MUSEU
D'ART CONTEMPORANI
DE BARCELONA

ExpressArt

Guide for Teachers

Idea, design and realisation: **Marta Berrocal Capdevila**

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Introduction

The ExpressArt project is designed to foster a reflection on contemporary art as an endless generator of ways of learning, and on the need to make available to everyone a project where the successful experiences of all the participants are guaranteed from the start. It is addressed to teachers and pupils from primary and secondary schools, including children with special needs. It can also be used at a higher level of education and by adults. The aim is to provide the resources for working on different issues and themes, depending on everyone's capabilities, with contemporary art as the starting point.

The project has been conceived as a series of didactic proposals to be developed in the classroom with the help of a number of materials (three-dimensional objects, images and texts) delivered to the teachers in a wooden crate similar to the ones used for storing and transporting artworks, on wheels, and containing three separate compartments.

These proposals should be carried out with the pupils prior to the Museum visit, in order to clarify certain aspects of contemporary art that cannot be analysed in depth during the course of the visit. By trying to understand and respect beforehand the many concepts involved in the work of an artist, the preliminary work in the classroom will help children develop fruitful processes of observation, recognition, identification, investigation, etc., when faced with the actual works in the Museum. In the event of the proposals being

studied following the Museum visit, they will allow for a deeper understanding of the questions arising in the exhibition galleries: what do artists express through their work, which materials do they use, what are their work processes, etc. as well as other questions related to various subjects.

To begin with, the project wishes to emphasise that art is a means of expression offering a myriad ways of communicating ideas, feelings, opinions and emotions; that it can use a wide range of materials, objects and procedures, which, in turn, can mean different things depending on the artist who uses them. We cannot speak of a single typology of artist, or working method, or a code of universal meanings. On the contrary, what we have is a great diversity of artists, working methods, individual and collective expressions, materials and procedures. In the same way as writers use the written language and musicians the musical language, artists express themselves through a very particular language: one that is constantly evolving without a universal and stable vocabulary, syntax and grammar regularising artistic expression in an unequivocal and unambiguous manner.

The project does not formulate value judgments on the artistic work, or approach it in a chronological and/or historical way. The aim is to make known the work of some of the artists in the Museum's Collection and to foment in the pupils an interest and a desire to learn and discover, by incrementing the communicative and expressive capabilities of the participants.

The project requires the suspension of all preconceptions, so that it can change the way your pupils, and you the teachers, look at contemporary art by freeing your gaze of all aesthetic, cultural and social prejudices, if possible. The aim is to foster new opinions based on knowledge, interlocution and experience.

> 'What I have in mind is that art may be bad, good or indifferent, but, whatever adjective is used, we must call it art, and bad art is still art in the same way that a bad emotion is still an emotion.'
>
> Marcel Duchamp

We hope that children, and you yourselves, will enjoy the work made by artists and will be able to establish a dialogue based on personal experiences. Through this encounter we wish to encourage the type of attitude that is favourable to discussion (shared reflections) and interpretation, and that is respectful of and interested in art as a means of expression.

Another aim of the project is to make pupils aware of their own expressive potential and to develop it freely, with as few impositions and restrictions as possible, while encouraging them to adopt some of the elements and procedures used by artists.

Many of the proposed teaching-learning activities are not restricted to any specific area of knowledge. While it is true that contemporary art is taken as the starting point, the resources on offer can be approached in many ways, in regard to concepts as well as procedures. The

aim is to play and work around artistic expressions, and to subsequently formulate one's own ideas, opinions and feelings using any available language, but including, of course, the artistic language.

Our objective is to be respectful of diversity, with all the different aspects that make each person unique, so that no two individuals in the world can be the same. Each human being has its own physical constitution and cultural origin, its own way of learning, perceiving, feeling, loving and thinking. And our project wishes to stimulate precisely this diversity by providing a space for expression for all the participating children and young people.

The main thing is to enjoy the experience and learn from the interaction with school friends and other people, and to contribute to the respect for the work of artists and, by definition, for any means of expression.

The ExpressArt project wants to encourage attitudes that are open, flexible, receptive, analytical, critical, respectful and participatory, and to express them, if so desired, through art.

Thoughts on contemporary art for working with the pupils

The ExpressArt project deals in contemporary art, and in particular the Collection of the Museu d'Art Contemporani de Barcelona (MACBA), a specific and very dynamic collection in constant transformation, thanks to new acquisitions that enable it to establish relations between works and artists, and to construct different visions and itineraries, not always subjected to chronological criteria. Each of these visions prioritises different aspects that are highlighted in the successive presentations of the Collection.

We know that contemporary art is complex and requires intellectual effort, but the project does not aim at acquiring an exhaustive knowledge of contemporary art, or turning teachers, professors and pupils into art specialists. The project regards contemporary art as a generator of different ways of learning, and as the starting point for a multiplicity of activities with disparate objectives, yet coinciding in some areas of knowledge.

Therefore it is not necessary to be an expert in the field in order to develop the project. What is required is the willingness to work with a selection of contemporary artists and their works, included in the MACBA Collection, leaving aside any prejudices and preconceptions. The project asks for complete cognitive and emotive availability, i.e. you must be willing to open your eyes and your mind in front of the artworks, and let all sensations, feelings, ideas, memories and associations

flow freely, without stopping to analyse whether what we are feeling or thinking is convenient or pertinent. There will be time for this later.

If we give in to first impressions and let negative judgments cloud our vision of an artistic manifestation we are unfamiliar with, we will never be able to go any further. We know it's difficult to avoid having an immediate emotional reaction, but we ask for a moment of suspension so we can enjoy a brief spell of careful observation, experience our emotions, feel curiosity, perplexity or inquisitiveness without being angry, disappointed or indifferent. And the same goes for your pupils. Give them the opportunity to look, touch, think, talk, draw, invent, imagine, play, laugh, share, and then you can all discuss your feelings and thoughts, and all the things you would like to know and understand, without giving in to negative judgements.

Understanding requires an attitudinal and intellectual effort, since in order to understand we must first have complete and rigorous information that then needs to be processed and integrated into our own cognitive structure. And this isn't easy.

All data are significant, but some more than others. In other words, we need to know about the artist, his friendships, his interests, the political situation at the time the work was created, philosophy, music and literature, scientific discoveries, social conflicts, fashion trends, the economy, the environment, etc. Artworks belong in a complex framework of connections that we need to discover. They are not produced in a vacuum, not even when they happen by chance.

We could say that contemporary art in general has introduced significant changes in relation to more traditional art, due to the incorporation of new materials and procedures, new working methods, new mechanisms of production and diffusion, changes in the role of the viewer, and new concepts more or less explicitly expressed in the work. We could say that contemporary art wants to widen the concept of the work of art and abolish the barriers between art and reality.

Contemporary art tends not to be mimetic. Its intention is not to copy or imitate, or to faithfully reproduce a real model or referent, or to be beautiful, but to express things that may be very different in nature. To express ideas, reflections, opinions, desires, dreams and fantasies with very different intentions: provocation, awareness, identification, denunciation, critique, play, etc. Some of these expressions and intentions are known and/or shared by different people and collectives, others are individual expressions linked to the personal experiences of each particular artist.

Art itself can be the object of reflection and expression in works that question the concept of authorship, the uniqueness and saleability of works, the role of the museum and the audience, etc.

The absence of mimetic or real referents often makes contemporary art difficult to understand. It uses untraditional materials and media, and the barriers between historically well-defined territories (material, support, etc.) have been diluted. A complex hybridisation lies behind many of the new artistic procedures:

readymade, collage, assemblage, performance, installation, video, etc., with some of them incorporating a temporal dimension. Art uses a multitude of materials: ephemeral, organic, degradable, intangible, waste, domestic and industrial objects, etc., that are loaded with meaning attributed to them by artists to reflect on their own personal experiences or issues of a more global nature, and that have their own physical characteristics. Materials and supports are often mixed together. For example, a TV set may be incorporated into a work as an intrinsic part of it, or it may be the support or medium needed to visualise a work of art, possibly ephemeral, that existed at a different time and in a different context.

Sometimes the primacy of the sense of sight for comprehending the work disappears, with other senses coming into question.

Contemporary artworks have referents, and they are to be found in the inner world of the artists, but also in the world around them. We rarely have access to their inner world, unless the artists themselves are willing to let us in, but we can surmise their concerns, their fears and desires, their love, their loneliness, etc. And there is something in all of us that brings us close to each other, so our experiences can sometimes resemble those of the artists. As for the world around us, we know it either because we share it or because historical memory allows us to reconstruct the past. Often the challenge is to find connections between the works and the context in which they were created. They may be invisible at first, but they are there.

Art is not free of implications. Artists are not hermits living with their backs to the world, on the margins of society. On the contrary, they are immersed in the reality we all share, and they express what they feel, think and believe. We share the same world, and therefore, we can understand the expressions of the artists, despite the difficulties we may find on the way, if we are willing to try.

So don't be afraid to discuss contemporary art with your pupils, even if you're not an 'expert' on the subject. Simply **ask yourselves**, for instance, the reason why those dirty dishes are on that table, in a contemporary art museum, instead of assuming that it's just the artist being lazy, or that it is some kind of joke to make you feel ill at ease because you can't understand why they're there, unwashed. Then **continue asking yourselves** about dirty dishes, what do you know about them, what kind of situations do they bring to mind, what exactly do we mean when we use the expression 'dirty dishes'. And **continue asking yourselves** about the artist and his or her relationship with dirty dishes. And finally, **try to answer the questions** using any strategy that seems appropriate.

You may not find answers to all the questions, but the process leads to **research**. As Robert Filliou, an artist included in the MACBA Collection, says:

> "Research is no longer the privileged domain of the person who knows, but of the person who does not know."

