



INTRODUCTION TO THE CONSTRUCTION MODULE

The Construction Module has sessions in both the  and the  levels.

OVERVIEW

The Construction Module develops children's ability to plan, to articulate what they have planned, to analyse the structure of objects (e.g. buildings, bridges, fences and so on) and to analyse the relationships between their different parts. To do this, they learn to use an important mental tool. This is a scheme (a drawn plan or a structure), which acts as a visual model of a structure that the children will build for themselves using a set of modular building blocks. With the use of a range of schemes in a variety of tasks, children learn to look at objects from different perspectives and to think carefully about what they need to do to build a given structure before they start building.

WHY THESE SKILLS ARE IMPORTANT

One of the most important characteristics of successful adults is that they see themselves as architects of their own lives; they do not act on impulse alone, but are able to set themselves goals, make plans that will allow them to achieve those goals and then execute them. The Construction Module aims to foster goal-directed behaviour, and to help children to master their impulsivity.

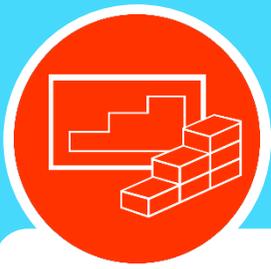
HOW THIS MODULE WORKS

The Construction Module offers structured activities that help young children to use building blocks to develop key cognitive abilities. There are tasks that involve using symbolic representation: for example substituting 2D shapes on a drawing for 3D blocks, and then using the arrangement of such shapes as the visual model – the plan – for constructing a specific structure. There are tasks that demand a combination of logical analysis and symbolisation. For example, the children may analyse a plan to work out which blocks they will need and how they will need to place them so as to create the 3D structure represented, or they may create their own visual models to represent 3D structures that others can afterwards build.

Further tasks develop logical analysis and creative production. For example the children devise their own solutions to overcoming such problems as building a road wide enough for two vehicles, or a bridge tall enough to allow a big boat to pass beneath it. To do this they must understand the relationship between the design of the structure that they are to create and its function, plan and build a design that actually works, set criteria for judging that the completed design does, in fact, work and then check their own and others' work against these criteria.

THE ADDITIONAL BENEFITS OF THIS MODULE

A key feature is the opportunity to develop mathematical concepts and language, because the module demands the use of a rich mathematical vocabulary in a practical, visual context. As they talk about their work, the children have the chance to access vocabulary that includes: the names of the building blocks, and the 2D shapes to which they correspond in their plans; names for concepts such as edge, side, corner, face, flat, solid, straight, curved, plan, elevation; for actions such as balance, build, connect, put together, take apart, stack; for prepositions and prepositional phrases such as on top of, to the left of, to the right of, next to, under etc. The children also acquire a practical understanding of the physical properties of the shapes – not least a practical understanding of their relative sizes that should facilitate their understanding of measurement.



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PRACTICAL INFORMATION

For this module, you need the wooden blocks that come in the Physical Product Pack. The pack includes enough wooden blocks to do the sessions with your child, as well as the stencils and 'ghost models' that you will also need. On the next pages, you can see the full list of blocks, their dimensions and how they relate to each other to make them 'modular'.

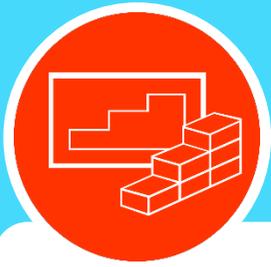
If you are doing this program with 2 or 3 children, each child must build their own structure from the blocks for each activity, hence why there are different product packs for those with more than one child. If you have other children who are not officially doing the program with the child you bought it for, but they may join in, you need to ensure that this child is able to take the lead with their set of blocks. You can encourage them to listen to their sibling's ideas, so that you enhance their communicative abilities from working together, but ultimately the child you bought it for needs to be the one who makes the decisions on what and how to build and the like.

We have included 19 pairs of googly eyes in your pack too - you need to stick a pair on one of each of the 19 different types of block from the set. Stand each block on a flat surface and stick the eyes in the most prominent position, to make them look like 'characters'. These blocks will make up the Block Family and will be needed from the first session. Later on in the module, when you need those blocks for building structures, you can take the eyes off again if you need to.



ADDITIONAL RECOMMENDATIONS

Enrichment: The work that your child is able to accomplish during structured sessions can be enhanced if they are provided with information and stories relating to the types of structure that they are being asked to create. For example, you could take them out to see and talk about something relevant to the session, e.g. a bridge or a building site, or read a relevant story. They will also benefit from access to the building materials during free play times and encouragement to plan and give shape to their own visions.



