**Where does the TjopTjop idea come from?**

The developers Prof Leenta Grobler and Dr Henri Marais are both engineers in the NWU Faculty of Engineering. Engineers always look for ways to solve problems and make the world a better place. They are also both parents of small children, and the problem of long rows outside schools to have the kids’ temperatures measured and recorded by hand was something they had to do something about. So they used their skills to design a cellphone app that can make the screening process faster and more accurate, without using pen and paper.

**Please explain step by step how the TjopTjop app works and how it differs from other thermometers we are used to?**

The app is a solution to record the data quickly and accurately, it is not a new way to measure temperature. Firstly, we issue a ID card with a QR code for each learner. This is used to identify the learner that reports at a screening point. Next, we measure the temperature of the learner using a standard digital infrared thermometer. We then use the app to take a photo of the output on the screen of the thermometer. With an image processing algorithm, we identify the numbers on the screen and automatically record it. The screener confirms that the temperature corresponds to the one on the thermometer. We then verify whether the learner is wearing their own mask or whether a mask was issued to them at the screening point (this is just to ensure that the school can procure new masks in time if supplies are running low). Finally the answers to the standard Covid-19 risk assessment questionnaire of the department of health is recorded on the app. The headmaster can then view all the recorded responses for their school on a website to see trends emerging and also any temperature alarms that were raised at the screening point.

**How is this idea going to help fight Covid1-9 at schools and Higher education institutions?**

This app will make recording the data much faster and more accurate than doing it by hand and retyping or analyzing it later. It also makes contact tracing based on a specific date significantly easier.

**Have you tested the solution and what was the outcome?**

Yes – we tested the solution with the teachers and management teams at 4 local schools, using different cellphones, thermometers and persons doing the screening. The teachers’ response was overwhelmingly positive and they all opted to implement it at their schools immediately.

**Did you confirm that the results given by the app are accurate?**

Yes, we did – we were able to accurately record all the data we generated thus far.

**How will the app assist in saving time, as we know there is a large number of teachers and learners?**

This was the whole point of developing the app – we can now complete the entire screening process per learner in less than 5 seconds per person. A school can load the app to as many phones as they want as long as they have enough thermometers to pair with those phones, making it easier to screen a large number of students in parallel.

**How will the app indicate that a teacher/learner needs attention from health officials?**

If the temperature of a learner is 28 degrees or above, an alarm is made on the phone and it is also sent to the principal’s dashboard. Each school then has a protocol of how to deal with the specific learner. Once the department of Health comes on board with this project, we will also be able to share this information with them automatically.

**How much do you think solutions like these will contribute to the fight against Covid-19 in South Africa?**

I think these may be one of the game changers in the fight against Covid-19 because our children will have more time to focus on learning and spend less time standing in line waiting to be screened. I also hope that learners that see us use the app to record their screening data will realize that they too could come up with solutions like these, and that us at the NWU Faculty of Engineering would like to help them acquire those skills that will make the difference when the next global crisis strikes.

For more information, schools and businesses can visit: [www.tjoptjop.info](http://www.tjoptjop.info)