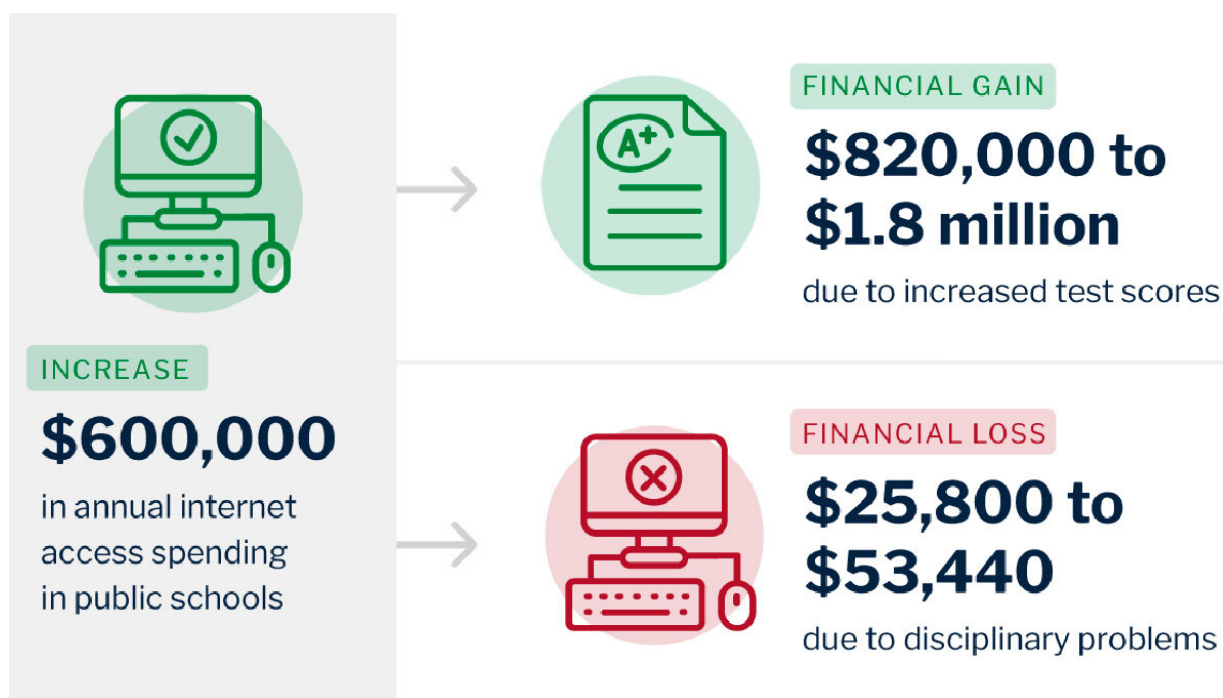


Internet access spending in public schools increases test scores, but also disciplinary problems

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A \$600,000 increase in annual internet access spending produces a financial gain of approximately \$820,000 to \$1.8 million, alongside losses from disciplinary problems totaling \$25,800 to \$53,440, according to new research from Yixing Chen, an assistant professor of marketing at Notre Dame's Mendoza College of Business. Credit: Olivia Rotolo/University of Notre Dame

From 2015 to 2019, public school districts in the United States invested

nearly \$5 billion to upgrade their Wi-Fi networks, according to EducationSuperHighway. However, in the age of COVID-19-mandated virtual learning, millions of K-12 students still lack the minimal connectivity at home for digital learning.

In a new study from the University of Notre Dame, researchers quantify how [school](#) district connectivity increases test scores, but underscore the dark side of technology—increased behavior problems.

A \$600,000 increase in annual [internet access](#) spending produces a [financial gain](#) of approximately \$820,000 to \$1.8 million, alongside losses from disciplinary problems totaling \$25,800 to \$53,440, according to new research from Yixing Chen, an assistant professor of marketing at Notre Dame's Mendoza College of Business. His paper "Investigating the Academic Performance and Disciplinary Consequences of School District Internet Access Spending," which appeared in the February issue of the *Journal of Marketing Research*, also shows the academic gain is larger for schools in counties with better home access to [high-speed internet](#).

Internet access improves students' [academic performance](#), which is associated with higher future income potential. Meanwhile, disciplinary problems leading to students' removal from the classroom incur administrative costs per expulsion, funding losses due to lower average daily attendance rates and operations costs for alternative education programs.

The team compiled data from more than 9,000 [public schools](#) in Texas from 2000 to 2014, including [internet](#) access spending, 11 academic performance indicators and 47 types of school disciplinary problems. They also supplemented the public data with surveys of 3,924 parents.

Empirical evidence about the downside of school internet is lacking,

although there is an ongoing debate on the regulation of school internet access. On the one hand, the concerns by schools and policy advocates about children's access to obscene or harmful content over the internet led to implementation of the Children's Internet Protection Act. On the other hand, there is a serious concern that zealously limiting internet access can undermine learning outcomes.

Chen, who specializes in the social impact of marketing, advises districts not to blindly spend big money on tech, but to think strategically and consider how they will manage the fallout.

"Our research shows high-speed internet serves as an information superhighway to learning opportunities and to negative behaviors such as cyber-bullying," he said. "Therefore, we should reimagine the boundaries of open school internet access and strengthen internet safety training in our curricula."

Despite goals to close the classroom connectivity gap, parents, school districts and policymakers struggle to quantify the impact of internet access spending, and Chen says his team's study—one of the first marketing studies on education—provides a roadmap for schools to evaluate the payoffs of their institutional spending and underscores why bridging the digital divide needs to be done carefully.

"School district administrators can use our findings to effectively communicate to parents the tangible value of their internet access spending," Chen said. "The positive synergy between this and household internet access suggests districts' efforts to incentivize and help parents obtain access can be a good way to help their students, but must be coupled with better strategies for mitigating any negative unintended consequences."

This study was part of Chen's doctoral dissertation, which was selected

as the winner of the 2021 John A. Howard/AMA Doctoral Dissertation Award. Co-authors include Vikas Mittal from Rice University and Shrihari Sridhar from Texas A&M University.

Extending this study, Chen is building a benchmark database of U.S. public schools' performance metrics, finance, school characteristics and neighborhood characteristics. He has also established a research collaboration between Notre Dame and GreatSchools, a K-12 nonprofit, to help public schools with strategic planning.

More information: Yixing Chen et al. Investigating the Academic Performance and Disciplinary Consequences of School District Internet Access Spending, *Journal of Marketing Research* (2020). [DOI: 10.1177/0022243720964130](https://doi.org/10.1177/0022243720964130)

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