



TEACHER GUIDE 2 - LEGEMATERIAL • LAYING MATERIAL

*Lasst uns Fröbel spielen  
und neu erleben!*

*Let's play and experience Fröbel – again!*

# PREFACE

## “Fröbel! A model for the future from the past”

was the closing statement of the first Teacher Guide by beleduc for the well-known Gifts 1 – 6. This second Teacher Guide is therefore aiming to expand on this claim.

While the Gifts by Fröbel focussed on forms in space, we will now turn our attention to **lengths and surfaces in the plane**.

The focus is now on Fröbel's laying sticks, which in pedagogical terminology are quite simply referred to as engagement resources as part of the activities he has devised for children. From this terminology, it can be deduced that children should simply “engage” with sticks of varying lengths or with different triangles, rectangles, and circles.

If we continue reading Fröbel's original work and notice that he called a square a “Geviert” and the various triangular shapes “Gedritte”, we could initially find it difficult to associate his ideas with modern educational theory, innovative didactics or even with a future-oriented approach to education.

However, as is often the case with Friedrich Fröbel, his seemingly antiquated language is deceiving. Anyone who allows themselves to “engage” with these materials will be guided into a cosmos of geometry that can be interpreted in an artistically creative as well as mathematically rigorous and systematic way which inspires adults and children alike.

With this Teacher Guide and the accompanying didactic materials, which we have specifically developed for this purpose, we would like to give you an insight into the seemingly endless possibilities and how you may easily succeed in employing Fröbel's laying materials for educational purposes.

**Let yourself be inspired by the variety that these materials offer both artistically and educationally.**

We hope you enjoy discovering and experiencing Fröbel's laying materials.

Sabine Handstein & beleduc and experts team

## MILESTONES IN THE LIFE OF FRÖBEL

Birth:  
21 April 1782  
Oberweißbach/  
Thuringia



Teacher in  
Frankfurt / Main,  
visited **Pestalozzi**  
to become  
better informed  
about his  
methods



Fröbel's  
main work  
“**The Education  
of Humans**”  
is published



1782

1799 - 1801

1805 - 1806

1816

1826

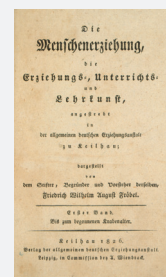
1837



Studied  
natural sciences  
in Jena



Founded the first  
general German  
educational insti-  
tution in Keilhau



Fröbel moves to  
Bad Blankenburg,  
begins  
**production of  
play gifts**



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**FRIEDRICH WILHELM AUGUST FRÖBEL**  
1782 – 1852

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„Through the laying material, the child learns to recognise structures recognise structures, find patterns and solve complex problems by experimenting with different shapes and colours.“

Opening of the  
play and  
employment  
centre in  
Bad Blankenburg



**1839**

Book "mother  
and cosy songs"  
is published



**1849**

Start of the  
training of  
kindergarten  
teachers in  
Bad Liebenstein

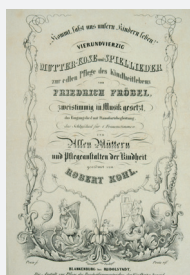


**1850**

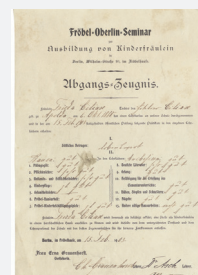
**1852**



Foundation  
of the first  
kindergarten in  
Bad Blankenburg,  
today's  
Friedrich-Fröbel-  
Museum



Start of the  
training of  
kindergarten  
teachers in  
Bad Liebenstein



Fröbel dies on  
21 June 1852 in  
Bad Liebenstein  
(Marienthal)

**EN**

## PLAYING WITH THE LAYING MATERIALS

### DISCOVERING FORMS AND COLOURS ...

Mathematics in particular brings order to disorder. And once again, it was Friedrich Fröbel who first succeeded in designing a system of laying materials, i.e. sticks and regular bases, which on the one hand fulfils strict mathematical-didactic requirements and on the other hand is incredibly fun for children to play with.



