perceive details, use several sources of information, and exercise comparative behavior. Illustrations lends itself to the development of vocabulary and oral and written language; it is also highly useful for generating task-intrinsic motivation. It is used in conjunction with other instruments to reinforce or elaborate previously learned strategies.

- Definition of the inferred problem.
- Use of relevant cues as a basis for inference.
- Use of comparative behavior.
- Use of summative behavior.
- Hypothetical thinking and use of logical evidence to support conclusions.
- Establishment of relationships between the individuals, objects, and events shown in the illustrations.

Sample Task

Picture with '*incorrect*' aspects to them are presented. Students' have to work out what the problem is.



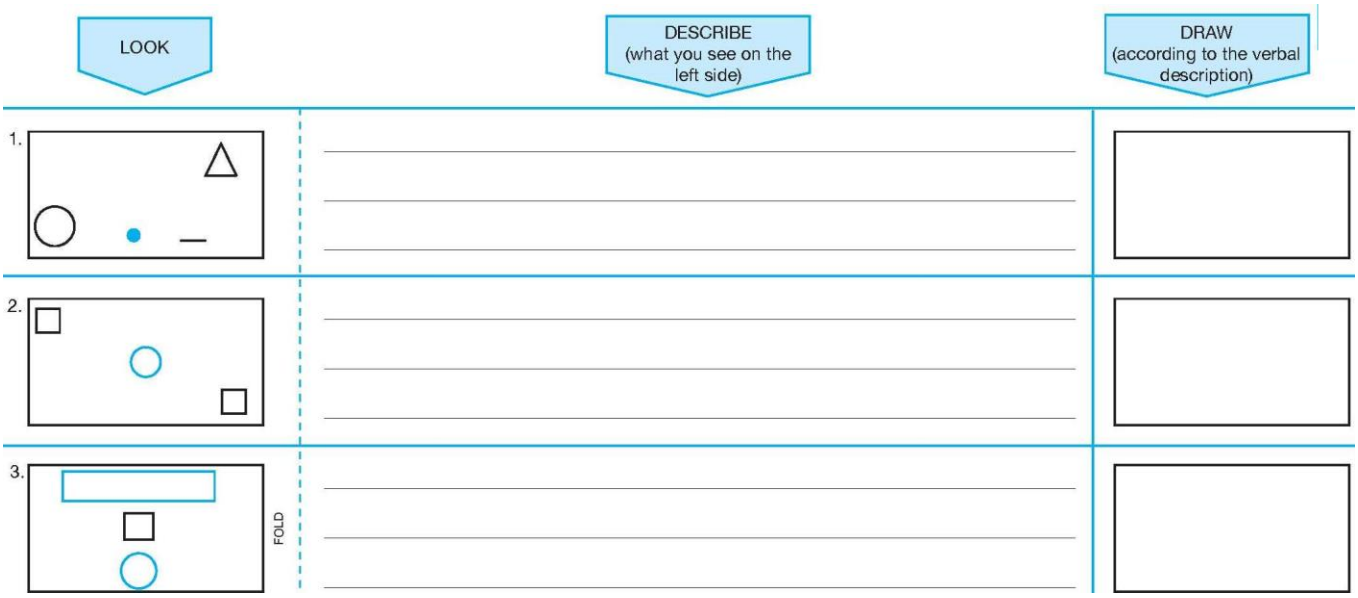
Instructions

Instructions focuses on students' encoding and decoding ability of verbal and written information. The task is not in the meaning of the words, rather the significance of the words and with what they imply in context. Through the insights gained into the reasons for their successes and failures, students are transformed into generators of information, able and willing to interpret and transmit complex instructions.

- Definition of the problem.
- Comparison of completed drawing with verbal instructions.
- Use of relevant cues to clarify ambiguities.
- Hypothetical thinking and use of logic evidence to support hypotheses.

Sample Task

Students are given written descriptions and pictorial representations. They have to work out which correspond and which do not.



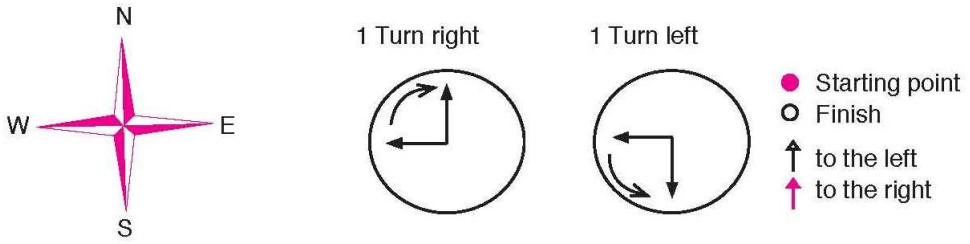
Orientation in Space II

Orientation in Space II introduces and provides students' practice in the use of external, stable, and absolute systems of reference. Geographical concepts such as compass points, coordinates, and graphs are used to describe relationships and an object's orientation in space. Students have to simultaneously apply the relative (internal) system of reference and the absolute (external) system of reference to describe and understand spatial relationships.

