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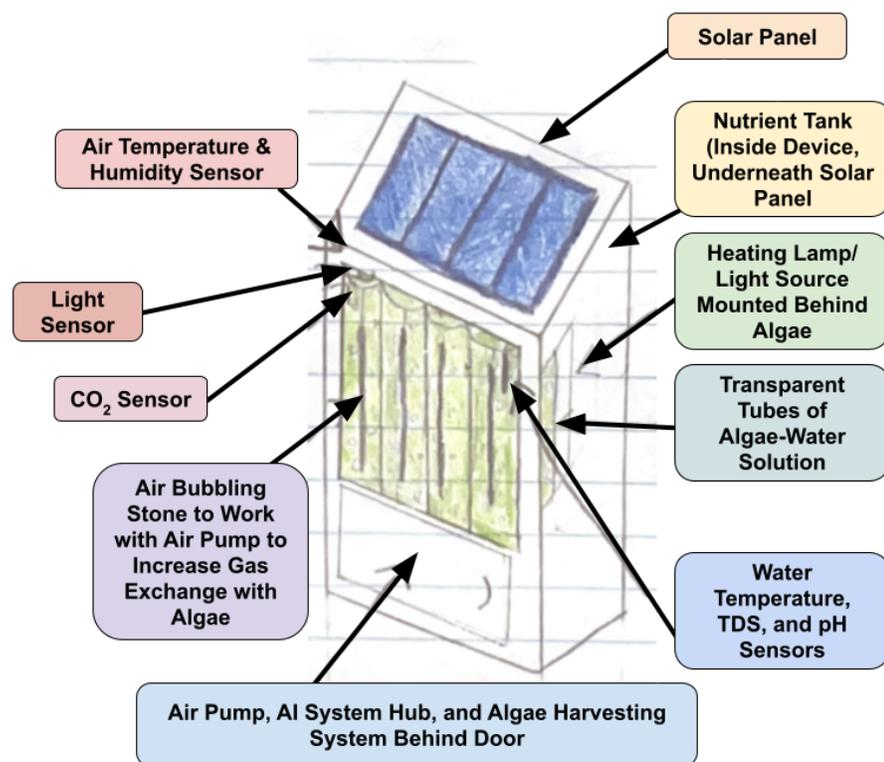
School: Oswego East High School

13 October 2022

According to the EPA, air quality is poor within 50% of United States schools resulting in decreased academic performance, student discomfort, and increased absences. I am currently working on a sustainable, innovative solution to this problem to implement within my school district. My invention, a small-scale

AI-controlled microalgae photobioreactor, is a unique, inexpensive, effective, and environmentally friendly device to improve school air quality. Algae can absorb airborne pollutants within schools such as Carbon Dioxide, Volatile Organic Compounds, particulate matter, and respiratory aerosols, converting them into oxygen

and improving air quality. My device will use artificial intelligence coupled with a variety of sensors and systems like an air bubbler (to circulate room air through the algae) to maximize the efficiency of the algae air purification. My device will also be an improvement to current air



purifying systems through its efficiency, stand-alone nature, quietness, and environmental benefits. By actually converting pollutants into oxygen instead of only transferring them elsewhere (from inside the school to outside) my device will combat climate change. Also, my device will minimize the effort needed in caring for the algae by automatically dispensing nutrient solutions as needed and automatically adjusting growing conditions. Finally, harvesting the algae biomass with my system to be used for other purposes like bioplastics, biofuel, and fertilizers is very fast and simple. I submitted a paper about my invention idea to the Massachusetts Institute of Technology and just received a \$7,500 grant to develop my device!

Other universities within my nation are also using algae to improve air quality and fight climate change by creating algae-based artistic displays on their campuses. For example, at Arizona State University, student Phillip Carrier created an algae-based indoor art piece to simultaneously improve indoor air quality and combat climate change.