Anyone who observes children, and often adults too, for example during a break on a walk in the woods in autumn, will notice the fascination that children have for collecting chestnuts and then recreating beautiful or regular structures or familiar objects from their everyday lives. Forms may emerge almost involuntarily, which can be categorised into the forms of cognition, beauty and life which Fröbel has named accordingly.



Form of beauty



Form of cognition



Form of life

## The five surface shapes by Fröbel



Remarkable and less well-known in this context is that Fröbel himself had only designed five different surface shapes (the rectangle and four different types of triangles) and these were “only” stained in the three colours red, yellow and green.

While there is an essay by him on how to use the sticks, of which there are plenty in our set (720 in total), unfortunately, there is no further information on playing with the laying tablets. It was above all his pupils who, most probably in close dialogue with him, turned these materials into what is generally understood today as Fröbel's laying materials. New geometric shapes such as circular discs, semi-circular discs and circular rings. Rectangles, rhombuses, trapezoids and parallelograms were added over time, as was the colour spectrum of the materials, which was expanded to include six rainbow colours known from his first Gift.

Our colours:





Nowadays, it has become common to refer to such collections, such as the one we are presenting to you, as “Fröbel laying materials”.

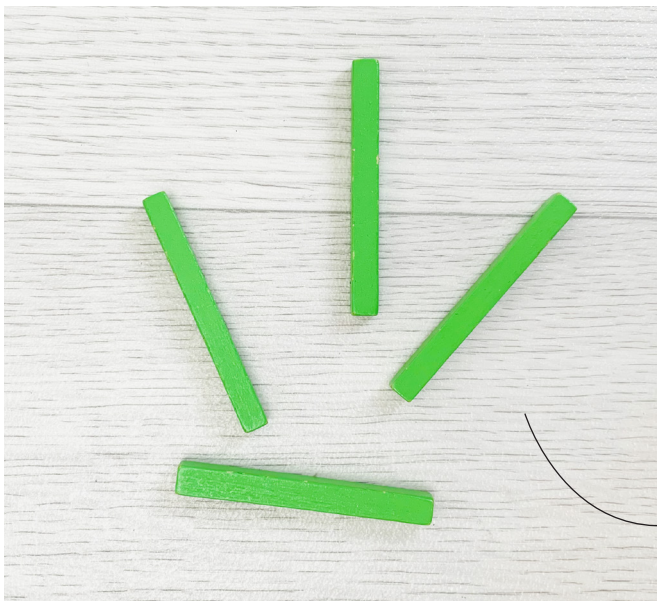


Why are our laying materials bigger than  
the original forms by Fröbel?

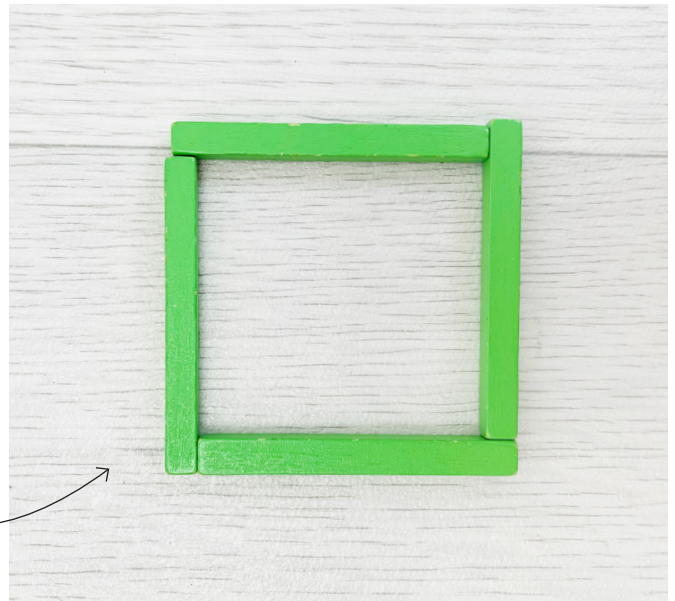
Extensive tests with preschool children have prompted us to slightly enlarge the decimal measurements (2.5 cm, 5 cm, 7.5 cm and 10 cm), that are generally used as a basis, and to use their length measurements as divisors of the number 12 (i.e. 3 cm, 4 cm, 6 cm, 12 cm). The slightly larger material makes it much easier for small children to cleverly handle them with their hands.

