

Influencing Underserved Communities While Building Our Cybersecurity Workforce

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Abstract

As cyber-attacks on individuals, companies, and countries increase, so does the need for cyber defenders. It is apparent that the safety and future of our country will depend on our youth. This study analyzes the educational technology and cybersecurity resources available to middle and high school students in less populated areas compared to those in densely populated locations and a solution to that problem. Whether looking at cyber-based classes, competitions, training, or career exploration, students in rural areas have **fewer resources** available to them. Due to this, they are less prepared and competitive for entry into the field. The Cyber Community Club (Cx3) was designed to address the issue of youth in underserved communities lacking cybersecurity and technology resources. Since the program's launch in November 2021, Cx3 has affected over 600 individuals, 25+ communities, and 12+ schools.

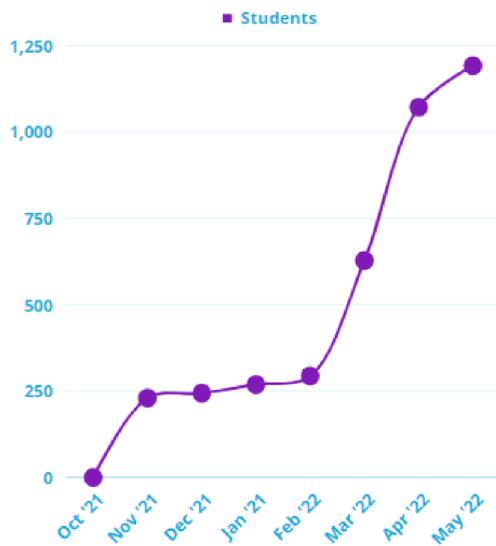
Background

While the cybersecurity field consists of diverse backgrounds, there exists great imbalance in access to cybersecurity resources across the country. This has been shown through multiple avenues including CyberPatriot - the National Youth Cyber Education program. Recently, they had over **32,000 middle and high school** participants. It is notable that the majority of teams competing within the competition come from states that are more densely populated and have increased resources of cybersecurity education and training.



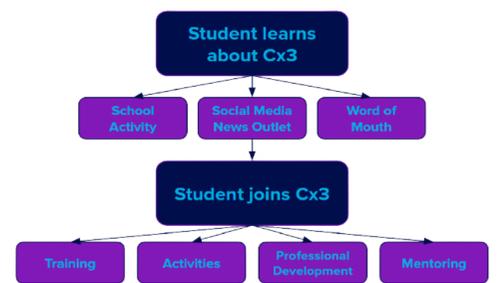
Results and Discussion

Since the launch in November 2021, the Cyber Community Club has hosted monthly, hands-on virtual activities for students, 6 school/event outreach activities, provided mentoring, and more. In the few months, Cx3 affected over **600 students**, 25+ communities, and 12+ schools. A majority of these students reside in rural areas of the US including South Dakota, Iowa, Minnesota, Oklahoma, and others. Although just beginning, Cx3 plans on continually growing month to month.



Methodology

Our approach is to create a long-term solution that provides cyber security and technology opportunities to youth. The Cyber Community Club (Cx3) is a community of like-minded individuals striving to educate youth in middle and high school in the STEM fields of technology and cybersecurity. It is a **year-round**, virtual community where students have can obtain training, participate in activities, grow their skills, find camps, apply for scholarships, obtain a mentor, and more.



Literature Review

Historically, less populated areas have been underrepresented in the fields of technology and cybersecurity. A national survey conducted by the academic initiative of the Cyber Innovation Center shows that both students and educators have **limited knowledge** of cybersecurity. These findings are supported by the following reports.

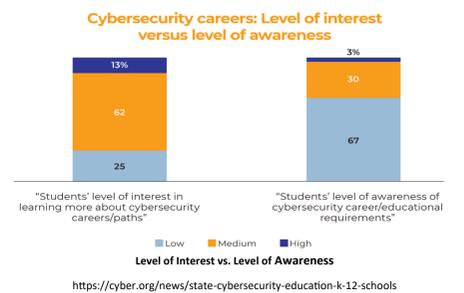
[1] *The State of Cybersecurity Education in K-12 Schools*. 2020. Cyber.org. EdWeek Research Center. June 23, 2020.

[2] *Cybersecurity Workforce Study*. (ISC)2. 2021.

[3] *Registered Teams*. www.uscyberpatriot.org.

[4] Showalter, Daniel, Sara L. Hartman, Jerry Johnson, and Bob Klein. 2019. *Why Rural Matters*. The Rural School and Community Trust.

[5] Lynch, Matthew. 2014. *Poverty and School Funding: Why Low-Income Students Often Suffer*. Education Week, October 2, 2014, sec. Education.



Conclusions

With technology increasing, the need for cybersecurity is rapidly rising. A report^[2] from (ISC)² indicates the shortage of cybersecurity professionals is **2.72 million**. More than ever, it is important for youth to be able to learn about cybersecurity and grow their skills. With Cx3 and other partners, the gap between resources available to rural and populated students will close. Cx3 continues to spread the word about the opportunity and host outreach events that directly affect students. With everyone's help, we can help ensure the safety of our country.

