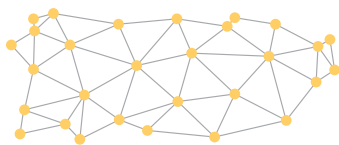


EDUCATION GAP ANALYSIS



CASE STUDY APPROACH BY

ABRE
PUERTO RICO



fundación
COLIBRÍ

WALTON FAMILY
FOUNDATION





TABLE OF CONTENTS

- 2 Preface
- 5 Introduction to ABRE PR
- 6 Background and Introduction
- 10 Methodology
- 15 Aggregate Results
- 18 Results of school profiles
 - 20 Aggregate Results of Principals Profiles
 - 21 Aggregate Results of Teachers' Profiles
 - 23 Aggregate Results of Parents' Profile
 - 25 Aggregate Results of Psychometric Questionnaires
 - 28 General Description of Qualitative (Interviews) Analysis
 - 31 Aggregate Results of Interviews to School Principals
- 32 Case Study: Aguadilla, PR
- 38 Case Study: Arecibo, PR
- 44 Case Study: Barranquitas, PR
- 49 Case Study: Caguas, PR
- 54 Case Study: Carolina, PR
- 59 Case Study: Humacao, PR
- 64 Case Study: Loiza, PR
- 66 Conclusions and Public Policy Recommendations
- 81 Glossary
- 84 Appendix

PREFACE

Fundación Colibrí (Colibrí) and Walton Family Foundation (WFF) are proud to partner in support of the work of ABRE, Puerto Rico (ABRE) and its publication of the study, Education Gap Analysis: Case Study Approach. Colibrí and WFF come together as committed and optimistic philanthropic collaborators who share the core belief that a quality education opens a path of opportunity for all people. The Foundations share a systematic approach to improving education and building a healthy ecosystem that promotes transparency and accountability to students and parents. We believe that each person has unique contributions to make in service of their community and we invest in schools that provide appropriate conditions and relevant learning experiences conducive to success, where educators motivate students to become lifelong learners and effective problem solvers of the complex challenges in today's society and world.

ABRE has played a critical role in promoting a culture of data and transparency in Puerto Rico. Thanks to the support of local philanthropy, the organization published Puerto Rico's first school index, *Abre tu Escuela*, a data-driven tool that allows citizens to stay informed and engaged. By supporting their current research, Colibrí and WFF seek to build upon ABRE's previous work on public school performance and data visualization tools. In this new report, Education Gap Analysis: Case Study Approach, ABRE looks beyond the numeric data to dive deeper and identify the school conditions, climate, resources, leadership, and practices that may play a role in improving student outcomes, using the district's standardized test results as the basis.

If educators and leaders seek to promote an analytical environment that embraces continuous learning, they must first embrace a culture that

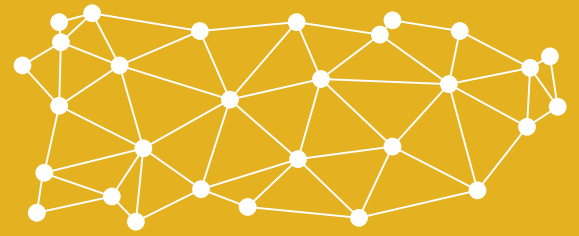
sets the conditions for informed decision-making, planning, and sustained instructional improvement. This requires the collection, analysis, and sharing of hard data as well as insights about school climate, parental involvement, and student outcomes. It is only by reflecting on this information that one can assess performance and develop strategies for individual and system-wide improvement. Engaging parents in the conversation is key. Parents can be powerful advocates for improved systemic conditions and equitable distribution of school resources.

In Education Gap Analysis: Case Study Approach, ABRE begins to identify and highlight what is working for students so that parents, education leaders, and policymakers have a compass that helps guide and inform their decisions on the allocation of scarce resources and create the conditions for system-wide success. By making data and information accessible, ABRE seeks to raise awareness and gain support for public policies and conditions that facilitate educational transformation across the Island. With data, parents can more precisely promote policies and practices that improve student motivation, support enriching educational environments for the growth and success of all students, improve effective teaching practices, and advance the wellbeing of the school community.

Fundación Colibrí and Walton Family Foundation want to thank ABRE Puerto Rico for the invaluable experience and opportunity of collaborating in this project. We also wish to thank the Puerto Rico Department of Education, the school principals, teachers, and parents from participating schools for their cooperation and willingness to share data, their experiences, insights, learnings, and recommendations. Let's keep this conversation going and make quality education a reality for all in Puerto Rico.

ABRE

PUERTO RICO



A BRIEF INTRODUCTION TO ABRE PUERTO RICO

ABRE Puerto Rico (ABRE) is a nonpartisan, not-for-profit venture focused on fostering and promoting an engaged and participatory Puerto Rico by providing its citizens with free, transparent access to information, data analyses, and interactive technology. We push for government transparency by:

WE PUSH FOR GOVERNMENT TRANSPARENCY BY:

- compiling, publishing, and analyzing government data,
- developing experiences, such as interactive visualizations and maps, and
- educating and engaging citizens through data-driven accountability.

Key Historical Events

2012 **September 2012 - First Steps** ABRE Puerto Rico was born out of the restlessness of a group of Puerto Ricans in the diaspora with a deep interest in contributing to the island's public debates.

2013 **January 2013 - Operations Begin** The first Board of Directors is assembled, along with a team of advisors, focused on acquiring and disseminating public data or data that should be on the public domain. The overarching goals were promoting government transparency and accountability.

2014 **March 2014 - First Tool for open data** With the support of the Sunlight Foundation, ABRE designs and deploys Puerto Rico's first open data platform.

May 2014 - Partnership with the newspaper "El Nuevo Día" A data partnership is forged with a local newspaper -El Nuevo Día-, to examine and analyze the budget of the Government of Puerto Rico. An interactive app is created that breaks down all budgetary expenditures between 1970 and 2015.

2015 **March 2015 - Political Campaign Finance Transparency** A historic agreement - the first of its kind - is forged with the Electoral Comptroller's Office (OEC) to publish all contributions (donations) to political campaigns in Puerto Rico. A digital tool is created for searching and visualizing these donations.

October 2015 - Municipal Fiscal Health Index ABRE launches the first Municipal Fiscal Health Index in Puerto Rico. For the first time, the financial statement of every municipality on the island is available online for citizens to review.

December 2015 - Municipal Fiscal Health Digital Portal With the support of The Knight Foundation, ABRE Puerto Rico builds an interactive application for the Municipal Fiscal Health Index.

2016 **February 2016 - Puerto Rico Decides** ABRE Puerto Rico unites with GFR Media to create Puerto Rico Decides 2016, an informative space to provide nonpartisan information to voters during the election period.

2017 **March 2017 - Partnership with the Department of Education** Another historic agreement - between ABRE Puerto Rico and the Department of Education - is signed which makes available to the public an unprecedented level of information related to public schools in Puerto Rico.

September 2017 - Alliance with the Banco Popular Foundation The Banco Popular Foundation signs an agreement with ABRE Puerto Rico to support the creation of the first ever school performance index, and a digital portal for easy access to data.

2018 **March 2018 - School Performance Index Launched** A new digital tool is offered to the community, enabling citizens to intuitively evaluate the academic performance of public schools across Puerto Rico.

2019 **February 2019 - ABRE Tu Escuela II** For the second consecutive year, the School Performance Index was published. The newest edition of the online tool enables users to compare the performance of individual schools against previous year scores.

2020 **October 2020 - Municipal Fiscal Health Index VI** For the seventh consecutive year, ABRE Puerto Rico published its Municipal Fiscal Health Index, based on municipal finance data from the 2015-2019 fiscal year.

BACKGROUND

In March 2018, ABRE launched ABRE Tu Escuela (abretuescuola.org), Puerto Rico's first citizen-driven initiative that provides a digital tool for evaluating the performance of individual public schools throughout the island. It includes detailed performance reports for over 1,200 schools, comparisons between these schools, school closure data and downloadable reports. In addition, it has enabled all parents to access their children's school performance data, even from their mobile phone. Since its launch, the website has received over 100,000 visits from parents and school community members.

WHY DO SCHOOLS WITH SIMILAR CHARACTERISTICS AND WITHIN CLOSE PROXIMITY TO EACH OTHER DIFFER SO MUCH IN THEIR ACADEMIC PROFICIENCY?



During 2019, ABRE decided to further its research towards discovering the underlying reasons for the discrepancies found in school performance among geographically proximate schools with similar enrollment and comparable poverty levels. This resulted in the research proposal titled Education Gap Analysis: A Case Study Approach, which was submitted to the Walton Family Foundation and the Fundación Colibrí as possible funders. Both foundations decided to collaborate with ABRE and reached a funding agreement whereby ABRE would conduct between five and seven case study analyses by paired schools. These case study analyses would be undertaken to detect (if any) enabling factors for academic performance, with special focus on geographically proximate schools with similar student profiles but different academic outcomes. One of the main questions to be answered was: why do schools with similar characteristics and within close proximity to each other differ so much in their academic proficiency? ABRE wanted to gather data from each school to pinpoint the possible factors that might be influencing academic proficiency, as well as to better understand the context in which each school

operates.

School Selection Process

Using proficiency data from Abretuescuola.org ABRE pre-selected an initial group of 58 elementary schools that met the following criteria.

- The highest school grade of a given school had to be 8th grade. Such condition was established given the historically low performance (META-PR¹ scores) of schools with grade offerings above 8th grade. Moreover, the traits and conditions of larger schools could potentially affect the research.
- The school could not be considered a “specialized school” in the areas of Fine Arts, Sciences and Math. Such conditions allowed for a *fair* comparison of schools with similar organizational and operational structures.
- The total enrollment, socioeconomic status of students and the student-teacher ratio, must all be within similar levels.
- Each school must have a “pair” school with opposite results in their META-PR tests. That is, one school must have a proficiency level of A or B and the other school must have a proficiency level of D or F.
- Each pair of schools must be within geographical proximity of each other (less than a 5-minute drive).
 - In the case of Barranquitas, given its rural condition, the proximity factor was expanded to 10 minutes apart by car.

After selecting the 58 schools that met the aforementioned criteria, a smaller group of 25 schools were selected using a similarity matrix per the differences between schools. The reduced group of schools were submitted to the PRDE (via the Secretary of Education) for the final selection of 14 schools that were to be analyzed in the proposed research.

Given the scope of the research, all previously mentioned 14 schools were selected. The sample was categorized in 7 pairs, each comprising one High Proficiency School (HPS) and one Low Proficiency School (LPS). The following educational regions² were chosen to be included in the

¹ META-PR tests are a series of standardized assessments administered by Puerto Rico's Department of Education that measure students' academic performance in each school unit.

² Educational regions refer to the geographic and institutional definition of “school districts” in Puerto Rico. These are commonly known as *Regiones Educativas* and are named after the largest municipality in the area. Thus, the name of an educational region will coincide with the name of the leading municipality in the area.

META-PR TEST SCORES (2018-2019)



% Proficiency per Region

Arecibo	66.17%
Bayamon	60.45%
Caguas	67.01%
Humacao	58.18%
Mayagüez	64.00%
Ponce	64.18%
San Juan	57.78%

research: Arecibo (1 pair), Caguas (2 pairs were considered in order to include a pair of schools located in the rural area), Humacao (2 pairs were considered as to include a very low poverty level school), Mayagüez (1 pair) and San Juan (1 pair). In the case of Bayamón, no schools were selected given that no differences in META test results were found. That is, only schools with the same proficiency scores were found in the database.

Likewise, no schools from the Ponce region were included in the research given the January 2020 earthquakes.³

This report is the result of such research and it aims to thoroughly review the underlying reasons that affect school performance for each of the case studies. The schools included are all geographically distributed throughout the island.⁴

³ Any kind of data collected under those circumstances would not have resembled the reality before the earthquakes and would not have shown accurate information due to the impact caused by the natural disasters.

⁴ Schools located in the southwest region of the island were excluded from these studies due to the earthquakes that impacted the area in January 2020.

INTRODUCTION

One of the main unknowns of Puerto Rico's public education system is why some school units perform substantially better than others, even if they share a similar socioeconomic profile. Overall, the primary education system has endured decades of high levels of uneven academic performance between schools. That is, schools with similar conditions (location, infrastructure, socioeconomic conditions, among others) perform significantly better than other comparable schools. Such inequality has been sustained partly because of the limited expectations that citizens have regarding the public school system,⁵ the overall dismantling of institutions, the lack of effective investments, and decades of fragmented policies and processes, all within a highly centralized educational system⁶. There could be multiple arguments associated with challenging the use of aptitude tests to measure overall school performance. Nonetheless, at primary school levels, it is somewhat hard to ignore whether the majority of children at a particular school are even able to read and write properly.

The disparity of the school system is so significant that, as of today, parents have tolerated that only 5% of the 841 public schools have a specialized offering or modality for students⁷. Even though the development of such schools allows for a more robust education for students who academically qualify, they still represent an exception within the system and denotes a high portion of students who do not benefit from such systems. These schools offer the opportunity to fully develop the talents, interests, skills, and abilities of students. Moreover, these schools have their own internal policy for student enrollment, teacher recruitment process and curriculum creation, among others. Most of these schools specialize in Fine Arts and Math & Science. Students enrolled in a specialized school benefit from innovative teaching options that promote not only the academic aspect, but the development of specialized aptitudes they might have.

Meanwhile, school principals feel they have been seized by a centralized system which dictates on every aspect without considering their say in the matter. Some of the participants of this research have noted that the centralized system resembles the analogy of a restaurant owner that determines the main ingredients, the portions of the recipes, the type of stove and utensils to be used, and the

kitchen's infrastructure, while the chef, sous-chef, and the rest of the team are expected to get the critics' best reviews. Following the previous analogy, as will be explained throughout this report, the main constraint is the lack of autonomy within a system that is inherently complex and sets the standard for every recipe without team input.

Moreover, the school system has allowed such a level of disparate results to the point where several generations have accepted this as an inherent characteristic of the system or have somewhat normalized the variance associated with school performance. It seems that there is a "silent" understanding that all public schools are meant to be lagged, except for some specialized schools. As of today, Puerto Rico's educational system is considered a single, unitary, state-wide public-school structure, being both the state education agency (SEA) and the local education agency (LEA). It totals 841 schools, including 43 specialized schools, 47 Montessori schools, 26 Vocational schools and 4 Alianza Public Schools (Charter Schools)⁸. Such duality could potentially limit the system's capacity to be held accountable based on the actual performance of school units, partially attributed to a suboptimal organizational structure.

For the 2019-2020 school year, the total number of students enrolled in public schools was 295,518 students yet, for 2020-2021 school year, the official reported number of students enrolled was 276,413 students. Therefore, the public school system had a reduction of 19,105 students in a single year. It is important to keep in mind that from 2006 onwards, the structure of the public school system in Puerto Rico, as well as its main components, have undergone profound changes, which include a recent reform (Act 85-2018, Puerto Rico Education Reform Act). The system has been reduced by almost half, with more than 466 schools closed between 2016 and 2018. Some experts on the subject suggest that there is a strong possibility that more schools could face closure if the total enrollment continues to decline due to outmigration, the aging population, and low birth rates in the island.

⁵ The research conducted by ABRE concluded that parents consistently tend to believe that children are improving their overall education, even when the scores on aptitude tests of said school shows a lackluster performance.

⁶ The authors are aware of multiple regulatory and legislative actions (some of them, relatively new) that have tried to decentralize several areas of Puerto Rico's educational system.

⁷ These schools a commonly known as *Escuelas Especializadas*.

⁸ Numbers reported per PRDE's Transitional Report of November 2020.

THE RATIONALES BEHIND THE RESEARCH

During the past 4 months, ABRE has been conducting research on 14 schools throughout the island, in an attempt to understand the reasons behind the disparity associated with school performance. At the heart of this research is the rationale that organizations like ABRE must provide citizens straightforward answers to questions concerning educational performance. Such answers could contribute to the development of a single plan that may improve the entire public school system.

ABRE's research tries to answer several questions as to understand what drives academic performance in Puerto Rico's public school system.

- Why are schools in the same municipality, with similar enrollment numbers and similar socio-economic conditions achieving different proficiency levels when they are not far away from each other?
- Are there any practices or habits that positively and/or negatively impact the academic performance of a school?
- What drives, or enables some schools to perform better than others on META-PR tests?
- Are there any unique factors that contribute to a better academic performance in a school?
- Do leadership and management skills make any difference regarding performance standards?
- How much impact teachers have on students' performance standards? Are there any common arguments among low and high performing schools?

Our research has shown that schools must be analyzed as independent units. Therefore, they should not be examined as a monolithic organization, but rather, a highly complicated structure that is constantly affected by external and internal factors. That is, the policy recommendations to be made will not rely on strategic programs or approaches, but rather on the institutional design of each school as a separate unit.

Another rationale for this research is that META-PR test scores leave too many questions unanswered. There is no clear understanding of how a school obtains the score, or how such score could be used to improve the system. Moreover,

our research has shown that understanding what a high-performing school achieves could provide insights into what is required to improve a low-performing school. There is also a circular causation given the current set of incentives that interplay between school units. Interviews with school principals evidenced that schools with low test results tend to receive additional aid since funding grants are generally awarded for school improvement purposes. Given the limited accountability and the lack of program evaluations, such grants could become a pervasive incentive that disregards the success of the schools that have improved or sustained a strong performance. Thus, high-performing schools are not necessarily rewarded (any additional resources) for improving performance, while confronting similar unmet needs faced by the low-performing schools. Such condition inhibits the organic development of innovative solutions that are usually undertaken individually by school units.

The following sections will demonstrate how school performance varies by each pair of schools and what are the potential explanations or conditioning factors for such variances. To demonstrate these findings, a detailed case study analysis and assessment of 7 matched pairs of schools is provided. Each pair's results have been examined individually in a case-study format. Case studies are presented for each school region pair and consistently compare a High Proficiency School (HPS) with a Low Proficiency School (LPS) by combining different quantitative and qualitative data analyses.

However, a separate section was developed to analyze all 14 schools using aggregate empirical findings. These aggregate findings were developed in order to accurately present those variables and outcomes that are statistically significant for all schools within the selected sample. The aggregate results sections include all the insights associated with the underlying factors that could be affecting the academic proficiency of schools in Puerto Rico. Although our results should not be extrapolated to the PRDE school system universally, they shed light into the intricacies of unequal school performance and the internal and external organizational structure that is currently influencing academic achievement.

The report also includes separate sections for the methodology, glossary, conclusions, and policy recommendations.

METHODOLOGY

The main purpose of this research was to find out what factors might be impacting the schools' performance in the META-PR tests. More specifically, ABRE set out to gather possible explanations as to why geographically proximate schools that have similar socioeconomic characteristics perform so differently in these tests. Since the data gathering for the study started in March 2020, the methodology was adapted to the challenges of the COVID-19 pandemic. The main changes included shifting to online data gathering tools and excluded the on-site observations. The following section discusses the methodological processes performed for each phase and a detailed description of the different instruments used to complete these processes.

School Selection

School matched pairs were selected on a basis of the following criteria:

- One school had a proficiency level of A or B and the other a level of D or F in the META-PR test results.
- Pairs were selected within a geographical proximity of a 5-minute drive.
- Similar socioeconomic status of the student population.
- Enrolment and size of school, no higher than 8th grade, with similar levels of student-teacher ratio.
- Willingness of school leader to participate in the study.

Invitation to contact school leaders was supported by the PRDE. Once the initial screening and research proposal were completed, the next step was to seek authorization from PRDE as to conduct the study.