## KNOW HOW

You will certainly be familiar with the statement: "The whole is greater than the sum of its parts." It was formulated by Aristoteles (384 – 322 BC) and became the guiding principle of an entire school of psychology in the 20th century, namely the Gestalt psychology, or configurationism. This investigates the ability of humans to generate meaningful organising principles and structures from the sensory impressions we receive. This fundamental principle can be recognised in almost every single laying step.



No question, the sum of four green sticks remains: four green sticks.



Oops, what has happened here?  
The sum of the four green sticks creates something completely new: a square.



Each musician is a talented soloist and masters their instrument perfectly. The guitarist can play great solos, the bassist masters impressive grooves, the singer has a unique voice and the drummer is absolutely precise. However, when the band plays together, something that goes beyond their individual abilities is created and something almost "magical" emerges, which as a musical unit is more than the sum of the abilities of the individual band members.



## PRACTICAL TIPS AND DEVELOPMENT AREAS FOR HANDLING THE LAYING MATERIALS

The first beleduc Teacher Guide already formulated five tips for handling Gifts 1 – 6, which are fundamentally valid for dealing with play materials. They are therefore discussed again in this section, while specifically focussing on the new content and expanded in relation to the laying material.



### 1 Less is more ...

Even if the statement is wrong in a mathematical sense, since five laying tablets are of course more than three of them, the corresponding clue is particularly valid regarding the large variety of shapes and immense number of individual pieces (as there are 1450 individual pieces) of the laying material. This variety of shapes can very quickly become distracting and should therefore be avoided at the beginning. **A reduction to a limited and possibly already pre-sorted range of materials significantly increases the stimulus for the children to engage with them.** Contrarily, if we would offer them all the materials in all its variety right at the beginning, it could quickly lead to a great deal of weariness.

For example, it may be enough to trigger a veritable burst of creativity in children by offering them a single shape in all six colours or all five basic shapes (which are again subdivided several times) in one of the six colours.

The **picture laying stories** we have developed in the enclosed booklet are based precisely on this idea.



### 2 ... and more is indeed more!

However, it can be quite a different case if we offer children **only the same shapes**, like squares and rectangles. Boredom? Not at all! If we decide to do this, it is recommendable to give children all colours of one or possibly two shapes. With such an approach it is almost certain to predict that children will create **regular patterns and structures** with the large number of identical laying materials. Simply stating: "Kids, look what I've got with me today," and the following presentation of the laying materials on a suitable surface is usually enough to get them started. You will be amazed at how much fun children have laying regular patterns and structures.



### 3 Mixed up? There you go!

Following the first two tips, the material would be pre-sorted. But what occurs if you provide the children with a bigger mess?

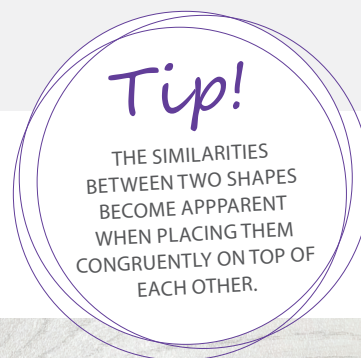
This mess, or rather “disorder”, can be reorganised in different ways:

1. According to “dimensions” (i.e. “one-dimensionality”, like lengths, such as the sticks and rings or half-rings; and “two-dimensionality”, like surfaces, such as rectangles, triangles and circular areas.
2. According to colour. <sup>1</sup>
3. According to shapes.

