

A photograph of Montessori geometric solids on a wooden table. In the foreground, there is a blue cone, a blue sphere with small white dots, and a blue rectangular prism. The background is a blurred indoor setting with warm lighting and wooden shelves.

Sensorial Education Lesson 2

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This week we shall continue deepening our understanding of the Montessori Child with the study of Sensorial Education.

Sensorial Education 2

Lesson Objectives:

1. To give a detailed overview of the presentation of
 - The Pink Tower
 - The Long Red Rods
 - The Broad Brown Stairs
 - The Colour Boxes
 - The Sound Boxes

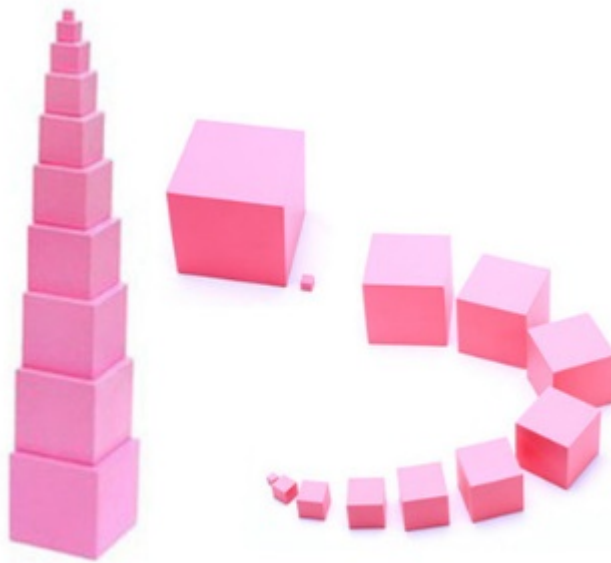
Sensorial Education Notes 2

"The senses, being explorers of the world, open the way of knowledge"

Maria Montessori

The Pink Tower

Sensorial Education Lesson 2



The Pink Tower is usually the first Montessori material introduced to the child in the sensorial area. The child is usually 2 and half or more and must already have been introduced to doing some Practical Life activities. It is made up of 10 pink wooden cubes ranging from 1 cubic cm to 10 cubic cm, differing in 1cm cubic dimensions. A floor mat of contrasting colour is used for this work

We use this material to develop the child's visual and muscular perception and discrimination of dimensions so that he can judge sizes.

It also helps to prepare the child for mathematics by providing her with experiences in comparing, grading and serializing the cubes. There is also the fact that this exercise provides a child with the basic language important in mathematics.

You present the material by inviting the child for a lesson, tell him you have something to show him and that for this lesson, you will need a mat. Have the child fetch and unroll a mat. Then bring him over to the Pink Tower which should be by or on the shelf in the Sensorial area of the classroom, and tell him: "This is the Pink Tower".

Show the child how to pick up and carry the top cube by gripping from above the top edges using your right thumb and index finger. Place the tube on the right hand side of the mat. It is important to note this placement and make it a point to do this always. The reason is because we write from left to right. Everything you do in the Montessori setting therefore emphasises this fact. (If you are teaching in an Islamic environment and would be teaching only Arabic, then you would do the opposite as you would be writing from right to left)

Sensorial Education Lesson 2

Once you have done the first few, have the child bring the rest of the cubes over and place them on the right side randomly. When the cubes get too big for the child to pick up and carry by only using one hand, show the child how to gently tilt the cube back using your right hand and sliding your left hand flat under the cube. Then lift the cube up and place your left hand flat under the entire cube. Then bring the cube to waist level and place your right hand flat on top of the cube. Carry the remaining cubes one at a time over to the mat. Once all of the cubes have been placed, have the child stand to your left so that he can see what you are doing clearly.

Now show the child how to build the Tower. This exercise as with most Montessori presentations are done without talking. The child watches you and is able to assimilate better without being distracted by words he may or may not understand. Carefully pick up the largest cube and place it near the front left corner of the mat.