- Definition of the problem.
- Comparison of alternative solutions.
- Summing right and left turns and finding their equivalents in fractions of a circle.
- Projection and description of spatial relationships in terms of relative and absolute systems of reference.
- Hypothetical thinking in considering alternative solutions.
- Use of logic in the integration of two systems.

Sample Task

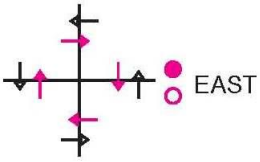
Students have to simultaneously apply the relative (*internal*) system of reference and the absolute (*external*) system of reference to describe and understand spatial relationships.



Fill in what is missing. Indicate the start and the finish in the tasks below.

1. You are facing eastward. Make 3 right turns and 3 left turns. Which direction are you facing? _____.

3 - 3 = [0]



Explanation: After 3 right turns you face north. In moving 3 turns in the opposite direction – left – you return to the starting point.

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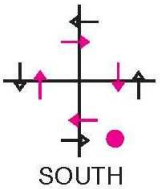
2. You are facing southward. Make 2 left turns and 2 right turns. Which direction are you facing? _____.

2 - [ ] = [ ]



Syllogisms

Syllogisms presents students with formal, propositional logic. In syllogistic reasoning, the integration of information from two premises about the relationship between terms yields the deduction of an unknown relationship. Through the tasks of Syllogisms, students gain the ability to discriminate between valid and invalid conclusions and between possible and inevitable outcomes. The instrument fosters inferential and abstract thinking.

- Appropriate definition of problem.
- Comparative behavior between attributes of a set and those of set members.
- Selection of relevant data..
- Overcoming episodic grasp of reality by establishing relationships.
- Broadening of mental field to simultaneously elaborate information from several sources.
- Elaboration of cognitive categories on the basis of conceptual criteria.
- Use of summative behavior.
- Hypothetical thinking and search for logical evidence.

Sample Task

Given information, students' have to apply logic to infer relationships between things.

1. a) Name of set:
   Members: cucumber, eggplant, onion, carrot, squash, peas

   b) Name of set: DAIRY PRODUCTS
   Members: _____ , _____ , _____
   Are there _____ that are dairy products? _____
   Are there dairy products that are _____ ? _____
   Cheese is a dairy product.
   CONCLUSION: Cheese is not a _____ .
   Lettuce is a vegetable.
   CONCLUSIÓN: Lettuce _____

2. a) Name of set: NUMBERS WHOSE LAST DIGIT IS 3 (13, 23, 3, 123, 1, 503)
   b) Name of set: EVEN NUMBERS (100, 76, 124, 8, 2,)
   There is no number whose last digit is _____ that is an even number.
   253 is a number whose _____ is 3.
   CONCLUSION: 253 _____ .

Transitive Relations

Transitive Relations requires students to deal with relationships that exist in ordered sets, which differentiates between set members and described by the terms "*greater than*," "*less than*," and "*equal to*." This instrument helps student recognize conditions that permit deductive and inductive reasoning. Through the tasks in Transitive Relations, students demonstrate their ability to engage in inferential thinking based on logical implication and relational thinking.

- Definition of problem.
- Selection of relevant information.
- Comparison and categorization.
- Hypothetical thinking.
- Planned and systematic behavior.

Sample Task

The transfer of relationships that exist between two pairs of set members to a third pair between the relationships which is unknown.

1. Usually we define the relationships between A and B with signs. We can also define the same relationships with the help of words and their abbreviations.

	The Relationship in Signs	The Relationship in Words	The Code
1.	A = B	A is equal to B	A e B
2.	A ≠ B	A is not equal to B	A n.e B
3.	A < B	A is smaller than B	A s B
4.	A ≮ B	A is not smaller than B	A n.s B
5.	A > B	A is larger than B	A l B
6.	A ≯ B	A is not larger than B	A n.l B
7.	A ≠ B	A is different from B	A d B
8.	A = B	A is not different from B	A n.d B

What is the meaning of the diagonal overlay on the signs below?