There certainly is a lot to discuss when sorting by shape. Separating round and angular shapes would be the easiest exercise. But rectangles and triangles are also easily distinguishable. However, it is more difficult to differentiate between the individual types within the shapes, especially triangles. Have a look at the individual shapes with the children and work with them to formulate their similarities and differences.

#### <sup>1</sup> Did you know?

Around 5% of all people are affected by colour vision deficiency (colloquially often somewhat misleadingly referred to as colour blindness). A male person is at a much greater disadvantage, as this anomaly affects boys and men almost ten times more frequently. With this vision defect, the colour red and green cannot be distinguished. There will certainly be children affected by this in your institution and it is very helpful for the children if this genetic disease is detected early, for which sorting by colour can serve as a diagnostic tool.



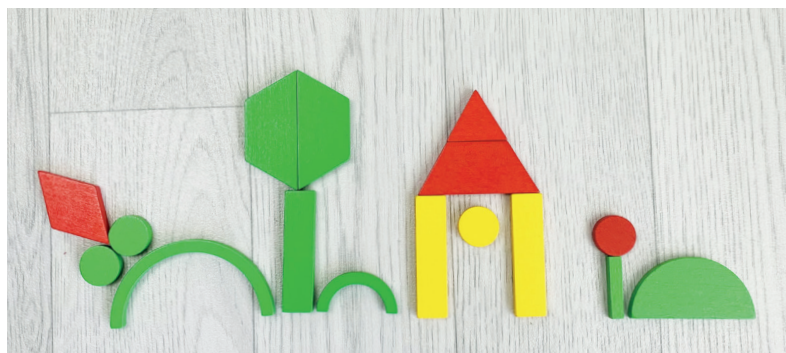
### 4 Interaction as a didactic principle

You will be amazed at how much fun children have when you play along or simply start to play with the laying materials by beginning to lay a pattern or a picture related to their environment. Your initiative will almost certainly motivate the children to take part in the game.

Occasional and cautiously formulated impulses are sufficient to get the children involved:

- “How would you continue now if you were me?”
- “Do you want to try it yourself?”
- Do something that does not quite fit and express your dissatisfaction: “**Somehow, I don’t like it. Do you have any ideas on how I could do it better?**”

And above all, the same applies here: talk to the children during the game. This should never be about instruction, but rather about (co-constructive) dialogue. Joint interaction is the didactic principle that needs to be applied.





## 5 Simply playing. Let them surprise you!

The laying materials are also a play material and not teaching aids. It is therefore logical that playing with them cannot be planned down to the last detail. You will be amazed at the ideas the children come up with all by themselves without any outside support. This is especially true when children work together on a project and inspire each other.

If children are familiar with working with the laying materials, it makes sense for them to co-operate while playing. Let them explain to you how they proceed.

Just be  
creative!

"FRIEDRICH FRÖBEL'S LAYING MATERIAL IS A CREATIVE TREASURE THAT TEACHES CHILDREN THE JOY OF DISCOVERING AND DESIGNING WHILE THEY PLAYFULLY LAY THE FOUNDATIONS FOR LIFELONG LEARNING,"  
according to our Fröbel experts.