Design and Selection of Data Gathering Instruments

Since there was limited data available from the 14 selected schools and because of the exploratory nature of this research, we first designed 4 surveys to draw up a profile of the schools, principals, teachers, and parents. The profiles were designed for gathering general descriptive information about the schools and to assess what could be impacting the schools' performance in the META-PR tests scores.

SCHOOL PROFILE SURVEY

- Composed of 67 short questions
- Principals completed the survey
- Questions pertained to classrooms, teachers, students, absenteeism, tardiness, non-governmental alliances, federal programs, sports facilities, computers, janitors, clubs, social workers, food served per day, among others. There were also categorical questions about: teachers and students' absenteeism or tardiness problems, Fine Arts programs, parent-teacher associations (PTA), infrastructure, air conditioning, internet services, library, after-school programs, among others.



PRINCIPAL PROFILE SURVEY

- Comprised 15 short questions
- Principals answered this survey as a self-report
- Questions pertained to educational background, years, and types of work experiences inside and outside the PRDE, age, time it takes them to arrive at the school, municipality of residence and certifications

TEACHER PROFILE SURVEY

- Comprised 30 short questions
- All employees of each school were invited to participate and answer a survey
- Questions pertained to: educational background, years, and types of work experiences inside and outside the PRDE, age, time it takes them to arrive at the school, municipality of residence, certifications, if they gave tutoring sessions, time spent giving individual feedback to students, materials and equipment needed, among others

PARENTS PROFILE SURVEY

- Comprised 14 short questions and 3 scales
- Parents from all the schools were invited to participate
- Questions pertained to: household composition, number of children in PRDE, whether they think their child has progressed in the school, educational background, status of employment, weekly time spent studying with the student, and their likes and dislikes regarding the school.
- The Parental Involvement Scale had 13 items that assessed how involved the parent was in the education of the student. The items were answered on a scale of 1 (almost never) to 4 (always) and had items like: "I help my son to study for his exams".
- The Satisfaction with School Scale had 13 items that assessed the level of satisfaction the parent had with the school services and infrastructure. The items were answered on a scale of 1 (highly unsatisfied) to 4 (highly satisfied) and had items like: "How do you feel about the lunchroom services?".
- The School Abandonment Scale had 6 items

that assessed if the parents had any intentions of getting their kids out from that school. The items were answered on a scale of 0 (I do not know), 1 (strongly disagree) to 4 (strongly agree) and had items like: "If I had better economic resources, I would take my kids out of this school".

While the data for the profiles was being gathered, we selected a variety of organizational psychometric scales to scientifically measure different factors that could be affecting teachers and therefore their performance in school. The selected scales have been previously used in Puerto Rico and had good statistical properties⁹. A description of each scale is presented below.

1. Organizational Justice Questionnaire (Colquitt, 2001)

- a. Organizational justice is defined as the perceptions that employees have about what is fair in the organization for which they work (Greenberg, 1987).
- b. It is made up of 4 subscales that are measured from 1 (never) to 5 (always).
 - i. Procedural Justice: how fair are the processes for the rewards that are received from the organization
 - ii. Distributive Justice: evaluation of the individual of what they receive from the organization because of their efforts
 - iii. Interactional Justice: cognitions from the evaluation of the quality of the interaction with their supervisors
 - iv. Informational Justice: the clarity of the information received from their supervisors

2. MBI Burnout Scale (Salanova, Llorens, García, Bürriel, Bresó & Schaufeli, 2005)

- a. Burnout syndrome is defined as "a persistent, negative, work-related state of mind in 'normal' individuals, characterized mainly by exhaustion, accompanied by distress, a feeling of reduced competence and motivation, and the development of dysfunctional attitudes and behaviors at work." (Schaufeli and Enzmann, 1998, p. 36)

⁹ ABRE PR hired Linterna, LLC as consultants for this investigation and they have the necessary permissions from the authors to use the scales in our investigation.

- b. It is made up of 4 subscales that measure from 0 (totally disagree) to 6 (totally agree).
 - i. Exhaustion: fatigue but without any explicit reference to 'others' as the source of these negative emotions.
 - ii. Cynicism: reflects indifference, distant attitudes towards work in general but not necessarily towards people.
 - iii. Inefficacy: the tendency to evaluate one's work negatively and a reduction in feelings of job competence and job performance.
 - iv. Depersonalization: implies the development of negative and cynical attitudes towards the receivers / users of the work or service.
- iii. Sportsmanship: behaviors of tolerance to undesirable working conditions without objecting to them.
- iv. Courtesy: consult with other co-workers before making decisions that may affect their jobs.
- v. Awareness: attend work and comply with organizational policies.

5. Psychological Capital Scale: OREA (Work Modification) (Meseguer de Pedro, Soler-Sánchez, Fernández-Valera, & García-Izquierdo, 2017)

- c. Psychological capital is a positive psychological state characterized by self-efficacy, optimism, hope, and resilience (Luthans, Youssef and Avolio, 2007).
- d. It is composed of 4 subscales that measure from 1 (totally untrue) to 6 (totally true).
- e. Self-efficacy: having confidence to face challenges and difficult tasks.
- f. Optimism: making positive attributions about current success or failure.
- g. Hope: visualize and persevere in objectives and goals.
- h. Resilience: the ability to recover and emerge even stronger from adversity.

3. Intention to Quit Scale (Rodríguez, Sánchez & Martínez, 2014)

- a. Composed of 4 items that monitor whether the teacher wishes to change jobs or leave that organization.
- b. It is defined as the probability that a person can decide to change jobs, careers, or workplace at any given time. (Kaur, Mohindru & Pankaj, 2013)
- c. The response scale ranged from 0 (totally disagree) to 6 (totally agree).

4. Organizational Citizenship Behavior Scale (OCBS) (Rosario-Rodríguez, Rodríguez-Montalbán & Martínez-Lugo, 2019)

- a. Organizational Citizenship Behaviors (OCB) are prosocial behaviors that contribute positively to organizations and their employees.
- b. It is made up of 5 subscales that measure from 1 (totally disagree) to 6 (totally agree).
 - i. Altruism: spontaneous behaviors of helping co-workers with their tasks.
 - ii. Civic virtue: participation and involvement with organizational life.

In addition to the surveys, a semi-structured interview guideline was designed for school principals. The interview consisted of 18 questions to gather information about: how the school obtained resources, what support did they received from the central and regional offices of the PRDE, student and teacher absenteeism, META-PR tests procedures, needed competencies, academic performance of students, alliances or federal programs, student profiles and schools' needs.

For the qualitative data analyses, we used the Grounded Theory approach and used it to draw general results and specific case conclusions. Many of the findings and conclusions are based on the qualitative data gathered through interviews, surveys, calls, visits and observations.



ABRE Scores for Proficiency, Parental Immersion, Infrastructure Quality and Technology

As noted, the data gathering instruments used collected a vast amount of data from the school unit, teachers, principals, and parents. To facilitate the interpretation of such data, ABRE developed a series of proprietary “scores” or indices that aggregated the results from all surveys and psychometric scales. The scores were categorized in the areas of academic proficiency, parental immersion, infrastructure quality and technology. The following section describes the scores, what they mean, and the process used to estimate them.

ACADEMIC PROFICIENCY SCORE

The META-PR is administered every year and is consistent with the requirements of the Elementary and Secondary Education Act of 1965 as amended by Every Student Succeed Act. Students in all public schools in Puerto Rico enrolled in 3rd, 4th, 5th, 6th, 7th, 8th and 11th degrees participate in META-PR. The tests evaluate Spanish, Math and English content areas as Second Language. META-PR (Science) is only offered in grades 4th, 8th, and 11th.

One of the main reasons for undertaking primary research for this project is the lack of readily available data on school traits and performance. Over the years, ABRE has struggled to get accurate and normalized data on school units in Puerto Rico, even though such data exists and has been shared with other researchers. Given such constraints, ABRE has managed to use the data from standardized tests to try to understand the performance of Puerto Rico’s public schools.

Such data, when aggregated at a regional level (META-PR weighted test scores), reveals a tendency of significantly lower performance levels in schools located in the metropolitan areas of the island (such as San Juan and Bayamón), with the

exception of the Humacao region, which shows low performance as well.

META-PR TEST SCORES 2018-2019

% Proficiency per Region
Arecibo - 66.17%
Bayamón - 60.45%
Caguas - 67.01%
Humacao - 58.18%
Mayagüez - 64.00%
Ponce - 64.18%
San Juan - 57.78%

However, the distribution of META-PR test scores is not homogenous, many schools show a non-proficient performance, while other schools, with similar conditions, show proficiency. Such differences may be conditioned by several variables, which could potentially explain why some schools are proficient and why others are not. ABRE estimated its own total proficiency percentage using the total number of students by region, resulting in the following scores for the selected school units:

Municipality and Sampled School	Average Proficiency Spanish	Average Proficiency Math	Average Proficiency English	Average Overall Proficiency
Aguadilla - HPS	83%	81%	82%	82%
Aguadilla - LPS	60%	67%	65%	64%

Municipality and Sampled School	Average Proficiency Spanish	Average Proficiency Math	Average Proficiency English	Average Overall Proficiency
Arecibo - HPS	94%	90%	87%	90%
Arecibo - LPS	59%	58%	57%	58%
Barranquitas - HPS	96%	96%	96%	96%
Barranquitas - LPS	62%	58%	60%	60%
Caguas - HPS	78%	76%	77%	77%
Caguas - LPS	61%	59%	52%	57%
Carolina - HPS	63%	69%	68%	67%
Carolina - LPS	59%	60%	45%	55%
Humacao - HPS	80%	84%	85%	83%
Humacao - LPS	57%	62%	46%	55%
Loíza - HPS	71%	74%	74%	73%
Loíza - LPS	45%	54%	40%	46%

The Academic Proficiency Score is the statistical compilation of the META-PR test data from each school that was provided by the PRDE. It was designed to be able to convert META-PR test data into percentage scores. This was done given that PRDE data includes the total of students whose results were categorized in the pre-basic, basic, proficient, or advanced level, but not the score students got in the test.

For the statistical weighting process, we took the data of each grade from the Spanish, English and Math subjects and put it through the following steps to obtain our final aggregated scores:

- We added the total of students that took the test and calculated the average percentage of

students at each level.

- We pondered those percentages by multiplying the pre-basic by 1, basic by 2, proficient by 3 and advanced by 4.¹⁰
- The multiplication results were aggregated to an average percentage that resulted in the total proficiency score of that grade (between 0 and 100%).
- To get the final proficiency score of the subject, an average was computed with all the proficiency scores of the grades. This gave us a total proficiency score by school for Math, English, and Spanish.
- Finally, an average was computed with the

¹⁰ The PRDE does a similar pondering process to compute their proficiency scores, but they only use two levels: giving a 0 to students at the pre-basic and basic level, and a 1 to students at the proficient or advanced level. Our score gives more depth to the analysis considering the variability of students at every level. The ponderation process we did has been used by previous scientific investigations in Puerto Rico.

totals from each subject to obtain the overall school proficiency on the META-PR tests.

- These scores were used, for the inferential statistical analyses that we conducted, mostly as the dependent variable. The total scores for each school are presented in the results section.

Given the research's objective, this weighing

process should render a *fairer* comparison or a more granular understanding than the one typically used by PRDE, where they group pre-basic and basic as 0 and proficient and advanced as 1. This methodology allows¹¹ for the development of 4 different values to better assess the META-PR scores' distribution. Moreover, it gives credit to pre-basic and basic level students and differentiates proficient level students from advanced level students.

PARENTAL IMMERSION SCORE

- For each school, the Parental Immersion Score measures the level of parental involvement in the students' academic life and how actively they are participating and collaborating in the school's curricular and extracurricular activities.
- We used data from the Parent Profile Survey and the Semi-Structured Interviews with the principals to compute this score.
- To obtain an average percentage of the total, the score was computed using the following variables (by adding the points of each variable):
 - All 13 items of the Parental Involvement Scale (converting them to 0 points if the answer is in the negative and 1 point if the answer is in the positive).
 - Question concerning hours spent by parents helping their children study every week (1 point if the average time spent helping them study is 2 hours or less, 2 points if the average time is 3 hours or more).
 - The school principal's positive or negative opinion during the interview (total of 6 points [0 if there is no integration of any kind, 1 if
- Involvement with a PTA or not (0 points if not involved and 1 point if involved).
- All 6 items of intention to abandon school (converting them to 0 points if the answer is in the negative and 1 point if the answer is in the positive).

Maximum score: 28 points¹²

there is little or no significant integration, 2 if small group of parents have integrated, 3 if integrated in activities that are not academic, 4 if integrated in all aspects of student life, 5 if integrated providing direct assistance to students and the school, 6 if there is higher and proactive integration by helping take care of the school, doing activities, obtaining funding, etc.).



¹¹ Other researchers in Puerto Rico agree and have used this weighting process. For example: "What is behind the variations in academic performance among public schools in Puerto Rico? Sociodemographic, community and school factors". By Dr. Eileen V. Segarra Alméstica, Director and Researcher of the Public Education Observatory of Puerto Rico (CEMGAP-UPRRP) and Professor of the Department of Economics at UPRRP.

¹² If the school had no data on an item because of lack of participation, said item was eliminated from the calculation of the total.

INFRASTRUCTURE QUALITY SCORE

For each school, this score measures the comprehensive quality of the school's basic services, physical facilities for teachers and students, didactic resources, and materials for effective organizational operation. Certain elements, such as teachers' salaries or the student-teacher ratio, are not analyzed here.

To compute this score, we used data from the Parent Profile Survey, Teacher Profile Survey, School Profile Survey, and the Semi-Structured Interviews with the schools' principals. To obtain an average percentage of the total, the score was computed using the following variables (by adding the points of each variable):

- Has a library (0 points if no and 1 point if yes).
- There is a librarian (0 points if no and 1 point if yes).
- Library is open all day (0 points if no and 1 point if yes).
- Has computers in the library (0 points if no and 1 point if yes).
- Has a computer lab (0 points if no and 1 point if yes).
- Has at least 25 computers for student use (0 points if no and 1 point if yes).
- Has the internet (0 points if no and 1 point if yes).
- Has Wi-Fi (0 points if no and 1 point if yes).
- Wi-Fi or internet service quality (0 points if there is no internet, 1 point if it is deficient, 2 points if it is regular, 3 points if it is excellent).
- Sports facilities (0 points if there are no sports facilities, 1 point if there is one facility, 2 points if there are two facilities or more).
- Has Fine Arts program and facilities (0 points if no and 1 point if yes).
- Quantity of Fine Arts programs available (0 points if no fine arts programs are available, 1 point if one program is available, 2 points if two programs or more are available).
- Air conditioning in classrooms (0 points if no classroom has air conditioning, 1 point if some classrooms have air conditioning, 2 points if most classrooms have air conditioning).
- Quantity of school janitors (1 point per janitor, with a maximum of 5 points).
- Parental satisfaction (survey) with the following: (converting them to 0 points if they are unsatisfied and 1 point if they are satisfied, total of 5).
 - Library services
 - Cleanliness of school
 - School facilities (classrooms, bathrooms, offices, etc.)
 - Sport facilities
 - Computers for student use
- Parental complaints about school infrastructure (0 points if there are a lot of complaints [from more than half of the participants], 1 point if there are a few complaints [from less than half of the participants], 2 points if there are no complaints).
- Teachers feel that they have all the resources to do their job effectively (0 points if no and 1 point if yes).
- Teachers reports of resources needed at the school (0 points if a lot of resources are needed [from more than half of the participants], 1 point if few resources are needed [from less than half of the participants], 2 points if no resources are needed).
- Principal reports stating they have everything they need for the school to operate effectively (0 points if no and 1 point if yes).
- Principal reports on infrastructure issues during the interview (0 points if there are several issues, 1 point if there are a few issues, 2 points if there are no reports on infrastructure issues).

Maximum Score: 36 points¹³

¹³ If the school had no data on an item because of lack of participation, said item was eliminated from the calculation of the total.



TECHNOLOGICAL INFRASTRUCTURE SCORE

This score measures how efficient the technological infrastructure of each school is in regards to equipment the students and teachers have (or need), how it is being used, and the quality of the internet services provided.

To compute this score, we used data from the Parent Profile Survey, Teacher Profile Survey, School Profile Survey, and the Semi-Structured Interviews with the principals.

To obtain an average percentage of the total, the score was computed using the following variables (by adding the points of each variable):

- Has library computers (0 points if no and 1 point if yes).
- Has a computer lab (0 points if no and 1 point if yes).
- Has at least 25 computers for student use (0 points if no and 1 point if yes).
- Has internet service (0 points if no and 1 point if yes).
- Has Wi-Fi (0 points if no and 1 point if yes).
- Internet access is monitored by a teacher (0 points if no and 1 point if yes).
- Quality of internet services (0 points if there is no internet service, 1 point if the internet service is deficient, 2 points if the internet service is regular, 3 points if the internet service is excellent).
- Parental satisfaction (survey) with: (converting them to 0 points if unsatisfied and 1 point if satisfied, total of 1)
- Computers for student use
- Teachers' reports of technological resources needed at the school (0 points if several resources are needed [from more than half of the participants], 1 point if few resources are needed [from less than half of the participants], 2 points if no resources are needed).
- Principal reports on technological infrastructure issues during the interview (0 points if no and 1 point if yes).
- Principal reports a need to develop better skills to use and handle technology (0 points if no and 1 point if yes).
- Principal reports that teachers need training to use and handle technology (0 points if no and 1 point if yes).

Maximum Score: 15 points¹⁴

AGGREGATE RESULTS

General Description of Analyses

The results presented in this section are based on descriptive and inferential statistical analyses that were made with the primary data collected during the research process. The general purpose of all the analyses was to find out if there were any variables that described, explained or had a statistically significant impact (predicting, changing, or affecting) on the META-PR proficiency scores or the overall school performance.

The main research instruments include:

- Schools Profile Survey
- Principals Profile Survey
- Teachers Profile Survey
- Parents Profile Survey
- Organizational Psychometric Questionnaires
- Semi-Structured Interviews with School Principals

*Most of the analyses were made using META-PR proficiency scores and based on whether the group of schools were proficient or not (as dependent variables).

Given that the sample is comprised of 14 schools and because the data was not randomly collected, the results shown can only be used to draw conclusions for the schools that participated in the study. Nonetheless, these results can serve as guidelines for further research and could offer insights on what the PRDE system could be facing and/or needing.

As noted in the methodology section, ABRE developed a series of scores that provide a holistic measure of a school’s infrastructure quality, technological endowments, and parental involvement. Such scores amount to dozens of variables that were gathered through survey instruments and interviews with school principals. In some instances, what we found was complemented with data gathered directly from the PRDE. The overall results of such scores are presented in the following table and will be discussed in detail in each of the case studies in the following sections. The percentages presented in the table respond to a 100% scale. For instance, a 93% score is a high score vis-a-vis a 33% score, which is a poor result.

Municipality + School	Quality of Infrastructure Score	Technological Infrastructure Score	Parental Immersion Score
Aguadilla HPS	67%	40%	93%
Aguadilla LPS	44%	40%	61%
Arecibo HPS	64%	47%	89%
Arecibo LPS	27%	14%	86%
Barranquitas HPS	64%	53%	75%
Barranquitas LPS	64%	47%	79%
Caguas HPS	36%	25%	82%
Caguas LPS	56%	33%	75%
Carolina HPS	75%	87%	86%
Carolina LPS	44%	40%	79%
Humacao HPS	64%	53%	75%
Humacao LPS	39%	33%	82%
Loíza HPS	n/a	n/a	86%
Loíza LPS	33%	40%	68%

RESULTS OF SCHOOL PROFILES

The School Profile Survey was answered by school principals. Thirteen of fourteen principals completed the survey (the HPS principal of Loíza chose not to participate). The survey had 67 short

questions on the school's services, teachers and students' attendance rate, infrastructure, non-governmental alliances, federal programs, after-school programs, technologies, among others¹⁵.