Reach over to the right half of the mat and carefully choose the next biggest cube. In a steady and precise movement, place the cube in the centre of the first cube. Once it has been placed, check to see if it is well centred. Then continue placing all of the cubes in correct order until the last cube has been placed on the top.

Look over the tower to check if all of the cubes are well centred and allow the child to do the same. You should check from every side by squatting down low to check for it being centred. Let the child check as well. Once you are satisfied, it is time to dismantle the tower.

Dismantle the tower in the same way you did when you were bringing the tower over to the mat from the shelf and place them back on the right hand side of the mat.

Once the tower has been dismantled you can now invite the child to build the Pink Tower. To help him get started, ask him which cube he is going to start with. If the child seems to understand, you can let him work alone. Once he is done, let him replace the cubes in correct order and centred back on the shelf.

Notice that there is a work cycle in place in this presentation. There is a beginning, a middle and an end.

Beginning- Preparing a work station and inviting the child for a new lesson, going to the shelf pointing out the material and introducing it's name.

Middle- Carrying the material to the workstation and working on it. Dismantling and working over and over again on this material. (This is normal for the pre-school child, the repetition enables them to learn what they need to.)

End- The final dismantling of work and returning the material back to the shelf in an orderly manner.

This work has several extensions that the child will probably work on before they move to the Primary classes these include the following, this is not an exhaustive list:

Sensorial Education Lesson 2

- Once the child has seemed to master the building of the tower, the directress will show him another way of building the Pink Tower. The directress will demonstrate in the same manner, as above but instead of placing each cube in the centre of the cube under it, she will line them up at a right angle with two sides adjacent. Once the entire tower has been built in this way, the directress will pinch the top cube with her thumb and index finger and place it on the ledge of the bottom cube. Starting at the far back, the directress will slide the smallest cube along the length of the entire ledge. This will be repeated for every ledge, by working you way up from one ledge to another. The child will then try. Once he is done, the child will replace the tower centred on the shelf.
- The cubes can be built in order of a staircase
- The cubes can be scattered round the class the child builds by running round the class to get the correct cubes in order of size.
- The cubes can be arranged in a spiral format.
- It is a great idea to let the children work with the cubes creating different arrangements that they can build.



Games you can play include: Grading from an extreme and grading from a midpoint.

Sensorial Education Lesson 2

Language and best practices: With the younger children 2 ½ it is best to start with 3 to 5 cubes. Help the child relate the shape to the environment by asking for example, "In mummy's kitchen what does she use to cook her soup and stews that looks like this?" Answer "Magi or Magi cubes"

Question: "I want to drink garri with something that makes it sweet what is it?" Answer "Sugar"

Question: "Do you like Choco Milo?" Answer "yes". Then explain to the children that, "All these things, the magi, sugar and choco milo all have the same shape as the Pink tower blocks and they are called cubes."

These are the other words children can begin to learn, use and understand with the pink tower:

- Cube, Big, Large and Small.
The positives, comparatives, and the superlatives
- Big, bigger, biggest
- Large, larger, largest
- Small, smaller, smallest

The control of error- The control of error lies within the child being able to discriminate dimensions. If the tower is incorrectly built it may fall down. If the error is only slight then wait for the child to correct himself, if not it may then be necessary to represent the material at a later stage.

Most Montessori materials has an inbuilt control of error, this enables the child to be able to correct himself. He can see himself that he is wrong and then make the appropriate corrections. For example with the Pink Tower if it falls the child knows it wasn't built correctly. Even through visual discrimination the child can tell that he has not built the tower properly if a smaller cube is under a bigger one. This is the auto-correction characteristic of the Montessori materials.



Broad Brown Stairs

Sensorial Education Lesson 2

The Broad Brown Stairs consists of 10 brown prisms of the same length 20cm, but differing in height. They vary from 10cm x 10cm x 20cm to 1cm x 1cm x 20cm. The material is laid on a floor mat with contrasting colour.

