



Paediatric VR needle experience information and user manual



Thank you for using Smileyscope's virtual reality device. This device has an introductory video and three VR experiences loaded onto it. Smileyscope is specifically designed to keep children calm and still during needle procedures.

If you have any questions that are not covered in this information manual, please contact info@smileyscope.com or call + 61 490 096 530 (Australia) or +1 917 284 2596 (U.S.A.)

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Background

Smileyscope was born from clinical experience. Through clinical training, Dr Evelyn Chan, a Melbourne-based paediatrician, attended many needle procedures. These were often distressing for children, carers and staff. Distractions such as television shows and soft toys were clearly not enough. Virtual reality was a way for children to avoid seeing needles, and to re-experience the needle in a more pleasant environment.

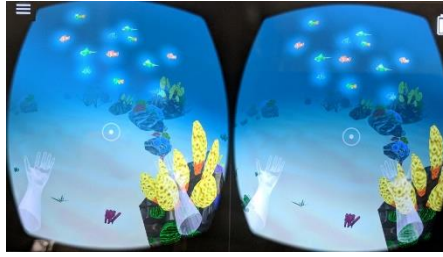
Smileyscope began as a collaboration between paediatricians, nurses, child life (play) therapists and digital partners. We built a custom virtual reality experience to help children with needle procedures, and ran a clinical trial proving its efficacy.

We made Smileyscope to improve paediatric needle procedures. We hope that you and your patients benefit.

What is virtual reality?

Virtual reality (VR) is an interactive computer system that allows children to be immersed in an engaging and interactive 3D 'virtual world'. The child wears a headset that replaces their view of the actual physical environment. They can look around the virtual world, and interact with the virtual environment by turning their head.

This means that with Smileyscope, the child can leave the 'real world' hospital and go on an underwater adventure. The real-world experiences of skin disinfectant are reframed as 'waves on the skin'. The real-world experience of you palpating for a vein and inserting the needle are reframed as 'fish nibbling'.



It is believed that the brain only has a finite processing capacity. Because VR is immersive (being interactive, occupying sight, depth perception, imagination and sound), it is theorised that VR takes much of the brain's processing capacity. This means there is less 'room' in the brain for pain to be processed and perceived.

Optimum management of needle procedures

Smileyscope supports paediatric needle procedures – but it is only one component of good needle procedural management.

The four key components to 'good' paediatric needle practice are:

1. Comfort positioning
2. Age-appropriate distraction
3. Local anaesthetic
4. Sucrose or breastfeeding for infants 0-12 months

We will focus on the first three, because infants are too young to use VR.

Comfort positioning

Comfort positioning is a really important part of performing a 'good' needle procedure. From the clinician's point of view, it can make a procedure a lot easier.

It involves an adult (usually a carer) providing positive assistance, in a 'hugging hold' that is secure and comforting for the child. The procedural arm should be isolated (away from the hold) so that the clinician can safely access it.

The child should be upright, as they feel more in control of the procedure that way.



Age-appropriate distraction

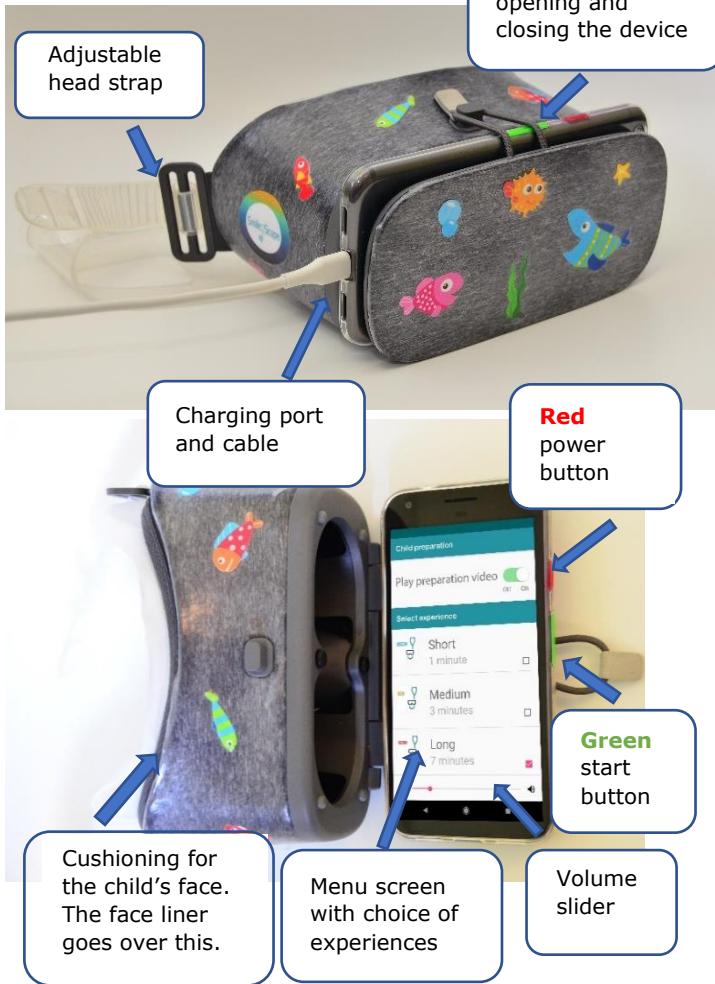
For our target audience of children aged between four and 11 years old, virtual reality has been shown to be more effective than other forms of distraction. Depending on the child's preference, this may include reading books, playing with toys and watching TV.