Research: This is what we are inviting you to do with your pupils. You will find information on the artists and their works in an interactive program belonging to the project. We hope it will help you understand and build some of the fragments that make up the multiplicity of connections embedded in all works of art, no matter how invisible they may seem.

Description of the project material

Contents of the crate

- Big drawer with thirty compartments containing different elements (domestic, industrial or natural objects, etc.), with a Perspex cover with a handle.
- Small drawer with no compartments, with a Perspex cover with a handle, containing:
  - Sackcloth bag with one hundred marbles
  - Thirty black rubber mats of 12 × 12 cm.
  - Guide for teachers
  - One CD-ROM
  - A laminated photograph of each drawer with compartments (objects and cubes) for replacing everything
- A black mat of 37 x 44 cm. Placed on top of the big drawer

After using the objects and the materials, please return them to the drawers as you found them, with the aid, if necessary, of the photographs we provide to help you leave everything in place.

When you return the crate to the Education Department / Centre of Pedagogic Resources, please inform us of any damage or loss that may have occurred, so we can repair or replace things accordingly.

At the end of the project, please complete the evaluation form and send it back to us.
You can find it at www.macba.cat/educacio

About the didactic material

The supporting didactic material belonging to the project consists of:

- **Materials, objects and various three-dimensional elements** to be manipulated by the pupils and used for a number of exercises and/or activities.
- **One CD-ROM** containing: an interactive program, a folder with images of works that can be printed and a PDF document with images of the objects in the big drawer that can also be printed. The interactive program has been designed specifically for this project and contains information (images and texts) on twenty-nine contemporary artists included in the Collection of the Museum and some of their works. Below you will find detailed information on the contents of the interactive program and how to use it.

All this material is accompanied by a series of didactic proposals and the different ways of using it (you will find them in this **guide**), and suggesting various activities and exercises that will help you integrate the contents in an innovative and motivating way, taking into account the many possible ways of learning.

If you're interested, you may download the entire guide in a PDF format from MACBA's webpage: www.macba.cat/educacio

Importance of three-dimensional objects

The elements in the drawers have been **carefully selected so children and young people can manipulate them.** Manipulation is especially important because it enables us to observe objects directly through the senses. By being able to touch, move and examine real objects closely, pupils will learn from those experiences in a much richer way than by simply looking at images of the same elements, since images are incapable of reproducing many of the objects' attributes, such as texture, temperature, hardness, weight, etc.; attributes that will be discussed, investigated and experimented upon in some of the proposals. Direct contact with the objects is especially important for this project. Perception will always be richer and more intense when working with tangible objects, rather than simply discussing them or using any means of reproduction. All reproduction, regardless of the medium, can only be incomplete.

Tactile perception of works of art is not a practical possibility in a museum. The opportunity for touching and manipulating objects that we offer is a way of redressing this anomaly. Some of the objects and materials in the drawers will be observed in situ during the visit to the Museum. If you have been working in the classroom, the pupils will be able to identify them despite some significant differences in scale.

It's a very simple idea: remembering something that has been experienced directly is easier than remembering something imagined.

Manipulation of objects and elements by the pupils

The objects and elements in the drawers are considered **adequate for manipulation by pupils of all ages**. Nevertheless, it is up to you to decide whether it is appropriate to use all the things you find.

At the end of this guide there is a section describing all the elements in the two drawers with compartments. This will help you determine whether some of them are not appropriate, depending on the age of your pupils.

To avoid problems and accidents, two bottles containing various substances and a small box are sealed, so that the younger children cannot access them. Inform your pupils so they don't attempt to open the bottles or the little box and break them. Nevertheless, we wish to make clear that **at the end of this guide you will find detailed information on each of the objects and elements provided, and it is important that you read it carefully.**

All the material provided must be handled with care and respect. Everybody, including the pupils, must be aware that **it is meant to be shared**, not just with others in the group, but with children and young people in other schools.

There should be enough materials for everybody, even if you decide not to use certain elements at some point. It has been designed for groups of up to thirty pupils.

DIDACTIC PROPOSALS

Introduction to the didactic proposals

How to present the project to the pupils

You are undoubtedly the best person to decide how to present or introduce this project in the classroom, depending on the motives that have led you to use it.

As we said earlier, the project is not restricted to any specific area of knowledge. It is a project about artists, what they do, what they express and how, without being subjected to a historical or chronological perspective. The aim is to encourage children to express orally, in writing, through gestures, and also through the artistic language, what they think, feel or imagine about the work of the artists, or anything else they may be interested in.

We don't think it's necessary to provide you with long introductions or explanations of the contents to be developed during the project, since these will be conditioned by the way you use the resources, the amount of time you spend on the project and the age of your pupils.

The best thing would be to treat it as a game initially, since this is what the project is about: playing, thinking, having a good time, expressing oneself, while also learning something.

We believe the materials provided will encourage curiosity, that they will make your pupils want to learn, investigate and experiment. The contents could be presented like a box full of surprises: curious objects and three-dimensional elements coming from the Museu d'Art Contemporani de Barcelona for them to look at, examine and manipulate. Or you could start by saying that the box contains the type of objects artist use, something that will help to understand their work.

Once you have a clear idea of the aims of the project and the possibilities it offers for working with the supporting didactic material, you can decide how to present it to the pupils. Think about it again later on.

The activities

The proposals we suggest are totally flexible. They can be adapted to any context in which they are to be developed. The material we provide may even suggest alternative uses, so the experience becomes live and dynamic.

The proposals are organised in three different blocks that require the use of different materials. It is advisable to do the blocks in order. Each block deals with a different aspect, all of them related to questions of

meaning or expression. Concepts appear in ascending order of complexity.

In the first block we work with objects of different shapes, sizes and materials. In the second, with elements of identical shape, but different sizes and materials. And in the third, with elements of identical shape, size and materials.

It is not necessary to do them all. Your selection will be determined by the academic level of your pupils and the amount of motivation generated in them by the materials and activities. Time will probably be your biggest problem. We should warn you that it is practically impossible to develop all the suggested projects and alternatives. So you should bear in mind that **doing all the proposals in this guide is not the aim of the project.**

Despite the guidelines we offer you, it's up to you to work out a timetable and a working pace determined by how your pupils progress. If you're working on Block 1 and there is still a long way to go, or interesting things have come up that you feel should be developed, it might not be worth breaking the pace in order to go on to Block 2. If you miss out this block, it's absolutely not a problem, even though you might wish you'd done it! The same applies to Block 3.

It's important that you feel free when using the resources provided by the project. The pace you choose, the way you modify some of the activities, or include others that were not foreseen, certainly falls within the aims of the project.

One of the most determinant factors in the way you run the project will be the age of your pupils. The differences in their academic level will affect the proposals in terms of speed and complexity, but, basically, they are the same for everyone.

In short: the aim is to manipulate objects and materials, play with them, think about them and discuss them, observe how different contemporary artists incorporate them in some of their works, and let children and young people use them to express themselves.

Block 1. Objects and meanings. Meanings attributable to objects

Objectives

Make your pupils understand that artists, in their work, use a great variety of **objects** to mean very different things.

In some cases, objects may be used as synonyms of something, or as a substitute, or to refer to it. For example, Miralda uses white plastic soldiers to construct some of his works referring to war, or images of saints and Madonnas to refer to religion.

In other cases, objects are not used as a substitute or a metaphor, on the contrary. Antoni Tàpies incorporates a real pillow in his work, not as a substitute for anything, but to show its physical presence, clearly and unequivocally. Equally, Pistoletto uses a large fragmented mirror in one of his works.

In some other cases, elements with a very specific use are borrowed for something totally unrelated to their original function, as in the domino tiles used by Brossa to construct a broomstick, or the measuring tapes used by Jana Sterbak to make false nails to lengthen her fingers. Objects change their context and interact with totally unrelated elements, giving way to new relations whose meaning we need to find and decipher.

Other objects appear modified or transformed, thus changing their initial appearance: artist paint them, break them, deform them or dirty them, as in the playing cards scribbled upon by the artists of the group *Dau al Set* or the map covered in mud by Pere Noguera.

Artists use 'mechanisms' or develop many kinds of strategies to incorporate objects in their work, even everyday objects. You should examine these strategies with your pupils.

Every single 'operation' carried out by an artist implies a different way of looking, doing and working, and the same can be applied to a school context in order to stimulate individual creativity.

Required material for developing the block

Phase 1

- Big drawer with thirty different objects (domestic, industrial or natural objects, etc.)
- Black rubber mats of 12 x 12 cm.

Phase 2

- Big drawer with thirty different objects (domestic, industrial or natural objects, etc.)
- Black rubber mats of 12 x 12 cm.
- Interactive CD-ROM

The thirty objects

The thirty objects in the drawer have been carefully selected following a complex process under multiple criteria. They have been created, constructed or acquired by a process that could be called *artistanal*.

The main criterion for including an object in the drawer is that it should be directly related to one of the works we have selected from the Collection. In other words, all the objects we provide are present or are part of a particular work, which can be seen in the interactive CD-ROM included in the didactic material. This doesn't mean that the objects are identical to the ones used by the artist, but that they maintain a direct relation on a different level in every case. The differences and similarities between the objects you have and the ones used by the artists will allow you to establish some very interesting comparisons.

In most cases they have different sizes and/or scale, but not always. For example, you will find a 10-centimetre-long broom and a domino tile, both related to P*oema objecte* by Joan Brossa, a piece consisting of a full-size broom with a handle made of domino tiles. Our broom is on a different scale, while the domino is an actual tile.

Some of the objects are not really what they're supposed to represent, such as the chocolate bar, which is made of plastic, or the banknotes, which are worthless. But others are the real thing, such as the quartz, the sachet of seeds and the tape measure.