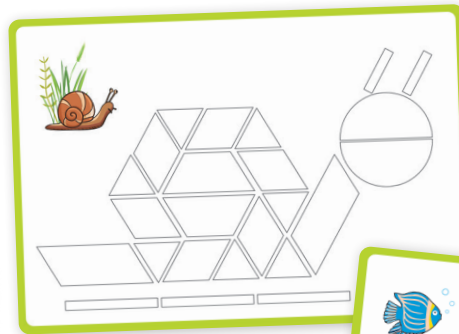




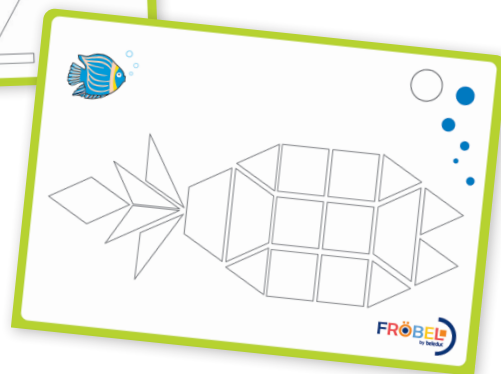
## WORKING WITH THE ADDITIONAL MATERIAL FROM THE TREASURE BOX

6

Template cards, Themed backgrounds, Mandala mat,  
Sorting trays and cotton bag



IMITATING FIRST  
MOTIFS WITH LAYING  
MATERIAL



THE FELT TRAYS HELP  
WITH SORTING AND  
SELECTING THE PIECES



THE COTTON BAG CAN BE USED IN A  
VARIETY OF WAYS, E.G. FOR A TACTILE  
OR GUESSING GAME



THE CENTRE OF THE  
MANDALA MAT IS MARKED  
WITH A FLOWER, MAKING  
IT EASIER TO LAY OUT  
SYMMETRICALLY

IN PRACTICAL, STACKABLE  
WOODEN BOXES - THERE IS A  
COMPARTMENT FOR EACH SHAPE.  
SORTING MADE EASY!







ALL TEMPLATE CARDS ARE  
PRINTED DIFFERENTLY ON  
EACH SIDE



IMITATING A FIRST PICTURE OR  
LAYING DIFFERENT SHAPES  
IN A ROW





**\*PAINTING  
DIFFERENTLY!**

## WORKING WITH THE ADDITIONAL MATERIAL FROM THE TREASURE BOX

**7**

The picture laying story booklets

**18**

STORIES WITH  
WITCHES, ACROBATS,  
FLOWERS, AND  
OF DREAMING,  
LISTENING AND  
LAYING PICTURES



BOOKLET 1  
"COLOURS & SHAPES"



WITH A QUICK GUIDE AND TABLE OF CONTENT  
ON THE BACKSIDE OF THE BOOKLET



BOOKLET 2  
"COLOURS"



BOOKLET 3  
"SHAPES"

Children not only love stories, but they love being read to above all. Listening and letting the pictures of the story develop in their imagination and then bringing them to life with the laying materials is great fun for children and encourages.

PLAYFULLY  
GETTING TO KNOW  
GEOMETRIC  
SHAPES

A SHEET OF  
PAPER AND  
YOU ARE READY  
TO GO!

**18**  
PICTURE  
LAYING  
STORIES





# WORKING WITH THE STORY BOOKLETS

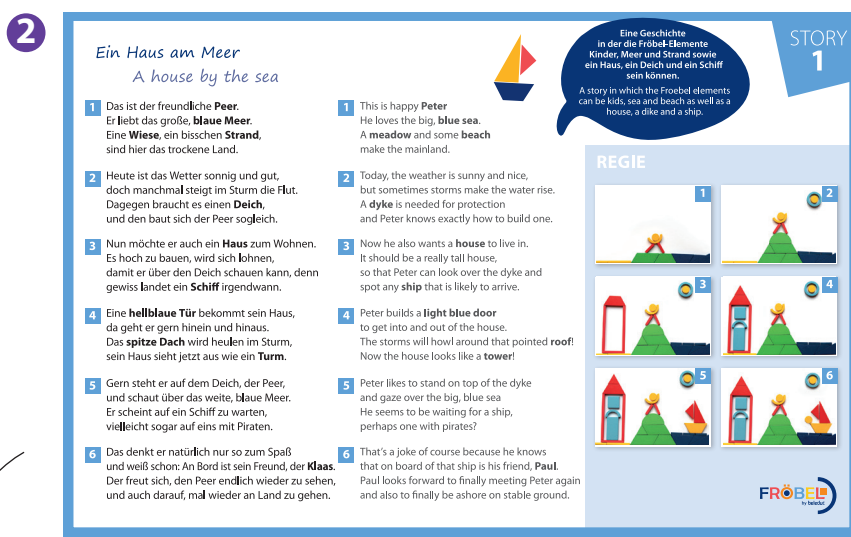
## Step by Step:



