



The promise – and pitfalls – of crowdsourced wisdom in K-12 education

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A report examining the potential of online reviews to improve and inform schools

By Carol Lloyd
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It is possible that the many, though not individually good men, yet when they come together may be better, not individually but collectively. – Aristotle

Executive Summary

Research has demonstrated that crowdsourced wisdom — the understanding that *experiencers* hold knowledge that may elude decision-makers — has many benefits for both those using and designing a product or service. From restaurants to hospitals, online reviews allow users to voice opinions in a way that can and does influence other users' perceptions and behaviors. Crowdsourced reviews can also influence the practices of decision-makers and experts being reviewed, by providing a reliable source of data that reflects or even predicts high-stakes outcomes. Studies have found that online reviews can predict product recalls or health code violations, and even accurately reflect hospital mortality rates.

An Opportunity for Education

The education system has the opportunity to use online reviews, just as other sectors have, to understand, learn, and improve. Understanding the nuances of what parents want for their child, their child's school, and schools across the nation merits the effort because so many stakeholders — from educators to policymakers to other parents — stand to gain from this knowledge. Most crucially, online reviews could enable schools and districts to respond to the needs of the moment by listening to the very people who experience the education system. In this way, crowdsourcing parent wisdom about schools may not only offer a scalable approach to deciphering parent desires in a time of increasing polarization, but it may also help the school system evolve.

To create meaningful crowdsourced information at scale, however, online review tools need to be strengthened and refined to ensure they address certain pitfalls. For example, online reviews tend to reflect human bias, skewing either extremely negative or extremely positive. They are also vulnerable to corruption by outside forces, such as payment for a promotional or oppositional review. GreatSchools, a nonprofit that provides school information for more than 150,000 K-12 public and private schools nationwide, has enabled parents, students, and teachers to write online reviews of schools for more than 15 years, collecting more than 800,000 reviews. To strengthen their review tool, they worked with researchers from the University of Notre Dame to identify common problems, such as the polarity of ratings, lower-income parents being less likely to leave reviews, incomplete reviews, and users focusing on only one or two specific topics rather than addressing system-wide issues. GreatSchools then redesigned the online review form such that users first consider important aspects of education, such as safety, family engagement, and social-emotional support, before writing an overall review. Researchers subsequently found that these changes increased review completion, more reviews with greater topic variety, and more high-quality reviews across socioeconomic groups.

Conclusion

Evolving online school review tools will not only improve the quality of feedback that parents offer their schools and their community of fellow parents, but it will produce data that can help schools and districts build a better, more equitable education system. With further data analysis, parent feedback can reveal the challenges and desires of different kinds of parents and students, whether the analysis is based on the family's income or neighborhood or the child's race, primary language, special needs, or interests. When all parents can voice their opinions in a form that decision-makers will hear, absorb, and respond to, then there will be a chance for the often silent partner in K-12 education to be heard.

Introduction

The concept of the wisdom of crowds has deep roots in our evolving social structures. Historically, our faith in popular wisdom has informed how we create institutions that produce more reliable decision-making and ultimately better outcomes. Whether in pursuit of greater justice (trial by jury), good governance (democratic elections), or a

functioning market (consumer demand), the very idea of elevating ordinary voices above those with power has emerged in diverse societies cutting across sectors and political ideologies. Whether the masses are called citizens, consumers, or patients, modern societies have increasingly innovated new structures for putting trust in the capacity of ordinary individuals to make crucial decisions for themselves, inform institutions, and ultimately influence the community as a whole.

Our faith in the wisdom of crowds is far from blind. It stems from the common sense understanding that the people who are not the experts but the *experiencers* hold knowledge that may elude decision-makers. Research has shown that the collective hunch of the many not only balances out the idiosyncrasies of individual knowledge gaps and biases, but often outperforms expert knowledge.¹

With the rise of the internet — the most accessible and unmediated network of information yet conceived — crowdsourcing the knowledge, ideas, and experiences of non-experts has taken on new proportions and possibilities. Yelp and Amazon have transformed how we assess, compare, and choose local services and products. Wikipedia, the crowd-sourced juggernaut tapped into existence by 40,000 unpaid editors every day, has reinvented the static, expert-controlled encyclopedia into a global living multilingual knowledge network.