Some relations are simple, others are slightly more complex, and the amount of time it takes to decipher them will depend on the age of the pupils. Some require a certain level of abstraction. Such is the case of the unfolding postcards with images of the interior and exterior of the Museum, which relate to a work by Perejaume entitled *Postaler* (Postcard Rack). Here the artist has substituted the traditional postcards displayed in postcard racks for mirrors of the same size reflecting the surrounding location rather than the usual still images of landscapes, cities, etc. Or a sackcloth bag with a printed sign reminiscent of a painting by Millares in which the artist substitutes a piece of coarse sackcloth for the usual fine canvas used for paintings.

Some objects relate to a specific work by one artist, others relate to various works by various artists. In the latter, the different uses by different artists of the same element help us to understand the possibility of alternative uses and the many meanings attributed to the same object.

To make your work easier, we indicate the initial relation between each object and the artwork in which it appears.[1] This does not preclude other relations that have not been established or specified; it is precisely this aspect that we would like you to explore with your pupils: to establish new associations between the objects and the works.

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1 See annex 'Artists, works and related objects' at the end of this guide

The objects have been chosen so that the pupils can identify and recognise them easily. By and large they all come from the world closest to them. There are toys and everyday objects, some used by adults, others by children. Depending on the age of your pupils, or their cultural background, some may not recognise the objects in the drawer. This is a good opportunity to discover new things and to exchange ideas among the pupils themselves, among those who recognise some of the objects and those who don't.

The diversity of elements in this 'mixed bag' has many advantages. Make the most of it.

Interactive program

The interactive program is contained on the CD-ROM in the drawer with a wooden cover. The program will familiarise you with the twenty-nine artists in the MACBA Collection and help you discover how the objects you are working with (playing with them, experimenting, etc.), or discussing (imagining, remembering, etc.) are used by those artists in some of their works.

The interactive program contains images and texts that are accessible in various ways, without a linear trajectory. At first you will find a window with two options: 'Artists' and 'Objects'. You can choose how to enter the program. You have the option of two different 'entries', both leading to the same information, albeit in a different order.

If you click on ‘Artists’, you will find a list with the surnames of the twenty-nine selected artists in alphabetic order. If you click on ‘Objects’ a window will open with photographs of the thirty objects in the big drawer with compartments, ordered in the same way.

The information in the interactive program is organised as three separate units: ‘Image’, ‘Artist’ and ‘Work’. These units correspond to the menu appearing at the bottom of the screen, once you’ve clicked on a particular artist or object. If the selected artist or object has only one associated work, you will enter directly. If it has more than one, you will find an intermediary menu with all the possible works. The ‘return’ button will take you back to the previous menu.

On the information unit titled ‘Image’ you will find photographs of the works with their original titles. All the photographs are interactive: look for the ‘sensitive’ zones and click on them to enlarge that part of the image. With some of the works, once you’ve clicked you will find other options, but we’d rather not reveal them so they come as a surprise.

There may be between one and ten interactive zones. If you want to make sure you’ve seen them all, click on the button ‘clue’ on the bottom-right corner, looking like a question mark. As you go over it with the cursor, the interactive zones become activated to facilitate the search.

The menu at the bottom of the screen allows you to change the information unit (‘Image’, ‘Artist’, ‘Work’)

anytime you want and in any order. If you click on ‘Artist’, you will access a new window with a photograph of the selected artist (except for one female artist who does not wish to be photographed), together with some brief biographic information. If you click on ‘Work’, you will access another window with a full technical description of the work, an image and an explanation.

Some words in the texts are highlighted in yellow: they provide a brief glossary of artistic terms. Click on the word and a window will open, which you may close whenever you want, with a definition of the term. All texts in inverted commas have been written by the artists themselves.

If you click on ‘Image’, you will access a window with a photograph or photographs of the works. Remember that the ‘return’ arrow allows you to go back to the previous menu.

You will soon become familiar with the interactive program’s browsing options. The structure is very simple, yet there are many ways of searching for the information. You can view or read only what interests you, and you can enter either through the window with the artists’ surnames or the one with the objects. Both options will let you access the same information, but there are differences depending on which one you choose. There is more on this below.

The interactive program can be used in different ways and at different moments, both by teachers and their pupils. It is essential to use it before entering the

second phase of this first block of activities, as you will see below. In any case, we hope it will enrich your knowledge and/or personal ideas on contemporary art, and those of your pupils. Obviously infants won't be able to read the texts, but you can always adapt the information to their level. Older children should be able to use the program on their own.

Activities

Phase 1

The first phase of this block consists in using the objects in the drawer by simply observing them, examining them, discussing them, thinking about them, finding associations of ideas and memories, without referring to the work of the artists.

First of all, distribute the objects among your pupils. We recommend that each pupil should have their own element, even though the activity can be carried out individually or in groups, or combining the two alternatives.

Distributing the objects among the children can be done under different criteria or procedures, but you should regard this simple operation as a potentially meaningful activity. Decide beforehand whether any of the objects should be withdrawn for reasons of safety or such like. Depending on how many elements you have left, decide whether it is convenient, appropriate or operative to let pupils choose one object, or whether you should distribute them. You can combine the two options if,

for instance, you make groups of five pupils with five different objects to share, provided they can all come to an agreement. Or you can leave it to chance by having them pick one of thirty pieces of paper numbered 1 to 30 (previously prepared), identifying the compartments from left to right and top to bottom.

Together with the objects, give each child a black rubber mat on which to lay the object. By doing so, the children can have the objects on their desks, carefully placed on the mat to avoid them rolling or falling. Don't forget to tell the children not to put the objects in their mouths, not to open the little bottles or boxes, handle things carefully, etc.

What do they know about the objects?

Tell children to observe and examine their objects carefully. They should each have a piece of paper to draw their object or write its name.

Next start a round of interventions by asking the following questions: What is this? Does it have more than one name? What does it look like (colour, shape, texture, etc.)? What is it made of? Is it a real object or a toy? What is it used for? Who uses it? When is it used? In what contexts or situations is it used? Can you think of similar objects? etc.

There are many possible questions on the object and its context. Depending on the age of the pupils, you may not want to ask all the questions we suggest, or

you might think of others. The main thing is to establish relations with concepts from various areas of knowledge and with situations that are familiar to the pupils. Some objects lead themselves to a discussion on jobs, bearing in mind who manufactures them or uses them; with others you may want to talk about materials, or about food and healthy eating habits, or about leisure and how best to spend our leisure time.

It's important to let everyone talk about their object. Find out what they know about it, making sure you promote dialogue, reflection and exchange of information between the pupils. As the moderator, you should intervene by completing their explanations, correcting errors in the concepts, redirecting the interventions, etc.

What do the objects suggest to them?

Now ask the pupils what ideas come to mind after seeing, touching and manipulating the objects. There should be no limitations: they will probably come up with quick and spontaneous ideas by association (words, short sentences, etc.), or maybe they'll remember past experiences related to the objects, or imagine situations, etc. This diversity of ideas will become an important resource later.

Maybe the child who gets the sackcloth bag with the 'Rice' label will have interesting associations: a potato sack, the rice fields near where he or she spends the summer, a rice dish, the advantages and disadvantages of the different varieties of transgenic rice, etc.

As there are no limitations, all the reactions and ideas put forward by the pupils will be equally valid. Never tell anyone that their answer is ‘wrong’, or that their comments or associations are not relevant. If anyone has doubts, make the pupils give detailed explanations and help them express themselves freely. You can of course limit the number of ideas or associations each puts forward: a maximum of five and a minimum of one per object, for instance. This is necessary to ‘control’ the duration of the activity and to make sure everyone participates.

Obviously the age and experience of each pupil will be important factors conditioning the ideas and explanations put forward during the discussion, but everyone should be able to talk and contribute to the dialogue without fear of being wrong, since it’s not a question of giving the ‘right’ answer, but of expressing what one feels in relation to a particular object, and anyone can do that, regardless of age or any direct experience of the object.

It would be interesting to write down these two processes (what do they know about the objects and what do the objects suggest to them), so you can develop the activity incorporating the ideas suggested by the objects, and using the most interesting and significant for the pupils.

If the children draw the object at the beginning of the activity, it would be a good idea to write down on the same piece of paper the relevant information on the object or their associated ideas. Think of the number

of alternatives: individual or group notations, written on different supports such as paper or the blackboard, teachers' notations, etc.

As in the first proposal, the main thing here is to let the pupils share their associations of ideas, memories, experiences, etc. and to encourage dialogue and reflection. It is important to have group discussions so everyone can see the objects of the others and listen to what everyone thinks about their objects. In all cases the discussion should allow the rest of the class to intervene in an orderly manner with new ideas and associations, or to say that they have similar associations to the ones expressed by a particular friend.

Depending on the age of the pupils, it should be easy to differentiate between memories and real-life experiences and associated ideas, and to hold different rounds of discussions, some on memories, some on impromptu ideas, etc.

These dynamics will show that objects have different meanings for everyone, since we all associate them with different ideas and experiences. It's not a question of finding better or worse associations, but of finding associations. Think of a bar of chocolate, for example. One person may associate it with war, another with having a headache, and a third with having an afternoon snack at their grandparents' house. The first person might come from a part of the world that is at war, where they were given a bar of chocolate by a UN soldier. The second might suffer from headaches and perhaps the doctor has suggested avoiding chocolate

or similar types of food, while the third is probably given a piece of chocolate when visiting the grandparents. Some of these associations may at first come as a surprise to other children in the class, but if everyone is given the opportunity to express their ideas, feelings and memories, they will all understand them in the end.

