Thinking about Quality and Schools

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Previous work around school *quality* focused on identifying schools that were "beating the odds." A typical approach has been to identify outlier schools by analyzing student outcomes, study these schools to determine what they appear to be doing well, and hopefully share these practices with other schools. In our early thinking about improving school quality, we began reframing quality around adult behaviors and inputs and the context they build in a school – factors we can leverage. This redefining of *quality* around adults resonated with us because of problems we perceive with approaches that place the most weight on student outcomes, which are biased by family poverty and factors outside of schools' control. Next, we asked "If we have metrics on adults, can we predict the student outcomes used in previous accountability metrics?" Eventually this reframing could serve as a new nomenclature for quality and a model for guiding improvement.

A review of the Effective Schools literature showed considerable overlap in the factors and conditions associated with schools "… in which students were mastering the curriculum at a higher rate and to a higher level than would be predicted based on students' family background, gender, and racial and ethnic identification." (National Center for Effective Schools Research and Development Foundation, 2003). A significant distinction between our work and the Effective Schools literature is that we separated student-related factors or outcomes from the predictors. Hence, we remove student outcomes from the formula so that the quality determination is not contingent on the characteristics of students in the school. After several theoretical iterations of the key adult factors (we call them drivers) affecting school quality, we finally reshaped our model to align with City Schools's School Effectiveness Review Framework by adopting similar terms. Ultimately, this will facilitate alignment between BCF's work and that of City Schools. The six drivers and their theoretical descriptions are:

> **Safety:** Students, teachers, and staff feel free of physical or psychological harm.
>
> **Welcoming:** Mutually welcoming and beneficial relationships are established between the school and parents/guardians.
>
> **Instruction:** Teacher creates a classroom environment that promotes learning, mutual respect, and high expectations. Teachers plan and deliver highly effective instruction that is relevant, accurate and promotes higher-level thinking.
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> **Teachers:** Teachers have the professional capacity to deliver highly effective instruction and meet the learning needs of all students.
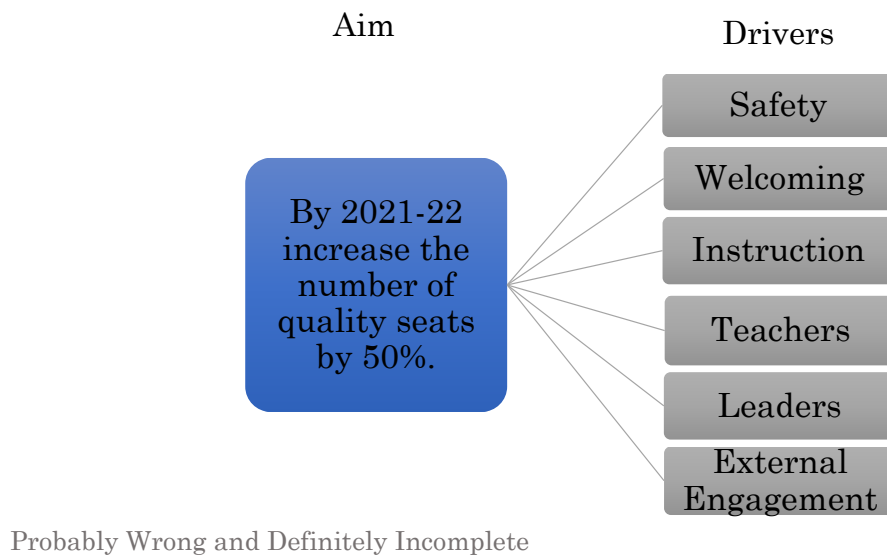>
> **Leaders:** School leaders have the professional capacity to establish and communicate goals and strategic plans, serve as instructional leaders by supporting teacher growth, be responsive to and inclusive of staff and community, and provide the necessary structures to support the other primary drivers.
>
> **External Engagement:** Highly effective, sustained partnerships exist with relevant external community organizations and services.

We used this framework to create our driver diagram (see Figure 1). The purpose of the driver diagram is to establish the factors, that if appropriately leveraged, will achieve the desired aim(s). To be achievable, the aim should include a measurable outcome and specify a timeframe. All driver diagrams are incomplete and probably wrong, but are an important starting place to organize theoretical frameworks into a problem-solution diagram.

As a team, we believe that by leveraging the six drivers we can achieve our aim to increase, by 50%, the number of quality seats by 2021-22. This project has allowed us to think about how to operationalize this model and develop prediction models examining student outcomes of attendance, academics, and behaviors.

Figure 1. Driver diagram to increase number of quality seats provided by school or district.

