



S'qiniseko Mponishane



Husna Docrat



Isabel Lutz



Rikyle Jordaan

SA young scientists showcase pioneering research at **International Science Technology Engineering Competition (ISTEC)** in Bali, Indonesia

Four young scientists, who were nominated by a panel of academics and professionals at the Eskom Expo for Young Scientists International Science Fair (ISF) in October 2023, represented South Africa at this year's International Science Technology Engineering Competition (ISTEC)

in Bali, Indonesia from 2 to 5 May 2024. The research projects showcased by the South African young scientists aim to address the country's energy crisis and determine the extent to which artificial intelligence (AI) can be ethically monitored.

The four were accompanied by Eskom Expo's Business Manager, Mmamoloko Rancia Riba. Rikyle Andrio Jordaan, a Grade 12 learner at Paterson High School in Gqeberha (formerly Port Elizabeth), showcased his research project entitled 'Building a resilient grid: Leveraging solar, wind, and hydro power for improved reliability'. Jordaan constructed a miniature power grid that effectively utilised solar, wind and hydro energy sources. By integrating these renewable energy resources, his research emerged as a significant contribution to addressing South Africa's persistent energy crisis.

Husna Docrat, a Grade 11 learner at St Dominics Newcastle Curro in KwaZulu-Natal, presented her research project entitled 'Exploring the feasibility of bioplastics as alternatives to conventional plastics'. With conventional plastic bags taking approximately 20 years to decompose, Docrat embarked on developing a bioplastic solution that offers a sustainable alternative to these widely-used pollutants. She has shown an in-depth understanding of the environmental hazards of plastic use. Docrat's project not only aims to mitigate plastic pollution, but also seeks to safeguard the well-being of plants, animals and the environment at large.

S'qiniseko Mpilenhle Mpontshane, a Grade 12 learner at Mandla Mthethwa School of Excellence in Ndumu, KwaZulu-Natal, had a research project entitled 'Sustainable transportation using a solar-powered autonomous car'. Mpontshane's innovative autonomous car prototype exemplifies the boundless potential of technology. His research encourages further advancements in renewable energy integration and autonomous vehicle technology, which is a buzz in the technology space. Rigorous performance evaluations conducted on the prototype have demonstrated the effectiveness of integrating solar power to supplement

the car's energy needs and implementing advanced navigation systems.

Isabel Lutz, a Grade 10 learner at Bloemhof Hoër Meisieskool in Stellenbosch, Western Cape presented her research project entitled 'Integrating AI-enabled chatbots in the classroom – friend or foe?' The use of artificial intelligent (AI) chatbots such as ChatGPT, Chatsonic, and Google Gemini is becoming prevalent in classrooms around the world. Currently, educators are grappling with issues arising from the ethics of learners using artificial intelligence. Lutz's project examines the effectiveness of using chatbots to assist second-language English learners with essay writing. Through her research, she sought to determine the extent to which AI integration is acceptable and how it can be ethically monitored to prevent any violations.

The Chief Executive Officer of the Eskom Development Foundation (Acting), Mologadi Motshale, said: "The research conducted by these young scientists covers a range of pressing contemporary issues, ranging from potential solutions to our country's persistent energy crisis and advancements in renewable energy integration, to understanding the environmental impact of plastic use and exploring the effectiveness of chatbots. These are challenges our society faces today. The fact that these young scientists are actively involved in addressing these issues highlights the importance of student participation in the Eskom Expo for Young Scientists. It demonstrates the crucial role the Eskom Expo for Young Scientists plays in fostering skilled and enthusiastic scientists and innovators".

Registration to take part in the 2024 Eskom Expo is now open. Learners in Grades 4 to 12, along with TVET college learners (NC2 to NC4) can register their research projects by [clicking here](#). – [Exposcience.co.za](https://www.exposcience.co.za)