

Student joins school learners in the quest for earth observation solutions



→ Learners from St Alban's College with Phumudzo Bebwele (back row third from left), Mr Chris Mouton (back row third from right), Prof Saurabh Sinha (back row second from right) and Joe Valliarampath (back row far right).

A joint venture by the Carl and Emily Fuchs Institute for Microelectronics (CEFIM) at the University of Pretoria and St Alban's College in Pretoria aimed to design and implement a micro-sensor-based air-quality monitoring system. The project was an Engineering Projects in Community Service initiative of the Institute of Electrical and Electronics Engineers (EPICS-in-IEEE), a global programme that seeks vertical integration between university and pre-university students.

The programme worked with non-profit organisations and delivered community-oriented solutions. In this way, the programme supported the IEEE's motto: "Advancing technology for humanity".

Final-year electronic engineering student, Phumudzo Bebwele, who is an IEEE student member, led the project team. The rest of the team consisted of eight Grade 11 learners of St Alban's College, a private school in Pretoria, and Chris Mouton, an educator at this school.

The project utilised wireless sensor network nodes (WSNs) to sense

and transmit selected ambient air-quality parameters to a central node, which relayed the data to a folder on the "Google cloud". While Bebwele designed an analogous system by first principles, the learners used educational off-the-shelf air-quality micro-sensor components. The learners used an Android-based input/output sensor node to communicate to a mobile phone, which managed the upload to a Google Drive folder. The educational air-quality micro-sensor systems developed during this project will also serve as an educational tool for improving public understanding of air-quality, including a new national air-quality act in South Africa. 📍

The learners used an Android-based input/output sensor node to communicate to a mobile phone.
