

New VR technology to make SA forestry chainsaw training safer

Trainee chainsaw operators in South Africa will soon be able to use a virtual reality (VR) application to test their theoretical knowledge and hone their skill in a simulated timber plantation. Developed by Forestry South Africa (FSA), the Fibre Processing and Manufacturing Sector Education and Training Authority (FP&M Seta) and industry partners, the solution trains chainsaw operators in a safe, simulated environment before they test their skills in this high-risk activity in timber plantations.



Image Supplied: ©Ludwig Sevenster

While the number of chainsaw operators employed in large commercial plantations has declined in recent years, the opposite is true in small-scale and community forestry, where suitably trained chainsaw operators need to be equipped with this scarce and critical skill.

Although forestry has used simulators over the past decade, their use in the training of chainsaw operators is an innovative development.

Mobile, cost-effective, learner-adaptable and injury-free

The cost of practical training has risen substantially. The sector sought a solution that would not only provide a cost-effective coaching medium with minimal risk, but a means whereby trainee operators could gain a feel for their equipment before taking their first steps into the field or forest.

Safety concerns have proved to be a limiting factor in the training of chainsaw operators. Other constraints include unwieldy class sizes and a limited number of trees available for practical instruction.

"Besides the obvious benefits that our industry stands to gain from this project, VR is the future of skills development and training. It transports learners into the environment for which they are being trained, promotes interactivity and improves the retention of information through experience," says FSA business development director Norman Dlamini.

"I am holding the very first chainsaw in the world that has been wired with sensors and can transport a learner into a virtual timber plantation," says Dlamini in a video developed to promote and demonstrate the application.

The solution is remarkably simple to operate and offers significant value for money. All that is needed is a dedicated computer, a VR headset, a specially adapted chainsaw with sensors and a customised mobile gazebo. The total cost of the hardware to run the app is approximately R35 000, while the software is available free of charge to FSA members.

Project partners

The project has been substantially funded by the FP&M Seta. "It uses fourth industrial revolution technology to improve the quality of instruction. Excited by FSA's proposal, FP&M Seta contributed to this initiative," says Felling Yende, FP&M Seta CEO, who too believes that VR is the future of training and skills development.

FSA executive director Michael Peter explains that capacity building and development are vital to the sustainability of the industry and its future growth. "Our membership includes not only the country's 11 major corporate forestry companies but 1,300 medium-scale plantation owners and around 20 000 small-scale operators. This development will benefit them by enhancing the quality of operator training."

Some FSA members have already committed to testing the technology at their in-house training departments and will be giving constant feedback to the development team to refine the design of the product prior to commercialisation.

Where to next?

According to Peter, the app will meet the need for better quality and safer training in the industry while standardising the level of training and assessment of trainees across the country.

Initial demonstrations have been well-received by the industry, with a Version 2.0 already in the making. "During consultation with user groups, we identified two important improvements to enhance the next generation of VR chainsaw training aids," adds Dlamini.

These will incorporate the use of a wireless module to eliminate cables that interfere with the movement of the learner operator as well as VR gloves to improve haptic feedback from the chainsaw during operation. This will add realism to the experience, enabling trainees to sense vibrations and resistance as the chainsaw engages with the virtual tree or timber.

Learning from this development, FSA is investigating other VR-based training applications for similarly hazardous operations. One of these is firefighting. "Fire knows no sectorial borders, so we would seek multi-sector collaboration," says Dlamini.

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