

A method for developing and enhancing spatial imagination and logical thinking through play, with the cuboro marble track system

Contents

Tasks on 92 index cards, which, in most cases, students can solve independently.

A book accompanying the task cards with solutions, remarks and explanations: This is a manual which makes it easy to understand the logical processes as well as the mathematical and physical patterns involved.

Discovering while playing

Both by constructing simple track systems and by deliberately planning and designing complex systems, new possibilities can be discovered and concentration, accuracy, patience and teamwork skills are fostered.

Testing while playing

Specific problem statements for the construction of cuboro marble track systems pose valuable mental exercises on different levels of difficulty. These exercises test the individual on three-dimensional and logical thinking, while fostering independent play. The statements also have the quality of riddles, the solving of which is satisfying and fosters independent thinking.

Many questions leave room for interpretation on purpose. Individual, creative solutions are encouraged, with less emphasis on "better" or "worse" solutions.

Origin (from the preface of the first edition 2010)

There are several reasons why I record and comment on the possibilities the cuboro system offers and how they are formed into tasks:

Originally, cuboro was developed as a simple three-dimensional educational puzzle game for special schools. It is a key learning experience that individual elements accurately combined can form a meaningful unit. Two-dimensional puzzles, memory games and jigsaw puzzles are approved learning aids. Corresponding three-dimensional teaching material is rare!

Benefits in concentration, cooperation and thought processes

cuboro is already deployed systematically in many schools and institutions. Their experiences, particularly with students who have a hard time concentrating, show that playing with cuboro can work small wonders. Children, who can hardly concentrate for five minutes in daily classes, often engage in playing with cuboro for more than one hour without interruption. Children, who have difficulties integrating into groups, can be motivated to construct large track systems together with others peacefully.

Again and again, one comes across adults who have a hard time constructing a simple functioning cuboro track system. These must be the same people, who after crossing a street two times in an unknown city cannot remember where they are, or who find it difficult to understand a construction manual for a bookcase.

It seems clear that sense of orientation, spatial imagination and logical thinking belong together and can be learned through play.

"cuboro creative thinking" offers possibilities to convey such learning contents in an entertaining manner!

Freely playing with cuboro

Without having to know that cuboro is a toy designed on simple mathematical relationships, players can have intuitive **experiences with geometrical connections and spatial thinking**. These experiences in turn will positively influence understanding of mathematics and mathematical relationships.

Track systems with geometrical requirements

cuboro is perfectly suitable for playing according to geometrical requirements, since all elements are shaped as cubes with identical linear dimensions and can be arranged on the basis of mathematical logic. This involves the simple use of identical forms on the surface and/or the use of a determined amount of elements on one level as well as systematically and symmetrically designed outlines and track sections.

Teamwork "architecture"

Within the strict rules of geometry, the creative possibilities of planning track systems open up to a surprising degree. For instance, small teams can plan large track systems (with several track courses) according to forms and determined amounts of cubes on one level, or they can come up with clearly defined rules for different track sections. **It is exciting to see how the applied rules influence the appearance and aesthetics of the whole system.** That way, functional and artful sculptures and "monuments" arise!

Thematic assignment "mental exercise academy"

In addition to the mental exercises presented in this product, additional criteria for further mental exercises can be created in thematic assignments. **The goal could be to develop a collection of riddles according to levels of difficulty.**

Calculative experiments regarding set, time and path

This learning area is about forms and sets as well as about simple mathematical problems.

Ordering – Exercises for assorting geared to the theory of sets.

Counting/calculating – Memorizing the sub-steps of constructing systems (levels, plus number of elements per level) permits the player to trace back the (calculation) process at any time. Thus, the cuboro system can be perceived as a kind of three-dimensional calculation frame. Experienced cuboro players can create the amazing experience of solving demanding mathematical tasks through play.

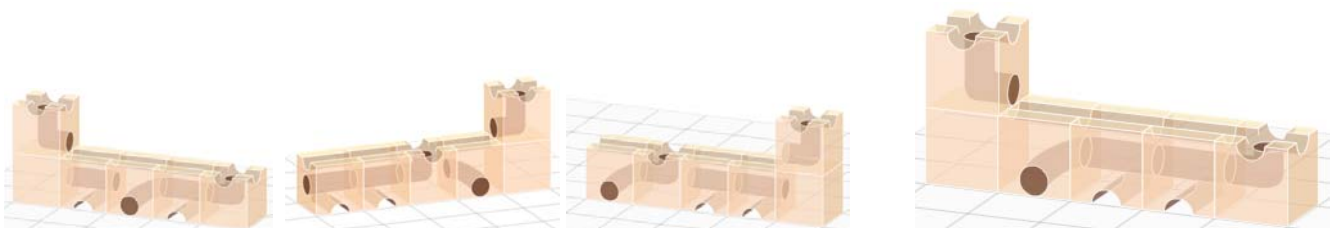
cuboro-webkit

Besides the possibility of virtually constructing track systems (which fosters logical and spatial thinking as well), the cuboro-webkit, which is offered parallel to this product, opens up the wonderful possibility of demonstrating and experimenting with the use and the social value of the internet. Similar to how designers, artists, technicians, scientists, etc. globally communicate and expedite projects, students can participate in a global exchange and "cuboro construction process" by virtually recording (and publishing) their own track courses or by further developing existing cuboro systems. Comments and a history of such advanced models by various participants even allow an insight into the "evolution" of such projects!

A small philosophical excursion

As a comparative system, cuboro can also be perceived in a social context! Even small cuboro marble track systems hold the wisdom that individual elements ("individuals") with all their distinct functions ("abilities") constitute a functioning whole.

The individual elements can only tap their full potential owing to the accurate connection among one another!



Examples of functioning systems with partly utilized "abilities".

Best possible utilization of the elements!

On the history

cuboro was developed by Matthias Etter as a simple educational game during his work with special school students in Gümligen, Bern, in 1976. At the time, it was a three-dimensional puzzle composed of cubes with channels and tunnels. If the elements are placed in the right order, a marble finally runs through the course, i.e. the task is achieved. Depending on age and capability, the solution is achieved through logical thinking, trial and error, imitating, copying, learning by heart, step-by-step practice or even by feeling in case of visual impairment. The students always experienced that through expedient combining a functioning system develops.

With time, Matthias Etter further developed the system and brought it on the market as a "multi-generational game" including cubes with 12 different functions in 1985. cuboro was successively extended with thematically chosen elements in supplementary sets. Presently, 82 different elements are offered.

Besides winning several awards and a large community of players, cuboro also gradually gained attention as a comparative system. Thus, today, cuboro is not only played for fun, but is also used as teaching material, in scientific studies on spatial imagination, in occupational therapy, in team trainings, for aptitude tests, in promotional concepts, in theme parks and for championships.

cuboro, made from FSC-certified beech wood from the region of Oberaargau/Emmental, is produced in a modern family joinery under outmost ecological circumstances and is globally marketed by cuboro Ltd. in Hasliberg Reuti/BE.