≠ ≯ ≮

_____

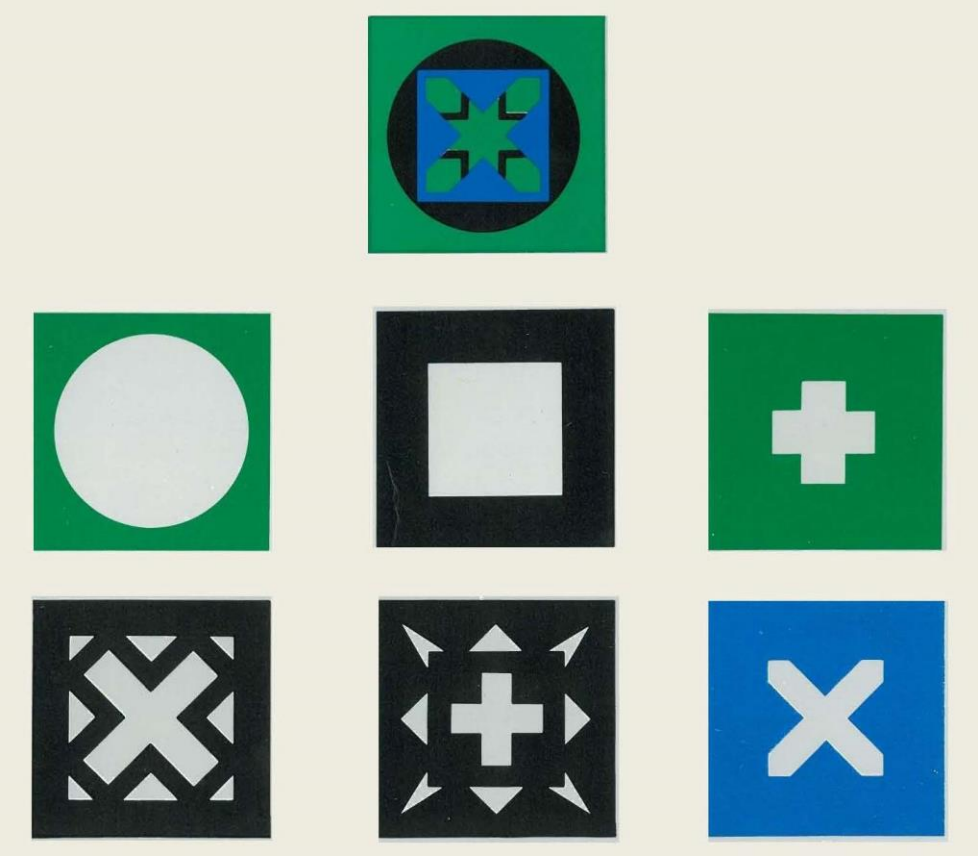
Representational Stencil Design

Representational Stencil Design consists of tasks in which students must mentally construct a design. The completion of the tasks requires a complex series of steps. The identification of the whole through its superimposed parts requires an active, mental construction with the help of inferences, and an anticipation and representation of the outcome. Answers are sought by affirmation, negation, and elimination of what is logically impossible. Students must extrapolate from the known to the unknown and rely on logic to identify the constructions.

- Comparison.
- Summative behavior.
- Categorization.
- Establishment of time and space with their relationships.

Sample Task

Students' must analyze a complex figure constructed of shapes and colors that transform.



INTRODUCING IRI's FLAGSHIP PROGRAM: FEUERSTEIN'S INSTRUMENTAL ENRICHMENT (FIE)

Exercise the brain for school academic achievement.

No more talk of the Middle Grades' and High School 'learning plateau'. With FIE, Middle and High School teachers develop their students into faster, sharper, and more intrinsically motivated thinkers. Improved thinkers mean better problem solvers and higher academic achievers who are prepared to meet the demands of the 21st century.

Join districts from Oregon to New York, children who are excelling or underperforming, and the many others who are celebrating dramatic increases in student achievement with IRI's customized implementation of FIE.

Objectives:

- Enrich students' learning potential by strengthening critical, targeted cognitive functions
- Develop cognitive abilities for success in a standards-based curriculum
    - See relationships, control impulsive thinking, compare, reason analytically, forecast accurately, categorize, differentiate, follow instructions with precision, draw valid conclusions, analyze cause and effect, form and test hypotheses
- Enhance critical reasoning, creative thinking, and problem solving skills
- Apply improved thinking competency to daily assignments
- Enable advanced students to excel
- Nurture all children's intrinsic motivation to learn
- Stimulate higher, faster, and enduring achievement among all students
- Enable students to apply cognitive approach to problem solving inside and outside school
- Improve academic performance within months

Methodology:

- Feuerstein's research-rich, world-renowned Mediated Learning Experience tool as basis for teachers to facilitate student thinking experiences
- Feuerstein's "Instruments" with their sequential cognitive challenges to jumpstart brain functions vital for more efficient thinking by all students
- Visual and verbal cues stimulate student problem solving and meta-cognition
- Students weave previously discovered rules and new concepts to increase complex thinking

Professional Learning:

- Work-sessions to master use of cognitive instruments before introducing to applied setting
- On-site coaching in teachers' classrooms and demonstration lessons to assist with implementation
- On-line mentoring and chat-room; peer collaboration
- Project leadership seminars, project assessment coordination, peer support teams, and monthly progress review with district project leadership teams