SMART CUBES: Interactive Tactile and Sound Set for Blind Children

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Blind children have great difficulty in learning Braille. I conducted research and found out that for successful mastering of Braille it is necessary to use tactile and sound aids. But these aids are practically not available on sale. I conducted a survey among parents of blind children and found out what areas in work with blind children would be most relevant. To solve this problem, a tactile and auditory aid called SMART CUBES was designed and produced, which consists of 33 cubes. Each of the 6 sides of the cube is designed with three-dimensional images written in Braille. The information can be read out by placing a cube in front of the reader. The sides of the cube contain the following information: letters of the Russian and English alphabet, household items, numbers, vehicles, animals. The cubes are made on a 3D printer and equipped with an RFID-chip system, which uses a special reader and programs on a smartphone or computer for voice voicing. The CUBES were tested in a school for the blind. A total of 16 blind children participated in the study - a control and an experimental group of 8 people each. For 2 months, the experimental group used CUBES in their lessons, while the control group used the traditional method. At the end, there was a test (reading in Braille for 3 minutes) assessed on a 5-point system in terms of Reading Accuracy. As a result, the quality of reading in the experimental group increased by 19% relative to the control group, and the speed of learning increased by 30%. According to the results of the parental survey, the interest in learning increased in the control group. A special feature of the teaching aid is the possibility of reprogramming them: depending on your goals, you can create a different kind of voice accompaniment in the software.

Awards Won:

American Psychological Association: Third Award of $500