The direct aims and objectives of the brown stairs material is to help the child develop visual discrimination of dimensions in thickness. While the indirect aims include, refinement of voluntary movement and preparation for mathematics.

To present the Broad Brown Stairs invite the child by telling her you have something to show her. Tell the child that for this lesson, you will need a mat. Have her fetch and unroll a mat. Bring her over to the correct shelves and point to the Brown Stairs. Tell the child: "These are the Broad Brown Stairs".

Show the child how to hold the thinnest prism by gripping over the top of the centre part of the prism using your right thumb and fingers.

Then slowly slide the prism off of the shelves until it is fully out.

Carry the prism vertical and at waist level.

Have the child carry all of the prisms over one at a time and place them randomly on the right side of the mat. (Show the child to place her hand underneath some of the thicker prisms.)

Once all of the prisms have been brought over to the mat, have the child stand to your left.

As you remain standing, carefully pick up the thickest prism (using both hands), and place it near the back left corner of the mat.

Turn to the child and tell her that you are now looking for a specific one.

Go over to the right half of the mat and carefully choose the next thickest prism. (Use both hands)

In a steady and precise movement, place the prism directly under the thickest prism and align them so that they are well aligned.

Once it has been placed, check to see if it is well aligned by sliding your hand along the left side of the two prisms.

Continue placing all of the prisms in correct order and placing them so they come closer and closer to you as each is placed.

Dismantle the Brown Stairs by removing the thinnest to the thickest prism and placing them on the right half of the mat. Invite the child to build the Brown Stairs. To help her get started, ask her which one she is going to start with. If the child seems to understand, you can let her work alone. Once she is done, have her replace the prisms in correct order on the shelves.

Exercises

Exercise 1

The child builds the stairs individually as above.

