

# ROBOTS IN SPECIAL EDUCATION

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People have been developing robots since 1950. And today they assist humans in the civil security, manufacturing, space, military, and sectors of transportation. Smart machines also have found a niche in the field of special education. For the past few years companies around the world have been designing robots that help kids with disabilities ranging from ASD to ADHD.

Interaction with others is something that autistic kids struggle with. That is where robots come in. Scientists hope that robots will help youngsters live normal adult life in the future. Many researches show that children with an ASD are able to interact with robots mostly on the level that they feel comfortable. They are drawn to robots and have the desire to learn with them.

There are a few robots on the market that help disabled kids.

EngKey, the assistant developed by Korean Institute of Science and Technology in 2010, was able to keep children’s attention at the lessons and keep them on track if they got distracted. However, their manufacturing has been stopped.

Newer robots, like NAO or Milo, focus more on the emotional needs of kids to foster a positive learning environment for them.

NAO, the companion robot that resembles a toy, can increase the child’s desire to concentrate and interact with other people. It eliminates facial expression and body language, which occur in social interactions. This helps children to get confidence and fight anxiety. For kids with ASD this robot may be a bridge to human relationships.

Milo is nearly 2 feet high socially interactive robot. It has been developed by a small startup based in Dallas called Hanson Robotics. It helps children with disorders to learn how to socialize. Milo looks like a kid with spikey hair. It can identify kid’s facial expression, keep the conversation and even teach them how to relax in stressful

situations. People with ASD can have troubles interpreting social cues, like smiles or frowns. Some of Milo's lessons are designed to help such children by demonstrating facial expressions and emotional cues and asking what they mean. Also, it speaks at 82% normal speed. That's very important, because a lot of children with Autism have troubles perceiving language up to a point.

Kaspar, made in the University of Hertfordshire, is a child-sized humanoid robot designed as a social companion to improve the lives of children with autism and other communication difficulties. Basically, it is a simplified version of a human being. It is designed to simplify reading of facial expressions. Kaspar is able to react happily when things are going well. But it has also been supplied with sensors to teach the children not be rough or violent. So, if Kaspar is struck fair in the face, it turns away and covers its face and also tells the child that it has been hurt. That's important for kids who have trouble reading social cues.

It is obvious that these robots are pretty expensive (Milo is 5,000\$ and NAO - about 7,990\$, Kaspar – about 2,000\$), but considering that yearly price tag to educate a child with Autism is between 17,000\$ to 22,000\$, the cost may not seem as scary.

Robots have an enormous success. After working with them, kids with disorders experience visible improvements in how they learn and interact with others. They're a great compliment to a human therapist or a teacher. Robots are calm, clear and consistent. They never get frustrated and can teach the same lesson over and over. That's exactly what kids need.

Considering the cost, these humanoids may not become common things in the nearest future, but if the success of these intelligent machines continues, they certainly will be popular in the future.

## **REFERENCES**

1. Robotic integration into our daily lives: now and the future, Chase Johnson, July 13, 2015 [Electronic resource]. – Access mode: <https://goo.gl/YM6oJL>.

2. A non-threatening way for learners with ASD to practice their communication and social skills [Electronic resource]. – Access mode: <https://goo.gl/bDqFgH>.

3. Robots In Our Homes And In Our Personal Lives, Sarwant Singh, April 15, 2015 [Electronic resource]. – Access mode: <https://goo.gl/eUTyCS>.

4. Robots to help children with autism, University of Portsmouth, June 28, 2017 [Electronic resource]. – Access mode: <https://goo.gl/nRHV7f>.