The education system has been slower to chase the wisdom of the people who experience the system. Broad adoption of school choice and open enrollment reflect efforts to imbue parents, the largest group of adult stakeholders within K-12 education, with the power to vote with their children's feet. But since the education "market" maintains a tightly controlled supply — both in terms of the number and variety of school options and the access to high-quality seats within those options — parents' collective voice has often remained muted.

At this polarized moment in our nation, the voices of certain parent leaders have emerged as potent political forces. The problem is that parent groups that make the

¹ Joshua Becker and Edward "Ned" Smith, "Research: For Crowdsourcing to Work, Everyone Needs an Equal Voice," *Harvard Business Review*. July 30, 2019, <https://hbr.org/2019/07/research-for-crowdsourcing-to-work-everyone-needs-an-equal-voice>

headlines may speak passionately for a small minority,² but fail to represent the sensibilities of most parents.³ Indeed, understanding what “most parents” think remains a holy grail that has eluded many a researcher. Historically, polls on parent opinion paint a complex, even contradictory picture, with parents appreciating their child’s school while judging the system as a whole more harshly. Recent research suggests this paradoxical trend may be accelerating. In a 2023 Gallup Survey, Americans expressed record-low satisfaction rates with the school system (36%). At the same time, a large majority of parents — 76% — report being satisfied with their own child’s school while only 41% approve of the U.S. education system as a whole.⁴

Indeed, the goal of understanding parents has become even more elusive. In this moment of stark political divides and gaping economic disparities, parents’ perspectives on schools and education are growing ever more divergent. A recent poll from the Pew Research Center found sharp distinctions between parents’ educational wants and priorities based on their political party, the types of schools their children attend, their gender, and their race.⁵ At the same time, there were commonalities for many parents emerging from the pandemic years: One survey found that two in three parents worry (some 26% or a lot 39%) about their child staying on track in school.⁶ Another survey found that while 73% think their own child’s school is doing an excellent or good job, a majority (58%) of both school-positive and school-negative parents say it’s time for schools to make bold changes.⁷

² Katie Balevic, “Just 11 people were responsible for most 2021-2022 school book challenges. A Virginia woman challenged 71 out of the 73 books she read,” *Business Insider* Oct 1, 2023, <https://www.businessinsider.com/school-book-challenges-bans-virginia-moms-liberty-education-2023-9>

³ American Library Association, “Voters Oppose Book Bans in Libraries,” Hart Research Associates and North Star Opinion Research, 2022, <https://www.ala.org/advocacy/voters-oppose-book-bans-libraries>

⁴ Megan Brenan, “K-12 Education Satisfaction in U.S. Ties Record Low,” *Gallup News*, 2023, <https://news.gallup.com/poll/510401/education-satisfaction-ties-record-low.aspx>. Only 36% of respondents (including parents and nonparents) report being satisfied with U.S. K-12 education quality, matching record low levels in 2000 whereas 76% of K-12 parents report being satisfied with own child’s school, and only 41% of parents report being satisfied with U.S. K-12 education broadly.

⁵ Juliana Menasche Horowitz, “Parents Differ Sharply by Party Over What Their K-12 Children Should Learn in School,” *Pew Research* 2022, <https://www.pewresearch.org/social-trends/2022/10/26/parents-differ-sharply-by-party-over-what-their-k-12-children-should-learn-in-school/>

⁶ National Parents Union Survey, *Echelon Insights*, 2022, <https://nationalparentsunion.org/wp-content/uploads/2022/03/NPU-Topline-March-2022.pdf>

⁷ Beacon Research, “A National Survey of Parents for the Walton Family Foundation,” 2021, <https://8ce82b94a8c4fdc3ea6d-b1d233e3bc3cb10858bea65ff05e18f2.ssl.cf2.rackcdn.com/f7/05/b30b45ea4186b058ef9ce54e6634/final-wff-april-2021-charts-6.pdf>

Its complexity notwithstanding, understanding the nuances of what parents want — individually and en masse — for their child, their child’s school, and schools across the nation merits the effort because so many stakeholders stand to gain from this knowledge. Policymakers could use the information to better inform their education recommendations. Learning providers attempting to attract families could apply the insights to the development of their products. Parents could use the information to understand what other parents experience and care about as they seek educational resources for their children. But perhaps the most significant impact of these insights is on schools and districts. By enabling schools and districts to listen to the very people who are on the ground experiencing a fragmented system, it would allow system leaders to respond to the needs of the moment. In this way, crowdsourcing parent wisdom about schools may not only offer a scalable approach to deciphering parent desires in a time of increasing polarization, but it may also help the school system evolve.

