What teachers say about NAO

- Nao has a huge motivational effect on students. It allows students to focus their creativity and produce exciting outcomes. It is a great way of demonstrating the reality of STEM with projects that draw out a whole range of skills. Nao has provided an opportunity to bring learning to life.

  Greg Armstrong
  Henley-in-Ardens School, Warwickshire, UK

When Nao arrived at Kingsbury he was welcomed with excitement by the students. Nao presented them with an opportunity to develop their programming skills at their own pace. Students soon developed programs with increasing complexity and speed. Nao was also quick to become a member of the school community.

  Chris Carver
  Kingsbury School, London, UK

What students say about NAO

- A wonderful robot which we were able to continue using in the STEM Club.

- A robot that talks, walks, dances, plays songs, sits up, answers questions, responds to people, plays football, WoW. I want one!

- Incredibly to be able to program a robot to dance to music.

- A fantastic opportunity to work on real 21st-century technology.

Karis

Primary, Secondary and Special Needs Education

Nao as QK (Autism Solution for Kids) was created by Aldebaran Robotics to customise Nao in order to create a complete, user-friendly robotic solution to revolutionise the education of children with special needs. The initial focus has been in the area of autism.

This initiative was developed to build upon the observation that many children with autism seem impulsively attracted to technology, therefore allowing Nao to become the perfect bridge between the human and technological world.

The Aldebaran Robotics team has worked with developers, therapists, researchers, teachers, and parents to create a fantastic resource for working with children with autism. We are very excited by the possibilities that this resource presents.

Utilising the power of Nao, teachers can now focus on guiding children rather than necessarily relying on prompting and systematic instructions. Nao's tasks are semi-autonomous educational apps that are based on various behavioural approaches/models (A, B, A, P, C, S, C, H, T, C, C, H, D, V, R, S, C, R, T, S). For example, Nao prompts the child, waits for the appropriate response, and provides a reward when the response is correct or, when the response is incorrect, encouragement and a clue. With Nao, teachers support and guide learners towards successfully achieving the tasks. At the end of the session, a larger reward is presented to the children, such as an entertaining story or dance.

Teachers can select and personalise tasks based on a child's individual learning goals, motivators, internal states, and personality to create the perfect learning match. All of this is accessible through a user-friendly interface for teachers to manage the robot, access a history of the child's progress, and indeed to share results with parents.

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Teaching and Learning with NAO

Primary, Secondary and Special Needs Education

Primary, Secondary and Special Needs Education

For more information on using Nao in education:

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Photo: Steve Foster/Camille Shah
Robotics is an exciting, energetic and fast growing industry and indeed one that perfectly illustrates the symbiotic relationship between Science, Technology, Engineering and Maths (STEM). The NAO humanoid robot is an ideal platform for teaching STEM subjects and is also a great way of developing an interest in the area of computer science; NAO brings it to life.

There is now a greater focus on programming and robotics in schools, and this is reflected in the new National Curriculum. There is also a desire to have more students study engineering, construction, manufacturing and computer science. A key focus for this is addressing a 100,000 shortfall annually of maths, science, technology, and engineering graduates.

Humanoid robots have always fascinated students; providing a physical reflection of developments in science and engineering. NAO is one of the most advanced humanoid robots ever created. His programmable, open and autonomous nature brings a wealth of learning opportunities to the classroom.

NAO comes with a curriculum that has been developed as a series of modules to engage students and provide project-based STEM. Each module covers a set of objectives specific to learning robotics, but also includes objectives, standards and lesson plans. Computer sciences, mechanics, electronics, and control are at the core of the NAO platform. Our curriculum, when used in conjunction with NAO, allows students to develop a structured approach to finding solutions.

NAO is a great stimulus for questions in the classroom and this encourages the development of deep learning – ‘Why might NAO have a problem with the execution of the assigned task? What are the difficulties or obstacles that NAO is having? How might NAO use sensors to better complete a task?’ Students are naturally motivated to find answers to these questions.

“When our school district first purchased the NAO robots I was unsure about the cost versus benefit of these platforms. What I have found is that the humanoid robot generates an unparalleled interest from students. My traditional computer science students are driven to program the robot to do everything from dance to fold laundry. But it is not the traditional students that really surprised me so much as the overwhelming response to the robot from non-traditional students: I had students from our nursing and carpentry programs beating down my door for an opportunity to work with the NAO. These students were captivated by the humanoid robot in a way that traditional robotics platforms and computer software simply could not duplicate.” – Mike Beber, Computer Science teacher

UK CUSTOMERS
SCHOOLS/LOCAL AUTHORITIES
- King’s High School for Girls, Warwick
- North Liverpool Academy
- Warwickshire ICT Development Service

HIGHER EDUCATION & RESEARCH
- Imperial College, London
- Oxford University
- University of Bath
- University of Wales
- University of Ulster

ADVANTAGES OF USING NAO
FOR STUDENTS
- Provides hands-on experience, connects theory with practice and allows students to explore a wide range of fields linked to robotics such as computer science, mechanics, electronics or control.
- It inspires a high level of motivation & interest for STEM based careers through practical problem solving projects.
- It fosters team work, project management, problem solving and communication skills.