AGGREGATE DESCRIPTIVE STATISTICS

The following descriptive statistics are presented on a comparison table between the schools with lower proficiency, the schools with higher proficiency, and the schools within the sample. The pur-

pose is to generate insights about the factors that could be affecting the schools' META-PR scores proficiency.

Most of the schools...	Percentage of HPS (N=6)	Percentage of LPS (N=7)	Total average (N=13)
Are maintained by OMEP	67%	85%	77%
Have After School programs	17%	14%	15%
Offer tutoring services	17%	29%	23%
Have student clubs that meet after school	17%	0%	8%
Have Parent-Teacher Association (PTA)	17%	29%	23%
Have a teacher attendance problem	50%	43%	46%
Have a student attendance problem	50%	43%	46%
Have libraries	100%	71%	85%
Have librarians	67%	71%	69%
Have after school sports programs	33%	29%	31%
Have fine arts programs	83%	57%	69%
Do NOT have federal support programs	50%	71%	62%
Have alliances with non-governmental organizations	50%	85%	69%
Have air conditioning in SOME classrooms	67%	71%	69%
Have a school psychologist	50%	71%	62%
Have internet access in their school	100%	86%	92%

In most of the aggregate descriptive statistics, the schools are fairly similar. The main differences between these schools, which could also impact the META-PR scores are¹⁶:

- the problems associated with teachers and students' attendance,
- having Fine Arts programs, and
- federal programs and alliances with non-

governmental organizations.

Nevertheless, as shown in the analyses between pairs of schools, there could be similar variables that are handled differently and could also have an impact on META scores. As will be explained in the conclusion section, the lack of standardized systems of key performance indicators, that are actively monitored and maintained, hinders the overall evaluation of public schools.

¹⁵ Details of all the instruments are presented in the Methodology section of this report.

¹⁶ The results in this section were somewhat constrained by missing data from some LPS. In most instances the school principal did not know the information, which caused the elimination of the variables from our report (e.g., average number of students and teachers absent daily).

AGGREGATE INFERENCE STATISTICS

After analyzing the results of the School Profile Survey, no single variable was identified that significantly predicted or affected the schools' META-PR scores proficiencies. This could be associated with the sample size and/or because of the low variability of the answers given by respon-

dents. At a descriptive level, there were limited differences between the data collected from LPS and HPS, which means that schools' profiles are more similar than expected and may have unique individual factors that are currently affecting their META-PR scores.

AGGREGATE RESULTS OF PRINCIPALS' PROFILES

The survey of principals' profiles was filled by the incumbents of each school. Thirteen of the fourteen school principals of the selected schools completed it (the HPS principal of Loíza chose

not to participate). The survey had 15 questions concerning the principal's academic background, work experience inside and outside of PRDE, teaching experience, among others.

AGGREGATE DESCRIPTIVE STATISTICS

The following descriptive statistics are presented on a comparison table between the school principals of LPS, the principals of HPS, and all the school principals that participated in our research.

The purpose is to generate insights on the traits that could be affecting the schools' META-PR scores and overall performance.

Most principals...	Percentage of HPS (N=6)	Percentage of LPS (N=7)	Total average (N=13)
Take less than 30 minutes to arrive to their schools from their homes	100%	86%	92%
Have an academic background of master's degree or a doctorate	100% Master's	57% Master's 43% Doctorate	77% Master's 23% Doctorate
Have worked on administrative positions inside the PRDE	50%	57%	54%
Have experiences as supervisors outside of the PRDE	0%	86%	46%

The majority (83%) of school principals from HPS have more years in that position in their current schools and more years of experience being school principals under the PRDE overall. Close to half (57%) of the school principals of LPS were

recently appointed as principals in that school and, overall, had 4 years less of experience as school principals within the PRDE than the HPS principals.

AGGREGATE INFERENCE STATISTICS

- The years that the school principal worked outside the PRDE correlated negatively with the META-PR scores. This meant that the more years a principal spent working outside of the PRDE, the lower META-PR scores were for said school.
- In regards to the META-PR scores proficiency levels, there are significant statistical differences

between the principals that have worked as supervisors outside of the PRDE and those that have not. Surprisingly, the principals who have not worked as supervisors outside of the PRDE are the ones with higher proficiency levels on the META-PR scores.

Both analyses seem to point into a potentially

negative effect associated with work experiences that principals have had outside of PRDE system and that could affect the academic performance of schools in which they worked. **When this is combined with the fact that LPS principals have less time working in their schools, there is a clear tendency of higher turnover rates and a possible negative effect on the META-PR scores.** Previous studies have found that when a principal leaves their school, this is followed by a downturn in student performance, and this

continues for two years, even with the installation of a new principal.¹⁷ On average, it may take 5 years since the installation of a new principal for a school to reach their previous performance or start showing improvement. As studies have shown, it is important to invest in high quality principals with long-term expectations for retaining their job in a particular school. The previous association could provide an increase in graduation rates and student performance¹⁷.

AGGREGATE RESULTS OF TEACHERS' PROFILES

The data for teachers' profiles was collected through an online survey of 30 questions. A total of 231 teachers answered the survey (the teachers from HPS of Loíza did not participate). The survey

had questions about academic backgrounds, certifications, years of teaching experience, courses given, other work experiences, among other questions.

AGGREGATE DESCRIPTIVE STATISTICS

Based on the number of K-6 teachers in the selected schools, most schools answered the survey. In fact, more than half of the teachers answered except for teachers in the following schools: LPS from Arecibo, LPS from Loíza, and the HPS from Aguadilla.

The following descriptive statistics are presented as a comparison table between the teachers at LPSs, the teachers at HPSs and all the teachers in the study. The purpose of this breakdown is to generate insights on the traits that could be affecting the schools' META-PR scores and overall performance.

Mos teachers...	Percentage of HPS (N=123)	Percentage of LPS (N=108)	Total average (N=231)
To arrive to their schools from their homes take:	77% Less than 30 minutes 19% Between 30 minutes and 1 hour 5% More than an hour	73% Less than 30 minutes 27% Between	75% Less than 30 minutes
Have a scholarly level of:	39% Bachelor 59% Master's 2% Doctorate	58% Bachelor 38% Master's 4% Doctorate	48% Bachelor 49% Master's 3% Doctorate
Offer tutoring in their schools	0%	4%	2%
Have an average age of:	49	47.5	47
Understand that they do NOT have all the necessary tools to do their job	80.5%	95.1%	89%
Feel safe in their working environment	87.4%	83.6%	85.2%

¹⁷ Grissom, J. A., Kalogrides, D., & Loeb, S. (2015). Using student test scores to measure Principal performance. *Educational Evaluation and Policy Analysis*, 37(1), 3–28; Dhuey, E., & Smith, J. (2014). How important are school Principals in the production of student achievement? *Canadian Journal of Economics*, 47(2), 634–663; Branch, G. F., Hanushek, E. A., & Rivkin, S. G. (2012). Estimating the effect of leaders on public sector productivity: The case of school Principals (No. w17803). National Bureau of Economic Research; Coelli, M., & Green, D. A. (2012). Leadership effects: School Principals and student outcomes. *Economics of Education Review*, 31(1), 92–109.

Average (median ¹⁸) of years as:	Percentage of HPS (N=123)	Percentage of LPS (N=108)	Total average (N=231)
A teacher within PRDE	19 (N=123)	17 (N=107)	19 (N=230)
A teacher outside of PRDE	1 (N=100)	2 (N=87)	1 (N=187)
A non-teacher working outside of the classroom	2 (N=90)	2 (N=77)	2 (N=167)
A teacher in their current school	5 (N=123)	3 (N=108)	4 (N=231)
A teacher giving the current subject(s)	14 (N=122)	12.5 (N=108)	14 (N=230)
A teacher in charge of their current grade	9 (N=122)	8 (N=107)	8 (N=229)

AGGREGATE INFERENCE STATISTICS

- The number of years as a teacher outside the PRDE correlated negatively with all proficiency scores.

- There are significant differences between teachers who take more than an hour to get to their school, compared to those who take less than 30 minutes and between 30 minutes to 1 hour.

- ◆ For teachers who take more than an hour to get to their workplace, their schools have significantly higher scores in total proficiency than the other two groups.

- ◆ This may be associated with the increased effort of a longer travel time; hence, higher commitment levels could be expected and could also be reflective of their performance as teachers. However, there is no direct evidence from our research to support that this is the driving factor behind such tendency. In the regression analysis, teacher education positively and significantly predicted school proficiency scores (3.4% explained variance of the model). Meaning that the higher education level of the teacher tends to predict higher proficiency META scores.

- In the regression analysis, teacher education positively and significantly predicted school proficiency scores (3.4% explained variance of the model). This meant that a teacher's higher education level tends to predict higher proficiency META-PR scores.

- There are statistically significant differences in the proficiency of the school according to the teachers' academic degree. Those

teachers who hold a master's degree have higher proficiency scores than those who hold a bachelor's degree.

- Teachers in higher proficiency schools have been in their current school significantly longer (an average of 5 years) than teachers in lower proficiency schools (an average of 3 years).

As per the results shown above, it seems that the years a teacher spends in the same school favorably impact the school's proficiency on the META-PR scores and teachers who are better prepared academically also demonstrate a higher performance on the META-PR scores. As is the case with school principals, there seems to be some sort of negative association between the teachers that have work experiences outside the PRDE system and the META-PR scores.

The more years teachers spend in their school, the better the students' performance and the more said performance should be evidently reflected in the students' META-PR scores. A longitudinal study in New York City (with over 1.1 million observations) showed that students in grades with higher turnover rates scored lower on tests (with a particular stronger effect in lower-performing students).²⁰ Furthermore, our sample shows what studies in other jurisdictions have validated: the educational level of teachers and their years of experience teaching at a specific school had a significant impact on student performance. In other words, the combination of the teacher's educational level and their years of experience have a positive impact on students' achievement¹⁹.

¹⁸ We report the median as the central tendency measure because the data was not distributed normally.

¹⁹ The Effect of Teacher Experience and Teacher Degree Levels on Student Achievement in Mathematics and Communication Arts. Jaime Dial, 2008. <https://www.bakeru>.

AGGREGATE RESULTS OF PARENTS' PROFILE

The data for parents' profiles was collected through an online survey of 14 questions and 3 scales that were sent directly to the parents from the 14 selected schools. A total of 566 parents from all 14 schools participated in the survey. The survey incorporated 3 scales that ABRE developed for the research:

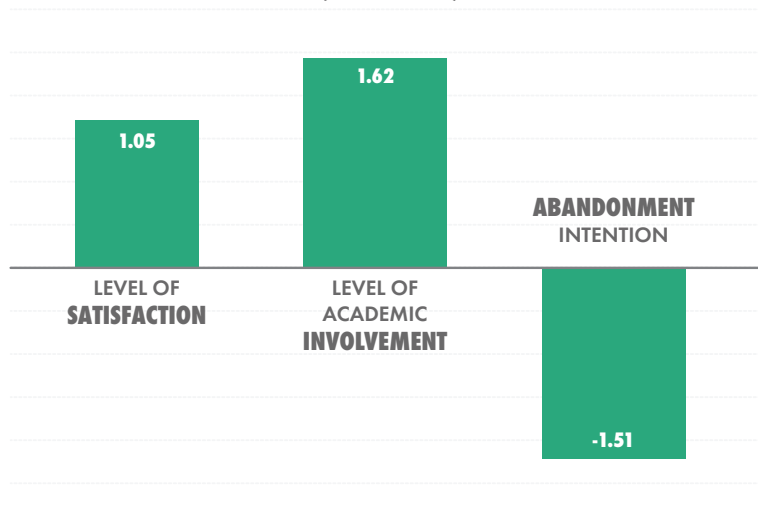
- The level of academic involvement a parent has with their children (e.g. with what frequency do they review their children's notebooks).
- The level of satisfaction a parent has with the school and its services (e.g. how do they feel about the teachers' work performance?).
- The intention of abandoning the school and enrolling their children in a different school (e.g. they are currently considering other schools for their children).

AGGREGATE DESCRIPTIVE STATISTICS

Using the number of K-6 students that the PRDE provides for each school, ABRE estimated that approximately 15.36% of parents participated in the survey. Given the lack of data provided by the PRDE (parents per grade in each school), the above-mentioned numbers are just estimates.

Mothers were the main respondents to our survey (93%). Forty-nine percent (49%) of respondents are from single-parent households, 47% are from two-parent households, and 4% are grandparents or legal tutors. Most of the parents (94%) think their children's education has improved in their school and 84% understand that they are the main people responsible for the education of their children.

AVERAGES OF SCALES
(FROM 2 TO -2)



Most parents that responded are satisfied with their school and appear to be highly involved in their kids' education. Also, overall, there are no intentions of taking their kids to a different school.

When dividing the data between the parents of schools with higher proficiency on the META scores and the parents of schools with lower proficiency scores, we did not find any significant differences:

Variables	Percentage of HPS (N=367)	Percentage of LPS (N=196)
Average level of academic involvement:	Always involved	Always involved
Average level of satisfaction with the school:	Satisfied	Satisfied
Average level of intentions of changing/transferring schools:	Do not agree with changing/transferring schools	Do not agree with changing/transferring schools
Time spent every week to study with their child	1 to 5 hrs. (47.1%) 6 to 10 hrs. (34.9%) 11 to 15 hrs. (12.3%) More than 15 hrs. (5.7%)	1 to 5 hrs. (60.7%) 6 to 10 hrs. (24%) 11 to 15 hrs. (10.2%) More than 15 hrs. (5.1%)
Quantity of children currently in the public-school system:	1 (44.1%) 2 (41.7%) 3 or more (14.2%)	1 (45.9%) 2 (39.3%) 3 or more (14.8%)
Completed academic level of the mothers:	High school or less (25.6%) Professional certification or some college courses (19.1%) Associate or bachelor's degree (48.2%) Master's or more (5.4%) N/A (1.6%)	High school or less (39.8%) Professional certification or some college courses (22.9%) Associate or bachelor's degree (32.7%) Master's or more (3.6%) N/A (1%)

AGGREGATE INFERENCE STATISTICS

- The level of educational involvement correlated positively and significantly with all proficiencies.
- Satisfaction with the school correlated positively with educational involvement and negatively with the intention to change schools.
- In the regression analysis, the educational involvement of parents and the mothers' education level positively and significantly predicted the proficiency on the school's META-PR scores (7% of explained variance).
- Lower proficiency schools have significantly higher scores than higher proficiency ones on their intentions of taking their children out of

school.

- Parents who perceive that their children's education has not progressed in their school have a significantly higher intention of changing schools.
- Parents who perceive that their children's education has NOT progressed in their school have significantly higher intention of abandoning the school.

Per the inferential statistics outlined above the META scores of the students can be predicted by the level of academic involvement the parent has with his/her child and their educational level. These findings are no surprise since many scientific researches have highlighted that an increase in parental involvement is significantly related to

an increase in academic performance²⁰²¹, even when controlling for the effect of the IQ level of the child²². The low variance of our regression

model can be due to the limited sample, yet it still signals tendencies that could be further researched in the future.

AGGREGATE RESULTS OF PSYCHOMETRIC QUESTIONNAIRES

A second survey was sent to teachers to assess specific work-related factors that might be impacting their performance and therefore the META scores of the schools. This survey included different psychometric questionnaires that have been previously used and validated with the Puerto Rican labor force. The survey had eight introductory questions on the teachers' performance and also included the following scientific scales²³:

- **Organizational Justice Questionnaire** (Colquitt, 2001)
Organizational justice is defined as the perceptions that employees have about what is fair within the organization they work for (Greenberg, 1987).
- **MBI Burnout Scale** (Salanova, Llorens, García, Bürriel, Bresó & Schaufeli, 2005)
Burnout syndrome is defined as "a persistent, negative, work-related state of mind in 'normal' individuals, characterized mainly by exhaustion, accompanied by distress, a feeling of reduced competence and motivation, and the development of dysfunctional attitudes and behaviors at work" (Schaufeli and Enzmann, 1998, p. 36).
- **Intention to Quit Scale** (Rodríguez, Sánchez & Martínez, 2014)
It is defined as the probability that a person can decide to change jobs, career or workplace in a given time (Kaur, Mohindru & Pankaj, 2013).
- **Organizational Citizenship Behavior Scale (ECCO)** (Rosario-Rodríguez, Rodríguez-Montalbán & Martínez-Lugo, 2019)
Organizational Citizenship Behaviors (CCO) are prosocial behaviors that contribute positively to organizations and their employees.

- **Psychological Capital Scale: OREA** (Work Modification) (Meseguer de Pedro, Soler-Sánchez, Fernández-Valera, & García-Izquierdo, 2017)

Psychological capital is a positive psychological state characterized by self-efficacy or having confidence to face challenges and difficult tasks; optimism or making positive attributions about current success-failure; hope or visualize and preserve in objectives and goals; and resilience or the ability to recover and even emerge stronger from adversity (Luthans, Youssef and Avolio, 2007).

A total of 209 teachers participated in this survey. Teachers from HPS of Loíza and LPS of Arecibo did not participate.

²⁰ <https://www.waterford.org/education/how-parent-involvement-leads-to-student-success/>

²¹ Castro, M., Expósito-Casas, E., López-Martín, E., Lizasoain, L., Navarro-Asencio, E., & Gaviria, J. L. (2015). Parental involvement on student academic achievement: A meta-analysis. *Educational Research Review*, 14, 33–46. doi:10.1016/j.edurev.2015.01.002.

²² Topor, D. R., Keane, S. P., Shelton, T. L., & Calkins, S. D. (2010). Parent involvement and student academic performance: a multiple mediational analysis. *Journal of prevention & intervention in the community*, 38(3), 183–197. <https://doi.org/10.1080/10852352.2010.486297>.

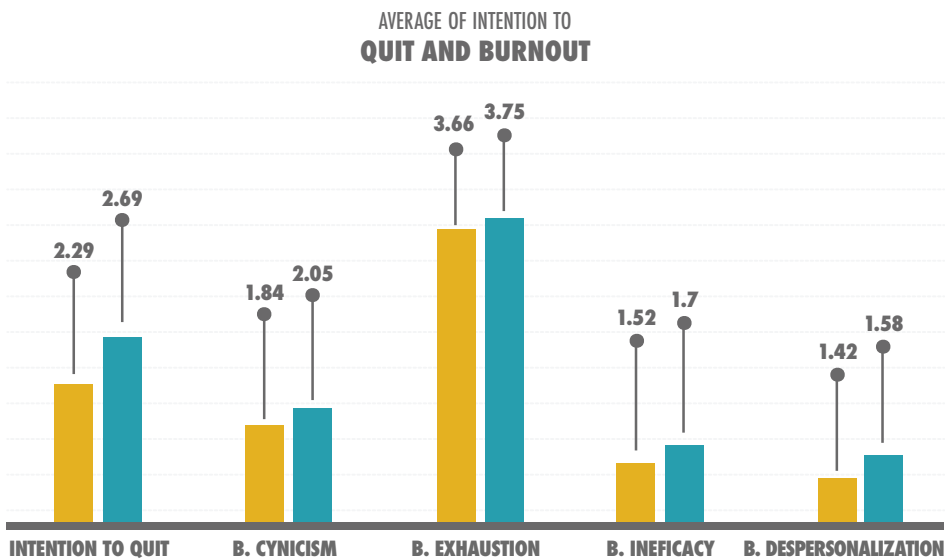
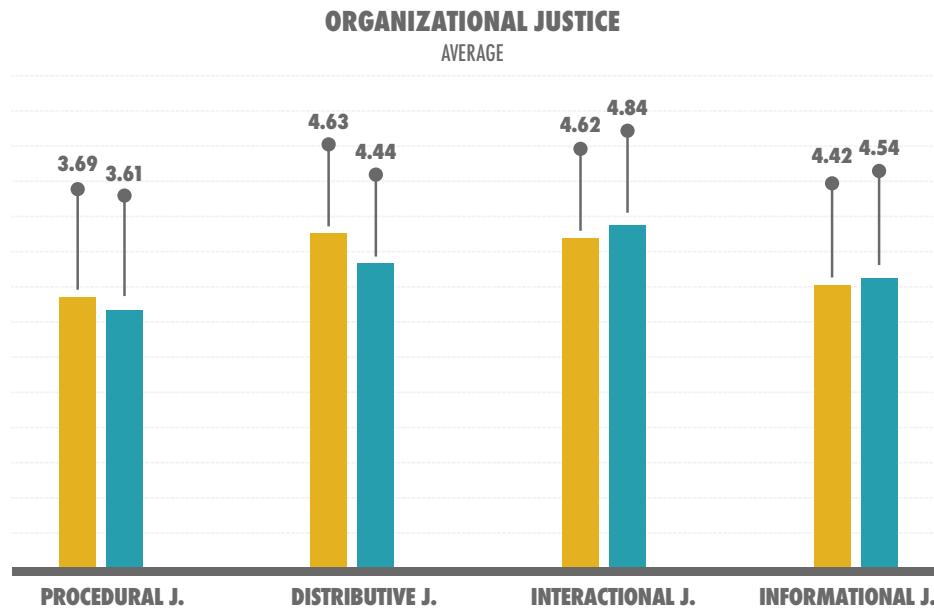
²³ All scales are defined and described in the methodology section.