But how might this happen at scale across the nation? One natural arena for crowdsourcing parent wisdom already exists in the form of online school reviews. This begs the question: are online reviews a good tool for the job at hand? Can they produce information that results in “crowd wisdom” that is accurate, honest, and gets to the root of issues rather than blandly skimming the surface? This paper reviews research on online reviews from multiple sectors to understand this ubiquitous form of user-generated content and its potential for understanding and improving K-12 education.

The online review: a wellspring of crowd-sourced wisdom — or breeding ground for the madness of crowds?

A review of the research of online reviews suggests that this common tool for generating user opinions bears many of the pitfalls of internet crowdsourcing. Research has found that online review systems can be vulnerable to corruption (as when Yelp enables restaurateurs to erase negative reviews) and gameable (as when companies pay consumers to post positive reviews for a fee or negative ones about competitors). They are also susceptible to human bias: research has shown that online reviews typically reflect the experiences of those who are either more happy or more unhappy than average about a given product or service. A study of 280 million reviews

from 25 major online platforms investigated the polarity of online review distributions, finding that the majority of reviews occupy the very positive end of the rating scale, with very few middling reviews, and more at the negative end of the scale.⁸

Despite such drawbacks, nearly two decades of research suggest that online reviews are not simply a channel for emotionally charged individuals to broadcast their adoration or animus. In fact, they may have more advantages than disadvantages for both the average person and decision-makers. Research from multiple sectors offers evidence that online reviews can and do influence both users' perceptions and behavior.⁹ In a survey by the Pew Research Center, 82% of U.S. adults reported that they sometimes or always read online reviews before purchasing products or services.¹⁰ In one study¹¹ of Yelp restaurant reviews, researchers found that online reviews so influenced diners' behavior that it was measurable financially. A one-star increase in Yelp ratings resulted in a 5% to 9% increase in an independent restaurant's revenue. There is also evidence that online reviews may influence the practices of decision-makers and experts being reviewed. For instance, one study analyzed online reviews to understand what patients want from doctors.¹² Its explicit purpose: since online reviews affect a doctor or hospital's bottom line, doctors and hospitals should use reviews to learn about and adopt more patient-friendly practices.

Equally as significant as the online review's capacity to influence, some research suggests that when analyzed appropriately, online reviews can form a reliable source of data that reflects or even predicts high-stakes outcomes. For instance, early analyses of product reviews found that online reviews can signal whether a product may be

⁸ Verena Schoenmueller et al. "The Polarity of Online Reviews: Prevalence, Drivers and Implications" *Journal of Marketing Research*, Volume 57, Issue 5, 2020, <https://doi.org/10.1177/0022243720941832>

⁹ Kushal Dave, Steve Lawrence, and David M Pennock. "Mining the peanut gallery: Opinion extraction and semantic classification of product reviews." *In Proceedings of the 12th international conference on World Wide Web, May 2003*, pages 519–528, <https://dl.acm.org/doi/10.1145/775152.775226>

¹⁰ Aaron Smith, Monica Anderson, and Dana Page. "Online Shopping and E-commerce." *Pew Research*, 2016, <https://www.pewresearch.org/internet/2016/12/19/online-shopping-and-e-commerce/>

¹¹ Luca, Michael. "[Reviews, Reputation, and Revenue: The Case of Yelp.com.](#)" Harvard Business School Working Paper, No. 12-016, September 2011. (Revised March 2016.) <https://www.hbs.edu/faculty/Pages/item.aspx?num=41233>

¹² Ellis M Berns et al. "Analysis of Patients' Online Reviews of Orthopaedic Surgeons." *Journal of American Academy of Orthopedic Surgeons Global Research and Reviews*, Oct 2022, https://journals.lww.com/jaaosglobal/fulltext/2022/10000/analysis_of_patients_online_reviews_of.6.aspx

recalled¹³ or exhibit safety hazards.¹⁴ Similarly, a natural language processing analysis found that Yelp restaurant reviews predicted health code violations.¹⁵ Finally, recent research looking at online patient reviews of hospitals found that this form of patient feedback accurately reflected hospital mortality rates.¹⁶

Do online school reviews offer a new lens on K-12 education?

