An educational innovation: BrainSquare!

BrainSquare provides puzzles, construction materials and thinking-tasks for children and youth. The goal of BrainSquare is to stimulate curiosity and wonder. Children are going to examine and explore how spatial problems can be solved. The child gets inspired: ‘wow! Look at this!’, and is going to ask questions: ‘He, how does it work?’

Abilities such as curiosity and creativity are important for a child’s development. The same accounts for abilities such as logical reasoning, thinking as well as for solving cognitive problems and concentration. Children need to develop these abilities because they are important for learning at school. At school, students need to control impulsive behaviors to stay focused in class. They need to neglect distracting information and keep attention for longer periods of time, otherwise they may miss important information taught in the classroom. For homework to be completed in time students need good planning abilities. They need to set goals and prioritize their activities. As self-regulatory skills such as impulse regulation, concentration and planning abilities are important for performance at school, it is imperative to stimulated the development of these skills in children and youth.

BrainSquare-materials stimulate the development of self-regulatory skill. Children are challenged to solve problems and to focus on particular aspects of the task. They make mental representations of possible solutions to solve tasks. They need to plan their behavioral acts and think logically. And then, they need to act. Children like to work with the BrainSquare: ‘This is as much fun as playing.’

BrainSquare has been developed by neuropsychologist of the Center for Brain & Learning of the Vrije Universiteit Amsterdam, in close collaboration with primary school teachers. In the past years, experiments have been conducted and new, challenging instructions have been developed for each task. The instructions start easily and gradually become more difficult.

Adults and teachers have an important role in regulating task-difficulty, and in supporting and “scaffolding” the development of their child’s/the student’s self-regulatory skills. Their role is to offer support and inspiration if needed. Support can be provided by helping children to complete challenging tasks, and then by gradually stepping back to let children manage the process independently — and learn from their mistakes — as they are ready and able to do so. Inspiration can be given by showing creative examples, starting with easy ones and gradually increase difficulty. By offering support and inspiration, it is prevented that children become frustrated and give up.
Few BrainSquare tasks will now be introduced. Although scientific studies have not yet proven the effectiveness of all suggestions given in this appendix, their presence here reflects the judgment of experts in the field and on extensive experiences of teachers. These activities are not the only ones that may help. Rather, they represent a sample of the many things children enjoy that can support healthy development.

**CONSTRUCTION TASKS**

**Building with bamboo and elastics** exercises *motor skills:* children need to connect two sticks with an elastic. It also promotes *mental imagery* and *mental rotation:* Children make a visual mental representation of their future creation and they turn it into their minds. *Planning abilities* are challenged because children need to plan the smaller steps needed to make the creation.

**Making a marble track** promotes *mental imagery,* *spatial abilities* and *mental rotation:* children rotate the wooden blocks into mind to imagine how the marble would roll through the tunnels. They imagine what the marble would do if they connect two or more blocks with together. They estimate how fast the marble will go to make sure that it reaches its destination. This task is great to teach children to *carry through* as the task looks easier than it is.

**THINKING TASKS**

**Where is Waldo?** is an exercise for *planning* and *strategy:* children need to determine how they are going to search. This task appeals to *memory* as children need to remember how Waldo and his friends look like and where they have searched. It is also great at challenging *attention:* children need to suppress irrelevant distracting information to stay focused and search for Waldo. Children practice to *sustain attention* as it is not easy to find Waldo: children need to *carry through.*
**What do you see?** challenges *perspective taking*: children need to take the perspective of the person opposed to them and describe how this person should place the figures so that they are the same as on their card. Children train their *spatial abilities* and learn to *communicate* and use words such as above, behind, near, left and right.

**Bill & Betty** is a strategic task. Children first need to learn the rules and *remember* them. They practice *spatial abilities* and *mental imagery* to determine the correct position of the blocks. They practice with holding complicated moves in mind, *planning* moves ahead and *adjust plans* in response to imagined outcomes.

**PUZZLES**

**Together one** is great at challenging children to come up with a *strategy* to match the wright blue and red pieces. They make a *mental visual representation* about how the other half of the puzzle would look like. A sandglass can be used to challenge *attention* and quick decision making.

**BrainSquare evaluated**

*In 2016, BrainSquare has been evaluated on nine primary schools in the Urban Amsterdam region: 1081 children and 48 teachers worked with BrainSquare (five weeks, once a week). Of these teachers, 96% were enthusiastic: They were convinced that BrainSquare stimulates neuropsychological development.*

More information? See www.breinplein.nl | Marleen van Tetering & Jelle Jolles