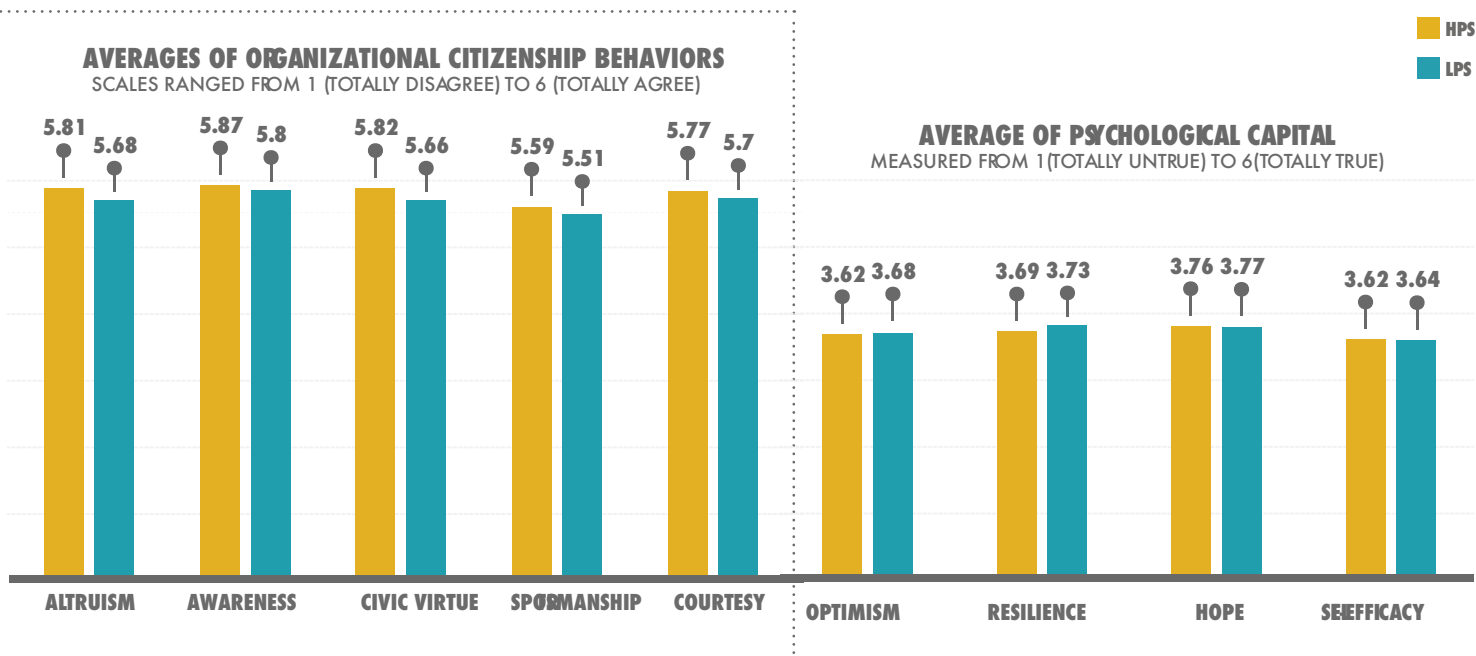


Aggregate Descriptive Statistics

Based on the number of k-6 teachers in the school, -as reported by the principals- eight of the schools and more than half of the teachers answered the survey.

Regarding the psychometric scales there were limited differences between the results of teachers from a **HPS** and those from **LPS**.





The main descriptive differences between teachers from HPS and LPS are reflected in the scales of *Organizational Citizenship Behaviors* (OCB) and *Psychological Capital*. Teachers from HPS had higher average levels of OCB, which could be a condition of the schools as an organizational unit. Studies have shown that high performance organizations tend to have a better work culture

and work environment that positively impacts employee's behavior. In the Psychological Capital scale teachers from LPS scored higher on average. This could be partially attributed to the fact that in more challenging work environments, employees deplete their psychological capital to cope with daily stress. Their Psychological Capital may be working as a protective factor.

AGGREGATE INFERENTIAL STATISTICS

- Within LPS there is significantly higher interactional justice (cognitions from the evaluation of the quality of the interaction with their supervisors).
- Teachers who understand that they do NOT have the necessary materials and equipment to do their job and do NOT feel safe at their workplace, are significantly more burned out than others.
- In the regression analysis, distributive justice positively and significantly predicted the proficiency on META scores of the school, while intention to quit and interactional justice negatively predicted proficiency on META scores (13% of explained variance).

Although the results with interactional justice can be somewhat counterintuitive, there could be associated with the *laissez faire* type of leadership that is often perceived by employees as being satisfied or comfortable with the way their supervisor treats them, but such condition does not translate into higher performance. Studies have shown that job satisfaction does not necessarily predict performance²⁴ and that there are other variables of greater significance²⁵. Per ABRE's research, we do not believe the two factors of organizational justices (interactional and distributive) and the intention to quit are directly impacting the schools' META scores. Literature on the subject has shown that organizational justices can influence trust and commitment of employees, which in turn influences their performance and results²⁶.

²⁴ Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127(3), 376–407. <https://doi.org/10.1037/0033-2909.127.3.376>.

²⁵ <https://www.apa.org/monitor/2013/12/job-satisfaction>

²⁶ Guh, W.-Y., Lin, S.-P., Fan, C.-J., & Yang, C.-F. (2013). Effects of Organizational Justice on Organizational Citizenship Behaviors: Mediating Effects of Institutional Trust and Affective Commitment. *Psychological Reports*, 112(3), 818–834. <https://doi.org/10.2466/01.21.PR0.112.3.818-834>.

The results from the survey have shown the importance of promoting and nurturing healthy work environments for teachers and limit the possibility of them suffering from burnout. **Moreover, the scores that teachers from both HPS and LPS obtained in**

psychological capital, organizational citizenship behaviors, burnout, and intention to quit show teacher quality and their willingness to put forth their best efforts, regardless of the school in which they work (HPS or LPS).

GENERAL DESCRIPTION OF QUALITATIVE (INTERVIEWS) ANALYSIS

School units must manage a myriad of circumstances and unknown conditions on a daily basis. Therefore, school performance will be conditioned by such intricacies, as well as other informal organizational situations that occur and which are usually managed by the school principal. To assess and evaluate said situations, ABRE conducted 12 semi-structured interviews to school principals of the sampled schools (the school principals of the HPS of Loíza and Caguas did not participate in the interviews). Using a semi-structured interview guide, each school principal was asked about their experience and overall knowledge on: the school's accessibility to resources, factors that

could potentially affect their students' performance, their outlook on the META-PR tests, among others.

The results were studied and reviewed carefully using a discourse analysis technique. The results were collected into general and specific categories which were organized by themes. The order in which each category is listed has been organized according to the number of mentions, the categories, or factors that were mentioned at the start of each question, whether or not they were the most cited or emphasized by participants.

AGGREGATE RESULTS OF INTERVIEWS TO SCHOOL PRINCIPALS

This section provides a series of tables which summarize the results rendered by participants. The tables are divided into general categories and compared between HPS and LPS. Overall, the results show that schools, based on their principals' perception, are relatively similar in terms of the challenges they face and highly heterogeneous or unique with respect to the strategies they have

developed to influence the school's performance. **Moreover, some school principals have shown a high level of proactivity and these usually fall within HPS.** As noted in the following tables, the need for technological equipment and/or knowledge was constantly commented on. Is important to keep in mind that these interviews were conducted during the COVID-19 pandemic.

General Findings	Average of HPS (N=5)	Average of LPS (N=7)
1) The schools rarely cancelled classes due to either water service suspension and/or power outages.	100%	100%
2) The lack of equipment and materials (both academic and technological) affect the students' overall academic performance.	100%	100%
3) The lack of student motivation and extracurricular aid affects the students' overall academic performance.	80%	86%
4) A good school environment, effective communication, and feedback contribute towards better academic performance.	80%	86%
5) Unmotivated or irresponsible parents result in students' absenteeism which, in turn, results in low academic performance.	100%	86%
6) Responsible parents who are highly involved in their children's academic tasks result in a higher academic performance score.	80%	100%
7) More time and knowledge should be devoted to data analysis that could potentially help improve the schools' performance.	60%	14%
8) Believes in the practice of continuous availability of the principal towards the teachers and staff, as well as frequently walking through the school to supervise efficiently.	100%	86%

9) The grades that report most absences are kindergarten and 1st grade.	20%	14%
10) The budget assigned to the school is not enough to cover their expenses and needs.	80%	72%
11) The principals do not have the resources, equipment and/or materials necessary to manage the school and improve the students' performance in standardized tests.	100%	100%
12) The principals design an alternate plan to cover the absenteeism caused by the elimination of pay for excess vacations and sick days.	80%	57%
13) The school needs more autonomy in the selection and recruitment of staff and personnel.	60%	14%
14) The lack of teacher planning affects the students' performance.	80%	57%
15) The students' sociodemographic profiles are generally prone to economic disadvantages and having dysfunctional families.	100%	100%
16) Principals wish to obtain skills and learn how to get federal proposals/grants or alliances with non-governmental organizations.	80%	86%
17) Teachers need training to use technological equipment.	100%	100%
18) The ORE and the PRDE in general do not provide direct support to schools to improve their academic performances.	100%	100%

META-PR Tests Related Findings:	Average of Higher Proficiency Schools (N=5)	Average of Lower Proficiency Schools (N=7)
1) Students need more motivation and reinforcement to take the META-PR standardized tests.	40%	86%
2) The META-PR standardized tests do not correlate with students' grades.	40%	57%
3) The META-PR standardized tests need higher academic and personal importance for students, parents, and teachers.	20%	100%
4) The META-PR standardized tests do not measure students' real academic performance.	80%	86%
5) The preparation for the META-PR standardized tests starts in August, with a review of the previous year's results.	80%	86%
6) The META-PR standardized tests are not tempered or aligned with the school's curriculum.	40%	86%
7) The META-PR standardized tests are too difficult for the students' level.	40%	72%

Infrastructure Related Findings:	Average Of Higher Proficiency Schools (N=5)	Average Of Lower Proficiency Schools (N=7)
1) The schools need air conditioning units (AC units) in all classrooms.	60%	43%
2) Schools have not been painted or properly maintained.	40%	29%
3) Wish to eliminate individual seating in classrooms and convert them into a laboratory-type setting.	40%	14%
4) There is much need for technological equipment (computers, photocopiers, etc.).	60%	100%
5) There is a need for better spaces (classrooms, recreational spaces, green areas, sport facilities, etc.).	40%	29%

When asked: If you had a magic wand, which 3 things would you instantly change and/or improve to make your schools' academic performance better? All school principals emphasized:

- Classrooms with a laboratory-type setting
- Less complex and overcomplicated procurement
- Technological materials
- Better infrastructure
- Better planning and teaching methods from teachers
- Higher salary
- Better operational control
- Incentives for students, parents, and teachers

SIGNIFICANT QUALITATIVE RESULTS REGARDING THE IMPACT ON META-PR SCORES AND OVERALL PERFORMANCE

An in-depth analysis was made to compare HPS principals' answers with those given by the LPS principals. We found three distinct significant aspects:

- Autonomy and strategies for the management and pursuit of funding opportunities and other resources.
 - ∴ The principals of the HPSs are aware that they have a limited budget and that there are usually hurdles to obtaining the resources that the school needs in a timely manner. Thus, they have developed different activities to find the resources or raise the funds needed. They seemed more proactive when looking for resources for the school. Among the strategies mentioned for finding school resources are:

- looking for support from the students' parents, applying for or requesting help from private organizations, and holding fund-raising activities.
- ∴ Some of the principals of the HPSs asked for more autonomy to be able to effectively manage their budget, purchases, and their process of selecting or changing staff.
- ∴ Most of the principals of the LPSs rely on the ordinary budget assigned to their school by the PRDE (at the central level) to obtain the resources and materials they need, following the already established processes. The principals of the HPSs tend to look for more funding opportunities to fulfill the schools' unmet needs, as well as better management of the funds they can gather.

TEST PREPARATION PROCESS FOR THE META-PR STANDARDIZED TESTS

- The HPSs tend to perform a more robust and structured test preparation process. This process usually starts at the beginning of the school year and includes actions such as organizing meetings with school staff and parents to raise awareness regarding the importance of these standardized tests. They use blueprints as guides to teach the necessary skills that will be measured in the tests. Likewise, they examine the areas where students scored the lowest to reinforce those areas' concepts or themes during the next school year. Some schools design a follow-up plan for those students who performed poorly on these tests.
- Some HPSs indicated that META-PR standardized tests correlate in a positive way with the results of the students' academic performance. Overall, they have a better perception of the utility and potential benefits of giving these tests.
- The test preparation process of the LPSs is more informal. They have meetings during the initial stages of the school year and emphasize the importance of these test from the 2nd semester onward. There is no process or protocol regarding potential adjustments in the curricula or plans that could be developed by teachers to improve test results. Most LPSs reported they take a week before the test to practice.
- Most of the principals of the LPSs have a negative perception of the META-PR standardized tests. This perception is based on the tests' alleged

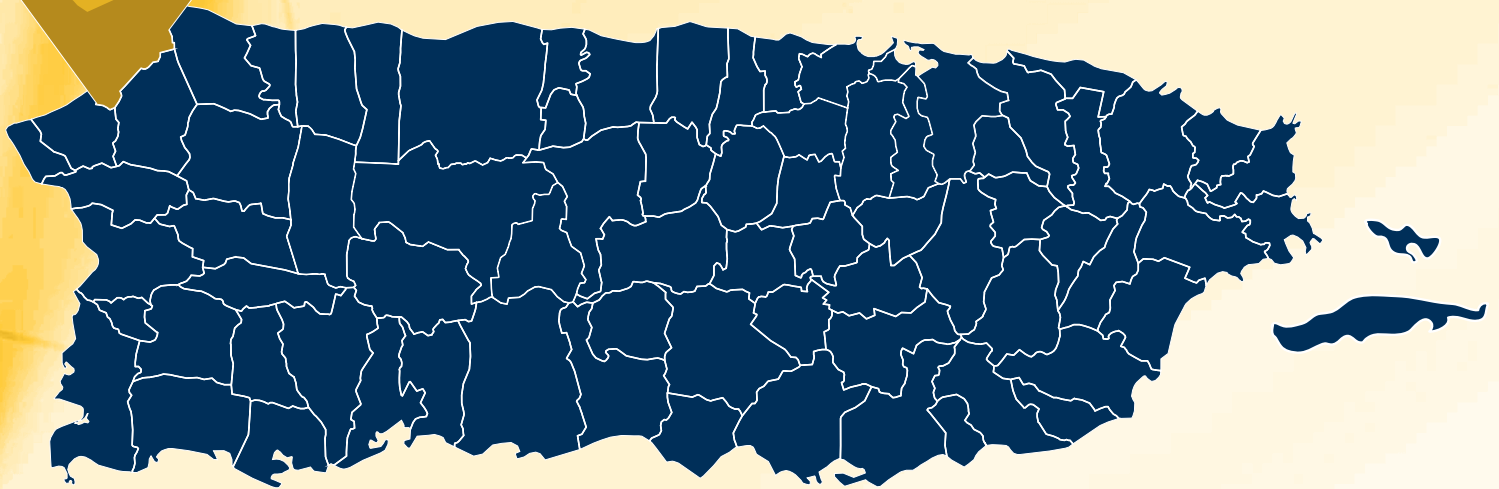
inability to gauge students' academic performance and how they align with the school's prescribed curriculum. They also mentioned that the PRDE (at the central level) must develop strategies and tools to help schools improve their test results.

Principals' levels of proactivity

- Principals from HPSs showed higher levels of proactivity when answering questions during the interview. They had specific strategies in place to deal with teachers' level of absenteeism, get adequate and timely funding, and implement changes. Furthermore, when answering these questions, they were able to mention details of each subject and were able to provide specific examples of what they have implemented in their schools. They proved to be deeply knowledgeable on what goes on in their respective schools. Most of these principals had more years of experience working in their schools.
- On the other hand, most (not all) of the LPSs principals answered many of these questions vaguely or with "politically correct" answers and were not able to provide detailed examples of implemented strategies that were currently in place. This could also be due to the fact that four of these principals were relatively new to their positions and have not had enough time to design and implement their own policies or strategies in order to assess their effects.

CASE STUDY

AGUADILLA



Aguadilla Schools

School Type	Student:Teacher Ratio	Enrollment (Up to K-6)	Highest Grade Level	Location	%Special Ed from Total Enrollment	Poverty	Principal: Yrs at this school	Teacher: Average Yrs at this school	Teachers Academic Profile*	Infrastructure Index	Technology SUB-index	Parental Engagement Index	Average Overall Proficiency
HPS	24-1	264	k-5	Urban Public Housing	40%	87%	6 yrs	4.5	70%M	67%	50%	93%	82%
LPS	27-1	214	k-8	Urban	43%	92%	less than 1	2	61%M	44%(F)	40%	61%	64%

*M=Master Degree / B=Bachelor Degree

Aguadilla - High Proficiency School (HPS)

This HPS was classified by the PRDE as a 5-star school, based on the results of the META-PR 2019 tests. It is ranked in the top 5% of all schools in Puerto Rico, with 82% weighted academic proficiency.

The school has 264 students enrolled, 87% live in poverty, and 40% participate in the Special Education Program. The current student-teacher ratio is approximately 24:1. The school is located in an urban area, within three public housing projects, and the school serves a student population that ranges from kindergarten students to fifth grade students.

Despite having approved grants for equipment and several alliances with different nonprofit organizations, the school's principal mentioned they are currently in need of technological tools that will allow them to offer classes in a more efficient way. The principal's proactive support for their teachers has led them to design various strategies and develop special projects at the school, which helped achieve excellent results on the META-PR tests. The school principal understands that their children's education has progressed at their school and also seemed to be equally satisfied with their infrastructure and services.