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Organisation of the blocks: We suggest you use a large, clear plastic tub for the blocks, or one with compartments so you can organise the blocks according to their type. The latter would be better, but a suitable box can be difficult to find. If you do have one or find one, you should label the compartments with a picture of each block (an extra copy of the block list cut up would be fine) and encourage your child to put each block away in its home when you have finished the activities.

Routines: You could choose a suitable song for starting these activities and for tidying up afterwards, for example the 'Bob the Builder' song. You may also want to use a timer.

Props: We highly recommend that if you don't already have the following items, you buy them – they will greatly enhance the play experience for your child and would be used repeatedly throughout the module. Whilst they are optional, we have included their use in the instructions for the sessions as they make such a difference as to how much fun the sessions are for the children:

A builder's hard hat and jacket, for playing the role of builder

Some plastic glasses for when they are the architect 'checking' on the quality of the build or designing a build

A small ball that you can draw a face on and give a name to, that can be used to check for cracks/gaps in the building structures

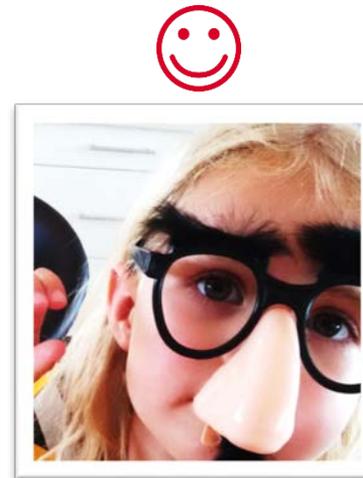
A large plastic truck for moving blocks around – that can hold about 10-12 blocks

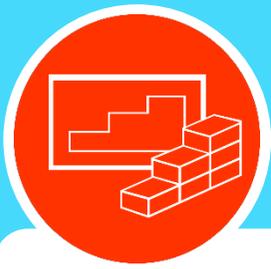
An empty box or toy house that could be used as the Block Family house (and to store the family in)

A smiley face stamp or similar for 'signing off' on projects with the Building Certificates

Small play people and/or animal figures, and some small toy cars

A small basket or tray for putting out specific blocks





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THE MAIN PROCESSES IN THIS MODULE

1) Building by Imitation – Copycat Step by Step

Children can reproduce the adult's structure, replicating the adult's actions step by step.

2) Building by Imitation – Copycat All at Once

Children can reproduce the adult's structure, remembering and replicating a sequence of actions in one go.

3) Building by Example – Concealed Construction

Children can analyse a structure and identify its component parts, determine the spatial relationships of those component parts and reproduce the same structure, at first with identical blocks and later with different ones.

4) Building from a 3D outline model – Ghost Model

Children can replicate a structure from a 3-D outline model without requiring detailed information about the blocks.

5) Building from a 2D Graphic Model – Camera Shot

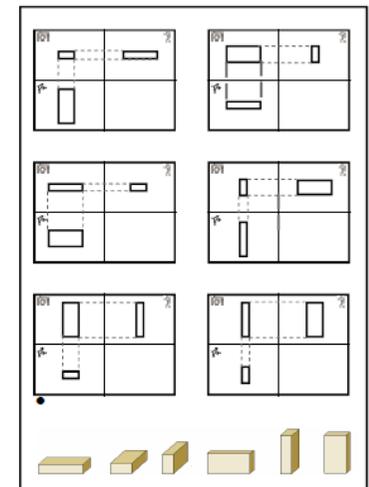
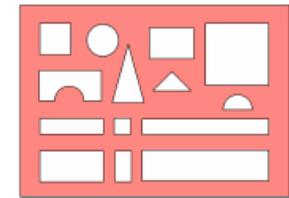
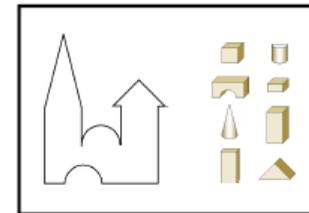
Children can build a structure by matching blocks to a full-size front view. They recognise that each block has its own specific place.

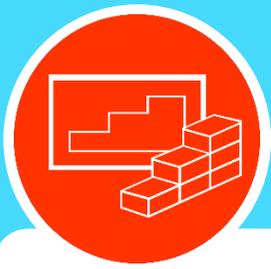
6) Building from a 2D Graphic Model – Bird's Eye View

Children can build a structure by matching blocks to a full-size top view detailed diagram. They recognise that each block has its own specific place.

7) Building from a 2D Graphic Model – Nosy Neighbour

Children can build a structure by matching blocks to a full-size side view detailed diagram. They recognise that each block has its own specific place.





