

# Robotics and Automation & Biomaterials and Nanomaterials

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## Using robotics programming in primary education

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Robots for educational purposes also come with a smaller size and in a low-cost market, such as the Wonder Workshop Dash Robot, Ozobot, SPHERO, BB-8, Wow Wee COJI The Coding Robot Toy, mBot, Transformable DIY Programmable Robot Kit, Clementoni my First Robot, LEGO, Bocco, Plen, Chip, Damian, Hicolor, Kamigami Robots Spot the Ladybug, DOBBY, Robi, Robohon, Roboactor, OHaNAS, Zoomer, Mip, KINGBOT, DIY Iron Bot Robot, Premaid, light sensor programming car, the exhilarated robot programming set, the Puchi little robot, block robot taste and Tama robot, etc. Why are there so many robots invented for programming education? They stimulate students through body sensation. In prior to the breakthrough learning point at 9 years old, touching various objects and observing in real objects are vitally important. So, our focus is on the planning of the implementation of robot programming as primary students in Japan, in where programming education is still in a very initial stage, students should also be more

interested in programming through real and visible robotic movements than in computerized ones. Kanoh upholds the instruction proposal of nurturing “ways to learn and think about the information” defined by Kanoh and her group and the implementation of the programming education proposal in the concrete controlling period of Piaget, J’s development theory is also suggested. The project ‘Challenge Robots Programming’ was carried out on Wednesday, October 18, 2017 at Yamagata Municipal Elementary School 5. 18 children participated. When checking the Pearson correlation coefficient on both sides, a highly positive correlation coefficient ( $r=.78$ ,  $p<.01$ ) was found about the degree of understanding to the programming itself. The linear approximation curve is  $y = 0.48x + 3.02$ , which proves that children are highly motivated to learn about and have a high degree of understanding towards programming. In addition, some children explored questions they found.

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