Infrastructure

This HPS has a library with 30 working computers, internet services, a librarian, a psychologist, a social worker, a nurse, a nutritionist, a Parent-Teacher Association (PTA), and various sports facilities (basketball court, volleyball court, and soccer park). However, there are some areas within the school that do not have Wi-Fi access. Most of its classrooms are air-conditioned and the school has an alarm and a doorbell.

In addition, it has a baseball program and an after-school music program. One parent of the respondents surveyed spoke positively about school safety, but another commented on the need for a little more surveillance at lunchtime. Some parents also commented on the lack of cleanliness in the bathrooms as well as on the facilities' maintenance, despite the school having 3 janitors.

The school does not have after-school tutoring

programs, unlike LPS, but it does have six (6) student clubs. The clubs are: 4-H Club that promotes the well-being of green areas, Recycling Club, Tutors Student Club, Girls Scouts of Puerto Rico, Guiding Students Club, and the Financial Education Club.

The Office for the Improvement of Public Schools (OMEP) is the state agency in charge of the structure and gardens, as well as plumbing, electricity, and everything that involves repairs.

The principal would like to see designated spaces throughout the school's vast green areas for students to share and study.

Per ABRE's Infrastructure Quality Score, this HPS obtained 24 out of 36 points, for a total score of 67% (D). On the other hand, regarding the Technological Infrastructure Score, this HPS obtained 6 out of 15 points, for a total score of 40% (F).

Grants, Donations, and Alliances

From grant applications to forming alliances, the principal and their team first set out to identify their unmet needs and then identify where they should submit a proposal to. This HPS has specific strategic alliances with non-governmental organizations to address various needs, for example, technology,

academic improvement, parental involvement, safety, reduction of school dropouts, among others.

Some of the alliances are:

Alliance	Description
Ana G. Méndez University	Practice and observation center for students in different career paths
UPR – Aguadilla Campus	Residential Social Work Program
Villa Nueva	Association between the community and the school in relation to any incident or need that arises within the students' environment.
4-H Club	This promotes the well-being of the school's infrastructure and green areas; workshops are given to students to promote everything related to the environment.
Girls Scouts of Puerto Rico	Improves academic performance, minimizes dropouts, and increases parental involvement in their children's education.

The computers that the library owns were donated through a program sponsored by a technology equipment company, who donated around 28 computers to create a Virtual Library.

The school also has an "Up Down" program which provides home service to students who, due

to a disability or illness, are unable to attend school regularly.

Additionally, the school received approval of a submitted proposal ("21st Century") to offer tutoring programs and assist students who are slightly behind in their studies.

School Principal's Profile and School Environment

The principal has a master's degree in Educational Administration and Supervision and a bachelor's degree in Physical Education at the Secondary Level. The principal also holds several certifications, such as the Teacher Facilitator in Physical Education, and has held the role of principal of the PRDE for 6 years, all while working in this HPS. They served as a teacher for 19 years before becoming principal and worked 6 years outside the PRDE as a teacher in various private schools.

According to the information gathered in our research, the principal considers that a more autonomous budgeting process is imperative. More specifically, it should be one that allows an expedite acquisition process to meet the school's priority needs. They also want to get more professional

development workshops, both for themselves and their teachers, so as to become more proficient in the use of technology.

The principal demonstrated high levels of proactivity throughout the interviews, which is consistent with the results achieved in their school. The principal understands that other school principals of the PRDE system should dedicate more time to data analysis.

In terms of the organizational environment, the principal considers that the environment is efficient and has given good results because everyone encourages "effective and open communication to reach a consensus" at all school levels, among students, custodial and school cafeteria employees, teachers, librarians, etc. Parents and teachers also commented positively on communication quality.

Faculty

Seventy percent (70%) of the teachers surveyed have a master's degree and, on average, have been working at this school for 4.5 years. They have also been teaching their current grades for 2.5 years longer than teachers at the LPS. This may provide the stability and time required to implement beneficial changes for students and for teachers to acquire a higher degree of specialization in their areas. This is consistent with the revised literature, in which a high teacher turnover rate is consistently detrimental to student achievement. A 2012 study collected data for over a decade on 1.1 million elementary school students in

New York and found that students that experienced high teacher turnover rates scored lower in both English and Math. When the study eliminated teacher turnover rates from the analysis, results showed an increase in student achievement in Math by 2% to 4% of a standard deviation.¹

With 264 students, this HPS has a student-teacher ratio of 24: 1. The principal considers that for the teaching process to improve, the student-teacher ratio should be decreased. The principal understands that they do not have a problem of teacher absenteeism, yet the data provided by the PRDE reflects a 4%

¹ "How Teacher Turnover Harms Student Achievement" by Matthew Ronfeldt, Susanna Loeb, and James Wyckoff. A research program by the American Institutes for Research with Duke University, Northwestern University, Stanford University, University of Missouri-Columbia, University of Texas at Dallas, and the University of Washington.

absenteeism. A policy has been created in the school where, unless it is an emergency, the absence is notified in advance to the principal and strategies are drawn to limit the effect on students. Additionally, the school principal believes that the PRDE should design policies that limit teacher absences. The principal also thinks that by eliminating a previous policy, which provided for the payment for excess vacation and sick days,² teacher absenteeism has increased.

Most teachers live within the same municipality (Aguadilla). Teachers reported that, to do their work more effectively, they must obtain more and better technological equipment and books. Some of the required equipment or materials include photocopy machines, scanners, computers, technological educational games, projectors, laboratories, whiteboard markers, and other educational materials.

Parents

Most of the parents surveyed highlighted the teachers' great qualifications, the safety, and the healthy communication of the school staff. On the other hand, many parents complained about the lack of cleanliness in the bathrooms and the way special education students are treated. All the surveys were answered by mothers. Of these respondents, 50% are employed and 50% are unemployed. About 92% understand that their children's education has improved in this school.

Additionally, parents have institutionalized a PTA and a Parent Volunteer Program that helps with some tasks, such as concerts, recitals, talent shows, field trips, landscaping, cleaning, and more. All these activities promote community engagement and integrate parents towards participating in the students' educational process.

The principal does not see a problem of student absenteeism or tardiness in the school. Data provided by the PRDE suggest a 5% student absenteeism. The principal believes this could be due to a lack of commitment of some parents in grades such as kindergarten and first grade. The principal considers that parents are fully integrated into the school. As an example, they mention that parents are the custodians of the school, given its location within the community.

Even though the school gates close at 8:00 a.m. and are not reopened until 3:00 p.m., parents provide security around the school. Furthermore, parents actively participate in school assemblies and are encouraged to communicate their concerns. The principal informed us that this openness gives parents a sense of belonging that has yielded many positive results.

As for ABRE's Parental Immersion Index, the HPS obtained 93% (26/28 points).

Mechanisms to Improve Academic Achievement

The principal has created strategies and submitted proposals to achieve better results in academic proficiency. For example, considering the high level of poverty (87%) that exists in the school, the principal has established an internal policy of "not working from home." Teachers try to cover materials and assignments at school, believing that when students go home, families are solving higher-priority situations and may not have the time for homework. This policy is backed by the school's tutoring services.

The principal considers that the Regional Educational Office (*Oficina Regional Educativa*; ORE, by its Spanish acronym) has been very supportive of their special projects and strategies, as some of them require the office's approval and in the past three years they have been able to count on said support. The principal states that ORE is willing to approve and support these projects if they are aimed at strengthening the students' academic achievement.

Another strategy implemented by the principal is "peer tutoring." The PRDE guarantees 2 professional development periods for teachers, from kindergarten to third grade teachers. However, in this school they managed to get the fourth, fifth and sixth grade teachers to also have their 2 professional development periods. The first period is the regular professional period of all schools and the second period is one based on tutoring for students with questions or lagging in some subject. In addition, they can also assist students if a teacher is absent, keeping them in custody and in class. Each activity that is done at school has its subsequent analysis of achievements and failures so as to ensure its improvement the next time it is performed.

The school has an internal policy to start preparing for the META-PR test at the start of the school year (August). Furthermore, this school has maintained a test preparation strategy that originated from a previously canceled program (Puerto Rican Tests of Academic Achievement; PPAA, by its Spanish acronym). Despite their cancellation, the school decided to continue working with the same strategy because of its positive outcomes. The principal and their team of teachers update the school's curriculum and adapt it based on the META-PR results. Throughout the year, they constantly monitor underperforming students to practice their skills before taking the test. The effort is supported by several student clubs (academic and non-academic). As mentioned above, this school has

its own mechanism for substitute teachers, meaning that teachers in their second professional development period replace absent teachers. All these strategies

have resulted in the obtainment of high proficiency scores.

Aguadilla - Low Proficiency School (LPS)

It is important to note that the LPS principal has been an interim principal since January 2020. The official principal assigned to this school, who had been in charge for 10 years, is now working at the ORE since January 2020. Given that principals answer most of the research instruments, significant differences were found on the quality of responses.

With 64% weighted academic proficiency, this LPS has 214 students, 93% of them live in poverty, and 43%

of them participate in the Special Education Program. The current student to teacher ratio is approximately 27: 1. The school is located in an urban area of Aguadilla and 11 minutes from the HPSs (3 miles). The student population ranges from kindergarten students to sixth grade students (elementary school). We were informed that the LPS lacks school equipment and supplies. The highlighted unmet needs were different technological tools.

Infrastructure

This school has 37 classrooms and OMEP is the state agency in charge of the school's structure and grounds, as well as plumbing, electrical, and anything else that involves repairs. The school has internet and Wi-Fi but does not have computers. According to the surveys, the school urgently needs basic educational materials and technological equipment. Basic tools and materials required include electronic whiteboards, pencils, pens, paper, drafts, books, markers, among others.

It has a basketball court and a library, but it does not have a librarian. It also has an after-school tutoring program and a "patrollers" club.

The LPS has several Fine Arts programs with high student participation. Among these programs is the drawing program, which lacks the basic essential materials so that it can work efficiently. They also have a music program and a modeling program.

The parents surveyed complained about the

lack of hygiene in the bathrooms, even though the school has 3 janitors. They also complained about the infrastructure, including one doorless bathroom. In addition, they complained that the school proximity to the beach and the dearth of trees around campus make the heat in non-air-conditioned rooms become unbearable. They only have air conditioning in some classrooms. Among the infrastructure needs of the school is the physical facilities' maintenance and a camera system to be installed inside said facilities (since the school already has security cameras installed around its buildings). The school also has a security guard, 2 social workers, a bell at the entrance, and an alarm.

On ABRE's Infrastructure Quality Score, this HPS obtained 16 out of 36 points, for a total score of 44% (F). In terms of the Technological Infrastructure Score, this HPS obtained 6 out of 15 points, for a total score of 40% (F).

Grants, Donations, and Alliances

They reported that, since 2013, they have had few alliances with nonprofits to target infrastructure issues. They also have an after-school tutoring project. The

principal is eager to further their knowledge on the complete process of how to identify, develop, and submit proposals that can benefit the school.

School Principal's Profile and School Environment

The interim principal has a doctoral degree in Education and Technology. They also hold several certifications related to education. They live in Aguadilla and has been principal of the PRDE for 7 months (since January 2020). They worked outside the department for 5 years, had experience in administrative jobs at the PRDE and as a supervisor outside the PRDE. The current school principal has been working for 10 years in this LPS but has excelled in the ORE.

Due to their short time as principal of this school, they showed little knowledge and insight of the details concerning the school when answering our questions. The school principal is eager to get Professional

Development (PD) in basic school administration skills.

On the other hand, the principal believes that the lack of equipment and materials, along with the shortage of extracurricular support, leads to poor motivation in both teachers and students, which has negatively affected student performance over the years. The principal considers that there is a good atmosphere at this school. They have been working for a short time but are addressing the administrative structuring of the school.

Faculty

The parents surveyed highlighted the outstanding performance of the teachers, the principal, and the positive communication between them. With 214 students, the student-teacher ratio is 27:1. The teachers surveyed have an average of 17 years within the PRDE, 11.5 years teaching their current subjects, and 3.5 years teaching their current grades, but only 3 years in this school. Sixty-one percent (61%) of the teachers surveyed have a master's degree.

The principal considers that there are no absenteeism or tardiness issues, but according to the data sent by the PRDE, it reflects a 5% absenteeism. The LPS principal could not specify the reasons for teachers

being absent, but believes there has been an increase since the elimination of a previous institutional rule regarding sick leave, where teachers and other public employees received a payment for excess vacations and sick days.

The LPS teachers have higher intentions to quit their jobs than HPS teachers and 95% think that they do not have the necessary equipment to execute their work as teachers. Most live in Aguadilla, while the rest live in Aguada, Isabela, and Moca. The principal stressed that teachers need professional development workshops. Meanwhile, teachers insist that they urgently need basic equipment and materials.

Parents

Eighty-three percent (83%) of the parents surveyed stated that their children's education has progressed at their school and showed similar levels of satisfaction with the infrastructure and services. All the surveys were completed by mothers. Of these respondents, 50% work and 50% are unemployed.

Parents are very dissatisfied with the library services offered at the school since it does not have a librarian. Most of them responded that if they had better financial resources, they would change their children to another school. They also showed dissatisfaction with the cleaning and maintenance of the school

facilities. The school does not have a PTA and the level of parent participation in assemblies and meetings is very low.

The surveys showed that there is no good integration between parents and the school. Moreover, parents do not follow up with their children at home. The principal infers that student absenteeism is due to the lack of commitment from the students' parents.

As per ABRE's Parental Immersion Index, the LPS obtained 61% D (17/28).

Mechanisms to Improve Academic Achievement

Currently, the school gets ready weeks before the META-PR tests and some teachers stay beyond their work hours to help their students. The principal looks forward to implementing some organizational changes when the 2020-2021 school year begins. They expect each teacher to have a similar number of

students in terms of Special Education students and a similar gender distribution. The principal also hopes to administrative restructuring with maintenance staff and other non-teaching employees by promoting that all teachers are "on the same page" to enable continuity in education.

General Comparisons

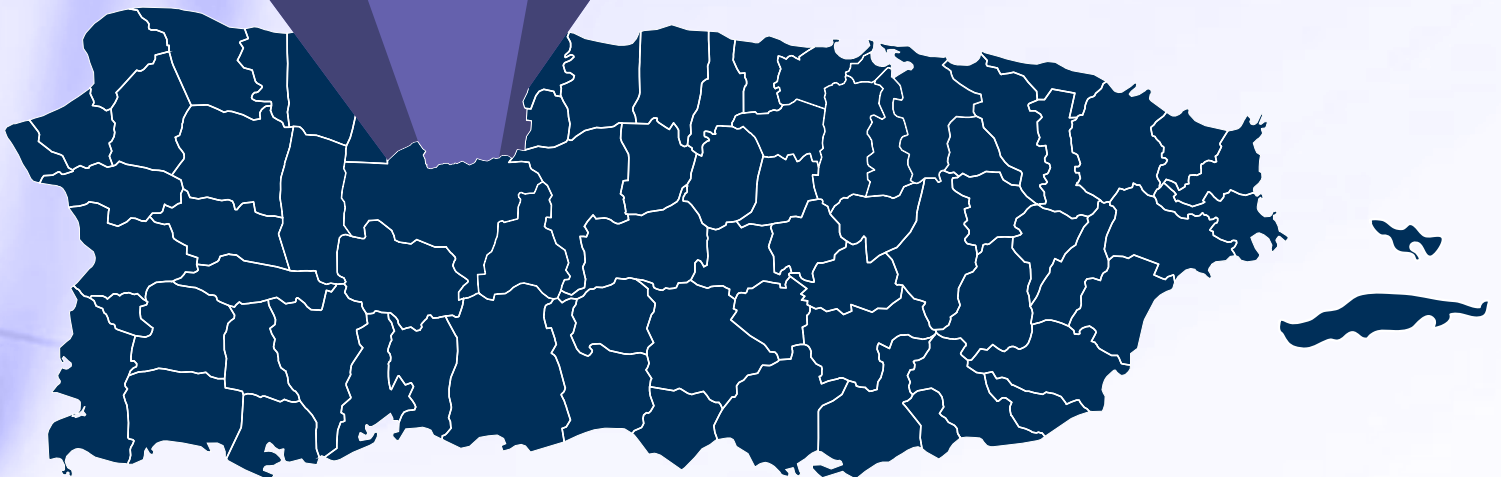
The staff of both schools describe the processes for obtaining materials to be bureaucratic and complex. Both schools' personnel indicate that they need more supplies of technological tools at school. Regarding teachers' feedback, both principals agree that they provide feedback daily (2-3 hours a day), following an informal process. Regarding the factors that affect student performance, the LPS staff identifies the lack of equipment and materials as key factors that negatively affect the teaching process. Meanwhile, the HPS staff indicates that the most influential factors are the socioeconomic level of the students' families and the limited time that parents dedicate to help their children with their homework. Both schools agree that they receive support from the ORE. The LPS does not have much knowledge about federal aid, compared to the HPS. The HPS demonstrates that it performs more preparatory activities for the META-PR tests compared to the LPS.

From the parents surveyed, 58% of LPS parents reported that they study with their children for less than 5 hours a week, versus 58% of HPS parents who indicated that they study with their children for more than 6 hours a week. However, there appears to be no difference in the educational attainment of the parents who answered the survey from both schools.

The main gap between this pair of schools that is probably having a greater effect on academic proficiency are the strategies, alliances, clubs, and special programs that the HPS has implemented. Recognizing that depending on the PRDE's budget is not enough, the HPS has recognized and established approaches such as grant opportunities and strategic alliances. More importantly, the HPS has established formal strategies to deal with the internal factors that they understand are influencing overall proficiency levels at school. These unique factors and practices could be affecting their proficiency.

CASE STUDY

ARECIBO



Arecibo Schools

School Type	Student:Teacher Ratio	Enrollment (Up to K-6)	Highest Grade Level	Location	%Special Ed from Total Enrollment	Poverty	Principal: Yrs at this school	Teacher: Average Yrs at this school	Teachers Academic Profile*	Infrastructure Index	Technology SUB-index	Parental Engagement Index	Average Overall Proficiency
HPS	27-1	402	k-8	Rural	43%	79%	9	2.5	50%B	64%	47%	89%	90%
LPS	30-1	354	k-8	Sub-urban	35%	83%	4	4.5	50%B	27%	14%	86%	58%

*M=Master Degree / B=Bachelor Degree

Arecibo - High Proficiency School (HPS)

Arecibo's HPS is ranked in the top 10 elementary schools with high academic potential on the island. It is a 21st century school located in a rural area of Arecibo and it is the first school in Puerto Rico to obtain the LEED®Gold (Leadership in Energy and Environmental Design) certification. It was built in 2014 and serves a student population that ranges from kindergarten to the eighth grade.

The principal started their role 9 years ago only to face a hostile and totally disjointed school environment, especially since having a permanent principal was unheard of. They worked hard to change the school's structure and today they offer different academic programs during and after school hours. As other HPSs, it provides several key programs such as

visual arts (drawing and music, where approximately 100 students participate), volleyball, and basketball, among others.

Despite being classified as a modern school and having 4 computer labs, budget constraints associated with maintenance of technological equipment has translated into having a smaller number of functional computers available and damaged digital whiteboards. These challenges have not limited the principal's commitment to offer META-PR tests online. At 90% weighted academic proficiency, this school has about 402 students in grades K-5, 79% of students lived in poverty, and 43% participated in the Special Education Program. The current student-teacher ratio is approximately 27:1.

Infrastructure

The school is 125,000 square feet and OMEP has control of the grounds, maintenance, and building repairs. The school has Wi-Fi and 4 computer labs. However, only 40 computers in these labs work; they have around 25 damaged computers. In addition, they have a librarian and 5 library computers. Other school features include a green roof on the third level, a multipurpose court, an amphitheater, an interior courtyard on the first level, and air conditioning in some of the classrooms. The cafeteria, multipurpose court, and amphitheater are intended to be shared

with the surrounding community.

