



INFORMATION IS EVERYTHING: RURAL EDUCATION AND CELEBRITY SCIENTISTS



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Galileo Galilei, Isaac Newton, Marie Curie, Albert Einstein, Elon Musk—these scientists all relate upon one common thread. They carried the torch from their scientific ancestors and changed civilization for the better. Delving into the storied history of science, the growing opportunities in areas of science, technology, engineering and math (STEM) are increasing more and more with every new generation.

In addition, according to the Education Commission of the United States, between 2017 and 2027, the number of available jobs in STEM-related occupations will increase by 13%, in comparison to the increase in non-STEM related occupations. In addition, since the early 1990s, employment in STEM occupations has risen by 79%, according to a study conducted by the Pew Research Center. The importance of these statistics extends beyond the quantitative significance; with this newfound growth in the various STEM fields, the inaccessibility of the scientific progress by rural communities must be fixed, in order for all components of society to reap the benefits of innovation and progression.

In the context of COVID-19, the manner in which people refused state mandates of health policy should serve as a great cautionary tale surrounding the reality of science's acceptance by members of society. Despite immense scientific achievement and advancements that are happening during the COVID-19 era in the U.S., many have viewed the science of precautionary steps to be insufficient. In essence, the explanations and portrayal of STEM concepts were inaccessible to people who have not had a robust STEM education, especially those in rural communities.

In these communities, there is a need to bridge the gap between the existing disparities and accessible success; enhancing educational standards, highlighting the exponential growth of STEM career opportunities and addressing the responsibilities of the scientific community are essential to making long term

improvements in society so that scientific progress is equitable for all.

A major problem with the current educational standards surrounding rural communities is not the community itself, but rather outsiders' inaccurate perception of the quality of education in these communities. In a study conducted by Nat Malkus, the Deputy Director of Education at the American Education Institute, students from predominantly rural areas consistently outperformed students from suburban and urban areas in the National Assessment of Educational Progress (NAEP) reading exam.

In addition, the study also demonstrated that rural communities tend to exhibit higher levels of social cohesion, higher faith in community safety and stronger beliefs in the ability of educational institutions. The importance of this study is that it corrects the narrative surrounding the perceptions of rural communities; we must fund STEM programs in these areas, as test scores indicate the intelligence and capability of rural students.

More attention must be given to underprovided educational sectors within various rural areas. According to a survey conducted by the Harvard Kennedy School, in predominant East coast states, rural districts receive 50% less funding from the federal government per student than urban counties. For STEM-related fields, which often require funding for technology and equipment, this is a staggering educational barrier that bars thousands of students from entering their fields of interest.

There is a solution to low-quality STEM education in rural areas that can also help society at large: scientists engaging in public education. Currently, the social context surrounding these fields has grown to a point where political discourse is currently being set by scientists, doctors, educators and other field experts, who initiate collaboration with the hopes of explaining contemporary phenomena to the public and generating dialogue to further societal understanding.

The significance this can play is not to promote the popularity of these figures of science; rather, it will allow people of all backgrounds to receive direct content of well-established scientific literature. According to the Pew Research Center, 79% of scientists believe it is a major problem for science that news reports do not distinguish between whether or not a scientific

finding is well-founded. A well-founded study is peer-reviewed, replicated and its findings have been confirmed by multiple sources, whereas one that is not well-founded lacks these components. By not clarifying whether or not a finding is well-founded, news organizations can have a detrimental effect toward society's understanding of science and the world around them. Without transparency, the information directed toward viewers is a disarray of conspiracies, weak truths and blatant fallacies.

It is incumbent upon the leaders in the STEM fields to put effort toward increasing the literacy of society in relation to general scientific processes and mechanisms. By not doing so, they allow uniformed people to fall prey to the predator of those who are willing to exploit them for financial and social gain. In order to shift this paradigm to a more informed society, more leaders in science occupations need to take active roles in engaging in public discussions via news outlets, journal articles and online forums in order for fact to be differentiated from fiction.

A good example of this is Dr. Anthony Fauci, director of the U.S. National Institute of Allergy and Infectious Diseases and the chief medical advisor to the president, who prioritized bluntly telling the truths of COVID-19 in a vocabulary that was accessible to average Americans. The knowledge of scientific concepts and appreciation of their processes is required for personal decision making, such as wearing a mask or receiving vaccinations, and greatly influences the livelihoods of all involved. Though not everyone listened to him, Dr. Fauci was patient and productive in his explanation of the science behind COVID-19's spread and necessary precautions. There is a responsibility of the scientific communities to make the new developments and breakthroughs in science accessible to all members of society.

We need scientists to enforce public STEM education because there are already anti-STEM voices out there. To prove this, I call to the stand the anti-mask movement beginning in 2020. As COVID-19 greatly affected the livelihoods of millions of families and small businesses, this movement arose through the cracks and was a predominant topic of political discourse for quite some time. According to California-based psychiatrist Dr. Gayani DeSilva, oppositional messages in the media and from people in positions of authority, such as government officials, are the major reasons for how and why this anti-mask movement arose in the first place. Subsequently, a surge of infections proceeded, driven in part by this dereliction of safety precautions. Herein lies the real-world gap that the promotion of STEM education, particularly by "celebrity scientists", can serve to bridge.

In the promotion of STEM education and opportunity, society can and will directly reap the benefits of these advancements. It is often said that true liberty, in its raw and unfiltered form, is only safeguarded and protected through the

preservation and successful diffusion of fact and knowledge. Such is the case for the times we live in, where the roles of scientists are more fluid than ever. People like Neil deGrasse Tyson, Bill Nye, Stephen Hawking, Jane Goodall and Bill Gates have become household names, as well as reliable distributors of STEM information.

In fact, it was the great astrophysicist Carl Sagan who once stated, "We live in a society exquisitely dependent on science and technology in which hardly anyone knows anything about science and technology." Comedy aside, this quote unveils the field's best kept secret: we need to educate people on STEM because we need people who are educated in STEM.

The scientist has become the beacon of defense, the researcher has become the primary source of central intelligence and the nurse has become the soldier in the battlefield. Standing upon the shoulders of the men and women who dedicate their life's work towards redefining the boundary between the known and unknown, the capability and opportunities surrounding the STEM fields must be promoted in order to maximize these advancements into something tangible, concrete and effective toward the lives of the general public.

The potential of translating widespread scientific practice into a solution for millions of people represents the bastion of hope that can serve to bridge the gap between the present disparities. No longer will the page be left untouched where equitable access to information and advancement is barred. Only through equal access may we hope to cultivate a rich culture of academic excellence in which we rid the world of borders and promote connections of knowledge and community.

As a student at Saint Louis University, a research institution that represents a state-of-the-art paragon in terms of promoting academics and spirituality, I feel greatly responsible in shedding awareness toward this, as education is transformative in its ability to manifest multiple career paths for students from all socioeconomic backgrounds. A great solution to the deficit of STEM education in rural communities is for members of the scientific community to mobilize toward public education. To further catalyze this revolution of STEM, we must ensure inclusivity regardless of socioeconomic status. A student's zip code should not dictate their STEM literacy and educational options, plain and simple.

