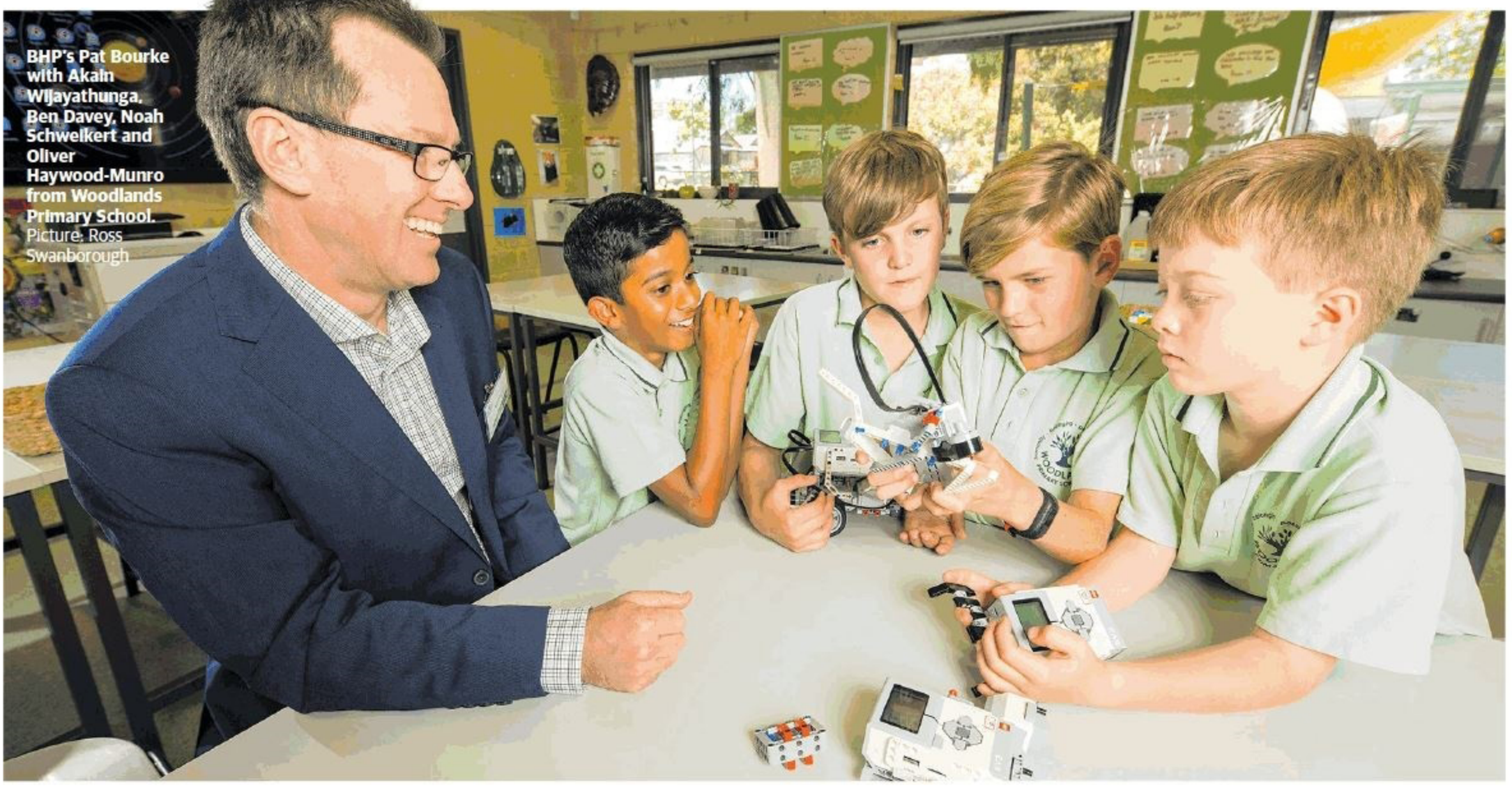

BHP's Pat Bourke with Akain Wijayathunga, Ben Davey, Noah Schweikert and Oliver Haywood-Munro from Woodlands Primary School. Picture: Ross Swanborough

BINDED BY SCIENCE

LAURA NEWELL

Using microbes in soil to generate electricity, developing self-fixing robots and harvesting the power of algae — they're just some of the ideas from forward-thinking WA students who set out to solve some big real-world problems.

Students from schools around the State have been flexing their creative and scientific muscles as part of the BHP Future Ready STEM challenge, in partnership with Seven West Media, to chase a share of a $100,000 prize pool.

Teams from Years 3 to 10 have spent the past four weeks researching, hypothesising, designing and prototyping solutions to five of the resource sector's biggest conundrums.