Several parents complained about the school's lack of hygiene and cleanliness, and the principal acknowledges that their school needs 3 additional janitors. ABRE's Infrastructure Quality Score ranked this HPS with 23 out of 36 points, for a total score of 64% (D). Concerning the Technological Infrastructure Score, this HPS obtained 7 out of 15 points, for a total score of 47% (F). This HPS is an example of a school that does more with less as the quality of infrastructure and technology scores are not at an acceptable level.

Grants, Donations, and Alliances

The school did not report to have financial aid from any grant or other private sector support programs. The school reported having a federal grant program to improve academic achievement that was presented by

the PRDE. The school principal understands that the school will benefit from managing federal grants and developing strategic alliances with non-governmental organizations.

School Principal's Profile and School Environment

The principal has a master's degree and started working in this capacity in 2011. At that time, the school had profound discipline and academic problems. They initially created a new organizational structure in which teamwork, discipline, consensus, and respect were central components. The principal informed that

they had adapted the requirements established by the PRDE to their internal and local context. Moreover, they have confronted strong resistance from teachers who have taught at PRDE schools for many years and who are reluctant to adapt to changes made by the school principal.¹ One key strategy was the use of the

¹ In the event that the school has an emergency and classes must be canceled, the school has a policy to make up for the approximately 2 or 3 school days that

school's own funds to provide workshops to teachers that have not been able to get assistance from the PRDE. This type of action has resulted in a stronger commitment from all teachers. The school principal has developed specific programs to empower teachers and better inform them on the rules and regulations that condition their work, which has translated into

teachers improving their problem-solving skills. The principal's contention is that these programs have enabled a shared sense of responsibility between all the main school components or staff involved (janitors, teachers, parents, administrative personnel, among others).

Faculty

The principal reported that, of the 54 teachers at this school, there is an average daily absenteeism problem with 7 teachers. When asked about absenteeism and tardiness, the HPS's principal indicated that the absences are due to illness, but when the law changed and the incentive to pay for excess sick days was eliminated, this consequently increased absenteeism. However, the HPS principal has established policies alongside teachers to plan ahead and make sure students get their contact hours. The tardiness at HPS was primarily attributed to traffic and a lack of enough parking spots at the school (only 26 parking spots for a staff of over 100 people). Most of the teachers surveyed live in Arecibo and the rest are from neighboring municipalities. Half of the teachers have a bachelor's degree, and the other half hold graduate degrees. Even though most teachers have over 10 years of experience, the average number of years at their current school is 2.5 years.

The HPS teachers report significant levels of exhaustion (one of the components of burnout) and

consider that they do not have all the materials and resources they need to effectively perform their duties. The principal reports having difficulties with different groups of teachers and investing more efforts in dealing with those relationships and group dynamics. This finding was validated in the psychometric scales that teachers completed because in the organizational justice perception of procedural, informational, and distributive justice, the HPS was the only school with statistically significant lower levels in comparison with other schools. This school can be an example of how the school's success can be influenced by its organizational culture. For instance, research on the working culture of a HPS found that positive organizational characteristics, like teachers having positive relationships, contributing towards problem solving, and the principal having positive leadership traits, contribute to school success. **As previous research has shown, this proves the need to manage the organizational behaviors in educational institutions to enhance job performance.**

Parents

The principal of the HPS describes the students' families as working class and educated professionals, with 79% of families living in poverty. Of the 145 parents surveyed, 135 were mothers. Most of these parents have a bachelor's or graduate degree and about 60% of parents believe that their children's education has improved at this school and 131 believe that parents are primarily responsible for their children's education.

The principal reported an average daily absenteeism problem of 30 students, while an average of 40 students are generally late. The HPS runs a cooperative along with the parents, and they invest their funds in different

kinds of activities. The principal indicated that parents are always supportive and helpful in school activities, events and even make financial contributions, if necessary. Most parents expressed satisfaction with the school safety component and the commitment of the teachers and the principal. On the other hand, parents complained about school access and the very few parking spaces available.

Using ABRE's Parental Immersion Index, the HPS scored 89% (B) (25/28), indicating a high level of involvement and interest.

Mechanisms to Improve Academic Achievement

Since the beginning of the semester (August), the principal begins the preparation process for the META-PR tests. The process includes: (1) educating parents on the importance of avoiding absences during the probationary period; (2) mentoring teachers, parents, and students to raise awareness on the importance of the META-PR tests for the entire school community; (3) each teacher evaluates the “blueprints” as a guide to tackle the skills that they should work on; (4) since kindergarten, they teach students to work on the computer in order to prepare them for the third grade exam; and (5) META-PR tests

are administered online, a modality that has resulted in an improvement in scores since it was made available.

The HPS states they need to invest in technological equipment and make their computer labs 100% functional. As reported by other schools, this HPS has used funds collected through fundraising activities to purchase materials and for other pressing needs. They explained that, historically, there is gross inconsistency and uncertainty in the delivery of materials purchased through the PRDE system.

Arecibo - Low Proficiency School (LPS)

In the abretuescuola.org index, this LPS obtained “C” scores in both 2018 and 2019. Nonetheless, in 2019, they have managed to increase the percentage of academic proficiency with their META-PR scores. Founded in 1917, this school is located in a suburban area of Arecibo, 8 minutes away from the HPS (2.6 miles), and serves a student population that ranges from kindergarten to eighth grade (elementary school). This year, the school was declared a “Historic Place” on the National Register of Historic Places² (RNLH, by its Spanish acronym).

The principal arrived at the school 4 years ago and immediately began to develop new organizational

structures while facing a strong decline in the quality of the school’s facilities. After learning about the setbacks that the school staff had faced, it is difficult to figure out how they managed to further improve academic proficiency. The LPS has strategic alliances with 5 different entities to improve academic performance and involve parents in the education of their children. At 58% weighted academic proficiency, this school has an approximate 354 students in grades K-5, 83% of these students live in poverty, and 35% participated in the Special Education Program. The current ratio of students to teachers is approximately 29:1.

Infrastructure

The school’s classification as a historic place has created a compliance issue with regard to its infrastructure’s maintenance. The school claims that this historic condition negates the maintenance responsibilities that otherwise would have been satisfied by OMEP or PBA. In addition, this condition tends to increase maintenance costs, for which the principal has relied on the school’s small cooperative. Moreover, the school facilities were severely affected by Hurricane María in 2017 and neither financial assistance or help with repairs has been provided through state or federal agencies.

The school reported several problems: there are 12 buildings with a total of 7 classrooms that are closed due to the damages caused by the hurricane, it has a broken sewer, there is a rodent infestation, it has broken toilets, and its plumbing system is in poor condition, among many other difficulties.³ Due to the lack of maintenance, school security has been compromised and the principal reports that they are

constantly robbed by thieves who have broken down doors and windows, thus aggravating the situation of repairs and leaving no teaching materials for students.

The LPS cancels classes several times during the school year, cancelling classes more often than Arecibo’s HPS and even all the other schools surveyed. This school has canceled more than 10 school days in a single year due to infrastructure issues (i.e., electrical fires, clogged and/or broken plumbing, toxic gases, etc.).

The principal submitted a proposal to the Laura Bush Foundation and was awarded \$40,000 worth of books and 20 computers for its library. Although the school has a library club, it does not have a librarian on staff. However, even if they assign a librarian and open the library, the school does not have internet access. Additionally, this LPS also does not have sports facilities or after-school programs and has air conditioning units in a limited number of classrooms.

² The RNLH is an official federal government list of historic properties that have architectural, engineering, archeological, historical, and cultural significance in general. The RNLH operates under the authority conferred by the National Historic Preservation Act of 1966 and is part of a program of the government of the United States of America to coordinate and support both public and private efforts to identify, evaluate, and protect these properties. The RNLH is managed by the National Park Service of the Department of the Interior, which empowers the State Office of Historic Conservation (OECH) to execute and administer the program in Puerto Rico. This means that neither OMEP nor PBA have jurisdiction to manage the maintenance of this school.

³ Teachers need a faculty room; the school only has 2 bathrooms for 600 students; and the principal needs a new air conditioning unit for their office, since it was damaged by Hurricane María.

Some parents complained about damaged and dirty bathrooms, lack of resources, poor physical infrastructure, and lack of general hygiene. ABRE's Infrastructure Quality Score gave the LPS 9 out of

33 points, for a total score of 27% (F). Regarding the Technological Infrastructure Score, this HPS obtained 2 out of 14 points, for a total score of 14% (F).

Grants, Donations, and Alliances

The LPS reports having 5 different alliances with nonprofit organizations to work on improving academic achievement and to increase parental involvement in their children's education. Moreover, the school has a federal grant program to improve academic achievement. As noted above, the school won a grant through the Laura Bush Foundation, which provided computers and books for its library. It has also won grants for infrastructure repairs and is

currently pursuing a partnership with the Pontifical Catholic University of Puerto Rico-Arecibo Campus for after-school tutoring programs.

The principal coordinates alliances and submits proposals to the surrounding universities. The school has formed alliances with the Lions Club of Puerto Rico and the Pontifical Catholic University, among other institutions.

School Principal's Profile and School Environment

The principal has a Ph.D. in Education and has worked in this LPS for the past 4 years. The principal has significantly more experience outside the PRDE, as a professor in private universities. They also have 8 years of experience as a director within the Department of Education. Since their arrival, two pressing circumstances have come up: (1) the school needed to improve proficiency levels, and (2) they,

as principal, had to create a strategy to upgrade the school's infrastructure. Step by step, they have been creating alliances and encouraging teachers to submit proposals, with the benefit that they can serve as faculty support. The principal has a long way to go, but the grants have already started to arrive, and parents and teachers alike are helping with the development of administrative processes.

Faculty

The principal indicated that they did not have a teacher absenteeism problem. However, they reported that an average of 6 teachers arrive late daily. When asked about the causes of absences and tardiness, they explained that they are due to the serious health problems some of the teachers were facing at the time and the practice of taking available sick days, especially since the PRDE's enacted policy change regarding sick leave. Half of the teachers surveyed live in Arecibo and half live in Hatillo. All of them have a graduate degree.

The school has 7-10 vacant teaching positions. This teacher shortage brings the student-teacher ratio to approximately 29: 1. At the time of the interview, the principal had not received notification of whether the PRDE would fill the vacancies or not.

The LPS had a very low teacher participation rate in the surveys, with only 4 teachers in the first survey and 0 in the second. On average, the teachers from the HPS had twice the years of experience as teachers within the PRDE system and the LPS teachers (16.5 vs. 8.5). However, the LPS teachers have an average of two more years working at their school.

Parents

Such has been the effort of the principal of this school that she/he has managed to have a daily program of 22 parent volunteers, who help the teachers as classroom assistants and run the cooperative. Parents and the PTA (Parent-Teacher Association) are responsible for much of the maintenance that the school receives. The parent-run cooperative generates its own funds that are invested to improve infrastructure, cover some school needs, and work on different projects.

parents understand that their children's education shows progress at this school and 25 believe that parents are primarily responsible for education. Most of these parents (21) have a bachelor's or postgraduate degree, and about 64% have a job (working class and educated professionals). For these parents, what they like best about the school is how close it is to home whereas what they like least are mainly the infrastructure challenges, including the limited number of computers for the number of students (they only have 12 computers). In the case of the LPS, the parents surveyed have greater intentions to remove their children from that school than the parents of HPS.

The LPS Principal described that parents are below the poverty level (83% in poverty), unemployed, some are illiterate and have dysfunctional households with serious problems that could affect the chances of the student getting to school on a daily basis. Of the 28 parents surveyed, 27 were single mothers. 27 of the

Although the principal did not specify the magnitude of students' absenteeism, they recognized it as a

concern. Tardiness was also another concern they shared. The LPS explained that, after a recent school merger (school closure program), the transportation problem worsened because many of the students who switched to this school live far away, many parents do not own cars, and the school does not offer

transportation services.

Both schools, the HPS and the LPS, report having good levels of parent and community involvement. According to ABRE's Parental Immersion Index, the LPS scored 86% (B) (24/28), demonstrating a high level of engagement and interest.

Mechanisms to Improve Academic Achievement

The principal understands that student absenteeism has historically been critical and negatively affected academic performance at the school. They even mentioned extreme cases of absenteeism, which had been reported to the competent authorities. At these elementary levels, where the greatest responsibility of students attending and arriving on time lies solely on their parents, most of the principals surveyed believe that the lack of commitment of some parents is what

may be causing this problem.

As for META-PR testing processes, this LPS provides paper-based tests, unlike the HLS that provides online tests. The LPS principal reported that new strategies have been put in place to motivate children to take these tests. Nonetheless, students' absenteeism is remarkably high during the testing period.



General Comparisons

The parental survey participation rate was significantly different between the HPS and the LPS; a total of 150 parents responded to the HPS survey while only 28 parents answered the LPS survey. In both cases, mothers were the main respondents. The HPS has more resources than the LPS, which reported vandalized classrooms and greater problems with the school's infrastructure. The HPS provides more individualized feedback to teachers compared to LPS. The LPS cancels more school days than the HPS (8 to 10 school days vs. 2 to 3 school days). Both schools are well integrated with the community and report good levels of parental immersion or interaction.

The LPS personnel indicate that they need more staff members (teachers) and resources compared to the HPS school. The HPS has a higher population of professional working parents compared to the LPS, where most

households are composed of single mothers (single-parent households) and many families are going through social issues. Parents at both schools have complained about poor facility maintenance.

The main factors that could be influencing the differences in academic competence between the HPS and the LPS are the greater challenges faced by the LPS in terms of infrastructure, personnel, and resources. These factors can drain the LPS school's time and effort that should be dedicated towards investing resources in its students' academic performance. However, both schools have their own specific coping mechanisms so as to respond to their pressing needs.

CASE STUDY

BARRANQUITAS, P.R.



BARRANQUITAS

The image features a dark blue silhouette of Puerto Rico with white outlines of its municipalities. A large, semi-transparent orange shape is overlaid on the northern part of the island, representing the Barranquitas municipality. The word "BARRANQUITAS" is written in white, bold, uppercase letters across the center of this orange shape. The background of the entire page is a light beige color with a network of thin, dark orange lines connecting various points, creating a geometric, web-like pattern.

Barranquitas Schools

School Type	Student:Teacher Ratio	Enrollment (Up to K-6)	Highest Grade Level	Location	%Special Ed from Total Enrollment	Poverty	Principal: Yrs at this school	Teacher: Average Yrs at this school	Teachers Academic Profile*	Infrastructure Index	Technology SUB-index	Parental Engagement Index	Average Overall Proficiency
HPS	18-1	108	k-8	Rural	37%	88%	less than 1, but 5+ experience	3	77%M	64%	53%	75%	96%
LPS	24-1	146	k-8	Rural	42%	89%	1	8	70%B	64%	47%	79%	60%

*M=Master Degree / B=Bachelor Degree

Barranquitas - High Proficiency School (HPS)

This is an elementary school that has become well known over the years for its academic excellence. The school reported having 108 students enrolled and has a 12:1 student-teacher ratio. As officially reported in the PRDE E-Data, 37% of its population takes part in the Special Education Program. The average poverty level index of the student population is 85%. Moreover, many students come from dysfunctional households and their families continuously experience harsh economic circumstances. The school community is strongly committed with its students and the school as a whole. This is partially evidenced by the fact that the school does not have student absenteeism problems, which have been common among the sampled schools.

Many students attend one or more of the several wide-ranging clubs and student organizations, which are part of the school community's daily life. There is a counseling club, technology club, conflict mediation club, health club, and they previously had an after-

school program dedicated to entrepreneurship. It is noteworthy that the school has no sports clubs or athletic teams. In addition, the school has several strategic alliances that indirectly impact the academic improvement of the HPS's students and its environment:

1. **Red Cross** - Sustainable Energy (solar panels were installed since schools usually serve as a shelter during emergencies).
2. **SISA** - Department of Health – conferences for personal care, hygiene, health, etc.
3. **Social Action** with the Municipality – provides services like workshops, photocopies, and meets other needs within families and the school community
4. **Save the Children** – Backpack initiative, where 25 families receive food on weekends.

Infrastructure

The school's infrastructure was highly criticized by parents through the provided survey questionnaires. The school building has sustained poor maintenance efforts, which are supposed to be handled by OMEP. According to teachers and parents, and even the

school principal, the overall nature of the schools' main facilities and common areas are in unacceptable conditions. As for ABRE's Infrastructure Quality Score this HPS obtained 23 out of 36 points, for a total score of 64% (D).

School Principal's Profile and School Environment

The school principal feels proud to be a part of this school, always expressing love and showing dedication towards the entire student community. The school principal lives in Barranquitas and has around 10 years of experience as school administrator. However, they have overseen the school for less than a year and reported that the first year at the school was incredibly challenging due to the exceptional circumstances that took place during the second semester of 2019-2020 school year: the earthquakes and COVID-19. However, a description of effective supervision strategies was drawn during the interview as internal mechanisms were established to improve organizational traits such as:

- One-on-one feedback sessions with teachers,
- Checking and overseeing lesson plans, and
- All kinds of evaluations to make sure lesson plans are aligned with both the curriculum and the META-PR blueprints.

The principal mentioned that the school needs better Wi-Fi access and a new photocopying machine. They also stated that a coach should be assigned to the school to have some guidance as new projects are integrated within the school environment and to support their professional development.

School's Needs and Benefits

The school's equipment is in a very precarious state. Only around 13 computers are available and some of them are not working properly. There is a lack of technological equipment for teachers and other staff members, which affects the school's efficient operation. Teachers reported a need for technological tools and equipment to efficiently perform their tasks. The 53% (F) in the Technological Infrastructure Index is only a confirmation of the school's reality.

Despite all the listed needs, the community is highly engaged with META-PR. For example, the school starts implementing different strategies as early as August to prepare students for their tests. The school has a follow-up system to check on teachers and make sure they are implementing the necessary changes in teaching strategies or content in order to offer to low-performing students the help they may need in school, resulting in higher proficiency levels.

Faculty

Around 77% of the HPS teachers have a master's degree and an average of 3 years teaching at the school. Thirteen teachers live in Barranquitas, while the rest of the teachers live in neighboring municipalities. The HPS teachers need training on how to integrate

technology to the classroom and asked for more access to technological equipment for their classrooms. The HPS teachers feel safe at their school and no teacher absenteeism problems were reported.

Parents

According to the school community, it has been extremely difficult to increase any kind of parental involvement in school academics, and the same difficulties are being faced at the LPS.¹ Parents enjoy participating in activities where there is little or no engagement with academics. Most families are single-parent families and there are high levels of parental unemployment. Although parents seem to be satisfied with many aspects of their children's school, they ask for better extracurricular programs and some

additional courses such as Fine Arts or STEM courses to complement the regular core classes offered during normal school hours. As per the survey, participation from the HPS parents was observed to be higher than that from the LPS parents. Nonetheless, the school scored 75% (C) in ABRE's Parental Immersion Index, which is 4 points below the LPS score.

Barranquitas – Low Proficiency School (LPS)

The LPS from Barranquitas had 148 students enrolled for the 2019-2020 school year, and there is a poverty rate of 89% among the student population. The LPS has an 18:1 student-teacher ratio and 42% of its student population is part of the Special Education Program. The LPS school is five miles apart (18-minute drive) from the HPS, although both are rural schools.

The LPS after-school program initiatives are available for all students and include volleyball, basketball, and other Fine Arts programs. In addition, the school

has two academic clubs, the Library Club and the Counseling Club. High levels of student absenteeism are evidenced in the collected data as an average of 20 students who are daily absent. The LPS school principal believes many students are absent because of their lack of commitment and motivation. In addition, they also notice that there are students with mental health conditions and other kinds of diseases because of the low levels of parental responsibility.