FOR TEACHERS
- It presents an exciting and challenging platform for teachers to develop new and motivating approaches to learning through project based work.
- Software that allows all students to develop a depth of learning through a personalised and flexible approach to programming.
- It provides an exciting opportunity to develop further skills in their area of specialism.

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Aldebaran Robotics and Active Robots have put together a specific solution tailored to the needs of UK schools - bringing together hardware, software, warranty and training.

The solution is based around the NAO H25 Humanoid Robot, which is covered by a two year warranty. The warranty is designed to give you and your students confidence in using NAO whilst in a school environment - we want NAO to take a very active role in your school!

We have combined a range of software as part of the solution. A Choregraphe license that allows the installation of the software on up to 10 computers [PC or MAC] is included. There is also a one year subscription to Webots which will further expand the ability of students to work with NAO in a virtual world. Monitor is also available to install throughout the school; giving access to NAO data.

Training for teachers is a key part of maximising the potential of NAO and this forms part of the solution. Training is focused on the individual needs of the school and offers opportunities for training across the two years, allowing teachers to build upon their skills year on year, and/or providing opportunities for new staff to develop their skills with NAO. Certification of the training is also available.

Curriculum support materials are also included to help staff introduce NAO in to their classrooms.

THE SOLUTION
DESIGNED FOR SCHOOLS

NAO H25 ROBOT
TWO YEAR WARRANTY
CUSTOMISED TRAINING PLAN
10 LICENCES FOR CHOREGRAPHE AND MONITOR
WEBOTS [1 YEAR SUBSCRIPTION]
NAO ROBOTICS CURRICULUM DIGITAL

TRAINING
EXCITING CPD FOR TEACHERS

We offer schools training that is tailored to their individual needs. It can be carried out at the school itself or at our training centre in Warwick, Warwickshire.

There are also training opportunities available at Aldebaran Robotics in Paris.

Beyond the training there is also a support network that will help you get the very best out of NAO in the classroom.
SOFTWARE SUITE

**CHOOREGAPHE**

POWERFUL PROGRAMMING SOFTWARE

Entirely designed and developed by Aldebaran Robotics, Choregraphe is the programming software which provides an intuitive ‘drag and drop’ interface to enable students to program without, initially, mastering any code. It allows them to develop an understanding of, and confidence in, the general logic and key concepts of programming.

The action boxes are many and varied and all have the capacity to be amended by the students, allowing the fine tuning and personalising of their programs.

Choregraphe also contains a simple, yet sophisticated, tool to support students in the development of animations for NAO – making use of the concept of keyframe animation which many students will already be familiar with.

From within Choregraphe, students can also teach NAO the identity of individual objects and faces; potentially adding a whole new layer of creativity to programming outcomes.

The software also enables students to connect to a local, virtual version of NAO on which they can develop their programs. This allows, and indeed encourages, experimentation and risk taking. Students can, at any point, connect wirelessly to NAO and try out their program in the real world.

Choregraphe represents an ideal interface to program across all key stages and abilities. It offers the opportunity to develop more advanced programming languages such as C++ and Python. Students can also explore various areas of research in robotics, focusing on NAO’s capabilities: vision, audio treatment, control, planning, navigation etc.

**WEBOTS**

3D PHYSICAL SIMULATOR

Webots for NAO is a simulator that allows students to test their algorithms in a virtual world governed by real physics. They can modify the environment by editing and then inserting objects of various shapes and weights in to the simulated environment. Webots for NAO is interfaced with Choregraphe to provide a safe place to test programs before playing them on NAO in the real world.

**MONITOR**

ACCESS TO NAO’S DATA

Monitor is a desktop application that gives students feedback on what NAO is sensing. With the Camera module they receive data from the camera that they choose. The Memory module allows students to access and analyse data from NAO’s sensors in a user-friendly manner. Monitor also lets students test vision algorithms on recorded excerpts.
TESTIMONIALS

WHAT TEACHERS SAY ABOUT NAO

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**Greg Armstrong**
Henley-In-Arden School
Warwickshire, UK

WHAT STUDENTS SAY ABOUT NAO

Awesome robot which we were able to continue to use in STEM Club.” - Alex

A robot that talks, walks, dances, plays songs, sits up, answers questions, responds to people, plays football, WOW, I want one!” - Ryan

Incredible to be able to program a robot to dance to music.” - Zahra

A fantastic opportunity to work on real 21st century technology.” - Karis

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FOR MORE INFORMATION ON USING NAO IN EDUCATION:

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