I created a video as a persuasive visual story highlighting this problem and the innovative solutions helping solve it:

<https://youtu.be/fp6e2EDzYxI>

My video script:

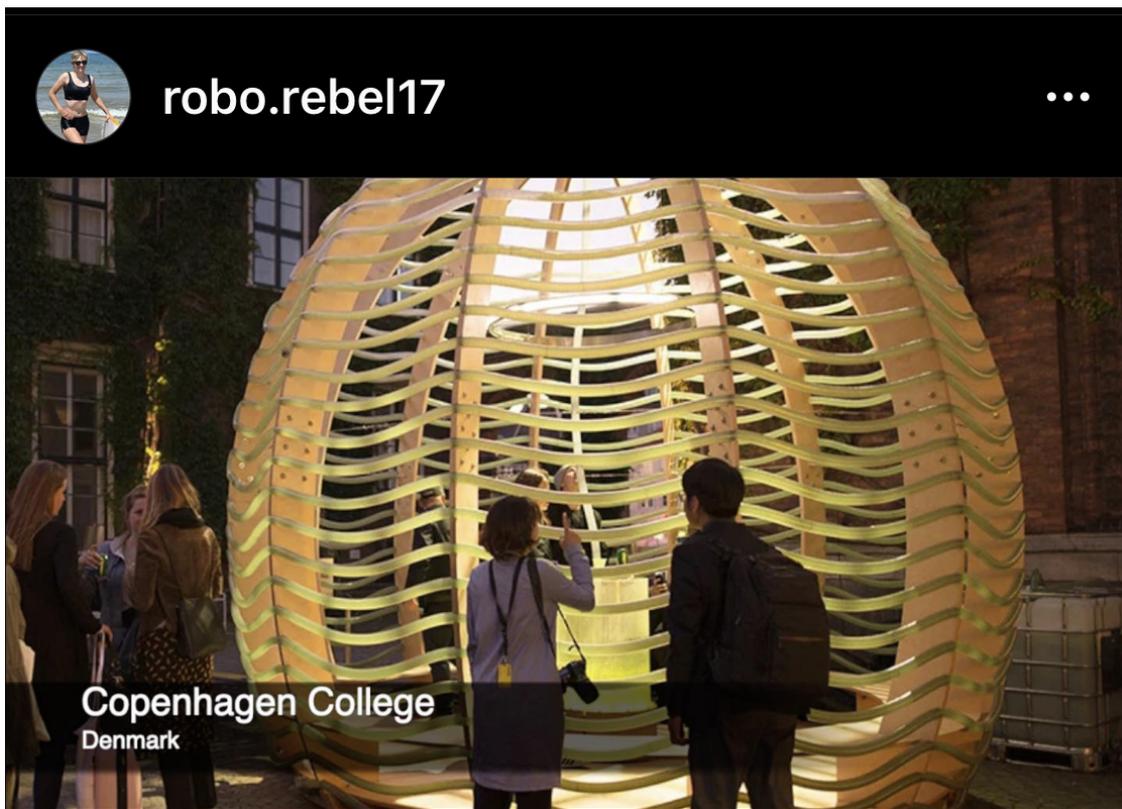
The WHO reported that air quality is getting worse in the United States and around the world. PM2.5 particulate matter in the air kills 4.2 million people worldwide each year, and many United States cities saw significant increases in PM2.5 levels within the last year. Low air quality is also impacting our students. The EPA found that 50% have poor air quality which is strongly correlated with decreased academic performance, increased rates of illness, increased absence rates, and even with increased rates of mental illness within schools. Clearly, we need to act to improve air quality to protect our environment and ourselves. An inspiring way college students are working to address this problem is through algae-based art exhibits. Algae can be 400 times more effective at carbon sequestration than trees as the whole organism is photosynthetic. Also, they absorb other airborne pollutants such as particulate matter. Students are building these both beautiful and sustainable exhibits to help fight climate change and air pollution as well as educate others. The innovation of these students should inspire us all to pursue sustainable solutions to local, national, and even global problems.

Social Media Caption:

Watch the video I created on how university students are creating algae-based art exhibits to fight air pollution! Algae are very effective at carbon sequestration and removing pollutants from the air. In fact, algae are 400 times more efficient at removing carbon dioxide from the air than trees.

Watch my video here: <https://youtu.be/fp6e2EDzYxI> to learn more.

Social Media Post:



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robo.rebel17 Watch the video I created on how university students are creating algae-based art exhibits to fight air pollution! Algae are very effective at carbon sequestration and removing pollutants from the air. In fact, algae are 400 times more efficient at removing carbon dioxide from the air than trees. Watch my video here: <https://youtu.be/fp6e2EDzYxI> to learn more. @turninggreenorg @goinggreenmedia #pgc2022

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