Everyone has had different experiences related to chocolate, hence the different associations we have suggested to construct our example. These and other questions determine the processes of attribution of meaning to objects and materials on the part of the artists, an aspect we will further develop in Phase 2 of this block.

Establish associations between objects

The diversity in the attribution of meaning will enable us to establish different relations between the objects in the drawer. This could lead to a specific activity consisting of examining the global content and encouraging the pupils to rearrange the objects in groups, under their own objective or subjective criteria.

The objective criteria could come under the following categories: toys, food, antiques, fake and real objects, etc. It doesn't matter whether these categories create doubts about the pertinence of a particular object to one group or another. If the context allows it, it would be preferable that the criteria for establishing these categories come from the pupils themselves rather than the teacher.

The subjective criteria could lead to groups of objects around a single idea or concept, such as war, childhood, old age, beauty. If you take notes of the ideas coming out of group discussions, these could lead you to specific proposals.

If we take the example of the bar of chocolate again and try to establish relations between the objects in the drawer, we may find that the child or the youngster from another country relates the chocolate to the plastic soldier, for the reason already mentioned, or that the association with war also makes them want to connect with the image of the Virgin of the Mercè, for obvious reasons. On the other hand, pupils with other experiences may not find any elements associated with war.

The activities suggested so far imply that each pupil has one object, but it might be interesting to suggest other exercises around these proposals based on pupils sharing objects and working with several at once. For example, they could exchange their objects among the group or in pairs. Explore potentially interesting activities by combining different groups of objects that may lead to reflection and dialogue at different levels. This could also determine or influence the way you take note of the suggested ideas.

Invert the association

Everything we have proposed so far follows a particular direction: starting with the objects, find meanings, ideas and concepts. Now we propose the opposite, start with

the ideas and find the objects that can best express them.

Bearing in mind the dialogue among the children and the ideas put forward during group discussions, now give them specific ideas and ask them to find objects to which these might relate. This exercise can be done many times and in many different ways, depending on what's appropriate.

You could propose the same idea to the whole group, either by telling them directly or by giving each pupil an envelope indicating that there is a word inside that will act as the starting point for their search for a corresponding object. Depending on what you decide, the envelopes could contain the same word or sentence for everybody, or suggest different ones.

Examples of these words are: 'war', 'injustice', beauty', 'loneliness', 'affection', 'friendship', 'play', etc., or sentences like 'happy childhood memory', 'feeling of loneliness', 'pleasant dream', 'poverty and hunger', or any other idea you may deem appropriate. It's better to let the pupils themselves suggest them, since that will make them aware of how many things they can reflect upon and work with. We remind you that the previous work in the classroom will help you select interesting issues for working with the group. Obviously these will vary depending on each class.

There are thousands of possibilities, depending on the subject chosen beforehand for conducting research into the object, which should refer to it in one way or another.

In any case, there should be no limitations to this object-based research, except, perhaps, for the size or the number of objects.

If children have been trying to discover beforehand the meaning that each object has for them, they should be able to conduct the operation in reverse and find an object that can express or refer to a particular idea.

Depending on how it's formulated, the activity we are proposing will obviously generate a great variety of responses. It would be interesting to evaluate the different working groups (individually, in pairs, in groups, etc.) and to pay attention to the pupils' contributions, since these could lead to new activities that were not initially planned.

If, for example, they are all given the same point of departure for conducting the object-based research, it will be very rewarding to see the different 'solutions' arrived at, since the fact that each pupil will establish different association and relations starting with the same idea will foster an understand how artists use objects in a variety of ways.

It is advisable to examine the proposed ideas together in class, before asking the pupils to find objects referring to them. In other words, if the idea is to work around the concept of beauty, you should first discuss the meaning of beauty with your class, the attributes that identify it, the things people do to make themselves beautiful, etc. Here the age of the pupils will be crucial, since the meanings deriving from one single concept will vary

depending on whether you're working with primary or secondary school children. In relation to beauty they may refer to questions such as: being neat and tidy, the colour of the eyes, the proportions of the body, clothes, top models and cosmetic surgery; or else refer to internal beauty: being good, loving others, etc.

As in previous proposals, once the object-based research is completed, it's important to let each child show their chosen object to the others and express the reasons for choosing it. There should be a group discussion where they could all explain the process they've followed and the possibilities they have discarded. This will help them realise how many ways there are of expressing the same idea: and of using objects.

Replace the contents of the drawer

So far we have suggested that you start with objects in order to find related ideas and connections between objects, and then reverse the process in order to find an object starting with a particular idea. Now we suggest starting with an object, finding a related idea and then connecting this idea with a second object. This then replaces the first object, allowing us to activate all the procedures upon which we worked previously.

Each object in the drawer will evoke different ideas to each pupil. The broom might suggest the tale *La rateta que escombrava l'escaleta* (The Little Mouse that Swept the Stairs) to some or a game of quidditch with Harry

Potter to others. In this case, you could ask them to find an object, other than a broom, that also refers to the tale about the little mouse or the novels of J.K. Rowling. It could be a coin, or the ribbon bought by the little mouse to make herself pretty, or a magic wand, etc.

Given that each object provokes different ideas in each pupil, the process of replacing the contents of the drawer with the elements provided by the children, and which represent the thoughts provoked by each object, could prove interesting and attractive for the pupils themselves, who in this way will be building a new drawer of resources.

The size of the drawer's compartments could be a limitation to this new object-based research, for the objects must be appropriately sized if they are to fit in the drawer and this might hinder your research. But perhaps there is no need to fit them in, in which case size is irrelevant. We leave this decision to you.

We wish to emphasise once again that the main thing is to work in a group, so everyone can show the others the object they've brought and the reasons for choosing it.

As you can see, it's impossible for us to offer you a definitive list of ideas and solutions since there are infinite possibilities. And here lies the key to success, as we remarked at the beginning. Associations can never be wrong, provided they can be justified and explained, no matter how odd they may seem at the beginning.

Phase 2

In this phase it is essential to work with the interactive CD-Rom. This will help the pupils discover how artists have used or incorporated in their work the thirty objects in the drawer, which should by now be familiar to the children.

To view the interactive program, ideally you should have a projector and a space where you can conduct group discussions, but you could also work with computers. It depends on the dynamics you wish to establish and the technical means available to you, or any other issues you may want to take into account.

You should give each pupil the object they worked with and the rubber mat. If that's not possible, you can substitute the objects for the images that can be printed by opening the PDF file entitled 'Photographs of the objects', which you will find on the CD-Rom. In some cases these images may be slightly different to the elements you have worked with; there could be variations, depending on the crate you're using. This may be the case with the playing cards, since the number and suit of the cards may not coincide, or the white plastic netting cut irregularly by hand, or the plastic animals and the ball, where there are different colours and models, etc.

Before viewing the CD-Rom, you must tell the pupils that in the next exercise they should look carefully at the artists' works and find out if their object is part of these works, or whether their object relates to a specific work without actually being part of it or without being visible.

First, open the interactive program by clicking on the icon ExpressArt and **select the menu 'Artists'.** Next click on an artist's name (it is not necessary to follow any order).

Every time you perform this operation you will arrive, as we have already explained, at the 'Image', where you will find the work/s by the selected artist.

Ask the pupils to look at the work you have selected, examining all the zones that allow you to see it in detail. If you can't locate the objects in the main image, try looking in the enlarged images.

As we said earlier, in most cases the relation is obvious because the pupil's object is very similar to an object in the artist's work. For instance, you'll find a badge that is practically identical to the one used by Mullican in his installation and a white plastic soldier similar to those used by Miralda in one of his works. In other cases the relation is subtler and requires a certain level of abstraction, such as in the chair that relates to the works of three artists, Ferrer, Tàpies and Meireles, or the sachet of carrot seeds related to the work by Brehmer. The small chair is not identical to the one used by the three artists, but they are all chairs. The sachet of carrot seeds is not identical either, but it's obvious that they're seeds from the same plant.

There is a third level of complexity in which the link is even more difficult to establish, such as in the accordion-folded postcards and Perejaume's *Postaler* or the sackcloth bag and the work by Millares. In these

situations, you should consult the information about the work on the CD-Rom, which will help you establish its relation with the object.

Younger children might require a bit more help. Try to give them more clues so they can finally work it out themselves.

As we said earlier, pupils should also be given the option to relate their object to a work in which it does not appear explicitly. We have established a series of connections between the objects and the works based on purely formal similarities (except for the ones we have just mentioned), but it is possible to establish other connections of a more conceptual nature. Two examples: in a work by Torres there is a toy plastic tank charging against a house of cards until it falls down. The object we have linked to this work is a playing card, but maybe the pupil with the white plastic soldier will connect his object to this work even though it incorporates no soldiers: obviously, because the work, like the soldier, refers explicitly to war. There is also a work by Pazos in which the artist has replaced a broomstick with a piece of a guitar, and incorporates a dustpan with musical notes next to it. The object we have linked to this work is a small broom, but it could be that the pupil with the musical score also links their object to this work.

These two examples demonstrate that it is possible to establish newly-found connections between the objects and the works in the interactive program. This is not something casual or circumstantial, but totally intentioned. In fact, it makes the process more interesting.

You will soon understand why we encourage you to use the CD-Rom by accessing the images of the works in the option 'Artists'. In this way, it is the pupils themselves who must discover and/or establish the relation between the objects and the works. If you enter the option 'Objects', when you click on any of them you will be automatically directed to the unit 'Image', showing the works we have linked to each object. This curtails the discovery process, although it is still possible to establish new associations.

Nevertheless, having two options could help you prepare the lessons beforehand with the pupils, and after working for a while in groups, they may be able to use the interactive program unaided and discover the works that relate to each one of the objects. In any case, our intention is to make it as easy as possible for you to develop the project by giving you a variety of flexible resources adaptable to any circumstances.