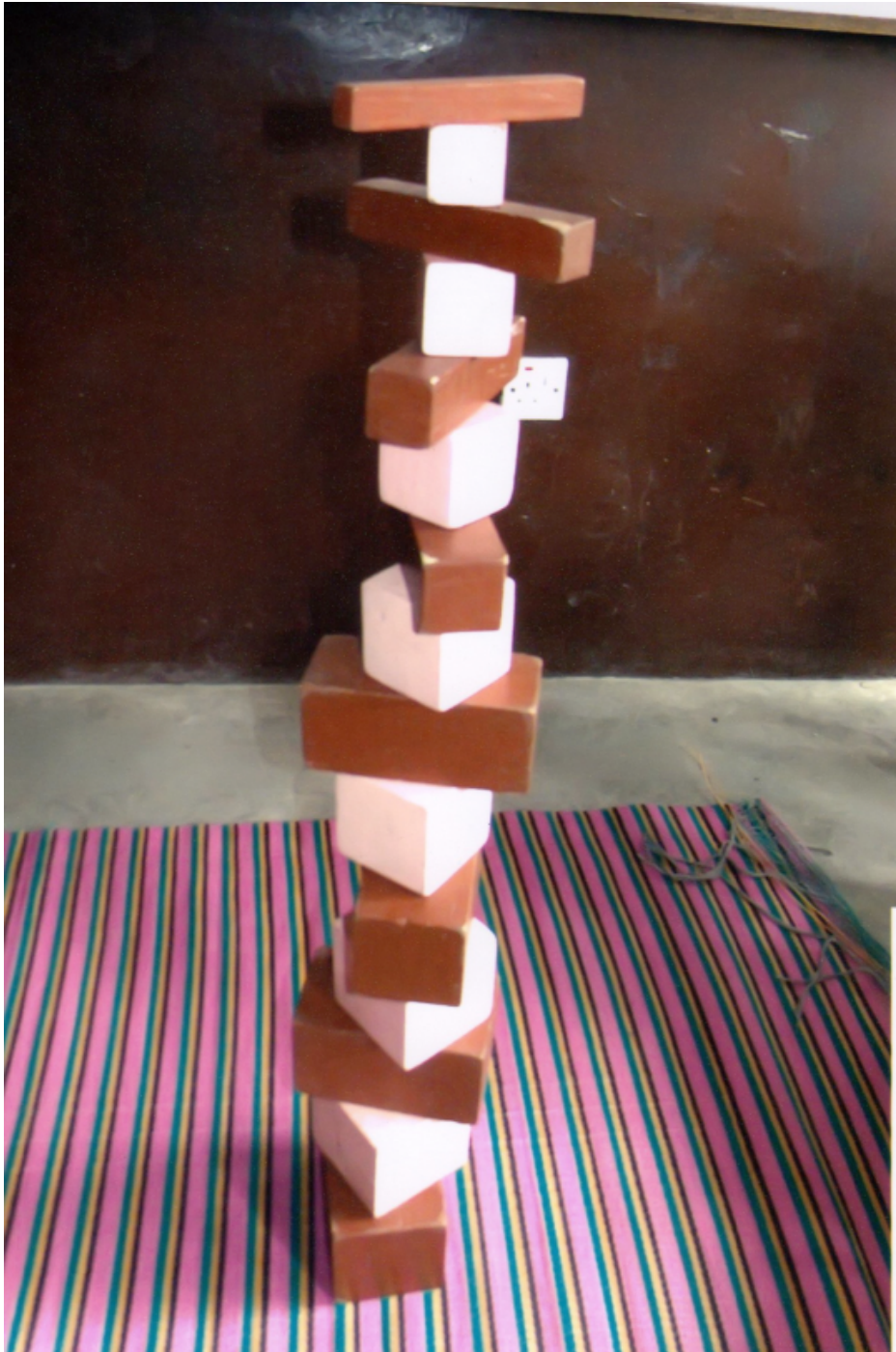
Exercise 2

Once the child has mastered the building of the stairs, show her an additional step by carefully placing the thinnest prism on the ledge of the second thickest prism and up against the thickest prism. Show the child that by doing so, the second thickest prism is now at the same height as the thickest. Repeat this on every

Sensorial Education Lesson 2

Exercise 3

Use both the Broad Brown Stairs and Pink Tower to build a structure interchanging the prisms and cubes as shown below.



Sensorial Education Lesson 2

Games

Grading from an extreme and grading from a midpoint

Language

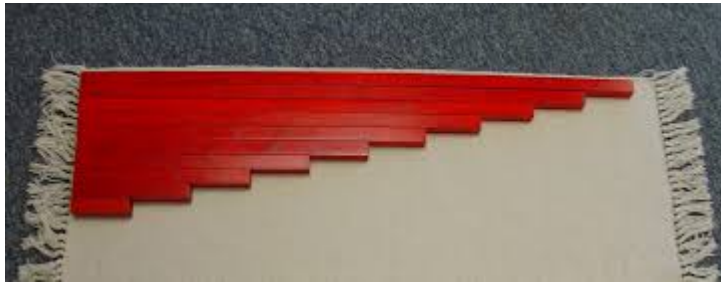
Thick and Thin

Control of Error

The control of error lies within the child, being able to discriminate the dimensions.

Age

3 to 3 1/2 years



Long Red Rods

The Long Red Rods are made up of 10 red rods differing in one dimension – length. The length ranges from 10cm to 100cm. The unit of difference between each rod is 10cm.

A large floor mat or two regular mats are also needed for this activity

The direct aims and objectives are to provide the child with experiences of the visual discrimination and muscular memory of length and the indirect objective is to prepare the child for mathematics

Sensorial Education Lesson 2

To present the Long Red Rods invite the child by telling him you have something to show him. Tell the child that for this lesson, we will need 2 mats. Have the child fetch and unroll a mat. Then have him bring another mat and have him place it next to the first mat to form an "L" shape. Bring him over to the correct shelves and point to the Long Red Rods. Tell the child: "These are the Long Red Rods".