ILLUSTRATION OF THE STORY - FACING THE CHILDREN.

## Painting differently!

Further suggestions and ideas for working with the picture laying stories can be downloaded directly from the author Renate Schoof.



STORY TO READ ALOUD WITH STEP-BY-STEP EXAMPLES.



QUESTIONS, SUGGESTIONS AND TIPS BY EXPERTS FOR THE STORY.



FINAL LAYING PICTURE: THIS IS HOW IT COULD LOOK LIKE. FACING THE CHILDREN.

# Fröbel!

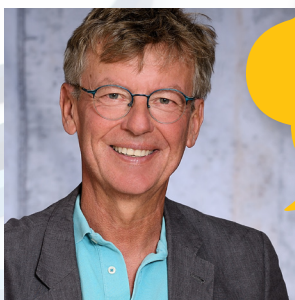
## EIN ZUKUNFTSMODELL AUS DER VERGANGENHEIT

Gemeinsam mit einem Team aus Expertinnen und Experten auf dem Gebiet der Pädagogik, der Kinderliteratur und der frühen mathematischen Bildung entstand dieser beleduc Teacher Guide zu Fröbels Legematerial. Gefüllt mit Informationen rund um das Thema „Formen & Farben“. Mit viel kreativem Zusatzmaterial, die Lehre Fröbels im Kindergartenalltag zeitgemäß zu integrieren und damit die kindliche Entwicklung positiv zu unterstützen. Gemeinsam in der Gruppe Fröbel entdecken! Mit viel Spaß Geschichten hören und kreative Bilder legen. Los geht's!

# Fröbel!

## A MODEL FOR THE FUTURE TAKEN FROM THE PAST

In collaboration with a team of experts from the fields of education, children's literature and early maths education, this beleduc Teacher Guide to Fröbel's laying material was created. Filled with information on the topic of "Colours & Shapes" and with plenty of creative additional material to integrate Fröbel's teachings into everyday kindergarten life in a contemporary manner – to support child development. Discover Fröbel together with a group. Have fun listening to stories and creating creative pictures. Let's go!



„In einer Welt, die ständig im Wandel ist, ist es entscheidend, dass wir unseren Kindern Werkzeuge geben, um sich kreativ zu entfalten und zu gedeihen.“

### Dr. paed. habil. Gerhard Friedrich

ist Diplom-Pädagoge und unterrichtete als Lehrer die Fächer Mathematik, Technik, Pädagogik und Psychologie. Er ist Privatdozent für Allgemeine Didaktik an der Universität Bielefeld sowie Buch- und Spielautor.

*has a degree in education and began his professional career as a teacher of mathematics, technology, education and psychology. He trained teachers in general didactics at the University of Bielefeld in Germany. He is a book and game author.*



„Die Geschichten können als Ausgangspunkt für vertiefenden Wissenserwerb oder zu weiteren Aktivitäten anregen.“

### Renate Schoof

ist eine deutsche Schriftstellerin. Sie studierte Pädagogik und Germanistik in Lüneburg und Berlin. Sie schreibt Gedichte, Romane, Erzählungen, Sachbücher, Jugend- und Kinderromane sowie Bilderbuchgeschichten.

*is a German author. She studied education and German studies in Lüneburg and Berlin. She writes poetry, novels, short stories, non-fiction, young adult and children's novels as well as children's picture book stories.*

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