It is very important to pay close attention to what the pupils say, without curtailing their freedom of expression, even if their associations may seem strange or puzzling at first. The main thing is to encourage them to make associations without fear of 'getting it wrong', and to end by congratulating them for their contributions.

The fact that the objects we have given you differ in most cases from the ones used by the artists should lead to discussions about the differences and similarities between them. Sometimes these differences may be minor. Other times they may relate to aspects such as size, the material they are made of, their shape or how they have been transformed, used, etc.

You must develop an accurate process of observation and conduct discussions where comparisons are established from different perspectives. The exercise of comparing can have many possibilities depending on the types of associations and the dynamics you decide to establish, as well as the way in which you decide to collect the pupils' observations (in writing, through drawings, etc.). Try to find the alternatives that best suit each group.

Next you can conduct an exercise consisting of letting the pupils formulate their own hypothesis on the reasons why artists use certain objects in their work, and their expressive and/or communicative intentions in each of their works, always bearing in mind the activities conducted during the first phase of this block and whose aim, among other things, is to make pupils aware that objects have the capacity to generate and evoke ideas, which may be different for every individual.

The point is not to get things right, but to think, to imagine, to put forward explanations according to one's own ideas. The fact that the pupils will have already commented on the physical qualities of the objects and the memories they evoke, or looked for objects to express specific ideas, should enable them to develop this exercise.

The interactive CD-Rom contains units of information on the works that can be contrasted with the hypothesis put forward by the pupils. You can also read the information on the artists.

There is no need for the pupils to remember all this information, let alone learn it by heart. Depending on the group dynamics and the age of the pupils, it's up to you to decide whether it is appropriate and/or convenient to access the texts while you're conducting the exercise of associations, or afterwards, or never. Our intention, as we've already said, is to offer you a variety of flexible resources.

Other questions that would be interesting to read and comment upon concern the size of the objects and the materials they're made of. You can also look at the date of creation and relate the object to historical events at that time; or to concentrate on the title and try to imagine the appearance of the work according to it, or try to decipher its possible meaning, origin, etc., or create new works (in other formats if necessary) with the same title.

The activities in this phase have endless possibilities and can also be adapted to specific contexts and situations. Therefore you should examine carefully the contents of the interactive CD-Rom before working with the pupils. On the CD-Rom you will find a file with the images of the works that are part of the interactive program, which you may want to print and use later.

As stated in the introduction, the objective of the work suggested so far is to enable children to enjoy works of art by establishing a dialogue that is free of prejudices, relating to their own experiences, and leading to different hypothesis on the work of artists and a respect for art as a means of expression. If would be

encouraging if the pupils showed interest in the works of art and were willing to learn more by observing them carefully and establishing a process of dialogue and reflection, aware that all artworks can express things that are not immediately evident but need to be discovered gradually. They may also be willing to initiate processes of research in order to discover more about the works and the artists.

You should pay close attention to your pupils' interventions, contributions, expectations, hopes, etc., and take advantage of any spontaneous developments in the course of the activities, so you can gradually construct a working plan for this project.

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Be ready to invent other activities around the objects. You can use them to conduct exercises of perception or memory, to draw, to generate stories and narratives, or any other activities concerning language skills, etc.

Warning

All the works in the interactive program are part of the MACBA Collection, so they may be on show at the Museum at any given time.

Nevertheless, when you visit the Museum you will never find all the works in the interactive program exhibited together. Depending on their exhibition programme

and the time of year you conduct the visit, the number of works on show in the Museum galleries will vary, but you will be able to see others under the guidance of our team of education officers.

BLOCK 2. Materials, shape and size. Meanings applicable to shapes and materials

Objectives

Make the pupils understand that:

- artists use a variety of **materials** in their work with different expressive aims
- the same **shape**, configured, manufactured or constructed with different materials can express different things
- the **size** of the shapes can also be a significant factor

Artists use a great variety of materials in their work. No catalogue can enumerate them all; it is up to artists to decide which materials to use depending on what they wish to express, or any other matters, such as technical requirements, for instance.

Materials have physical properties that influence their behaviour, such as hardness, density, flexibility, colour, transparency, etc. These properties determine the procedures and techniques necessary for manipulating them. Working with wood, for example, may imply carving, while working with iron may require melting, forging or welding.

Materials also have sensual properties leading to different sensations or feelings. Touching a marble

surface gives us a very different feeling to touching a surface made of undulated cardboard, wax or glass. In every instance, the tactile experience may generate different perceptions or emotions. There is no pattern relating each material to a specific emotion, for emotions are determined by other factors, such as our own personal experiences with the material. For some marble may be warm and pleasant, while others may find it unpleasant. Past experiences can often configure the way we see things, although there are certain shared codes, of a more universal nature, that almost inevitably make us associate gold with riches and cardboard with poverty, for example.

Artists use materials according to the ideas they wish to express. The decision to use certain materials is part of their working process, although sometimes a fortuitous discovery can provoke the use of a particular material.

The physical and sensual properties of objects together with the personal experiences of the artists, plus the meanings of a more universal nature they may wish to express, determine the way artists use the materials around them.

Aside from the more traditional materials, such as iron, stone or wood, contemporary art incorporates other materials that may be organic and/or edible, textiles, chemical products such as sulphur, photographs, TV monitors and objects of all kinds. Sometimes the materials themselves become the centre of an artist's work.

Required material for developing the block

- small drawer with fifteen cubes of different materials and sizes
- Black rubber mats of 12 x 12 cm.

The fifteen cubes

In this block the emphasis is on materials, and it is for this reason that we have decided to work with fifteen elements made of different materials but configured in the same shape: cubic (with small differences). This makes it easier to see and recognise the specific characteristics of each material.

A cube is a classic geometrical form appearing in works of art of every period in history, and even gaining a central position at the time of the Minimalist movement. It is a recurrent form in the work of some artists, including some in the MACBA Collection, such as Judd or Byars.

The cube is essentially a 'human' form, since it is practically non-existent in the natural world, with the exception of some minerals, such as pyrite, halite and fluorite, which are the product of crystallisation due to high pressure and temperature. A cube is a regular polyhedron comprising six square sides. From the point of view of the psychology of form, a square is regarded as static and severe, hence its frequent use when referring to concepts such as organisation and construction. The cube symbolises the Earth and has connotations of stability, solidity and permanence.

A cubic form also generates other meanings, which can vary enormously depending on the material and size. A marble cube differs greatly from a foam or paper cube, in the same way that a one-centimetre cube is very different from one measuring half a metre or four metres.

The cubes we provide measure between two and seven centimetres, and are made of different materials. [2] There are fifteen cubes so they can be shared: one for every two pupils.

There are small differences between the cubes: some are slightly irregular (pyrite, glass, Plasticine, etc.); some are solid and some hollow; some are handmade and some are industrial. These differences allow you to talk about form and the many different ways of configuring a cube.

2 See item 'What are the cubes like?'

Activities

First you should distribute the cubes and the black rubber mats among the pupils, bearing in mind the aspects mentioned in Block 1 when talking about how to distribute the thirty objects. In this case, we have allowed one cube for every two pupils, so they can all share with a partner. However, depending on the number of pupils in the group or any other pertinent issues, you may want to distribute them differently.

Once distributed, tell the pupils to examine the cubes carefully and ask them if they know what each cube is made of. You may also ask them to draw it.

What are the cubes like?

Some materials will be easily recognised, others not. Pupils not knowing what their cube is made of may wait until after they've started the exercise to see if they can guess, deduce or otherwise find out.

Whether they know it or not, we suggest that you start by talking about the visible and/or verifiable characteristics of each cube. You can start the discussion in various ways, for example by drawing a list of the different aspects to be discussed, such as colour, shine, transparency, hardness, weight, flexibility, texture, etc., and then discuss each one of these aspects in turn. If you start with colour, each pair of pupils should describe the colour of their cube to the others, using one word

or more, but trying to indicate the tones or hues, and establish comparisons or metaphors.

Imagine one pair 'hiding' their cube so the rest of the class can't see it. The exercise could become a game of discovery. Find alternatives such as this one to encourage motivation.

It might be interesting to write down what is being said during the discussion using, for instance, the same sheet of paper with the drawing of the cube, or making different files for everyone, or any other system you deem appropriate. Think about this aspect, because the mere fact of collecting the details of the discussion may be an interesting activity in itself, especially regarding the procedure. In any discipline data are collected, ordered, analysed, examined, etc. leading to further hypotheses. In fact, the accumulated data should help pupils to recognise the materials. Those who didn't know from the beginning what their cube was made of might be able to deduce it as the characteristics of the cubes are discussed and one of these characteristics is perhaps extrapolated to a particular group of materials. If this does not happen, then you should tell them so that everyone finally knows what their cube is made of.

Depending on the age of the pupils, certain aspects will be more easily discussed than others. Each of these characteristics (colour, texture, etc.) has a specific vocabulary. Encourage your pupils to use adjectives that are precise and exact to describe the materials that they are manipulating. It is important in any discipline to describe things with precision.

While talking about the cubes, you can conduct small complementary exercises based on some of the observed characteristics.

Experiment

Checking, verifying and confirming some of the cubes' characteristics may lead to small experimental activities in relation to their weight or size. You could ask questions such as, 'Which is the heaviest cube?' And then do some calculations, estimated or exact, using measuring tools. Depending on the age of the pupils, this could make them realise that the mass of a body is not necessarily related to its volume, and you could use this to introduce the concept of density.

You could also use various measuring instruments such as a ruler, a Vernier calliper or a measuring tape, to measure the cubes, or a magnet to see if any of the metal cubes contain iron, or a magnifying glass to compare the different surfaces, etc.