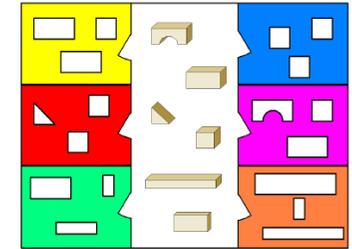
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8) Building from a 2D Graphic Model - Miniature

Children can visualise real objects represented by a 2-D diagram. They can build a 3-D structure using a 2-D scaled-down diagram.

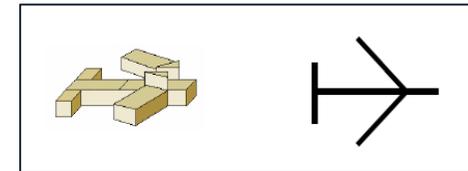
9) Building from a 2D Graphic Model - Ghost Outline

Children can accurately select the building blocks required to create a match for a full-size outline diagram and a scaled-down outline diagram, and then build the structure.



10) Building from a 2D Graphic Model - Schema

Children can build a structure from a schema - i.e. a generalised, visual concept of a structure.

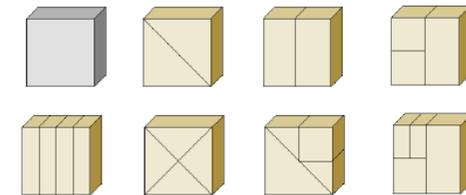


11) Building to given criteria - Scenarios

Children can explain the problems that they have to solve when building a particular structure. They can explain how their structure overcomes the problems, i.e. they explain the criteria this task required and how those criteria were met.

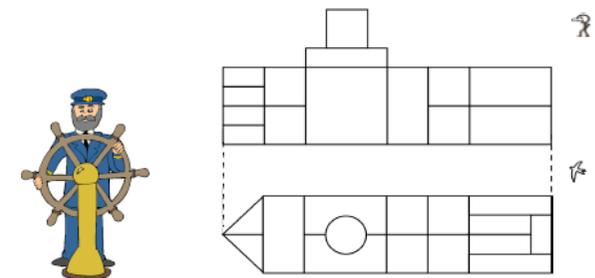
12) Building according to individual design - Architect and Builder

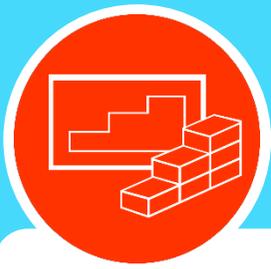
Children can articulate a plan, create their own designs, choose and use appropriate materials, and build a structure according to their own design.



13) Building according to group design - Architect, Builder and Building Inspector

Children can communicate successfully to achieve a joint enterprise, work together cooperatively, distribute roles and tasks fairly, articulate a plan, choose, use and share appropriate materials, and create, execute and evaluate a group project.

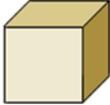
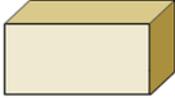


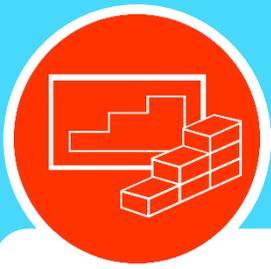


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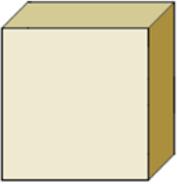
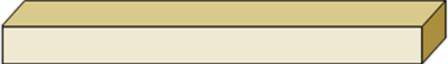
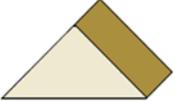
THE SET OF MODULAR BUILDING BLOCKS

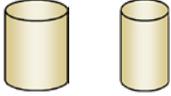
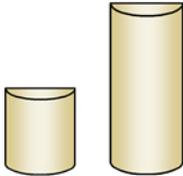
This program uses the set of modular building blocks that you ordered. Modular means that the dimensions of the blocks are interrelated. The basic unit is the cube. The other blocks are all either multiples of, or a division of, this unit, e.g. a brick is twice as long as a cube, one cube wide and a half cube thick. Well-made wooden blocks, with precise measurements, reinforce mathematical concepts relating to measurement. It is easier to create stable structures with well-made blocks too, so they also help to keep frustration levels to a minimum.

| BLOCK | NAME |
|---|--------------|
|  | CUBE |
|  | CUBOID |
|  | BRICK |
|  | HALF-CUBE |
|  | QUARTER-CUBE |



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| BLOCK | NAME |
|---|-----------------|
|  | LARGE HALF-CUBE |
|  | SHORT BOARD |
|  | LONG BOARD |
|  | SMALL PRISM |
|  | MEDIUM PRISM |
|  | LARGE PRISM |

| BLOCK | NAME |
|---|--------------------------------------|
|  | CYLINDERS |
|  | LARGE CYLINDER |
|  | HALF-CYLINDER LARGE HALF-CYLINDER |
|  | ARCH |
|  | CONE |
|  | THIN SHEET |