Show the child how to hold the shortest rod by gripping over the top of the centre part of the rod using your right thumb and fingers.

Slowly slide the rod off of the shelves until it is fully out.

Grip the rod with your left hand below your right hand.

Carry the rod vertical and so your hands are at waist level.

Have the child carry all of the rods over one at a time and place them randomly on one of the mats.

Once all of the rods have been brought over to the mat, have the child stand to your left.

Carefully pick up the longest rod and as you kneel in front of the mat, place it horizontally near the back of the other mat.

Turn to the child and tell him that you are now looking for a specific one.

Go over to the other mat and carefully choose the next longest rod.

Kneel in front of the longest rod and in a steady and precise movement, place the rod directly under the longest rod on the other mat, and align them so that the left edges are well aligned.

Once it has been placed, check to see if it is well aligned by sliding your hand along the left edge of the two rods.

Continue placing all of the rods in correct order and placing them so that they come closer and closer to you as each rod is placed.

Once you have completed building you and the child should examine the work then its time to take it apart. You do this by removing the shortest to the longest and placing them on the now empty mat.

Invite the child to construct the Red Rods. To help him get started, ask him which one he is going to start with. If the child understands, you can let him work alone. Once he is done, have him replace the rods from longest to shortest back on the shelves.

Exercise 1

The child works individually with the material as shown during the presentation.

Exercise 2

Once the child has mastered the constructing of the rods, show him an additional step. Carefully place the shortest rod to the direct right of the second longest rod and up against the side of the longest rod. Show the child that by doing so, the second longest rod is now at the same length as the longest. Repeat this on every end of every rod by working your way down to the shortest rod.

Exercise 3

Use the rods to build a maze and ask the children to take turns walking through it.

Sensorial Education Lesson 2



Games

Matching shape and colour to the environment

Grading from an extreme and grading from a midpoint. **Language**

Long, Longer, Longest and Short, Shorter, Shortest.

Control of Error When the child is able to discriminate dimensions he can see the disharmony in the building of the rods. If he can't see it then you need to represent the activity later on. **Age**

3 1/2 – 4 year



Sensorial Education Lesson 2

The Colour Boxes

Materials

There are 3 boxes with lids containing colour tablets:

Box 1:

Contains 6 tablets; a pair of each of the primary colours (red, yellow, blue). These are the most sharply contrasted colours.

Box 2:

Has 22 tablets; a pair of each of the primary colours, the secondary colours (green, orange, purple), and also pink, brown, black, white, and grey.

Box 3:

Has 63 tablets; 7 shades of 9 colours: red, yellow, blue, green, orange, purple, brown, pink, and grey.

Aims and Objectives

Direct

To provide the child with a key to orient him in the world of colour.

Presentation Box 1

Invite the child by telling him you have something to show him. Bring him over to the correct shelves and tell him we will be using the Colour Tablets. Show the child how to carry the box with your two hands on opposite sides of the box with your fingers underneath the box and your thumbs over the top. Have the child bring the correct box and have him place it near the top right corner of the table. Have the child sit to your left and then you sit down in front of the box. Take off the lid using both hands and place it directly in front of the box. Pick up the box using both hands and place it carefully onto the lid.

- Take the red, yellow, and blue tablets (with their matching pair) out of the box with your thumb and index finger and make it evident that you are aware of not touching the colour part.
- Place each tablet randomly on the table next to the box.
- Pick up the box and place it behind the lid and then pick up the lid and replace it onto the box.
- Pick up one of the red tablets using your right thumb and index finger, holding the "frame" part of the tablet.
- Place it near the top left hand corner of the table and isolate it from the other tablets.
- Then tell the child, "I'm looking for one just like it."
- Choose the other red tablets and gently place it directly next to the first red tablet.
- Then pick up the yellow tablet and place it under the first red tablet.
- Ask the child, "Can you find the one just like it?"
- Match the yellow in the same way as the red.
- Place one of the blue tablets under the first yellow tablet and get the child to match it. Complete the work-cycle.