It may be appropriate, therefore, to use the cubes during a maths or natural sciences class, and to make different calculations and operations using different procedures. Or the cubes could be used during an art class to experiment on the effects of light on the bodies and then work with projected shadows.

Compare, order and regroup

Starting with the different characteristics of the materials, you could ask the pupils to compare, order and regroup them. Following the previous example, once the weight of each cube is determined, you could ask the pupils to order them from the heaviest to the lightest, or according to size, from the largest to the smallest. It may also be interesting to establish different criteria for regrouping them: one group could include all the solid cubes, another all those that require tools to be deformed, etc.

The age of the pupils will be a determining factor when designing the different activities; there will always be concepts that are best suited to certain age groups.

Locate in a space and describe

Other activities may consist of placing the cubes on a particular surface or in a limited space and asking the pupils to describe the location, taking into account what they know. You can use the larger drawer as a support and place the biggest mat on the Perspex cover. Choose a few cubes and arrange them in any way you like. Pupils could then observe: 'The flexible foam cube is situated to the right of the wooden one', 'The transparent Perspex cube is situated between the Plasticine and the iron one', 'There is a paper cube on top of the paraffin one', or 'The stone cube is inside the aluminium one'.

If you invert the exercise and give verbal instructions to the pupils to place them according to your indications,

you'll be able to see their level of understanding of spatial concepts. Ask them to place all the plastic cubes in a straight line, or the smallest on top of the biggest, or all the transparent ones next to each other. In this way, almost without noticing it, they'll be working on aspects of composition that will become relevant in the next block of activities.

Some of these things may at first seem interesting only for young children. But think about a welcome centre in a secondary school where young people from other countries receive language tuition and assessment so they can express themselves in Catalan. Many of these exercises could help them achieve this aim in a context that would improve their language skills by enriching their vocabulary and reinforcing the basic grammatical structures necessary for the learning of any language.

Besides talking about materials, you could initiate discussions about the various uses of materials, where they are normally used, who uses them, when they were manufactured and by whom, what their origin is (organic or non-organic) and their composition, and anything else that may be relevant. Try to relate these questions to other areas of knowledge such as technology and natural science, or any of the contents you may be working on in class.

If you keep a record of the new vocabulary that appears you'll be able to use it for other activities. For example, you could go back to the idea of inverting the operations, so that starting with some specific characteristics defined by specific adjectives, pupils

then have to look for other materials with the same characteristics. For example: look for something smooth, white and shiny or something soft, rough and opaque. There are many possible combinations with appropriate solutions, starting from the same premises.

What do we feel when we look at them and touch them?

The following activity consists of touching the different cubes carefully to get a feel for their surfaces, and then expressing the feeling produced by this sense of touch. All the answers will be equally appropriate since we're dealing with sensations. Therefore the fact that two pupils may express totally opposite reactions to the same material is not a problem. The main thing is to share these sensations so they all become aware of their own and those of their classmates. This will make them realise that direct contact with materials can lead to very different reactions, although there may also be some coincidences.

Another interesting thing would be to touch the cubes with a blindfold to avoid any visual interference in the perception, while playing at guessing the type of material the cube is made of. In the previous activity, pupils were allowed to see, touch, describe and know the name of the cube. It's not necessary to work with the fifteen cubes: you can choose the most interesting ones depending on your objectives.

While conducting this activity, try to make your pupils increase their vocabulary so they can refer to multiple aspects.

We must insist that you keep a record, in any way you deem appropriate, of your pupils' contributions when describing their sensations. As we said earlier, this is a resource of great potential for evaluating the evolution of the activities and establishing connections with other types of activities you may be working on with your pupils.

What do they suggest to us?

Each cube in the drawer is different to the rest, although some are the same size. Each provokes different ideas relating to past experiences, etc. You should encourage your pupils to let all their thoughts and memories flow by using the cube as a stimulus. Give them sufficient time to think, then organise a discussion in which everyone can express what they feel in relation to the cube. If you conduct the exercise in pairs, as we suggested at the beginning, the fact that two people can express what they think about the same element will make them aware of the variety and diversity of things we can imagine, associate, remember, etc. in relation to the same element.

You can establish different dynamics if you play with the number of cubes and the number of pupils, and organise actions such as rotations, relays, etc. If the amount of time you can spend on each activity is a problem, you could choose only five cubes, for instance, and pass them round using a common sheet of paper where pupils can write their thoughts on each cube and then discuss them together at the end. Ideally they should all be able to work with all the cubes.

In the next exercise, pupils are allowed to choose the cube that best expresses their ideas. Let's go back to a previous example: ask them to choose the cubes that can best describe the ideas of wealth and poverty, or the ideas of loneliness and company. By proposing different ideas or contrasted concepts in pairs, the exercise will become easier. But you could suggest more or just one idea.

Let's resolve the proposal hypothetically. It could be that in relation to wealth some children choose the pyrite cube, others the Perspex one and others simply the biggest, regardless of the material. In relation to poverty, some may choose the Porexpan cube, or the cardboard one, or the smallest. The reasons for their choice will obviously vary from one pupil to another, even when choosing the same cube. The reason may be related to the material, the size of the cube, or both, or perhaps to more personal aspects. Since there isn't an unequivocal relation, all the choices are correct as long as they can be argued. Encourage your pupils to explain the reasons why they chose a particular cube. It's important that everyone listens and respects other people's ideas.

If the exercise is repeated several times, you could suggest that they find other concepts, subjects, etc. that can be expressed through the cubes, and then develop the same dynamics again based on their proposals.

You can also invent situations and ask your pupils to choose a cube as a potential present for a person they love. Which one will they choose? The most valuable? The prettiest? What are the reasons for their choice?

Then ask them to mail a cube to a politician as a protest against the lack of legislation for the protection of endangered animals and plants or the small pension paid to their grandparents. In this case, would they need a cube other than the ones in the drawer? And so on.

Make compositions with the cubes

The cubes we supply can be used to make small constructions or experimental compositions of an expressive nature, or simply as a game.

The younger children will probably enjoy using the cubes as building bricks to make towers, tunnels or corridors, or imagining that the cubes are obstacles to be avoided when pushing toy cars, etc.

The older children could make constructions and use them to raise questions dealing with simple concepts or more complex ideas.

For example, you could ask them to build symmetrical or asymmetrical constructions; to express ideas of balance and instability; to make simple or complex constructions, or to refer to ideas of hierarchy and order.

Help your pupils understand the relations between cubes when placed in a particular order. For example, two cubes of the same size placed next to each other might express a relation of equality, while a big one next to a small one could express notions of imbalance and inequality. Equally, different relations could be

established depending on the distance between cubes, the type of material they are made of, etc.

You may limit, or not, the number of cubes to be used. You can combine individual work with group work, use different spaces or surfaces to lay them on, make compositions following your instructions, or by letting the children express themselves freely and then showing the class what they have done.

Whichever options you take, remember that all proposals are susceptible to having multiple solutions, all equally appropriate. As in previous exercises, the main thing is to allow everyone to express their reasons for placing the cubes in a particular manner. The point is not to come up with the right composition, but to examine the possibilities for manipulating cubes of different sizes and materials in space.

Continue the collection of cubes

To end the block we suggest one last activity consisting of simply continuing the collection of cubes we have supplied. To this end, pupils should look for other cubes of different sizes and materials, or build their own. These could later be used for other school activities.

Block 3. Composition, spatial relations and meanings. Element, unit and repetition.

Objectives

Make pupils understand that in any composition, made with identical elements (in terms of shape, size and material) and arranged in a particular space, relations are established between the elements that have a specific meaning. These relations are conditioned by the distance between the elements and their position, by the number of them, and also by the characteristics or qualities of the space where they are placed.

Colour or texture can also play an important role when one element presents different tones or textures.

In a composition made with a certain number of elements of the same shape (repetition), variations in size or material would lead to new relations between the elements and therefore to new meanings.

Another objective of this block is to make pupils use glass marbles to make compositions and to reflect on the different possibilities of distributing them in the space to create new meanings. We suggest that pupils work like artists, using a variety of identical elements, so the experiment can produce empathy while allowing them to enjoy aesthetically, emotionally and intellectually the same working processes adopted by

artists. It's important to make pupils understand that just one element, repeated a certain number of times, can generate infinite compositions leading to multiple meanings.

All works of art can be examined in terms of their composition. Composition refers to the relationship between the elements that make up a work in the space where this work 'exists'. To compose means arranging and combining. In a painting, the relations or combinations between elements (lines, colours, stains, etc.) take place in a specific place delineated by the canvas or other support. In a sculpture, the relations between the elements take place in a three-dimensional space that often goes beyond the work itself and into the space where it is installed or exhibited. In other cases, the space of the composition can also have a temporal dimension, as in a performance, where the work is composed of a series of scenes developing over time.

Relations between the different elements or parts of a work can be very varied. Some compositions involve elements sharing a particular space without touching each other; in others the elements may be superimposed; others may have large elements containing smaller ones, etc. Therefore compositions can be balanced, symmetrical, asymmetrical, regular, dense, complex, simple, compact, subtle and a long never-ending etcetera.

Required material for developing the block

- sackcloth bag with one hundred glass marbles
- black mat of 37 x 44 cm.
- small drawer with fifteen cubes of different materials and sizes

About the marbles

The bag contains one hundred marbles of the same size. You may not want to use them all: decide according to the activities you wish to conduct.

To make things easier, use the large drawer as a support or surface for the marbles in the following exercises. In the crate you will find a black mat measuring the same as the Perspex cover of the large drawer. Put it on top and use it as a surface so the marbles don't fall: the material will stop them rolling and the frame will act as a barrier.

