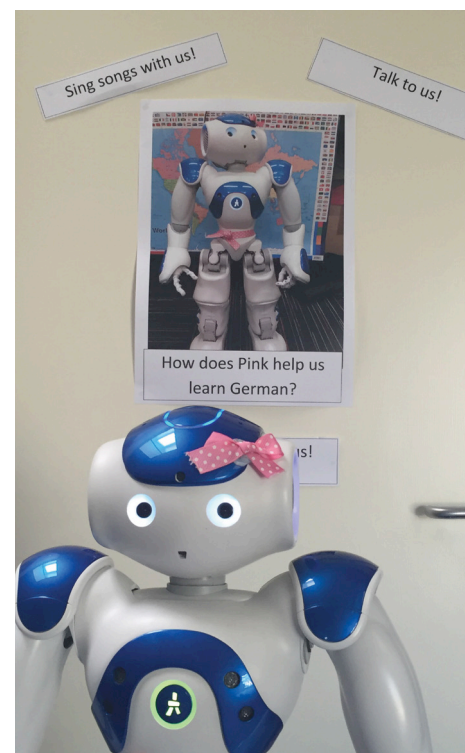
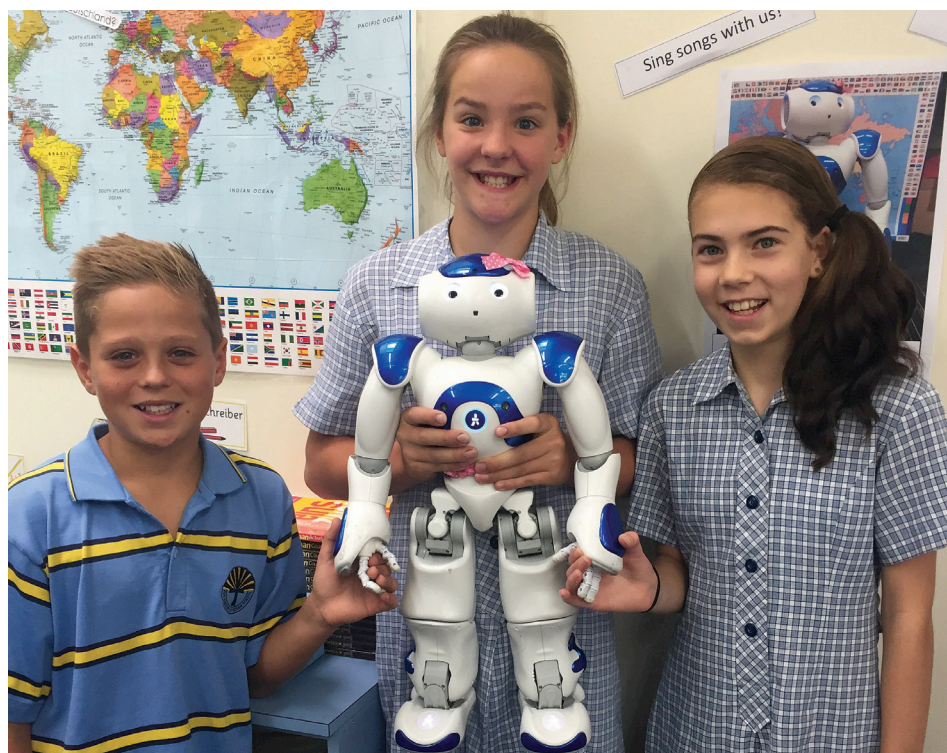


# NAO robots get to work in classrooms

ET Staff



**W**hen you're learning something new two things are essential; engagement with the topic and the willingness to persist when you get things wrong.

Our Saviour Lutheran Primary School in Adelaide has found that while its NAO robot, P!nk, does a lot of things, what she does best is engage the school's students and encourage them to keep going until a solution to a challenge has been achieved.

Assistant Principal Ben Curtin says that he has watched his staff and students' interaction with the robot closely and has been pleased with the way in which the NAO influences how learning happens at the school.

The NAO hasn't taken all that long to show its worth, on loan from the Association of Independent Schools of SA (AISSA) for a term, the robot was put to work within the Digital Technologies classes for Years Six and Seven and in German language classes across all year levels.

