

Fauquier County Public Schools: Overcoming Connectivity Challenges

Due to its 650 square miles of diverse geographics, intermittent cell service for students and families has always been an issue for Virginia's rural Fauquier County Public Schools. When education pivoted to online learning during the pandemic, Louis McDonald, Director of Technical Services, and his team worked diligently to provide consistent, reliable, and equitable access to connectivity in homes. McDonald said, "We did everything we could to support our students in whatever way we could to give them adequate broadband, but we just did not see it the way we hoped." Participating in the 2021 CoSN Student Home Internet Connectivity Study, Fauquier County SD confirmed that thirty percent of their students struggled with internet access. The study was also extremely valuable for McDonald and his team to understand the limitations of mobile hotspots, identify the implications on the connectivity of multiple students living in the same house, and provide essential connectivity data for the county's broadband initiative.

Limiting Value of Mobile Hotspots

At the pandemic's beginning, hotspots were one of the only workable connectivity solutions for students and families in Fauquier County, SD. The CoSN study highlighted the challenges rural districts faced in supplying reliable connectivity using service providers. McDonald echoed this challenge as there was not one service provider that supported the entire community due to their challenging terrain. During the CoSN study, the district participated in Sprint's 1Million Project as a connectivity solution. However, Sprint did not perform well and had a data cap that caused the devices to not be usable for video. Though T-Mobile, AT&T, and Verizon provided unlimited data plans for students, the district determined that T-Mobile and Verizon were the best options for students. However, even these hotspot solutions did not completely solve the connectivity issue. "I'll be frank," said McDonald, "We didn't get as many people taking advantage of the two thousand hotspots that we had available." Data collected by the district revealed that only four hundred families reached out for hotspots during the pandemic. McDonald heard similar situations from other local counties. The unreliability of connectivity using hotspots discouraged the request for them by families. The CoSN Study confirmed McDonald and his team's suspicions that the hotspots were a limited ability issue as an online connectivity solution. Video is an essential element of remote learning and accounts for up to 85% of the network traffic; however, data limitations and access throttling on a hotspot can negatively affect video.

Impact of Home Dynamics

Over 70% of students in the districts that took part in the CoSN study live in a household with other students. For Fauquier, the study revealed that many families in the lower end of the economic spectrum shared single-family houses. McDonald and his team discovered

that Comcast supports multiple connections into apartment buildings; however, they did not support multiple connections into single-family houses where many families live. According to McDonald, social dynamics in a home can lead to the primary person in the home owning the Comcast connection being unwilling to share the wi-fi with the other family living in the house. The data from the study led McDonald and his team to reevaluate their one hotspot per family policy. While they are mindful of the increased costs of multiple hotspots per family, they are also aware that students who shared one hotspot device were at a disadvantage when learning online.

County Broadband Initiative

Fauquier County constituency had already recognized the need to expand its reach of broadband to supply services to underserved areas. The connectivity data from the CoSN study was helpful to the county's broadband initiative as it showed the areas that McDonald and his team felt were a strain on access. Unfortunately, while broadband to underserved families would help online learning, the school district and the county have different timelines and ideas on where to focus the broadband initiative. The county is taking a multi-phase approach to target the low-hanging fruit that they can get to quickly. However, this does not solve the immediate need for long-term connectivity solutions for areas inhibited by geographic issues. Nevertheless, the CoSN study aided the county in understanding the extent of the demand for broadband in the community.

Looking to the Future

The second round of the study will be interesting to McDonald and his team at Fauquier County SD to show the critical future traffic loads. With the return to in-person learning and a district no-mandated homework policy, the need for access to the internet at home has dramatically reduced. However, a fourth of the lower economic student population still need reliable connectivity. McDonald and his team understand that hotspots are not a district-wide connectivity solution. Unfortunately, reliable long-term solutions such as private LTE networks come with a quarter-million-dollar price tag and will not happen anytime soon. McDonald said, "I think until we start treating broadband like a utility, it is going to be exceedingly difficult to justify a service provider digging trenches to service to people. Broadband has a way to go, and we still have a road ahead of us regarding broadband to our underserved areas. Hopefully, over the next three or four years, we will see some dent in that effort."