Research suggests that parents' reviews of their children's schools exhibit similar strengths and weaknesses as online reviews in other sectors, such as medicine or consumer products. GreatSchools, a nonprofit that provides school information for more than 150,000 K-12 public and private schools across the nation, has enabled parents, students, and teachers to write online reviews of schools for more than 15 years. During this period, the organization collected more than 800,000 reviews that include both open-field text and a 1-5 star rating system. Multidimensional ratings, added in 2018, enable users to rate the school based on broad topics including teaching, learning, special education, social-emotional support, safety, and family engagement. Although some students, teachers, and community members leave school reviews, the large majority come from parents whose children attend the school.

Like research on other kinds of online reviews, studies have found that school reviews skew toward extremes on either end of the opinion spectrum, with fewer in the middle. Moderation tools can help mitigate campaigns by school boosters and bashers alike, but users typically leave few moderate or neutral reviews. Researchers speculate that

¹³ Shreesh Kumara Bhat and Aron Culotta. "Identifying leading indicators of product recalls from online reviews using positive unlabeled learning and domain adaptation." In Eleventh International AAAI Conference on Web and Social Media, 2017, <https://doi.org/10.1609/icwsm.v11i1.14919>

¹⁴ David Goldberg and Nohel Zaman. "Topic Modeling and Transfer Learning for Automated Surveillance of Injury Reports in Consumer Product Reviews." In Proceedings of the 53rd Hawaii International Conference on System Sciences, 2020, <https://scholarspace.manoa.hawaii.edu/items/2a65ce2e-89dd-4b6a-9112-768d3022381c>

¹⁵ Jun Seok Kang et al. "Where not to eat? Improving public policy by predicting hygiene inspections using online reviews." In Proceedings of the 2013 conference on empirical methods in natural language processing, Oct 2013, 1443-1448, <https://aclanthology.org/D13-1150/>

¹⁶ Daniel C. Stokes, MD et al. "Association Between Crowdsourced Health Care Facility Ratings and Mortality in US Counties," *JAMA Network Open*, 2021, <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2785238>

One limitation: these findings were affected by locale. Online reviews accurately reflected mortality rates within that county, not on a state or national level. This suggests that the accuracy of online reviews may be affected by a community's exposure to what constitutes high or low quality.

this skewage toward sentiment extremes probably doesn't reflect the reality that there are no average schools, but as is the case with other online reviews, the motivation to write a school review is often triggered by extreme experiences.

Despite such shortcomings, researchers at Tulane University who used natural language models to analyze more than 300,000 online reviews on GreatSchools from a 10-year period (2008-2018) have found that the textual language in reviews can serve as a leading indicator of meaningful facets of a school's outcomes and makeup.¹⁷ They found that the appearance of certain words and phrases in reviews can predict changes in a school's diversity and test scores. More specifically, reviews that discuss changes in school leadership, a focus on testing, as well as discussions of diversity and school safety can signal future changes in both the school's test scores and socio-demographic makeup. As the researchers note, schools that increase in Math and Reading Language Arts scores are more likely to have reviews with words that address the category "instruction & learning" including terms like "science," "homework," "rigorous," and "AP." What's more, the information produced by these reviews is meaningful on a per-school basis, so this information can be used to understand individual schools, not just broad national trends. Finally, the researchers found that the reviews were *more predictive than the metrics themselves*. For instance, although past test scores tend to predict future test scores, the information in the review language associated with improved test scores provides more accurate predictions than past test scores alone.

Though the researchers do not make claims about whether the perceptions voiced in school reviews reflect or cause changes in schools, the implications of these findings are striking. They suggest that online reviews reflect important realities about schools and may offer valuable insights into the *future outcomes* of complex institutions. This information could be useful for both experts and experiencers. As the Tulane University researchers observed, "For administrators, having a predictive model of school outcomes, and having those outcomes tied to topics discussed by parents and/or students could help monitor changing community perceptions of the schools

¹⁷ Linsen Li et al. "Online Reviews Are Leading Indicators of Changes in K-12 School Attributes," WWW '23: Proceedings of the ACM Web Conference April 2023, 2808–2818, <https://doi.org/10.1145/3543507.358353> & <https://cs.tulane.edu/~aculotta/pubs/li2023online.pdf>

they administer.... [F]or parents, a richer understanding of the trajectory of a particular school may affect the choice of which school to attend.”