Sensorial Education Lesson 2

Language: Once the child can pair the colours use the 3 Period lessons to teach the names of the colours. Please say: 'This is red'. Not 'This is colour red'

The Three Period Lesson for Naming Colours:

Step 1:

Choose one of each of the primary colours.
Name the colours clearly and repeat 2-4 times.
Have the child close his eyes and you mix the colours up.

Step 2:

Ask the child to point to the colour you ask for.
Ask the child to give you a specific colour.
Ask the child to place a specific colour in a specific spot.

Step 3:

Ask the child, "What is this?"
Ask the child the names of all of the colours.
Mix up the colours and ask again.

Presentation Box 2

Now that the child can pair the tablets in Box 1, have him carry Box 2 over to the table and open the box as before.

- Take the red, yellow, blue, green, orange, and purple tablets (with their matching pair) out of the box and make it evident that you are aware of not touching the colour part.
- Place each tablet randomly on the table next to the box.
- Pick up the box and place it behind the lid and then pick up the lid and replace it onto the box.
- Pick up one of the red tablets using your right thumb and index finger and holding the "frame" part of the tablet.
- Place it near the top of the table and isolated from the other tablets.
- Then ask the child to place the one that looks just like it next to it.
- Have the child choose the next colour and place it directly under the first red tablet. Then you find its match.
- Have the child choose a colour and then match it until all of the colours have been matched. (Show the child where to place the tablets in a new column once the first column is done.)
- Have the child close his eyes and tell him you are going to mix them up.
- Mix the tablets and place them all to the right of the box.
- Have the child match just as you had done in the presentation.
- Take out the other colours and place them randomly on the table to the left of the box.
- Have the child match these colours as well.
- When the child has finished working, have him replace the tablets back into the box, as he had done with

Sensorial Education Lesson 2

Games

Matching at a distance and then matching to the environment

Language

Names of the colours (given after the child can pair box 2 without hesitation).

The Three Period Lesson for Naming Secondary Colours:

Step 1:

Quickly check for understanding of the primary colours.

Give the names of the new colours repeatedly as above.

Step 2:

Check for the child's recognition of the names of the colours as done in Step 2 above.

Step 3:

Ask for the names of all of the colours more than once.

Presentation Box 3

Now that the child has worked on Box 1 and 2, have him carry Box 3 over to the table and open the box as before.

Constructing

- Take out one shade of colour (so seven tablets of the same colour but of different shades).
- Place each tablet randomly on the table next to the box.
- Close the box as done for the other boxes.
- Ask the child to find the two tablets that are the most different.
- Have the child place them next to each other (to see the contrast) and in isolation from the other tablets.
- Separate them but still keep them isolated from the others.
- Point to the darkest tablet (should be on the left) and tell the child that you are looking for one that is just a little different.
- Place the correct tablet directly to the right of the darkest shade.
- Point to this new tablet and ask the child, 'Can you find the one that is just a little different than this one?'
- Continue until you and the child have successfully arranged the shades in decreasing order.
- Have the child close his eyes and you mix up the tablets.
- Have the child arrange the shades in order as shown.

Sensorial Education Lesson 2

Exercise 1

The child will repeat the work as shown in the presentation using other graded colours until he has done all of the 9 shades.

Exercise 2

The child takes out one set of colours to grade, and you choose another set of contrasting colour. Have the child grade them both. Mix up the tablets and repeat. Continue until the child has graded every two combinations possible.

Exercise 3

Place two mats next to each other. Place the disk in the centre. Take the darkest of each colour and place it horizontally around the disk. Grade each colour outwards to create a "Star Burst".

Exercise 4

Grade the colours two sets at a time, and then keep adding more sets until all nine colour sets have been worked on.

Games

Matching to the environment, grading from an extreme and then grading from a midpoint

Language

After the child can grade Box 3: introduce the words 'dark and light' and later the comparatives (darker and lighter) and the superlatives (darkest and lightest).