The robot was placed in Digital Technologies classes three days a week, assisting predominantly with teaching coding, students working with P!nk's interface and software to

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give her actions, while two days a week were spent in the German room.

The robot was programmed to speak in German, which is a simple process involving linking it to the website, and placed within a circle of children to ask and be asked questions in German.

“We had to set some rules here because a group of excited kids all speaking at the same time pressured the NAO's voice recognition capability.”

The NAO came with a lot of pre-programmed activities and interactive games; it could tell stories or sing songs or play games like 'guess the sport' where she would perform actions

associated with a sport and the children had to guess which it was. Other activities included the robot changing eye colour and the children having to find something of the same colour, or the robot acting out an emotion and the students identifying which it was.

“For the first couple of weeks we did the games in English so they could get the hang of it and then we started to do them in German and measured whether they were acquiring the language.”

Curtin says that he saw very quickly that the students were paying attention and absorbing the presented content in the German and Digital Technologies classes.

“The first thing you noticed was the engagement, we had done some coding programs with the kids using resources like Code.org, but the engagement working with P!nk and her software was just remarkable, the children were just so focussed and so excited.

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Most of the coding that took place used a drag and drop interface, the students were tasked with finding the right information and to put it into a sequence that worked, linking the bits of code in such a way that the robot would run it.

“It was really amazing how quickly the students were able to put the code together, there’s a lot of information to deal with. Some, who were really keen were able to drill down on those commands and go into the code and manipulate it in a more sophisticated way, and this is Python which is industry standard.”

Curtin says that OSPLS used Youtube videos as a starting point to show students what the robots were capable of but then stepped aside to let the students self direct as to what they wanted to do with the NAO.

Teachers took on the role of coaches, allowing the students to explore while checking in periodically to see if any help or direction was needed.

Logistically, the challenge was to format classes in such a way that each student got some time on the robot while still completing their coursework. Students were put in teams of two and were rotated through using two computers set up at the back of the classroom with P!nk set up next to them which was their time to pursue their personal project with her.

“When the kids were doing the previous coding program it was quite solitary while this format was very collaborative, they seemed to enjoy having someone to ask questions to and being able to help each other.”

The students engaged with the teacher on questions that they had come up with once a week as a group. It gave students the opportunity to ask “what is the next step”, “how do you do this”. The students also had the opportunity to share among one another.



By the third or fourth week, Curtin says that the teaching staff had achieved a good rhythm with incorporating the robots into their teaching. Curtin says that it took a few weeks to see how the plan they’d established was working and to make adjustments.

“Between myself, the Year Six teacher and the German teacher working with AISSA we had established a team that worked, we found that you really need a team and you need to have a plan and be willing to adjust it if it wasn’t working, it was a challenge but by the end of the term we were wishing that we had the NAO for longer,” he says.

Data capture was another consideration for Curtin, surveys were conducted with the Year 6 students to find out what they thought of their experience with coding and the robot and whether they felt it was worth their time.

“If the attitude was that the time with the robots wasn’t really valuable, using them would just be a gimmick. Some said that they liked using the robots and that it was fun but a lot of the students responded that they could see



themselves using code in the future, saying ‘I’m going to use this skill’ and that they wished that they could use the robot for longer,” he says.

The survey results indicated that if the children felt challenged, they were motivated to try a different approach, to ask a friend or to look it up online to see if they could find some code that could help them.

“The advantage of the robot is that they can test what they’ve done; their code might work or might not, a limb might move or might not move in the way that they wanted. A lot of the kids were trying to get the robots to do dance moves to music which is really very advanced, the students were really engaged, really motivated and they got that immediate feedback which assists in advancing their intentions,” he says.

“I think that a lot of what has made our experience with the NAO so rich is that it is so human-like, the parents, the teachers, the kids just seemed to love her, if she fell over they would rush to help her up. When we interviewed the kids about her they used words like ‘nice’ and ‘funny’ and ‘friendly’.

“If we had one permanently she would be part of the school community not just like a computer, we’ve already had her up the front in some of our school assemblies, our leadership team is highly motivated by the project and is looking at ways we could finance our own, it is costly but perhaps there could be a sharing arrangement with one of the other Lutheran schools in the area,” Curtin says. **ET**



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