



Using Health Literacy Principles to Create a Vision Loss Virtual Reality (VR) App

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Background

Millions of people are affected by common eye diseases like age-related macular degeneration (AMD) and cataracts. It can be difficult to explain what it's like to live with a visual impairment. The National Eye Institute (NEI) with support from CommunicateHealth (CH) developed the "NEI VR: See What I See" virtual reality app to give health professionals and caregivers a better understanding of vision loss from the patient perspective. In turn, this can lead to better treatment, improved disease management solutions, and proactive prevention through education.

Methods

App Development

We prototyped, designed, and created the following VR tools with the goal of increasing our audiences' capacity to obtain, process, and understand basic eye health information.

- Fully-immersive VR app for HTC Vive interactive headsets
- Google Cardboard version of the app for at-home use
- Educational online videos and still images based on the experience

Technical Review

We recruited a variety of subject matter experts to review the app for accuracy. Experts included physicians, vision researchers and scientists, and VR technical specialists.

User Demos

We conducted VR demos with more than 360,000 users at various conferences and events to test the app for usability, functionality, and overall community sentiment.

"NEI VR: See What I See" App

The "NEI VR: See What I See" app is an immersive experience that shows users what it might be like to live with common eye diseases, like AMD and cataracts. The app includes:

- Eye disease overlays and informational audio
- Realistic settings in a grocery store aisle and city street at night
- Full 360-degree surrounding view of each setting

Visit nei.nih.gov/vr to download the "NEI VR: See What I See" application to your smartphone! The app is available for Android and iOS. Scan here using the QR code!



Eye Diseases

Age-Related Macular Degeneration

- AMD – short for age-related macular degeneration – is one of the leading causes of vision loss in people age 50 and older.
- At first, AMD may not cause many symptoms – so people may not know they have it. In later stages, AMD can cause blurriness or spots in the center of your vision.
- AMD can also make straight objects look wavy. And people with AMD may have a hard time reading or seeing small details.
- Regular eye exams can find AMD early and treatment can help prevent vision loss. In some cases, early treatment can even reverse vision loss from AMD.



A city street at night with normal vision



A city street at night with AMD



A city street at night with cataracts

Cataracts

- When you have a cataract, the lens of your eye gets cloudy – and that can make your vision blurry.
- Having a cataract can cause a brownish tint in your vision – it's almost like looking through dusty glass.
- Over time, cataracts can also make seeing colors harder – especially blue and purple. People with cataracts may also be sensitive to bright lights and see glare.
- Cataracts are common – especially in older adults. The good news is that eye doctors can treat cataracts with surgery – and you can go home the same day!