Infrastructure

As seen in the HPS, this LPS's infrastructure is in a very poor state. It needs painting and basic maintenance to have decent facilities for its students. As reported by the principal, the school is a three-floor building and has not been painted in more than five years. There are security cameras in the school. The Public Buildings Authority (PBA) is responsible for this LPS's maintenance. The PBA is a government agency different from OMEP and the PRDE. In some cases,

PBA oversees maintenance efforts because they own the entire property where the school resides. In ABRE's new Infrastructure Quality Index, this LPS obtained 64% (D), the same score as the HPS.

¹ This could partly be explained by the parents' educational attainment.

School Principal's Profile and School Environment

As in the HPS, the school principal from the LPS has only been in charge for a year and lives in the municipality of Aibonito. The school principal agreed on needing to receive training on how to draft good proposals in order to compete for some grants. Obtaining grants would mean access to new equipment and working tools that they need for their

basic operations. The school principal also asked for training on learning how to deal with difficult interpersonal interactions, persuasion, emotional intelligence, and some fundamentals of labor-related laws.

The LPS's Needs

The LPS, as well as the HPS, received budget cuts and has not been supplied with any of the materials requested over the last two years. Its budget was spent but nothing has been received. This school faces the same lack of technology as the HPS. The school currently needs equipment for its effective operation, along with the basic everyday classroom materials. The Technological Infrastructure Index of 47% (F) confirms the need for a better technological

framework for the school. As for its academic needs, the LPS's community must develop a motivational plan to achieve a higher level of willingness or motivation to engage in META-PR tests and improve scores. The principal believes that if the right plan is designed and executed, along with the support of the community, it could work and influence all the student body in a positive way.

Faculty

Teachers from LPS schools have been teaching in this school for an average of 8 years. Twelve of the teachers live in Barranquitas, two in Orocovis, one in Aibonito, three in Naranjito, and two in Comerío. Around 70% of teachers from the LPS have bachelor's degrees, yet very few of them have a master's degree. The LPS reports having high teacher absenteeism rates due to the physical and mental health conditions of some teachers. In general, the faculty needs immediate training on how to integrate classroom technologies, training to develop skills to deal with students' discipline problems, and lastly, they require

professional development concerning classroom strategies to improve special education students' academic achievement.

Besides all these needs, teachers reported that the LPS is a safe school environment, although they do not have access to all the necessary teaching materials. They asked for all types of technological equipment for their classrooms, as well as for the use of their students.

Parents

Most of the families in the school are single-parent families, with high levels of parental unemployment. Furthermore, the main caretakers of most of the students at the LPS are their grandparents. According to the school's perception, the level of parental engagement with academics is poor. As data

suggests, parents seem to be satisfied with the LPS but would like to see more computers available for students. As per ABRE's Parental Immersion Index, the LPS scored 79% (C), which is 4 points higher than the HPS's score.



General Comparisons

The principals of both schools agree there is a challenge regarding the use and access of funds for the acquisition of equipment and materials. Having all the materials to teach is relevant to guaranteeing proper school operations. Apparently, schools from the municipality of Barranquitas have not received any materials since Hurricane María in 2017. In addition, both school principals mentioned that the socioeconomic effects of the high poverty levels in their communities and the students' caretakers who oversee their education are factors that influence the schools' academic performance. The HPS principal understands that the students' academic performance is historically affected by the kind of feedback and support given to the teachers when having to deal with challenging cases. Furthermore, the lack of commitment from parents who don't bring their children to school or don't support their studies at home are also particularly relevant factors that influence academic performance levels. Finally, both schools pointed out the students' mental health was also a significant and highly influential indicator of their academic performance.

The LPS principal agreed that the lack of support from the students' parents can influence academic achievement. However, this principal also considers that performance could also be negatively affected by the lack of resources and technology for teachers. Overall, the HPS school principal seems to be more proactive in the administration and supervision of personnel. The HPS also mentions the staff's lack of training to effectively handle difficult situations and discipline issues, both matters that could be related to mental health conditions.

This pair of schools could be an ideal example of how, even under similar conditions, each school has its own organizational system that influences each respective performance in different ways. When analyzing data to find out which factors could be affecting the schools' academic proficiency, we found similar problems or variables between both schools. However, these factors are impacting schools differently. We also detected some specific practices that each school puts in place and which could determine their outcomes.

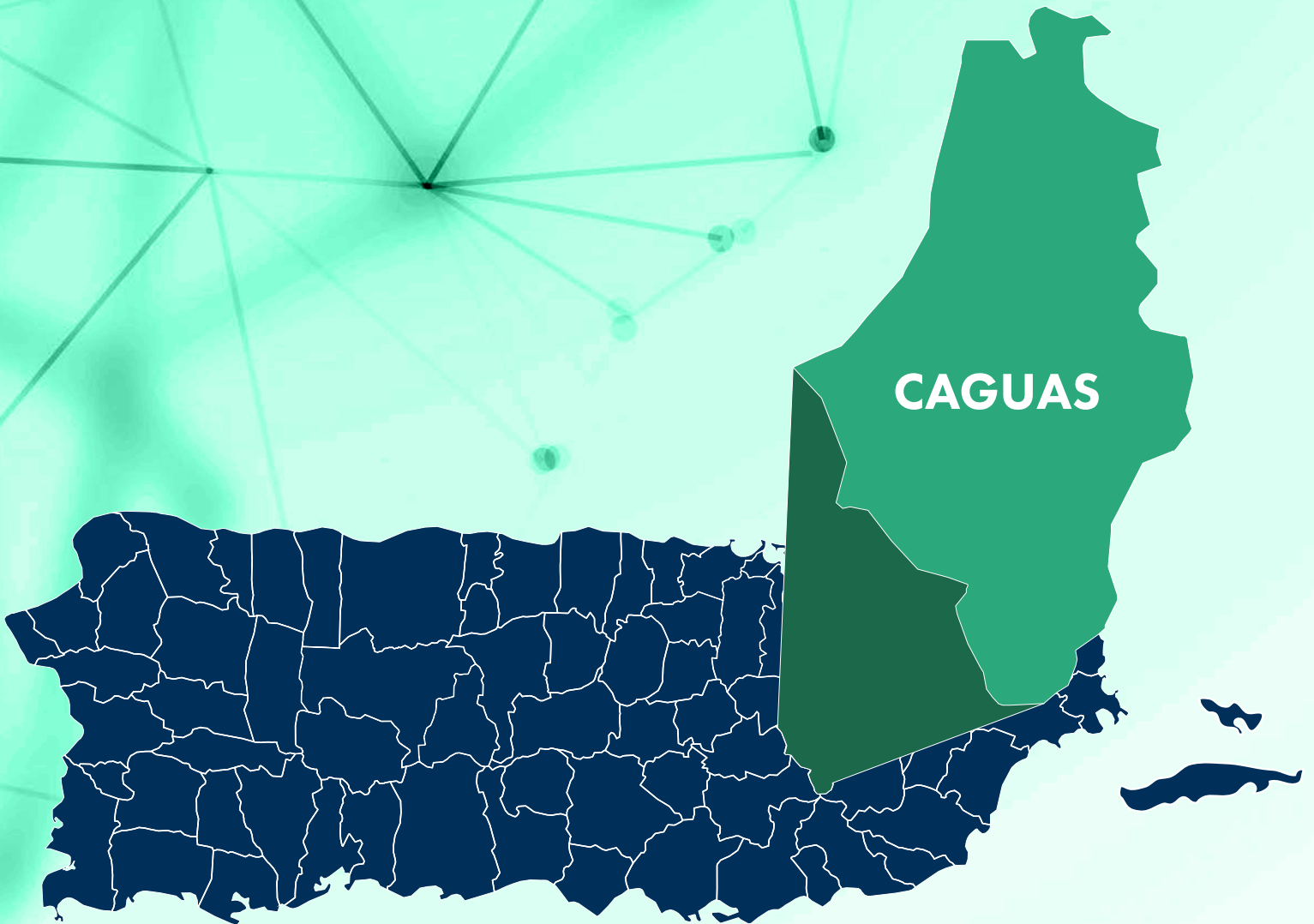
For example, although the HPS has solar panels and the LPS does not, both schools have infrastructure issues. Nonetheless, when analyzing the data in detail we noticed that the LPS has a higher need for basic didactical resources. Also, there are things that the HPS seems to do differently that can be having a positive effect on its proficiency, for example:

- A greater number of student clubs and extracurricular activities are available for students,
- A better follow-up system of lesson plans and blueprints guidance to help low-performing students, and
- Strategic alliances with non-governmental organizations, among others.

Further investigation should be done to assess if or how these variables may have a direct affect to the school proficiency. In general, although both schools seem to be similar, each one responds to their needs in different ways, and their student population responded differently to initiatives from their school principals.



CASE STUDY



Caguas Schools

School Type	Student:Teacher Ratio	Enrollment (Up to K-6)	Highest Grade Level	Location	%Special Ed from Total Enrollment	Poverty	Principal: Yrs at this school	Teacher: Average Yrs at this school	Teachers Academic Profile*	Infrastructure Index	Technology SUB-index	Parental Engagement Index	Average Overall Proficiency
HPS	19-1	203	k-5	Urban	30%	78%	2	4.5	58%M	36%(F)	25%	82%	77%
LPS	30-1	213	k-8	Urban Downtown	36%	80%	less than a year, has been principal for 6 years in 4 different schools.	3	77%B	56%	33%	75%	57%

*M=Master Degree / B=Bachelor Degree

Caguas - High Proficiency School (HPS)

At 77% weighted academic proficiency, this HPS has 203 students, 78% of them live in poverty, and 30% participate in the Special Education Program. The current student-teacher ratio is approximately 19:1.

For this pair of schools, the HPS's principal did not participate in the interviews. Therefore, the research missed significant data to explain the different

results of the school profile. ABRE was able to gather additional information on the school's profile through surveys and the principal's profile.

Located in an urban area at the entrance to the municipality of Caguas, this school serves a student population that ranges from kindergarten to the fifth grade.

Infrastructure

Even though some parents commented on the excellent location, most of the parents surveyed criticized the conditions of the bathrooms, the size of the library, and the poor condition of the basketball court. According to the survey, the school has no janitors and most parents complained about the school's cleanliness.

OMEP is the state agency in charge of the school facilities and gardens, as well as its plumbing, electricity, and everything else that may involve repairs. The

school has a library, several air-conditioned classrooms, a music program, and a basketball court. It also has internet access, but the staff indicated they don't have computers and the internet connection available is actually poor.

ABRE's Infrastructure Quality Score for this HPS is 12 out of 33 points, for a total score of 36% (F). On the other hand, regarding the Technological Infrastructure Score, this HPS obtained 3 out of 12 points, for a total score of 25% (F).

Grants, Donations, and Alliances

The principal is unable to specify the type, if any, of alliances that exist in the school, as they consider themselves as a new school employee.

School Principal's Profile and School Environment

The principal lives in Caguas (relatively close to the school) and has a master's degree in Administration and Supervision and various educational certifications. The principal has 5 years of experience as a PRDE principal in three different schools and 2 of those years includes their time at this school. Before becoming a principal, they served as a teacher for 10 years.

Also, the HPS principal stated that they did not

know some of the information that this study required, as they consider themselves to be new at the school.

Although the HPS principal did not specify the number of student absences on a daily basis, they did say that they have experienced issues along those lines. Additionally, the HPS has a daily average of 30 students who arrive late for school.

Faculty

Fifty-eight percent (58%) of the teachers surveyed have a master's degree and, on average, have been working at this school for 4.5 years, 1.5 years longer

than those in the LPS. Moreover, they have an average of 16.5 years of teaching experience. Among the teachers surveyed, the average number of years

teaching their current subjects is 15.5 years and the average number of years teaching their current grades is 10.5 years.

With a student community composed of 203 students, the school has a student-teacher ratio of 19:1. Most of the teachers live in Caguas and the rest live in Aguas Buenas, Gurabo, Juncos, and San Lorenzo.

Only 3 HPS teachers participated in the second

survey, which affected the possibility of further analysis between schools.

The academic progress of the school is partially attributed to the highly experienced teaching staff. Even with an unstable administration, the average working year of the teachers demonstrates their commitment to the school community.

Parents

Most of the parents surveyed commented on teachers' excellence and their good communication with the students. They also praised the good location of the school. Conversely, many parents complained about the lack of opportunities and assistance for students with special needs. They also pointed out that there are no computers at school, there is no security, and there is a general lack of resources.

This school reports higher participation in parent meetings implemented by the school than at the LPS. In addition, it has been reported that parents spend

more time studying with students during the school week.

Most survey respondents were mothers, about 74% holding a bachelor's or master's degree. Forty-seven percent (47%) of them indicated they dedicate between 1 to 5 hours per week to study with their children and 73% of them consider that their children have improved in their studies.

According to ABRE's Parental Immersion Index, the HPS obtained 82% (18/22).

Mechanisms to Improve Academic Achievement

The principal's only recommendation to improve academic performance was that students should take visual arts courses to be able to make lines, which will then help them improve their writing skills.

Caguas – Low Proficiency School (LPS)

At a 57% weighted academic proficiency, this LPS has 213 students, 80% of which are living in poverty, and 36% participate in the Special Education Program. The current student-teacher ratio is approximately 30:1. Located in the downtown of Caguas, eight minutes away from the HPS (1.4 miles), this school serves a student population that ranges from kindergarten to the eighth grade (elementary school).

ABRE's research showed that the LPS is lacking equipment as they have not received any in the last two years. There is consensus about the urgent need for technological tools.

This is the only school in the entire study that reported having after-school programs from 3:00 p.m. to 5:00 p.m.

Infrastructure

Built in 1950, this school has 20 classrooms and OMEP is the state agency in charge of providing maintenance to the school's buildings and grounds, as well as to its plumbing, electrical system, and anything else that involves that kind of labor or repairs. However, it was ORE that helped them fix the library tiles after Hurricane María. Many of the parents surveyed complained about the lack of security and the state of cleanliness at the school.

The school urgently needs two handicap ramps. It has a basketball court and a baseball field. The school has internet service but does not have computers. The

school has a library, a librarian, and some classrooms have air conditioning.

The teachers surveyed expressed that they need all kinds of technological equipment and educational materials, such as printers, projectors, laboratory instruments, computers, in-focus, among many others.

As per ABRE's Infrastructure Quality Score, this LPS obtained 20 out of 36 points, for a total score of 56% (F). On the other hand, regarding the Technological Infrastructure Score, this LPS obtained 5 out of 15 points, for a total score of 33% (F).

Grants, Donations, and Alliances

The principal reported that, since 2017, the school has the "Homeless After-School Program" and some alliances with the municipality in order to improve academic performance, minimize school dropouts, and promote school sports.

The municipality also helps them clean the school

and offers workshops for parents and teachers on topics such as: "*Help to Study*" or "*Avoid Suicide.*" As reported in the surveys, approximately 370 students benefit from these partnerships and services, considering their full enrollment (from kindergarten through the eighth grade).

School Principal's Profile and School Environment

The principal has overseen this LPS for less than a year at the time of this interview. They have been a principal for 6 years at six different schools. They are really invested in motivating students to avoid school dropouts. To accomplish this, they promote sport activities via three extracurricular sports programs (from 3:00 p.m. to 5:00 p.m. - basketball, baseball, and volleyball). The school has also developed music and visual arts programs for all its students.

We were informed that the school holds several activities a year in its basketball court, which are usually attended by a wider audience. However, when workshops or meetings are held, only 15 to 30 parents attend.

The principal considers that there is a harmonious environment and good communication between teaching and non-teaching staff. The teachers surveyed seem to corroborate the principal's claim, since 80% informed they feel safe in their working environment.

The principal is unaware of the processes for submitting applications for grants. They reside in Caguas and have a Ph.D. in Computer Science and Finance, a Master of Accounting, and several certifications, such as School Principal 3. Before joining the PRDE, they had over 10 years of previous work experience. At the PRDE, they had served another 18 years before becoming a school principal. They also had experience working as a supervisor outside the department.

Faculty

The average of the surveyed teachers have higher levels of willingness to quit their jobs than teachers working at the HPS. With 213 students, the student-teacher ratio is 30:1, which may play a key part in the observed teachers' quitting rate.

The teachers surveyed have an average of 26 years in the PRDE, 16 years teaching their current subjects, and 14 years teaching their current grades, but only

3 years working at this school. Seventy-seven percent (77%) of the surveyed teachers have a bachelor's degree.

The LPS principal says that teacher absenteeism is mainly due to illness, but they also acknowledge that it has increased since the removal of the sick leave incentive (change in the law for excess vacations or sick days).

Parents

The LPS has a PTA. However, the principal considers that parents' participation in extracurricular activities is substantially higher than their participation in meetings and workshops. The surveyed parents have lower levels of college education than the HPS parents, and most of them reported that they were currently unemployed.

The LPS reports a daily absenteeism rate of 15 students and a daily tardiness rate of 10 students. When asked about these rates, the LPS principal said their school has no absenteeism or tardiness issues. They also added that they believe that the reasons for the noted absences/tardiness are either because students report being ill or simply because they are not motivated enough to come to school. They recognize that the school needs to improve its course offering

because students are eager for more exciting and engaging classes that could appeal their interests, instead of just taking the core classes that the faculty members usually teach.

The LPS parents complained about the lack of communication and cleaning issues, while the HPS parents reported more issues related to infrastructure and lack of assistance for students with special needs. Fifty-seven percent (57%) of them affirm that they spend 1 to 5 hours a week studying with their children and 90% of them understand that their children have shown some improvement during their learning process.

In the new ABRE's Parental Immersion Index, the LPS obtained 75% (C) (21/28).

Mechanisms to Improve Academic Achievement

The principal believes that they do not need to develop any competencies to improve their performance. However, they consider that teachers should be more methodological and that the school needs equipment in order to improve its performance. The principal seems to be certain that there is a direct correlation between students' socioeconomic levels and their academic performance, since (they state) only 20% of the students reach academic excellence and they believe this is due to their low socioeconomic profile (97% poverty level among students) and because better-skilled students do not enroll in the school.

The school has 5 regular education classrooms and just 1 classroom designated for special education. The principal affirms that this situation has a negative impact on achievement results. When a teacher is absent, they fill schedules with assistants or adjust the schedule to prevent students from missing their elective period.

Regarding the META-PR tests and the preparation processes for these tests, the LPS principal said that the META-PR tests and their exercises are generally too difficult. However, they admit that the scores are correlated with the students' grades and, therefore, believe that they properly gauge the students'

academic proficiency. In preparation for these tests, the principal said LPS teachers take workshops, have meetings to work on outstanding issues, and practice with students. But even with this approach, the principal believes that students need additional stimuli to become more motivated and perform better on the META-PR tests.

Although the informality of the administrative and educational process does not affect teaching time, it does deter adequate monitoring of its staff and students towards promoting proper performance development. This school's lack of supervision and monitoring has not enabled the strategic changes that are necessary for improving academic performance. The assistance of specialized personnel in some specific development areas could improve school performance and achievement. In general, the LPS principal showed little to no proactivity at all in working through the different challenges that the school is currently facing. They commented that they do not dedicate time to provide daily feedback to teachers at school, yet they provide answers if the teachers have any questions and this can take about 2 hours a month.

General Comparisons

The HPS has a better teacher-student ratio (19:1) than the LPS (30:1), which could be influencing its teaching quality and, hence, its academic proficiency. The HPS shows a higher daily rate of teacher absenteeism and tardiness. Both schools do not have working computers for student use. None of the schools have federal programs or grants in place. Teachers from both schools reported that they need better technology equipment. LPS parents show to be more satisfied with the school's library access, sports programs, and extracurricular programs than HPS parents.