Although the evidence suggesting that online school reviews have predictive value for meaningful aspects of education is promising, there’s good reason to design the tool itself to mitigate the problems common to online reviews. In a recent effort to improve the review tool, GreatSchools began by identifying problems common to online reviews, including feedback underprovision (low percentage of users writing a review), the aforementioned polarity of ratings distribution (see Figure 1), socioeconomic disparities between reviewers, with lower-income parents less likely to leave reviews, and low topical variety with users often focusing on only one or two topics rather than addressing a diverse array of topics. Analysis of unpublished reviews also reveals a substantial dropoff by users in the middle of a review, indicating that users may face barriers that make it difficult to complete the task. This finding is of particular importance because painting a robust, multifaceted picture of a particular school requires multiple high-quality reviews, with individual opinions coming together to form a wiser collective. Internal user research has also shown that when a school profile has too few reviews, they question the credibility or authenticity of the reviews.

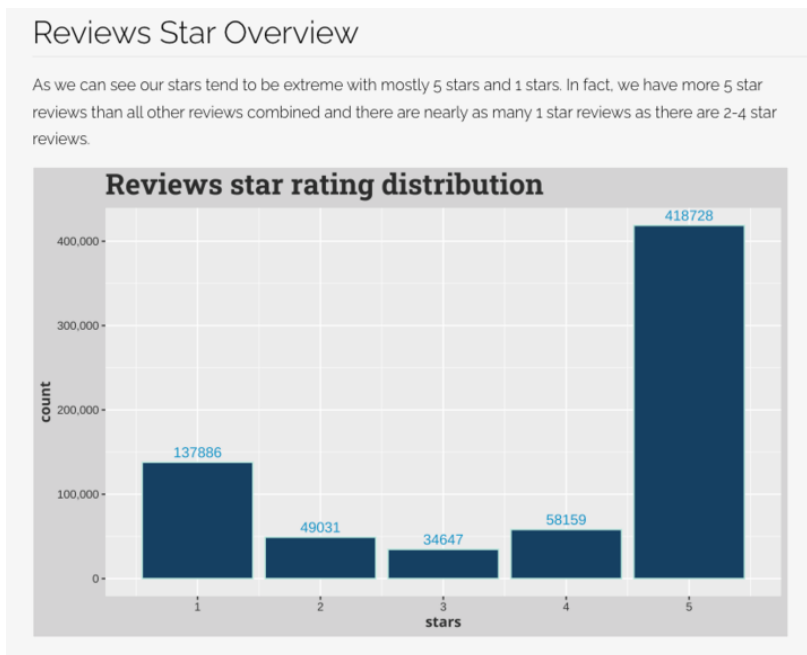


Figure 1.

With these challenges in mind, Yixing Chen and John Lalor, researchers at the Mendoza College of Business, University of Notre Dame, recently embarked on an experiment with the product team to uncover whether GreatSchools' review tool could be refined 1) to help increase the number of completed reviews, and 2) to improve the quality of reviews that users submit. (The experiment did not target polarity of ratings distribution.) Before the experiment, the online review tool was designed such that users were first asked to rate the school on a 1-5 star rating and then write a review in an open text field. Then they were asked to rate different aspects of the school on topics (family engagement, safety, learning, teaching, special education, and social-emotional support) on a 1- to 5-star scale (Figure 2, Panel A). "We hypothesized that exposing users to multi-dimensional aspects of school quality *prior to* leaving a written review (Figure 2, Panel B) might make these aspects more accessible in users' minds and thus facilitate the writing process of speaking to topics aligned to school effectiveness," the researchers said.¹⁸

Treatment 1

Write a review of Classical Preparatory School

Overall experience (required)
☆☆☆☆☆

Would you recommend this school?
 yes no

Review (required) [Review guidelines](#)

Example: What is your experience like at this school? How would you describe the community? What is it like in the classroom? Please explain.

Learning
In my experience, students at this school feel excited about what they're learning.
DISAGREE ○ ○ ○ ○ ○ AGREE


Special Education
This school provides students with disabilities the support and accommodations they require.
DISAGREE ○ ○ ○ ○ ○ AGREE

Teaching
In my experience, teachers at this school are respectful, supportive, and motivate their students to learn.
DISAGREE ○ ○ ○ ○ ○ AGREE

Safety
In my experience, this school provides an environment safe from violence, discrimination, and harsh punishment.
DISAGREE ○ ○ ○ ○ ○ AGREE

Social-emotional support
In my experience, this school supports students' mental health and emotional well-being.
DISAGREE ○ ○ ○ ○ ○ AGREE

Family Engagement
In my experience, the school welcomes and includes families as partners in their children's learning.
DISAGREE ○ ○ ○ ○ ○ AGREE

Your relationship with this school:
 Parent/guardian >

Authentication only - we never sell personal information. By submitting a review, you agree to the GreatSchools [Terms of Use](#) and [Privacy Policy](#).

