Case study 2 (Logical reasoning)

Logical reasoning involves thinking, ordering ideas and concepts, to reach a conclusion. It involves correcting and making decisions, constructing new knowledge and testing scientific hypotheses. It is therefore a mental process that involves the application of logic.

- **Description:** Helena is a 10-year-old girl who shows difficulties in identifying, recognizing and defining properties, as well as establishing relationships and operations between them.
- **Key words:** reflection, classification, mediation, problem solving, sorting, correction and checking.

Tool 1

1. **Title:** Puzzles
2. With this tool you can detect problems with shape and colour recognition, concentration and memory. It also exercises tenacity and frustration tolerance. It increases the ability to concentrate and problem solving. It helps to combat stress. Therefore, the fact of reasoning which piece fits with another or which different lines or shapes are due in the whole puzzle helps to develop logical reasoning.
3. **Instructions / Methodology / Recommendations how to use the tool**
   The player has to place the pieces correctly in order to obtain the solution. A puzzle has different pieces that have to be put together. Each piece has a small part of a picture that appears when all the pieces are correctly put together.
4. **Interpretation of the results**
   Puzzles force the brain to work with both cerebral hemispheres. Therefore, if the results obtained are not as expected, we will be facing a case of difficulties in the development of creativity, coordination, expertise, motor skills and laterality.

5. **Key words:** concentration, problem solving, reasoning, and memory
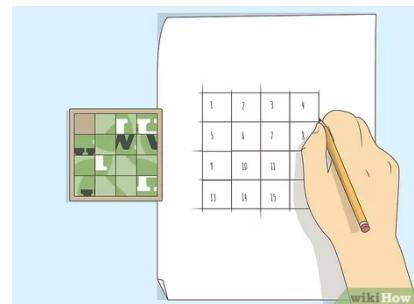
Tool 2

1. **Title:** Seriations
2. By means of this tool, problems can be detected in the comparative relationships between the elements of a collection and in the ordering following one or several criteria. Seriation is a work through which the subject learns to compare between several elements of the same set, so that by applying "trial and error" he/she obtains the correct answer.
3. **Instructions / Methodology / Recommendations how to use the tool**

The idea is to establish a hierarchical order according to characteristics such as size, colour, thickness, age, usefulness, function, etc.

4. **Interpretation of the results**

Bearing in mind that ordering means establishing an order and that, therefore, it is a basic and prelogical notion, the result of each one of them will depend on its pattern. Then, after the interpretation of the results obtained, the subject's ability to establish comparative relationships between the elements of a set and the order according to their differences will be determined.
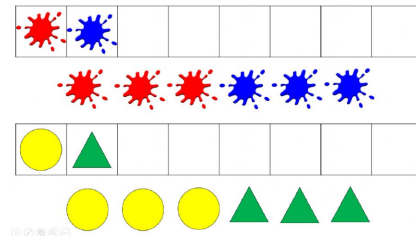
5. **Key words:** detection, criteria, sorting and comparison.

Tool 3

1. **Title:** Tantrix
2. This tool can be used to detect problems in the development of strategic thinking, spatial perception, planning and memory skills, and problem-solving abilities.
3. **Instructions / Methodology / Recommendations how to use the tool**

The objective of the game is that, given some pieces, a circuit of a given colour is closed, joining the hexagons that are available.

Therefore, to start the activity, the student or teacher must choose 14 pieces of a single type, for example, neither red, nor green, nor yellow, nor blue. (as you can see in the image)

Then, he/she will have to put only these 14 pieces in the bag, take out one piece and place it on the table. Then, you must take out one piece after another and place them in such a way that they match the pieces on the table. You must try to close a circuit with 14 tiles of one of the three colours.

A tip is not to decide too early on one of the three colours, and to leave several options open from the beginning. Placed tiles can no longer be changed or moved.

4. **Interpretation of the results**

If the student is not able to put together the three chosen colours, we will be facing difficulties in the development of strategic thinking, spatial vision, abstract problem solving and difficulties in planning and memory skills.

5. **Key words:** spatial perception, planning, memory and logic.

Tool 4

1. **Title:** Cubos Pixy
2. With this tool, problems of spatial thinking, logic and memory can be detected. Therefore, this tool improves visual-spatial ability, exercises attention and concentration, develops memory and fosters creativity.

3. **Instructions / Methodology / Recommendations how to use the tool**
The subject can choose to copy pre-existing patterns or create their own.
Includes 16 cubes, 10 card designs, 13 challenge cards and illustrated rules.
4. **Interpretation of the results**
The results will be verified by means of the template that the student has followed. If the results are not as expected, we will be facing a case of difficulties in reasoning, spatial orientation and visual perception.
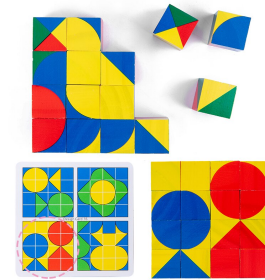
5. **Key words:** agility, visual perception, memory and creativity.

Tool 5

1. **Title:** Multitasc
2. This tool can be used to detect problems in concentration, coordination and reasoning.
3. **Instructions / Methodology / Recommendations how to use the tool**
On the same card there are two actions that the subject must perform at the same time. One of the tasks consists of representing with one hand the number of fingers indicated (if the card is red with the right hand and if it is blue with the left hand) and, at the same time, the subject must say the other number that comes up on the die.
4. **Interpretation of the results**
The teacher will be in charge of interpreting the results. If the student fails, we can affirm that there are difficulties in hand-eye coordination and reasoning.
5. **Key words:** concentration coordination and reasoning.