

Virtual Engineers on Wheels: Transitioning from Mobile to Online Outreach

Authors : Kauser Jahan, Jason Halvorsen, Kara Banks, Kara Natoli, Elizabeth McWeeney, Brittany LeMasney, Nicole Caramanna, Justin Hillman, Christopher Hauske, Meghan Sparks

Abstract : The Virtual Engineers on Wheels (ViEW) is a revised version of our established mobile K-12 outreach program Engineers on Wheels in order to address the pandemic. The Virtual Engineers on Wheels' (VIEW) goal has stayed the same as in prior years: to provide K-12 students and educators with the necessary resources to peak interest in the expanding fields of engineering. With these trying times, the Virtual Engineers on Wheels outreach has adapted its medium of instruction to be more seamless with the online approach to teaching and outreach. In the midst of COVID-19, providing a safe transfer of information has become a constraint for research. The focus has become how to uphold a level of quality instruction without diminishing the safety of those involved by promoting proper health practices and giving hope to students as well as their families. Furthermore, ViEW has created resources on effective strategies that minimize risk factors of COVID-19 and inform families that there is still a promising future ahead. To obtain these goals while still maintaining true to the hands-on learning that is so crucial to young minds, the approach is online video lectures followed by experiments within different engineering disciplines. ViEW has created a comprehensive website that students can leverage to explore the different fields of study. One of the experiments entails teaching about drone usage and how it might play a factor in the future of unmanned deliveries. Some of the other experiments focus on the differences in mask materials and their effectiveness, as well as their environmental outlook. Having students perform from home enables them a safe environment to learn at their own pace while still providing quality instruction that would normally be achieved in the classroom. Contact information is readily available on the website to provide interested parties with a means to ask their inquiries. As it currently stands, the interest in engineering/STEM-related fields is underrepresented from women and certain minority groups. So alongside the desire to grow interest, helping balance the scales is one of the main priorities of VIEW. In previous years, VIEW surveyed students before and after instruction to see if their perception of engineering has changed. In general, it is the understanding that being exposed to engineering/STEM at a young age increases the chances that it will be pursued later in life.

Keywords : STEM, engineering outreach, teaching pedagogy, pandemic

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