Aim

Drivers

By 2021-22 increase the number of quality seats by 50%.

Safety

Welcoming

Instruction

Teachers

Leaders

External Engagement

Probably Wrong and Definitely Incomplete

We implemented the driver diagram by identifying metrics for each of the drivers. We understood that we were limited by what data existed and also by what data were in BERC's archive. In Table 1, we operationally describe the drivers and list the metrics used to measure each, across two years.

Table 1

Driver Descriptions with Corresponding Year 1 and Year 2 Metrics

Driver	Year 1 Measures (2014-15)	Year 2 Measures (2015-16)
Leaders Measures of the experience, knowledge, and skills leaders bring to the school.	Administration factor from City Schools' School Survey	Administration factor from City Schools' School Survey Principals' years in position
Teachers A measure of the experience, knowledge and skills that teachers bring to the classroom.	% of teachers Certified % of Teachers missing fewer than 10 days of school	% of teachers Certified % of Teachers missing fewer than 10 days of school Teachers' average years-experience
Safety Measures that indicate students feel safe and free from distractions to learning.	Safety factor from City Schools' School Survey	Safety factor from City Schools' School Survey
Welcoming Measure of whether the school staff effectively communicates with and engages student families.	Parent factor from City Schools' School Survey	Parent factor from City Schools' School Survey
Instruction Measures of how teachers structure their classroom environment, how they use instruction time, and promote academic rigor.	Core Instruction factor from Student Survey on Teacher Practice Classroom Environment factor from Student Survey on Teacher Practice	Teacher Effectiveness Scores: % of teachers at each school rated as effective or highly effective
External Partnerships Measures of whether school staff effectively communicate with community partners and harness community-based resources.	No data available	No data available

Preliminary Findings

Regression models control for total student enrollment; % LEP students; % FARMS-eligible students; % special education students; student-teacher ratio; % of students on benchmark in Amplify fall (for Elementary/Middle school models with spring Amplify outcomes); and entrance criteria (for secondary models). Drivers were included independently of each other in separate models, as several are highly correlated with each other.

We began our analysis looking at elementary-only schools (schools serving pre-K/K to grade 5) and then elementary and middle schools. Per Tables 2 below, each of the five drivers had statistically significant relationships to one or more of the student outcomes, after controlling for characteristics of each school's student body. The only student outcome tested that was not significantly related to at least one of the five drivers was student promotion to the next grade in the K-8 schools. Secondary school models provided far fewer statistically significant results due largely to the smaller sample size. There were 137 elementary/middle schools, but only 38 secondary schools in the data set. Thus, in many cases, the regression models at the secondary level revealed very strong relationships between the drivers and student outcomes (with substantial effect sizes ranging from 0.20 to 0.40), but statistical significance was not achieved due to the small sample size given the number of covariates included in the model.

Table 2

Statistically Significant Relationships Between Drivers and Outcomes for K-8 Schools

Outcome	Safety	Welcoming	Instruction	Teachers	Leaders
% of Students Chronically Absent	Both	Both	Both	Both	Year 1
% of Students Attending over 97% of School Days	Both	Both	Both	Both	Year 1
% of Students with a Course Failure	Year 2	Both	Year 2		
% of Students Promoted					Year 2
% of Students Meeting or Exceeding Expectations on PARCC ELA	Both	Both	Both	Both	Year 1
% of Students Meeting or Exceeding Expectations on PARCC Math	Both	Both	Both	Year 2	Year 1
% of Students on Benchmark – Spring Amplify	Year 2		Year 1		

Key			
	P<.05 in Year 1: 2014-15	P<.05 in Year 2: 2015-16	P<.05 in both Year 1 & 2

Next Steps

We hope to continue our analysis by further developing these models. This fall we will shift to and complete a more rigorous methodology to test and answer our questions.

As a second methodological issue, the analysis of secondary schools did not yield the same findings. We hypothesize that this is because the model may require different drivers, i.e., that different data would fit the model better. For example, challenges in secondary school might relate to developmental transitions, such as the growing influence of peers on youth and their own transition into adulthood.

Related to the last point, a third consideration is that we are hampered by the limitation of *available* data. If the factors we believe are influencing quality are not measured, or data are not accessible, we are limited in how we might test our model and guide improvement efforts. For instance, more detailed human capital data might shed light on the instruction teachers bring to the classroom. High school models may better fit data like work-based learning opportunities and mentorship.

Ultimately, given that the driver diagram has validity, it could shape or be formally integrated into existing dashboard metrics and used to guide improvement efforts around adult factors in school. Informally, the diagram could be used by school-level staff to develop their own aim, metrics, and change ideas.