

The masked singers: How a WVU choir director composed the perfect masks for performance art

20 August 2020, by Jake Stump



Kym Scott, director of choral activities at WVU, assists 10-year-old Thessaly Troilo with a performance mask during testing. Credit: Chris Young/West Virginia University

We know that wearing a mask reduces the risk of transmitting viral droplets from person to person.

But one question remains: Can you carry a tune in one?

Not really, unless you're going for a muffled, disinterested Kurt Cobain sound.

Kym Scott, director of choral activities at West Virginia University, recognized the limitations of singing and performing in masks from the onset of the COVID-19 pandemic. So she tapped into her prior life as a [fashion designer](#) to solve a problem unforeseen by non-entertainers.

With the fall semester here, Scott needed to figure out how to teach singing to her students. Earloop disposable face masks and over-the-ear cloth coverings need not audition.

"I originally commented that if we were going to have to sing in those masks, I would rather do everything online," Scott said. "Singing in a mask is so difficult."

A former wedding dress designer, Scott knows a thing or two about sewing and designs. Never did she anticipate both of her professional worlds—past and present -marrying in harmony due to a deadly virus.

She developed a "performer's mask," which projects a few inches away from the face and has a sturdy, lightweight framework that keeps the wearer from sucking in the fabric like a DustBuster.

"It sits very close to the face to eliminate as much air coming in and out of the mask," said Scott, an assistant professor in the School of Music. "Yet your nose and mouth are far enough away that you can take in good breaths."

The ideas kept flowing, as Scott developed a second type of mask, which she is calling the "teacher's mask," designed for teachers and public speakers.

"Personally, I was struggling with wearing cloth masks and having conversations with people, finding the sound very muffled," she said. "It can be difficult to understand. So I thought, if I'm going to be teaching and speaking with a mask on all day, I need to create something that'll get me past those challenges."

The teacher's mask is a tad smaller, compared to the performer's mask. Scott said she's already received inquiries from church ministers and people who do public speaking. She's even fielded requests from people with asthma or respiratory issues, who believe they can benefit from a mask

that allows more room for breathing.

And one of the best perks of Scott's creations eliminates a pet peeve for the bespectacled.

They don't fog up your glasses.

The masks are outfitted with wires at the top that rest closely to the face, preventing air and moisture from rising and landing on your lenses.

Singing safely, backed by science

Early in the development stage, Scott consulted with researchers at the WVU Center for Inhalation Toxicology, or iTOX. Over the course of the COVID-19 pandemic, iTOX has collaborated with hospitals and the West Virginia National Guard and has tested the effectiveness of various face coverings in its state-of-the-art Inhalation Facility.

Scientists found that Scott's masks offer a level of protection even greater than a surgical mask, which has gaps along the sides.

Researchers conducted a fit test, which evaluates how well a mask protects the person wearing the mask.

Scott's masks scored a "4" on the fit test. Typical face coverings such as disposable or over-the-ear cloth masks tend to score a "1" or "2." A score of 100 is necessary to pass a N95 mask.

"What a fit factor of four means is that for every four small particles outside the mask, only one is getting in," said Karen Woodfork, of iTOX and teaching associate professor of physiology and pharmacology. "Nothing is 100 percent but that is significant and can make a person feel much safer.

"Obviously you still need to social distance, you still need to wash your hands, but this represents a level of protection that isn't seen in your average, over-the-counter, two-layer cloth and cotton mask."

Woodfork said the mask contains one layer of cotton on the outside, a layer of non-woven polypropylene—which acts as a filtration material—and another layer of cotton on the inside.



Juwan Johnson, a vocal performance senior, tests a mask developed by Kym Scott, director of choral activities at WVU, that allows more comfort and ability to project one's voice. Credit: Chris Young/West Virginia University

The high notes

Though Scott initially envisioned her masks to enhance the classroom experience, they will likely serve a purpose beyond the college campus.

Hannah Bush, assistant professor of music therapy in the School of Medicine, hopes to utilize the masks out in the community in places such as nursing homes, daycares and public schools for therapy sessions.

"As a music therapist, I utilize music to work on non-musical goals, such as utilizing singing to work on breath support and speech enunciation, and even utilizing scenes to elevate mood and bring positivity," Bush said. "A lot of us feel better after we sing and participate in live music interventions."

But Bush, too, has found that common disposable and surgical masks have been less than desirable in music therapy settings.

"The performance mask allows the extra space for singing," Bush said. "But we also know that it's stopping those aerosols."

Creative Arts students, including singing and theater majors, will be given a performer's mask as part of their welcome-back-to-school package, Scott said. Frostburg State University in Maryland is already using them, and other universities and high schools across the country and Canada have sent inquires to Scott, she said.

Scott is hoping this is the encore.

"In an ideal situation, we won't need to use these a year from now," Scott said. "But I can see these [masks](#) being practical in other professions—maybe in the [medical field](#) or even construction sites. There are worksites where you need to yell instructions and information to other people and this could show that the audio can be better while containing droplets. It's got a lot of potential uses."

More information: www.sing-safe.com/

Provided by West Virginia University

APA citation: The masked singers: How a WVU choir director composed the perfect masks for performance art (2020, August 20) retrieved 20 September 2021 from <https://medicalxpress.com/news/2020-08-masked-singers-wvu-choir-director.html>

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