Submit your review

Figure 2, Panel A

¹⁸ Chen, Yixing* et al (2023), "Advancing the Design of Online Review Systems in Education: A Field Experiment on Multidimensional Ratings," working paper.

Treatment 2

Write a review of Penn High School

Overall experience (required)
☆☆☆☆☆

Would you recommend this school?
 yes no

Learning
In my experience, students at this school feel excited about what they're learning.
DISAGREE ○○○○○ AGREE

Special Education
This school provides students with disabilities the support and accommodations they require.
DISAGREE ○○○○○ AGREE

Teaching
In my experience, teachers at this school are respectful, supportive, and motivate their students to learn.
DISAGREE ○○○○○ AGREE

Safety
In my experience, this school provides an environment safe from violence, discrimination, and harsh punishment.
DISAGREE ○○○○○ AGREE

Social-emotional support
In my experience, this school supports students' mental health and emotional well-being.
DISAGREE ○○○○○ AGREE

Family Engagement
In my experience, the school welcomes and includes families as partners in their children's learning.
DISAGREE ○○○○○ AGREE

Review (required) [Review guidelines](#)

Example: What is your experience like at this school? How would you describe the community? What is it like in the classroom? Please explain.

Your relationship with this school: [Parent/guardian](#)

Authentication only - we never sell personal information. By submitting a review, you agree to the GreatSchools [Terms of Use](#) and [Privacy Policy](#).

[Submit your review](#)

Figure 2, Panel B

Their findings supported the hypothesis. By flipping the order of the questions and asking users to consider and rate the school based on the six topics first before being asked to write an overall review, the researchers found that:

- Review completion increased.
- Reviews became more informative with a greater balance between topic variety and topic specificity.
- Disparities decreased. Using the new form, users reviewing schools with a higher number of students from low-income households were more likely to produce high-quality, complete reviews than with the old format.

As a direct outcome of the experiment, GreatSchools made the treatment condition permanent on the reviews platform, observing a significant growth in the number of school reviews, as well as reviews with more variety and reduced disparities.

New possibilities

Can online school review tools be designed to inspire parents to report on their experiences in a balanced, multi-faceted way that addresses the totality of their experience? Despite common shortcomings of this type of user-generated content, research suggests that online reviews across sectors (including complex high-stakes

systems like education and health care) *already do* signal important, sometimes difficult realities about quality and outcomes. What's more, recent experiments suggest that improvements in user design, language, and presentation can nudge users toward reflecting in more nuanced ways and ultimately providing better information.

Such information can support evolving our K-12 education system in a number of ways. Thoughtful school reviews can serve other parents not just as a window into a new school or learning opportunity but as a mirror for understanding their own values. By sharing experiences at their own children's schools, parents can help other parents not simply find schools, but recognize similar hopes, needs, and aspirations for what is possible for their children's education.

Collectively this parent-perception information can also help predict or encapsulate what is going on inside schools, offering insights about the day-to-day experiences of students, details on important topics that affect learning, and what families are hoping for and looking for. With further data analysis, the information can reveal the challenges and desires of different kinds of parents and students, whether the analysis is based on the family's income or neighborhood or the child's race, primary language, special needs, or interests. Such insights can then be shared with decision-makers to move them to adopt the policies, programs, and pedagogies that families feel are relevant, inclusive, and valuable.

Such is the promise of crowd-sourcing parent information about K-12 schools. It not only has the power to provide parents with a new lens on the nation's schools, but it can also offer a way to reflect families' experiences with their children's schools in a way that is both persuasive and relevant to important student outcomes. If high-quality parent reviews can be produced, improved, and shared at scale, there's a chance that the holy grail of understanding and listening to ordinary parents, in all their diversity and complexity, will be within reach. When all parents — ordinary parents, and not just the mobilized minority — have a chance to speak their truth to decision-makers in a form that decision-makers will hear, absorb, and respond to, then there is a chance for the often silent partner in K-12 education to be heard. Only then will parent wisdom take its rightful place in our education system, where parents are embraced as informed experts on their own children and full partners in the education process.



GreatSchools.org
66 Franklin St, Suite 300
Oakland, California 94607
United States

www.greatschools.org

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