If you think marbles are not appropriate for working with young children, you may replace them with other elements as long as they are identical in terms of size, material and colour, if possible. You could use spheres, cubes, pyramids or cylinders, or else organic elements of identical but irregular shapes.

Reading the proposals will help you find alternative elements if you decide to change them.

Activities

We suggest starting the activities by asking the pupils to propose a process of substitution by analogy, in relation to the glass marbles.

They will have to imagine that each marble represents a person. The analogy may come from the shape by associating the head of a person with a glass marble. The strands of opaque colour could suggest people's thoughts or ideas, which are always different. Like the marbles, they may be similar but never identical.

You can work with your pupils around the analogies we are suggesting, but always encourage them to come up with other similarities and/or differences between the marbles and people by paying close attention to the movement and other details. Then continue the discussion by establishing analogies between the marbles and other things, or imagining analogies between the people and other elements.

At this point it would be useful to remind the pupils of the works on the interactive CD-Rom and to comment on some of the aspects you've been working on, such as the process of establishing analogies between the objects and elements and the specific ideas used by artists, or the strategy of using one element repeatedly to configure a work, as in the case of Miralda, who uses thousands of white soldiers, or Lamelas, who uses seventeen TV monitors in one of his works.

Imagine human situations and arrange the marbles in a space referring to them

Distribute the marbles among the pupils so they all have the same number. You may start by giving them one or several, depending on your objectives. Think about the possibility of working in groups to solve some of the proposals. In fact, this block has been especially designed with a group dynamic in mind so the class can take part in a shared project. The aim is to use the greatest number of marbles in order to achieve the objectives, and that means adding up the marbles of all the pupils.

Ask them to imagine situations in which a group of people find themselves in a particular place performing a specific activity. It could be a group of pupils in a classroom, people queuing outside a cinema, a demonstration in a square, a rock concert or sunbathers on a beach.

Thinking about these situations, ask them to distribute the marbles in the space according to the scene they have imagined.

It's best to start with simple situations with few people, and then gradually make them more complicated. Simple statements can help with the understanding of certain ideas. If you suggest a double exercise consisting of two friends having a good time and two friends arguing, they will probably express it by putting two marbles together in the first situation and far apart in the second. In this case, the spatial location reflects the quality of the relationship between two pairs of people.

If you're working in groups, allow each group enough time to finish their composition and then show it to the rest of the class. Or you can all work together by taking it in turns and letting each child place a marble on the working surface or space. In this way, maybe the things some pupils, or you yourself, have imagined will not take place, since each contribution will alter the way each individual, or the group as a whole, imagined the final composition would be.

Let's say they've been asked to distribute the marbles in the form of people queuing at a supermarket till and that the first three participants have placed their marbles in a row. Then the fourth participant places their marble next to the last one, instead of behind. Our first reaction would be to think that he or she hasn't understood the proposal, instead of asking why they've placed their marble next to the other one. By withholding judgement we may well find out that what the pupil has in mind is a person who is trying to jump the queue, in which case it makes sense not to put it in line.

It would be interesting to have a few larger marbles so the pupils can construct situations in which one or two people, for instance, are represented by bigger marbles for reasons of age, experience, wisdom, power, etc.

We can imagine multiple situations, some simpler than others. The main thing is to let the pupils decide the number of marbles they want to use in each situation.

It may be that the space within which the marbles are laid limits certain aspects of the activity and that you

need a bigger space or a different one. If this occurs, use it as an opportunity to discuss with your pupils the importance of the space in a composition, how composition is conditioned by space, and then try to find another space if possible, or discuss what type of space would be more suitable. Below you will find another proposal on this theme.

Arrange the marbles in a space and then imagine situations

Following the idea of inverting the operations, we now suggest that you invite your pupils to make a composition on a particular surface by distributing the marbles in the space in terms of the composition only (density, balance, symmetry, etc.), in any way decided upon by the group, even if it's haphazard. The point here is to enjoy making spatial compositions. We recommend that they use the greatest number of marbles and think about the role played by quantity in compositions.

Next ask them to imagine situations in which a group of people are distributed in the same way as the marbles they have arranged. Treat it as a game and encourage them to use their imagination to remember or invent situations, and then to explain them to the rest of the class.

The diversity of possible answers to the same proposal is important in making pupils understand that, like artists, we can all attribute different meanings to the same thing.

In parallel, encourage discussions about the distribution of the marbles in the space where you're working, to help pupils understand the integration of concepts relating to composition, starting with the ones they have produced and are visualising.

It might also be interesting to work with less marbles to see how a composition changes depending of the number of elements. The differences may relate to the distribution, or to the meaning, sensations and emotions generated by the changes.

If initially you were exploring and/or establishing analogies between marbles and other living creatures or objects, so that the marbles became chicken or cars, for instance, now try limiting the options and make the marbles represent only children or grandparents, etc. The possibilities are endless.

Define a space with lines and distribute the marbles

Given that in previous proposals the question of space could be an inconvenience or a limitation, now we suggest that you define the space first and then distribute the marbles with different intentions, depending on the situation that is being proposed to express the relation between a certain number of people in that space.

The aim is to create simple maps with schematic and synthetic lines defining a specific space, decided beforehand. To create these maps you can use different tools and supports. Imagine, for instance, that you are

working in the school playground and you decide to use the paving as a support and some coloured chalk for drawing the lines. Or maybe there is sand on the ground and the children can draw lines with sticks to mark the limits of the space. Or you place a large sheet of wrapping paper in the centre of the classroom floor and give the children wax crayons. Or maybe you'll use the blackboard, or pen and paper.

The maps should represent a specific space and could be made individually or as a group, depending on how you conduct the proposal. Let's assume that the pupils are working in a space chosen by them, which in this case is the classroom. The aim would be to draw a map of the room, marking the perimeter with lines and indicating the positions of the desks, the door, the blackboard, etc.

Depending on the age of the pupils, the maps will be simple geometrical figures or more complex drawings made with a diversity of lines (straight, curved, discontinuous, thick, thin, etc.), indicating places that are especially significant and help with understanding the space. This is first and foremost an exercise in the representation of spatial data.

Next ask the pupils to distribute the marbles on the map, trying to reproduce the imagined situations. Still in the classroom, ask them to distribute the marbles differently for each moment of the day: before class, the moment everyone arrives, or when the teacher is explaining something on the blackboard, or a moment between classes, or when everyone is working as a group.

Depending on the supports, you may find that the marbles cannot always be placed on them. In that case, think of alternatives made of more suitable materials, such as stickers, or little balls of Plasticine, or even the tools or the materials you have used for drawing the lines, or anything else you deem appropriate.

Depending on the support, it's possible that the maps and the people distributed on top may disappear at the end of the exercise, such as with the sand in the playground; or you may be able to keep them if you've used paper or a similar support. If one or more visible products remain, it would be interesting to show them so everyone can see the graphic result of the activity and comment on the different compositions, the working process, what they felt during the activity, etc.

You could also take photographs of the pupils working and their compositions, so you can look at them together later and discuss the more relevant aspects.

Compose with cubes and spheres

The proposals suggested so far should have generated in the pupils new concerns and a desire to make a composition using elements of different shapes rather than playing with one repeated element. Even if they don't feel enough curiosity to do that, you could now give them the cubes used in the previous block and ask them to make compositions using them and the glass marbles together. The combination of the two elements will lead to new operations, such as putting one element

on top of another: a marble on top of a cube, or a larger cube on top of a smaller one, or two cubes with two marbles on top, or a cube balancing on a marble, or three cubes hiding a marble. There are endless possibilities leading to new meanings.

The aim is to enjoy making three-dimensional compositions in a specific space, taking into account the amount of possibilities and alternatives that occur when different variables are combined (shape, size, materials, distribution, etc.).

The conjunction of different elements in a space generates different meanings. Encourage your pupils to talk about their compositions, whether they start with a specific aim in mind, or whether by trying different solutions they finally arrive at a result that pleases them aesthetically or emotionally.

If you think it appropriate, you can also ask them to talk about specific questions they're interested in through their compositions, and then explain to the rest of the class the underlying ideas, the concepts or themes that they're trying to express, etc.

Previous discussions generated in the course of the activities can now be used as guidance for new proposals expressing specific questions. For example, earlier on we suggested wealth and poverty as possible working subjects. You could now go back to those subjects and ask the children to express them using the cubes and marbles freely.

They might produce a pile of cubes ordered by size, from the largest (at the bottom) to the smallest, with the glass marbles around it and a large marble on top of the last cube. They may explain this composition by saying that it reflects the way wealth is distributed in a society where the poor outnumber the rich, with a person – a king or a minister – on top of the step pyramid.

The compositions made with cubes and marbles could be used as models for drawing figures in perspective, especially with junior school children and secondary school pupils, and simple experiments such as the effect of the light coming from different angles, etc.

With both these groups of children compositions can be used as an excuse for giving verbal instructions to enter the compositions (depending on the available space), or to modify them. Each child could give an order to their immediate classmate: 'Take the Perspex cube and place it on top of the wooden one', 'Take the two marbles to the right of the iron cube and place them between the glass one and the cardboard one'.

Start a collection of spheres

The last proposal consists in starting a collection of spheres to be used later for anything you deem appropriate, but always bearing in mind that one singular form made from different materials and of different sizes can present very different attributes. Up until now you have been working with practically identical spheres. Now try conducting a research to

find different spheres, to which can be attributed, by analogy, different meanings to the ones given to the glass marbles.

If you decide to do this, look up the activities in Block 2 to find the possibilities offered by a collection of this nature.