Local anaesthetic

Depending on the procedure, local anaesthetic should be applied according to your institution's policy.

See the Royal Children's Hospital Melbourne Comfort Kids information sheets at
https://www.rch.org.au/comfortkids/for_parents/#cposition.

Device layout



Instructions for use

Before using the VR device, we strongly suggest you watch our instructional video on any tablet or phone by visiting smileyscope.com/use.

Remember the four steps:

1. Put on a face liner, select experience
2. Introduce the set to the child
3. Triple click to start
4. Wipe down and recharge

Try the VR experience yourself, so you know what to expect and what the child is seeing.

A two-sided laminated instruction sheet sits with the VR device. This gives a basic set of instructions for use and more detailed information on the back.

This device is locked down (it only plays the VR experience or the preparation video) and is security tagged.

Open the headset using the elastic clasp at the front and turn the device on by holding down the red power button.

When the device has turned on, the touchscreen displays the choice of playing a preparation video, and three VR experiences of differing durations.

Put on a face liner and select the experience

To begin, put a disposable face liner over the cushioning on the device using the adhesive strips.



You have the option to play a preparation video for the child – this will play before the VR experience. This video has been designed to introduce the VR device to the child and explain what they can expect during the experience.

This option can be activated using the toggle on the VR headset touchscreen. It can also be watched on any computer, tablet or phone by visiting smileyscope.com/watch.

To play the VR experience, touch the option on the screen that best reflects the duration of the procedure you are about to undertake:

- Short (1 min) can be used for quick procedures such as injections.
- Medium (3 mins) can be used for procedures such as venepuncture.
- Long (7 mins) is useful for longer procedures such as IV cannulation.





Close the front of the device using the elastic clasp.

Each experience is timed to allow you to check ID bands and documents, and set up your equipment, so the child never sees the needle.

The VR experience will continuously replay until you return to the menu screen and select another experience, or when the device is put down and is inactive for 10 seconds. When you are ready to use it again, pick up the device. It will wake up to the calibration screen, ready to go again.

If the same VR experience is required for the next child, simply press the green button three times to start. The device will recall your last selection. If you would like a VR experience of a different duration, return to the menu screen to select a new experience.

Introduce the set to the child

Explain to the child that they will go on an underwater adventure during their needle, and their job is to stay still and find their favourite animal. This is an opportunity for you and the child to connect, even if they have watched the preparation video. Show them the headset and explain how it is going to work.



Let them know they can interact in the VR environment just by moving their head. Smileyscope instantly moves the circular pointer to wherever they are looking in the current environment. Once an object, such as a fish, is in the centre of the circle, it will trigger a reaction.

Triple click to start

When the child is seated and in a safe, secure location, and you are ready to start the procedure, put the headset on them and adjust the latex-free head strap if required.



Make sure the child is comfortably facing forward with the headset on when you triple click the green button to start the experience. This ensures their virtual arms and the dolphin are aligned with the direction they are facing.

You can hear what is happening in the VR experience, and we have found interacting with the child as part of the experience works well – What are you seeing? What colour are the fish? I'm putting on your diving band (tourniquet). There's a fish coming in now – hold nice and still.

If the same VR experience is required for the next child, simply press the green button three times to calibrate or start. The device will recall your last selection. If you would like a VR experience of a different duration, return to the menu screen to select a new experience.

Wipe down and recharge

Wipe down the headset for the next patient, and replace the disposable face liner.

Please recharge when you've finished using it, and store it securely.



Battery and power information

This VR device has a battery life of approximately three hours of continuous use. It will give a verbal reminder between VR experiences if there is less than 30% battery. It will go into 'sleep' mode to use low power if it does not detect movement for a 10-second period.

