

cleverblox

- Creating thinkers

By John Stegmann

In March we introduced Cleverblox - **Grade 1 readiness skills.**

Taking that further, there are occasions when it is important that children do as they are told and follow instructions, but eventually we want them to be able to work out for themselves what is best to do.

It's recognising the difference between knowing *what* to think and knowing *how* to think.

In preparing today's children to deal with a bewildering abundance of readily available information the Three Rs are giving way to The Four Cs - *critical thinking, communication, collaboration and creativity* - all of which can be nurtured from an early age.

Cleverblox has a variety of exercises with a right answer, for instance: 'Copy this pattern or picture'.

But it also encourages children to explore further, which can be done almost without limit, by challenging them, for instance to 'See what other patterns and pictures you make with these shapes'.

These exercises are presented on cards in a numbered sequence, becoming progressively more complex, to stimulate both *critical thinking* and *creativity*.



As noted previously, numeracy skills enhance literacy skills needed for *communication* and *collaboration*.

Over many years I've corresponded with associate professor Stan Schwartz in Massachusetts, a firm believer in Reality First, on aspects of Moziblox and Cleverblox.

About two years ago he wrote: "I think this video, '[Dan Finkel: Five Principles of Extraordinary Math Teaching](#)', lends itself to the notion of discovery inherent in the Blox."

Allow children to explore the set of cubes without cards. Give them time to familiarise themselves with the cubes. Have them find violet on each of the cubes and explore violet patterns.

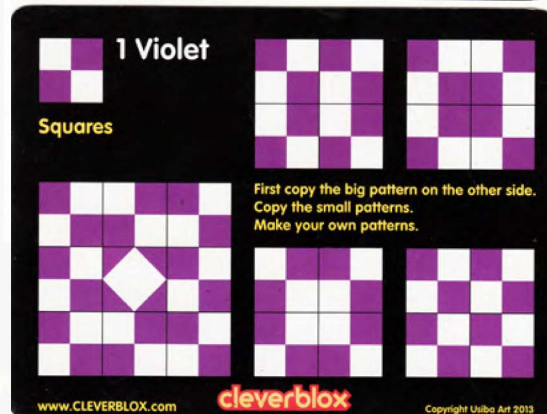
Then start with Card 1, Squares in violet and white.

On one side is a near full-size arrangement of the 12 violet cube faces to copy.

The other side, in reducing scale, are four patterns made with four cubes, and an example of a pattern made using 9 cubes.

Have them copy the patterns in the order just mentioned: 'What to think'.

Now ask what other patterns can be made, in any arrangement, using only this colour, thus exploring what if? And learning how



to think.

Cards numbered 1 to 6 each deal with a different colour and a different geometric shape. All have patterns to copy, presented in reducing scale, and all suggest exploring further to see what other patterns can be made.

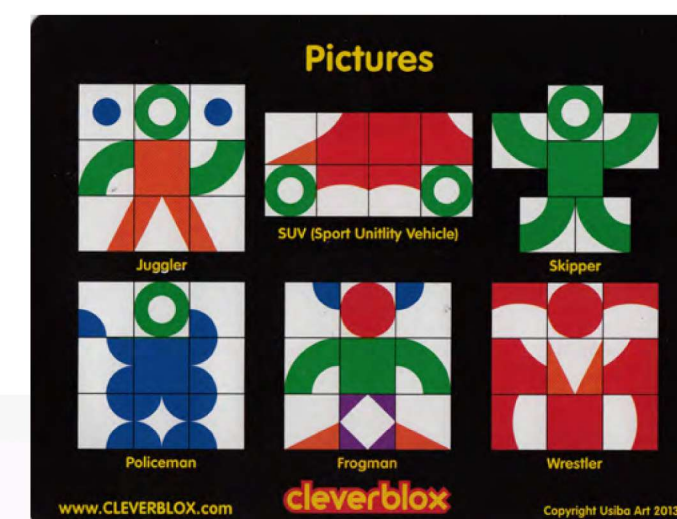
The box contains 12 individual cubes, 9 double-sided cards and instructions in 8 languages spoken in Africa.

Done in the presence of a caring adult it allows interaction to teach new words for shapes and actions, to talk about what they're doing, or trying to do.

There are squares, triangles and circles that feature in maths. They'll learn the names and fundamental characteristics. They'll learn to recognise shapes in different orientations, sizes or in parts, as well as the names of six colours.

They'll move from monochromatic patterns to multicoloured patterns and pictures to copy and to invent.

Firstly, there's a card using 4 cubes to make multicoloured patterns and pictures, and then there's this card using nine cubes. The patterns on the left are examples of different kinds of patterns - layered, diagonal, concentric, spiral, etc.



Pictures, too, are examples.

In all cases players should explore further and see what patterns and pictures they can make. They might be challenged to make a cat or an aeroplane.

12 cubes, with no repeats, were chosen for important reasons:

- Multiple sets of 12 cubes are manageable in a classroom. [Moziblox has 30 cubes]
- Cubes stack neatly together to make patterns and pictures.
- 12 is divisible by 6,4,3 and 2; 10 cubes are divisible into 5 or 2 equal sets.
- Cubes are like a ball - half their surface area is always hidden.
- The 12 cubes have a total of 72 square faces, or 72 'puzzle pieces'.
- Many of the shapes can be placed in any of 4 orientations.

Jigsaw puzzle pieces can be laid out so they're all visible, and each has one fixed position. Making patterns and pictures using Cleverblox cubes has seemingly limitless possibilities.

This requires manipulating the cubes to find a particular shape. Often the cube with the right shape has another shape on it that the pattern needs. A choice has to be made and the search must continue.

This activity stimulates and increases working memory capacity, an essential asset for thinking about solving complex problems.

The third in this series will appear next month: **How many patterns are there?**



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