Three Period Lesson for Grading Box 3: Positives

Have the child take out a set of the shades of one colour.

Have the child grade the colour from darkest to lightest.

Mix up the tablets.

Choose two tablets of contrasting shades but not the extremes.

Step 1:

In a clear voice name the correct one as dark and the other as light.

Repeat their names.

Change one or two of the tablets so the relationship changes and name them again.

Step 2:

Check for the name recognition by asking the child to show you a dark or light.

Change one of the tablets and ask for a dark or light.

Sensorial Education Lesson 2

Step 3:

Ask the child for the names.

Change the tablets and ask again.

Three Period Lesson for Grading: Comparative

Have the child take out any shade of one colour.

Have the child grade the colour from darkest to lightest.

Mix up the tablets.

Choose two tablets of contrasting shades but not the extremes.

Step 1:

In a clear voice name the correct one as dark and the other as darker.

Repeat their names.

Change one or two of the tablets so the relationship changes and name them again.

Step 2:

Check for the name recognition by asking the child to show you a dark or darker.

Change one of the tablets and ask for a dark or darker.

Step 3:

Ask the child for the names.

Change the tablets and ask again.

Three Period Lesson for Grading: Superlative

Have the child take out any shade of one colour.

Have the child grade the colour from darkest to lightest.

Mix up the tablets.

Choose three tablets of contrasting shades.

Step 1:

In a clear voice name the correct one as dark and another as darker. Add in the darkest and say; "Now this one is the darkest". Always use sentences when introducing a new word.

Repeat their names.

Change one or two of the tablets so the relationship changes and name them again.

Step 2:

Sensorial Education Lesson 2

Check for the name recognition by asking the child to show you the darkest.

Change one of the tablets and ask for the darkest.

Add in a few more of the tablets and ask for the darkest. Remove that tablet and ask for the new darkest.

Remove that one and repeat until you only have two left. Then ask for the darker.

Step 3:

Ask the child for the name of the darkest.

Change the tablets and ask again.

Control of Error

The control of error is the child's ability to discriminate colour. Meaning that if the child can see the difference himself he will know he is wrong and therefore will not need anyone to correct him.

Age

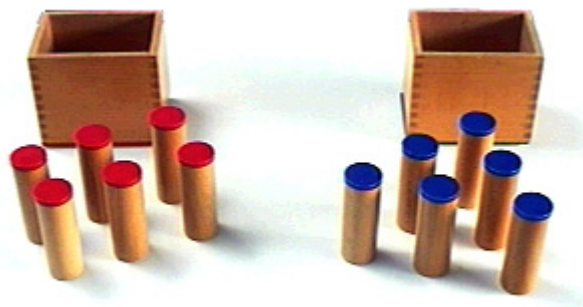
3 – 3 ½ years for Box 1 and Box 2,

3 ½ – 4 ½ year for Box 3

The Sound Boxes

This is made up of a blue box containing six blue cylinders, all the same size. These are partially filled with different substances so that each gives a different sound when shaken and also a red box containing six red cylinders that are identical to the blue cylinders in all respects except for colour.

The cylinders may have any of this substance in them: rice, semolina, sand, small stones, beads of the same size, beans, corn, lentils, etc. may be used. The cylinders are sealed; they cannot be opened.



Note: In filling the cylinders put the same amount by weight in each.

Presentation 1:

Sensorial Education Lesson 2

The teacher takes one box of six cylinders to the child's table and sits next to the child. The teacher takes the lid of the box and places it under the box. The teacher then removes the cylinders, and places them on the table. Now, the teacher shows the child how to take the cylinders one at a time and, using only one hand, shake them and listen to their sound. She does this by carefully picking up one cylinder with her dominant hand and listening intently as she shakes the cylinder. She then sets the cylinder back on the table and invites the child to listen to the cylinder. The teacher then proceeds to let the child listen to each cylinder one at a time using only one hand. The child listens to the different sound each makes as he does so.