Run as part of the Resources Technology Showcase 2019 and developed by education design firm NoTosh, the challenge was created to be accessible to pupils of different abilities and schools with varying resources.

The winning teams — which will each collect $10,000 for their school to spend on STEM development and resources and individual prizes worth $500 — have now been revealed.

BHP vice-president business partner, technology Pat Bourke, who met Year 3 winners from Woodlands Primary School this week, said he was impressed by what pupils had learnt during the challenge.

"Congratulations to all the students, teachers and schools that entered the BHP Future Ready STEM Challenge," Mr Bourke said.

"Clearly an enormous amount of thought and effort has been put into these entries and I am impressed and inspired by the depth and breadth of the solutions presented.

"BHP is proud to be supporting an even stronger STEM culture within Western Australian schools and I am personally excited about the talent that will lead our mining and resources industry in the future."

> "I am inspired and impressed"
> **Pat Bourke, BHP**

NoTosh senior consultant Jeremy Weinstein, one of the judges, said the panel was astounded by the creativity shown. "We were just blown away by the extremely high standard of the entries we received," he said. "Overall the standard was very high, particularly in expressing transfer of scientific knowledge to real-world contexts."

Woodlands science specialist teacher Lynette Martin said the $10,000 prize money would allow the school to buy hands-on technology for students.

"It will let us reach more kids when it comes to STEM learning," she said. "Resources in this arena aren't cheap and it's that hands-on experience that allows students to really understand and develop their ideas.

"The students really enjoyed taking part in the challenge and learning about real-world challenges surrounding mining. They were very enthusiastic and spent a long time researching and immersing themselves in the subject."

Inspired by the Transformers movie franchise, the Woodlands team designed a robot with the ability to diagnose problems as well as fix them. It would use 3D technology to print and install parts, and the robots would also be able self-charge and repair themselves.

Science Minister Dave Kelly said he was pleased to see an even representation of public and private schools taking out the top honours. "It's fantastic to see the innovative ideas that kids as young as eight years old have come up with to address some of the social and environmental challenges we face in Western Australia," he said.

"STEM is not just about lab coats and calculators. STEM skills are applicable to almost every industry in WA."

THE WINNERS

YEAR 3
Woodlands Primary
The team took on the issue of equipment breakdowns on a mine site. Looking ahead 50 years, they imagined a robot that could not only recharge and repair itself, but also diagnose mechanical faults, order spare parts and install them.

YEAR 5
Perth College
The students extended the principles already in place in many mines for remote and autonomous mining, using them to create a monitoring system for mines being rehabilitated. They used Google's teachable learning program to test their theories and created a virtual "fence" to keep out pests away, AI to recognise non-native flora and feral pests. The system is powered using a microbial fuel cell — a bioelectric device that uses microbes in mud to produce energy.

YEAR 6
Ardross Primary
The team also took on the rehabilitation of mine sites as their mission but looked to Whisson Windmills for inspiration. They turned their former mine into a farm irrigated by technology which harnesses wind power to collect water from the atmosphere.

YEAR 7
St Hilda's Anglican School for Girls
Hypothesising on what the future of mining might look like in 50 years the team analysed how carbon emissions could be reduced while still improving productivity.

YEAR 8
Presbyterian Ladies' College
Using the Pilbara's Mt Whaleback iron ore project, the team used Minecraft to demonstrate how they thought the area could be rehabilitated once mining ceased. They proposed turning it into a tourist destination, with a restaurant and lookout area. Visitors would be treated to guided tours while selected areas would be designated wildlife-only zones.

YEAR 9
Churchlands Senior High
Taking a worldwide perspective on mine site rehabilitation, the team created two prototypes of a working farm set-up that could tackle both open-cut and deep mines. With everything accounted for including lighting, irrigation and carbon capture, the team thought about even the smallest details with a particular focus on employment and environmental benefits.

YEAR 10
Pannawonica Primary
This team used their local Pilbara work experience knowledge to create an entire business plan, designed to launch WA's mines into the next 50 years. With a snazzy logo and uniforms designed to take the sting out of the North West heat, the group focused on letting technology take care of mundane work so humans could focus on the creative side of the industry.

JUDGE'S CHOICE
Great Southern Grammar's Year 9 team
Taking a deep dive into the intricacies of iron ore production, the team proposed the use of chlorophyta and cyanobacteria to reduce WA mining's carbon dioxide emissions. Not only would their plan be good for the environment they believe it would also boost tourism, with visitors clamouring to see the large tanks of algae in the middle of the WA desert.

SPECIAL MENTION
St Hilda's Year 9 team
The team's grand plan included creating a transport hub with old mines used as underground tunnels and stations, solar-generated electricity and storage for mined materials.