To reactivate it, simply move the VR headset. The app will stay on, so when the VR headset is moved, it will instantly return to the calibration screen, ready to start for the next patient.

Frequently asked questions

Can the child wear glasses while using Smileyscope?

Yes, the child is able to use Smileyscope VR with their glasses on. Just put the facemask directly onto their face and then slip on the headband.

Take care when removing the VR headset with glasses on. Remove the headband first, before removing the headset from the face.

What can I do if the headband is too small or large?

You can adjust the size of the headband by adjusting the length of the headband using the straps.

Is this safe to use for a child who has a latex allergy?

Yes, all the materials are latex-free, including the headband.

Why did an experience stop working while in VR mode?

Smileyscope VR goes to sleep mode if there is no movement detected by the device for more than 10 seconds. Usually, this is when the device is placed down on a flat surface. To wake the VR experience, just move the device and it will return to the calibration screen, ready to start for the next child.

Can I use other apps on this device?

Currently, the only app that plays on Smileyscope VR is the one for the three paediatric needle experiences and the preparation video. You cannot exit out of the program – it is locked down to this mode.

Where can I get more information?

If you have any questions which are not covered in this information manual, or have any suggestions or feedback, please contact Smileyscope by email info@smileyscope.com.

Ordering parts

If your Smileyscope headset is lost, please notify Smileyscope within 48 hours by sending an email to info@smileyscope.com.

A specific ordering procedure may be established with your institution. Below is a list of commonly ordered parts.

Otherwise, please contact Smileyscope with any questions.

Title	Description
Liner, Full Face	Disposable face liners (50 per pack)
Strap, Head	Adjustable latex-free head strap
Insert, Foam	Face cushioning for goggles
Cable, Charging	Phone charging cord with flag

Health and safety information

Potential adverse effects

Our research of 250 children (the world's largest VR-in-health clinical trial) has found minimal adverse reactions with the use of Smileyscope. Children sometimes report headaches, dizziness, nausea or vomiting, but these adverse effects are not more frequent than in children who have procedures without VR.

More broadly in the literature, adverse effects tend to be rare and minor. The most frequent are motion sickness-like symptoms such as dizziness, nausea or eyestrain. When present, they are transient and generally resolve without medication.

The prevalence of these symptoms varies between VR systems, depending on the quality of the equipment, speed of the graphics and the amount of movement the individual experiences in the virtual world.

In the event of an adverse reaction, the headset can be easily removed from the child (and the child or carer can remove the headset themselves).

Hygiene and infection control precautions

Apply a new disposable facemask liner to the device for each child. Wipe down the headset and headband between children. Avoid using Smileyscope VR on children who are under (or have suspected) contact precautions. Take particular care with children who are immunocompromised.

Troubleshooting issues

Software issues

Software type issues (such as freezing) are the most common and can generally be resolved with a reset. To do this, hold the red power button down for 30 seconds (until the screen turns off). Then hold down the red power button to turn back on.

Child is unable to see animals

If the child can't see the animals, it is likely that the VR world was not calibrated properly (off axis). To rectify this, make sure the child is looking straight ahead the first time the green button is triple-clicked. This calibrates the visual axis so the virtual world is in front of the child.

To change from one experience to another

- Undo the elastic clasp on the front of the set, so the phone screen can be seen. The preparation video and short/medium/long selection screen should appear.
- Touch to choose the short, medium or long option.

To adjust the volume

- Undo the elastic clasp on the front of the set, so the phone screen can be seen.
- The selection screen should appear, and the volume slider is at the bottom of that screen.

The volume can't be adjusted using the physical buttons (to prevent accidental adjustment).

If the device does not turn on

This is typically caused by an empty battery. To prevent this:

- When the set is turned off but charging, a battery icon should appear.
- When the battery has less than 30% charge, there is an audible prompt to charge the battery.

Remember to return the set to the charger after each usage.

Support available

There may be a procedure established to contact your institution's support department directly. Otherwise, please contact Smileyscope at + 61 490 096 530 (Australia) or +1 917 284 2596 (U.S.A.) or info@smileyscope.com

Laminated instruction sheet

Smileyscope has supplied a laminated double-sided guide sheet with step-by-step instructions for use with every device. Extra copies of this sheet can be downloaded at www.smileyscope.com/use.

Information for the box and charging cord

In most scenarios, the box has a sticker on it that includes the Smileyscope logo as well as contact information.

Also, the charging cord should have a sticker attached to it that includes the four key steps for use, the Smileyscope logo and contact information.

Thank you for using Smileyscope

Any feedback, comments or questions, please contact
info@smileyscope.com.