Exercise:

The child takes a box of cylinders whenever he likes and shakes them and pairs them.

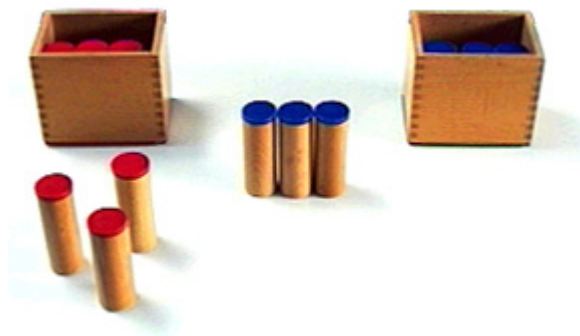
Purpose:

1. To make the child consciously aware of sounds.
2. To train the ear.

Presentation 2:

The teacher takes three blue cylinders from the blue box. She chooses the loudest, softest, and one in between. She then finds the three red cylinders in the red box which match the sound

of the chosen blue cylinders.



She places the blue cylinders on one side of the child and the red on the other. She then shakes one cylinder e.g. a red one and listens to the sound with the child. She puts this cylinder in the middle.

She asks the child to shake the other cylinders in turn until he or she finds one with the same sound as the one already shaken. (If the child forgets the sound of the first one, he or she can always shake it again.)

When the child finds the matching cylinder the teacher shows the child to place the pair side by side in the middle of the table. All the cylinders are paired in this way. When all the cylinders are paired the teacher suggest to the child that he or she check the work by listening to each of the pairs again by going down the line of pairs left in the middle and listening to them.

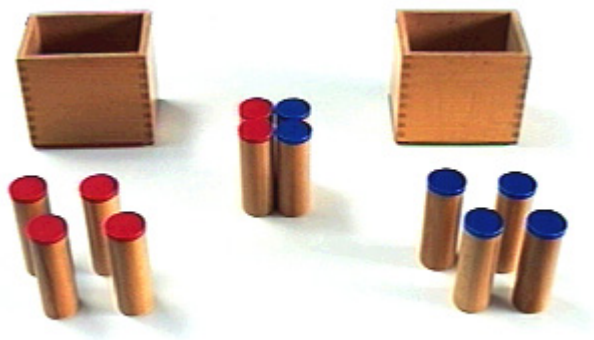
Sensorial Education Lesson 2

The child should not shake cylinders with both hands at the same time. Two sounds at the same time may blend in the child's mind and not sound different, or the child may shake less strongly with one hand than with the other which may make one cylinder sound different in comparison to the other when they actually should sound the same.

Exercise:

The child uses the material, pairing the cylinders by sound, as often as he or she likes.

When the child can match the three pairs easily, the child can have both boxes, containing all six pairs, to use in this way.



CONTROL OF ERROR:

When the child has finished pairing the cylinders he or she re-shakes each pair listening to see if they are paired correctly.

PRESENTATION 3:

The teacher takes one box of 6 cylinders to the child's table and shakes. The teacher has checked earlier to make sure that each cylinder when shaken; produces a different volume of sound so they can be sorted from loudest to softest. The teacher has the child help take the sound cylinders out of the box. The teacher then shakes each cylinder, one at a time, and gets the child to choose the loudest. The teacher puts the loudest in front of the child and lets the child shake the remaining five and choose the loudest of these. The one chosen is placed next to the one previously selected. The teacher continues to let the child shake the cylinders and arrange them in a row in order of sound. They can be arranged from loudest to softest or vice versa.

When the child has finished, the teacher has him or her shake the cylinders one after the other while listening to the gradations of sound from loud to soft and from soft to loud.

Remember to have the child shake only one cylinder at a time.

VOCABULARY

Sensorial Education Lesson 2

Loud - Soft

Loud - Louder - Loudest

Soft - Softer - Softest

Age: 3 ½ and above