Artists, works and related objects

Artists	Works	Related objects
Abad	*El Camp de la Bota*, 2004	Black and white photographs
Aballí	*Trompe-l'oeil, 2005 from the series Desaparicions II (suport)*, 2005	Jigsaw puzzle piece / letter
Brehmer	*Das Gefühl zwischen Fingerkuppen...*, 1967	Carrot seeds sachet
Broodthaers	*Le Manuscrit trouvé dans une bouteille*, 1974 *L'art et les mots*, 1973	Glass bottle Letter
Brossa	*Poema visual (tu)*, 1988 *Poema objecte*, 1986	Playing cards / letter Broom / domino tile
Dau al Set	*Joc de cartes*, 1949	Playing cards
Ferrer	*Silla Zaj*, 1973–74	Chair
Fortuny / O'Brien	*Neighbours*, 1996	Jigsaw puzzle piece / unfolding postcards

Gego	*Untitled*, 1970 *Untitled*, 1970 **Reticulárea cuadrada,** 1977 *Reticulárea cuadrada horizontal 71/10*, 1971	Weaving Weaving Plastic netting Plastic netting
Ladik	*The Yellow Bolero*, 1978 *Jugoslavian Hymn 1*, 1971	Musical score Musical score
Lamelas	*Situación de Tiempo*, 1967	TV set
Meireles	*Inmensa*, 1982 *Zero dollar*, 1978–84	Chair Wad of banknotes
Millares	*Cuadro 1967*, 1967	Sackcloth bag
Miralda	*Projecte de monument per a un jardí*, 1969 *Santa comida – Holy Food*, 1984 (2002)	Plastic soldier Perfume bottle / Picture of the Virgin of the Mercè
Mullican	*MIT Project*, 1990–2009	Badge / quartz / TV set
Muntadas	*On Subjectivity*, 1978 *Emissió / Recepció*, 1974 (2002)	TV set TV set
Nauman	*Bouncing Two Balls Between The Floor and Ceiling with Changing Rhythms* , 1968	Rubber ball
Noguera	*Mapa d'Espanya / Mapa d'Europa*, 1979	Map of Spain

Pazos	*Qué pasó con la música,* 1989 *While My Lady Sleeps*, 1988 *Un elefante en el limbo,* 1992 *Voy a hacer de mí una estrella,* 1975	Broom Plastic animals Plastic animals Black and white photographs
Perejaume	*Postaler,* 1984	Miror / unfolding postcards
Pistoletto	*Architettura dello Specchio*, 1990	Mirror
Rabascall	*Cultura i Vic: recurre el autor de una mona....* *Sèrie: 'Spain is different',* 1975 *La voz de su amo i Clasificación moral. Sèrie: 'Spain is different',* 1975	TV set / Rubber ball TV set
Roth	*Mar de xocolata,* 1970	Bar of chocolate
Smithson	*Mirror Vortex,* 1966 *Spiral Jetty,* 1970	Mirror Box with liquorice spiral
Sterback	*Cones on fingers, 1979* (1995)	Tape measure
Tàpies	*Rinzen*, 1992–93	Pillow / chair
Torres	*Tough Limo,* 1983 *Sculptura,* 1969 (2000)	Playing cards Letter
Valldosera	*Envasos: el culte a la mare,* 1996	Bottle-shaped plastic containers
Weiner	*Some Objects of Desire*, 2004	Letter

What are the objects like?

The ExpressArt project offers several boxes. Although they all have the same contents, the objects contained in each, a description of which is detailed next, vary slightly. In certain cases we have added a few observations to help you determine whether they are appropriate for your pupils or not.

You must bear in mind the small differences we indicate when using the photograph to order the objects in the drawer. The photographs are all the same, which means some of the objects in your set may have a slightly different shape or colour.

	Object	Description and observations
1	Mirror	It's a real mirror. It can break if knocked or thrown on the floor
2	Letter	It's made of wood. You may find any letter from the alphabet painted in any of these colours: red, yellow, green and blue
3	TV set	It's a miniature like the ones found in dolls' houses
4	Black and white photographs	They're glued to a rigid white plastic sheet. They are photo-copies of a real photograph and a real document
5	Chair	It's made of wood and protected by oil
6	Plastic netting	They vary in shape
7	Plastic soldier	Some are holding a rifle; others a bazooka etc. All are white
8	Carrot seeds sachet	It's a real one. The instructions and the name are in English because it was bought in Australia. Don't open it or you'll loose the seeds. They're not for planting
9	Sackcloth bag	It's a sack like the ones used for potatoes, cereal or other products. It's full of gravel.
10	Box with liquorice spiral	The boxes are sealed and cannot be opened. Don't force them or they'll break
11	Piece of jigsaw puzzle	Each piece is different and belongs to one of the five identical jigsaw puzzles made from a photograph of the Museum's façade

12	Picture of the Virgin of the Mercè	It has a prayer on the back
13	Map of Spain	It's a reduced copy of a real old map produced by the travel agency Hispania
14	Bottle-shaped plastic containers	They contain sherbet powder. The top is sealed and they cannot be opened. Don't force them or they'll break. They may come in two combinations of colours: blue and pink, or green and orange. They represent bottles of detergent or cleaning products
15	Wad of banknotes	They have no financial value. They are like the ones used in Oriental religions for funerary ceremonies, where they are burned. They are tied with a rubber band
16	Tape measure	They are all identical and made of plastic. They have two units of measurement: centimetres and inches
17	Unfolding postcards	The images are of the exterior and the interior of MACBA
18	Glass bottle	Each bottle contains a message written on a piece paper. In some cases it may be possible to take it out of the bottle. If the pupils manage to do so, they should put the message back unopened and try to guess its content
19	Bar of chocolate	It's made of rigid plastic. They come in two tones: dark brown (plain) and light brown (milk)
20	Weaving	It's a piece of textile made of cotton with knots forming a rhomboidal grid like the ones used for fishing nets

21	Quartz	It's a crystallised silicate mineral. It is very hard. This particular one comes from Morocco
22	Badge	It has a pin on the back. Pupils must be careful not to prick themselves
23	Plastic animals	There are three different ones in each compartment. Depending on the crate, you'll find a tiger, a lion and a monkey, or an elephant, a leopard and a giraffe
24	Playing cards	There are two different sets, a Spanish baraja (clubs, gold, swords and cups) and a French pack (clubs, diamonds, hearts and spades). Each card has a different number and suit. They're real
25	Rubber ball	You will find one of these four models: football, tennis, baseball or basketball
26	Domino tile	Each tile has different numbering
27	Musical score	It's a photocopy of a musical score from a book of exercises for flute
28	Pillow	It's made of cotton, like the real ones
29	Broom	It's made of natural vegetable fibres
30	Bottle of perfume	It's made of glass. The top is sealed and cannot be opened. It's full of water with food colouring representing a perfume or essence

What are the cubes like?

As with the objects, the cubes may also be slightly different from the photographs. These are the fifteen cubes made of different materials:

	Material	Description and observations
1	Pyrite	Each cube is different. Pyrite is a mineral that forms cubic crystals often growing together in clusters. These particular items are from La Rioja
2	Wood	They are all practically identical. Slight differences can be appreciated in the veins and growth rings. These items are made of Flemish pine
3	Plasticine	They are all red, but have different shapes (irregular) because they're hand-made. Plasticine is a plastic mass used for modelling. Its different compositions determine the plasticity, colour, hardness, etc. It is not edible. It is very malleable. You can manipulate the cube to see this characteristic, but afterwards you should return it to its cubic shape
4	Flexible foam	They are all practically identical. Slight differences can be appreciated in the edges and faces. They're hand-made and may be irregular. They're made of polyurethane foam, a form of plastic not attacked by solvents
5	Marble	They are all practically identical. Slight differences can be appreciated in the polished edges. Some are more regular and perfect than others. They're made of white marble from Macael, Almeria. Marble is a metamorphic rock composed mainly of calcium carbonate

6	Perspex	Perspex is as transparent or more than glass. It's very resistant to the elements and to chemical products
7	Rubik's Cube	Each cube has a different aspect depending on the position of the faces. It's a three-dimensional mechanical puzzle designed by the Hungarian sculptor and professor of architecture Ernö Rubik in 1974. They're made of plastic. You should not manipulate the faces since they're not very consistent and could break
8	Aluminium	They are all practically identical and have two faces missing, so that they are more like a quadrangular tube. They're made of aluminium, a pure non-ferric metal characterised by its greyish white colour. Aluminium is not very dense and therefore it's very light. It doesn't oxidise. It can be acquired commercially in different formats: plates, tubes, profiles, etc.
9	Expanded polystyrene	They are all practically identical. Sometimes known by the commercial name of 'Porexpan', expanded polystyrene is made of light, rigid foam with good thermal and acoustic insulating properties. It can be attacked by solvents
10	Glass	Each cube is different because it is hand-made. It's very irregular: more than a cube, it is a rectangular tetrahedron. Glass is a hard, transparent and breakable material when cold, but thick and malleable at high temperatures

11	Iron	They are all practically identical. Differences can be appreciated in the polished faces and edges. They're made of an alloy of iron and carbon attracted by magnet. They oxidise (rust) easily
12	Translucent plastic	They come in different colours. They consist of two pieces of translucent plastic in the shape of a 'U', which can be of the same colour or different. The pieces fit together to form a perfect cube
13	Cork	They are all practically identical. Slight differences can be appreciated in the polished faces (texture). Cork is the outer part of bark in certain trees (especially the cork oak), formed by a light, porous and impermeable layer
14	Paraffin	Paraffin is a white, translucent solid with a waxy texture, made mostly of saturated hydrocarbon. It is derived from petroleum. It's very soft and can be easily scratched. It is in fact a candle without the wick
15	Undulated cardboard	Cardboard is made of vegetable fibres. There are different types depending on the composition and purpose. This particular cube has been conceived as a box to keep things in. It can be opened and dismounted

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