Both schools seem to be suffering from unstable administrations and, although we could not gather enough data from the HPS to make better comparisons,

the obtained data points out a few key factors. For starters, the HPS seems to have lower teacher turnover rates and its teachers show higher commitment levels. The LPS's administration shows limited proactivity and no formal preparation for the META-PR tests. For example, they did not demonstrate if they use blueprints to identify gaps to help low-performing students overcome them before taking these tests. It seems that the LPS students' socioeconomic level is affecting the way they are perceived, approached, and guided, since the data demonstrated there is a shared belief and assumption concerning how improvement is seen and that it is an impossible obstacle because of where students come from and the challenges they currently face.

CASE STUDY



Carolina Schools

School Type	Student:Teacher Ratio	Enrollment (Up to K-6)	Highest Grade Level	Location	%Special Ed from Total Enrollment	Poverty	Principal: Yrs at this school	Teacher: Average Yrs at this school	Teachers Academic Profile*	Infrastructure Index	Technology SUB-index	Parental Engagement Index	Average Overall Proficiency
HPS	19-1	323	k-5	Urban	39%	82%	14	7	53%M	75%	87%	86%	67%
LPS	12-1	252	k-5	Urban	38%	91%	4	3	64%B	44%(F)	40%	79%	55%

*M=Master Degree / B=Bachelor Degree

Carolina - High Proficiency School (HPS)

The HPS is a high-performance elementary school with great academic potential, reaching a 71% proficiency level. Despite being in an urban area in the municipality of Carolina, the school does not lack any primary academic element to fulfill its duties and responsibilities towards teaching and reaching every student. As a high-performing school, it has a Fine Arts program, a Library Club, and a Patrol Club. Its location is 1.7 miles away from the LPS school mentioned below.

The HPS has 323 students enrolled, from kindergarten through fifth grade, of which about 39%

participate in the Special Education Program and 82% live below the poverty level. The student-teacher ratio is 19:1, being an average size and suitable for the elementary school level. Most special education students receive many of their therapies within the school's facilities, in spaces specifically enabled for those purposes. It is uncommon to see such conditions in a school. There are many individual classrooms to offer therapies to students, without the need to take them out of their school environment to receive these kinds of services.

Infrastructure

The structure where the HPS resides was built in 1988. The PBA oversees the building structures and gardens, as well as its plumbing, electric system, and everything that entails labor or repairs. Although it is a relatively small school, its principal has taken advantage of every area. The school also has a computer lab and access to all kinds of materials thanks to the school's warehouse where inventory is counted to know what is needed. In our new ABRE's

Infrastructure Quality Score, this HPS obtained 27 out of 36 points, for a total score of 75% (C). Most of the school's repairs and improvements have been made to maximize the use of the existing space. This was possible thanks to the principal's enormous effort, commitment, and persistence. In addition, the aid received from community members and some nearby private companies has been quite helpful.

Grants, Donations, and Alliances

Faced with a reality where the help and maintenance of government agencies is basically non-existent, every managerial leader of a school has to take on the task of knocking on doors and seeking help, not only monetary aid, but also help with the acquisition of specific materials that are needed. Usually, it is because of the existence of bureaucracy that schools do not have access to the most basic

materials every classroom should have. That is why grants and donations represent such crucial help, because sometimes are the only way to guarantee that schools have the materials they need. Nowadays, HPS has an alliance with Universidad Carlos Albizu, which provides some psychological assistance throughout a Psychology Intern Program.

School Principal's Profile and School Environment

This school exhibits a pleasant, peaceful, and harmonious environment that is difficult to replicate. The school's principal has held their position for 14 years, resulting in administrative stability that contributes to a high level of respect, trust, and safety. Their effective leadership and administrative

skills are well evidenced throughout the school community and parents' perception. The presence of a strong, perseverant and empathetic leader has a positive effect on how teachers and students respond. Berríos (2015) lists the qualities of a successful principal: (a) school management as teamwork, (b) the

promotion of social responsibility among members of the learning community, (c) training in the field of technology and its integration into the learning-teaching process, and (d) the school's optimal physical facilities. (Berríos, 2015)¹

Solving problems and situations in the HPS community is a daily practice, not because students present discipline problems or lack of control, but

because it is a school with an open-door philosophy. The school's management firmly believes in making the entire school community feel comfortable enough to visit the administrative offices and ask for help. The faculty feels comfortable expressing their feelings and concerns, while parents also experience a sense of belonging.

Faculty

The faculty has been in the school for at least 7 to 8 years, also demonstrating a high degree of stability and its effect on permanence. More than 80% of the faculty members reside in the municipality of Carolina, the rest of them do live in San Juan and Trujillo Alto. As a community, they know each other well. An additional relevant fact that could be extracted from the analyzed data is that 53% of teachers have a master's degree, being specialized in an education or school administration field.

The entire faculty feels comfortable working at this school, demonstrating low burnout levels and

few having an intention to quit their jobs. There are high levels of organizational justice, organizational citizenship behaviors, and psychological capital among teachers. Similarly, the only materials faculty members would like to have access to are more TVs and monitors. Teachers mentioned having all the tools necessary to do their job effectively. Previous investigations of the Job Demands-Resources theory have shown that having all the resources to face and cope with job demands has a positive impact on lowering stress and increasing motivation, bettering overall employee and organizational wellbeing.²

Parents

Most parents have achieved their high school diploma and mainly work in the private sector. However, there is a high percentage of unemployed parents or caretakers, as well as single mothers. In addition to the convenience of school proximity, parents appreciate and value the communication that exists between the principal, faculty, and parents. They would even like the school to teach high school, given the level of safety they feel when leaving their children at the HPS. The only criticism they brought up was regarding the cafeteria, the food they serve, and the appearance of the bathrooms. They stated that the cafeteria and bathrooms could be improved and that they could serve better food. They were also concerned that the school did not have a private, internal school playground. The student population uses the playground and facilities belonging to

residents of the area. The lack of a playing area in the school is the only specific aspect the principal has not been able to resolve as they would have liked to.

ABRE's Parental Immersion Index of the school yielded 86%, demonstrating a high level of engagement and interest, a factor that positively affects students' academic performance. Parental involvement has also been found to affect their children's academic achievement on various levels. Henderson (1987) conducted a literature review study based on the findings of 49 prior investigations. The results from these studies suggested that parental involvement in their children's academic activities, not only improves their academic test performance, but also their language skills and school behavior.

Mechanisms to Improve Academic Achievement

The HPS experience and instructional planning are highly appreciated. The team recognizes these key factors ensure group control and avoid discipline issues. This is even more critical in the case of those students who also face a structural deficit at home. It is for this reason that the HPS staff analyzes each of the META-PR test results, with a good correlation

between student grades and test results. To ensure that students who have gaps in certain skills are measured in META-PR tests, the HPS applies individual strategies to impact students who need support on specific skills. One advantage the students from HPS have is being able to take an online assessment on META-PR tests, year-round practice, and computer availability.

1 Berríos, R., Carrión, J., Carroll, J., Lucca, N. & Macksoud, S. (March 2015). Estudio internacional sobre liderazgo exitoso en escuelas públicas.

2 Bakker, Arnold B., & Demerouti, Evangelia. (2013). La teoría de las demandas y los recursos laborales. *Revista de Psicología del Trabajo y de las Organizaciones*, 29(3), 107-115. <https://dx.doi.org/10.5093/tr2013a16>

Carolina - Low Proficiency School (LPS)

This LPS is located 6 minutes away from the HPS in Carolina, approximately 1.7 miles apart. The LPS is also considered an urban school with an enrollment of 253 students from kindergarten through fifth grade, which represents a 21:1 student-teacher ratio and a 91% poverty level. Around 38% of enrolled students are part of the Special Education Program. Although there are no after-school programs, for the last three years

Fundación Flamboyán has hosted a Reading Program that fosters the appreciation of books and tackles students' reading gaps. The school has no computer labs for students and has only two computers for teacher use. For the last two years, the PRDE (at the central level) has not authorized the procurement of technological devices; therefore, no purchases have been made to meet the school's needs.

School Principal's Profile and School Environment

Although there might be an average organizational climate in the school, achieving an acceptable level of respect and empathy between students within the school's grounds has proven to be quite a challenge for the principal since they arrived at LPS four years ago. School interpersonal relationships were complicated since students from five different public housing projects coincide in the same area. Although the school's academic performance level is still very low, there has been progress since the existing student rivalry ceased. As a result, the entire student body are now members of a school team, where there is no space for bullying or fighting.

Before the current school principal arrived four

years ago, the faculty experienced a remarkable leadership void for two years due to the absence of an acting principal. Many students are absent due to different social situations that occur in their households. School staff do report these extreme cases of absenteeism and tardiness to the social worker, who then creates an individual plan for each case. The school administration is very strict on how the academic schedule is followed; teachers must relate all activities during school hours to specific content, which is the only way special activities can take place during school hours. Finally, the school administration creates a special class schedule with shorter periods to ensure adequate teaching time.

Faculty

Faculty members from the LPS have been part of the school's community for an average of 3 years, and 64% of the teachers only have a bachelor's degree. However, faculty members have experience in teaching the same grades and academic content for more than 8 years. Data shows a strong need for technological equipment for teachers. Some teachers

responded that they do not feel safe to perform their job, demonstrating higher levels of intention to quit their job and being affected by significant burnout levels. Data suggests that this LPS's teachers do not plan lessons, which results in negative behavior and low motivation levels from students.

Parents

The surveyed parents' responses demonstrated an average level of participation and engagement. As per ABRE's Parental Immersion Index, the LPS scored 79%. Most of the parents are unemployed and have only completed high school. Among them, there is a significant amount of single parent figures. A high percentage of parents valued the proximity of the

school to their houses. The basketball court still has no roof, as the effects from Hurricane María are still noticeable. Data suggests many parents described some faculty members as highly devoted teachers; they reported feeling at ease and secure when leaving their children at school.

Mechanisms to Improve Academic Achievement

Students at this LPS school have been practicing for test-readiness since second grade. The school's Planning Committee meets regularly to analyze the results as soon as they arrive and try to identify key

areas and skills that need more emphasis. However, the school administrator would like to receive more training on data driven decision-making and specific topics to better understand the META-PR test results.



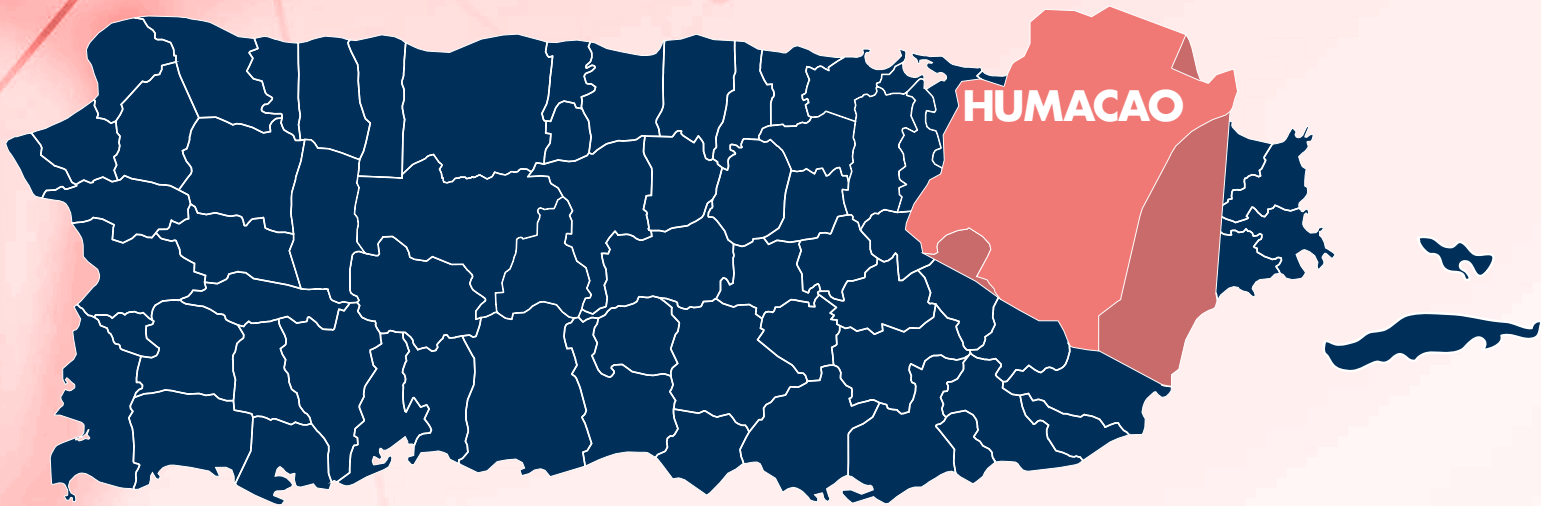
General Comparisons

In conclusion, both schools' personnel agreed that there is a lack of resources and procurement processes are highly bureaucratic when it comes to acquiring materials or equipment for their respective schools. In addition, the absence of school autonomy was mentioned as part of the ineffective processes described above. The HPS data considers that teachers are not formally supervised on complying with the right amount of teaching time. Both the lack of structure inside students' households as well as a new generation of teachers showing less commitment can cause an adverse effect on the students' achievement and academic performance. Both schools agreed there is a lack of managerial support from the ORE and at the central level of the PRDE. The HPS attributed academic performance to the commitment and competencies of its teachers and, in turn, to the commitment of students' families. The HPS staff is quite aware of the relevance of META-PR,

unlike the LPS personnel, which understands that their low academic performance is due to the discrepancy between what is taught in the classroom and what is measured in the state assessment.

Perhaps the most significant difference between the HPS and the LPS is that the HPS has a principal who has many years of experience managing the same school. This has allowed them the opportunity to sculpt the school community. Structure, organization, and an open-door policy seems to foster the development of a pleasant school environment. When there is motivation to take the META-PR tests within the school culture, the entire school community moves towards reaching the same goal, which is the case of the HPS environment. Having the opportunity to administer the META-PR tests online also seems to aid students' performance, as students seem to show more interest while taking their tests online.

CASE STUDY



Humacao Schools

School Type	Student:Teacher Ratio	Enrollment (Up to K-6)	Highest Grade Level	Location	%Special Ed from Total Enrollment	Poverty	Principal: Yrs at this school	Teacher: Average Yrs at this school	Teachers Academic Profile*	Infrastructure Index	Technology SUB-index	Parental Engagement Index	Average Overall Proficiency
HPS	28-1	367	k-5	Urban	20%	70%	7	13	65%M	64%	53%	75%	83%
LPS	56-1	167	pk-6	Sub-urban	29%	76%	9	4.5	58%M	39%(F)	33%	82%	55%

*M=Master Degree / B=Bachelor Degree

Humacao - High Proficiency School (HPS)

This HPS is located in a residential/urban area in Humacao and serves students from pre-kindergarten through fifth grade. It has an 83% weighted academic proficiency, with 70% of its 373 students living in poverty, and 20% enrolled in the Special Education Program. According to reports by the PRDE, the current student-teacher ratio is 28:1, with an 8% absenteeism rate.

Though satisfied with the outstanding work of the school's team, the principal has expressed a desire for a higher level of administrative autonomy to manage the school's needs in a much more independent manner. The principal is willing to volunteer for a one-year

pilot plan for school autonomy that would grant the school control of the purchasing process, recruitment of personnel, infrastructure maintenance, and all budget management, except for payroll expenses. It would also include all the necessary accountability processes and metrics to guarantee transparency. The principal is willing to be held accountable if the budget management is not done correctly and stated that everyone who works in a school, whether they are teachers or not, should understand that their endeavor is to "build people," so everyone should be a role model for students.

Infrastructure

Built in 1990 in a residential area of Humacao, this school has 18 classrooms and a library, though it does not have a librarian. It only has seven computers for the entire school community, and they are not in good shape. Similar to other schools, the lack of updated technology continues to be the school's Achilles' heel, leaving teachers and students with no access to basic equipment. There is a shortage of the basic tools and materials necessary to teach efficiently and to guarantee a full integration of technology in the classroom. The school also has an excellent fine arts

program, a basketball court, and a baseball field.

Although the HPS personnel identified many infrastructure problems, its urgent needs consist of approximately four air conditioners for its classrooms and a water tank. This HPS scored 23 out of 36 points, for a total of 64% (D), on our new ABRE Infrastructure Quality Score. On the other hand, it scored 8 out of 15 points, for a total of 53% (F), on its Technological Infrastructure Score.

Grants, Donations, and Alliances

Even though the principal seems to have a sound understanding of the steps and processes to submit federal grants, this HPS has not submitted any federal grant application for additional funding or more access to technology.

One of its projects is called "Healthy Children" and it is the result of an alliance with Nestlé Company and consists of providing guidance to students on health and good nutrition.

School Principal's Profile and School Environment

After working outside the PRDE for 3 years and being a teacher for 13 years, the current high school principal stepped into the administrative position despite having no previous experience as a supervisor. A resident of Humacao, the principal has served in this role for 7 years.

The school principal claimed to be able to acquire

all of the necessary resources except for technological equipment and infrastructure-related expenses, with the school's allocated budget. No other principals in this study agreed that they received sufficient funds to buy all of the necessary resources and materials for their own schools. The principal wants the HPS to become a model school and get permission to manage its own budget for a more effective allocation of resources.

Faculty

Most of the teachers (65%) from HPS have a master's degree in comparison with teachers from the LPS. Most of the teachers surveyed live in Humacao, and the rest are from Juncos, Las Piedras, and Yabucoa. On average, teachers have been working at HPS for 13 years. This means that, overall, HPS teachers have

more than twice as many years of teaching experience within the PRDE and at their school than LPS teachers do. Having a lower teacher turnover rate¹ puts the HPS school in an unfair advantage. Teachers from the HPS reported a higher frequency of performance evaluations (more than two) throughout the year.

Parents

HPS parents report spending more time studying with their children than LPS parents. In addition, they complained about the lack of technology in the classrooms and not having enough space in the school given the unacceptable condition of its infrastructure.

The socioeconomic factor is not perceived as a fundamental factor in terms of academic performance. The HPS principal indicated that, despite the 75% poverty level reported by the PRDE, most students wear their uniform, have all the necessary materials, and come from working class parents. Although the principal could not specify how many, a significant number of grandparents are usually the ones who pick up the students and supervise their studies. Four or five of these grandparents make up a committee that provides support to the school by carrying out a variety of tasks and projects at noon. Nevertheless, in a school of 373 students, this is still a low percentage of volunteers.

According to the parents surveyed, 45% spend 1 to 5 hours a week studying with their children, 41% spend 6 to 10 hours, 11% spend 11 to 15 hours; and 3% spend more than 15 hours. Although many parents responded that they like the school principal the most, the principal reports low levels of parental and community involvement in general and academic activities. Notwithstanding, this school had one of the highest parent participation levels in the survey (64). Even though this school has not had not serious parent-teacher issues, the principal wishes to increase parental support and engagement beyond just bringing children to school every day.

The HPS scored 75% (C) (21/25) in ABRE's new Parental Immersion Index, which confirms that there is still room for more parental support and involvement. On the other hand, even though HPS parents have a higher educational level than the rest of the parents in the schools surveyed, this trait is very similar to that of the LPS in Humacao.

Mechanisms to Improve Academic Achievement

The HPS principal attributes the school's success on the META scores to the quality and commitment of its teachers. The HPS ensures a curricular alignment with the META tests. Therefore, it promotes practice and invests efforts in guiding, disseminating, educating, and motivating parents about the importance of these tests. In both the HPS and LPS, the META tests preparation process begins in August. In December, the HPS principal brings the faculty together and discusses how they will review the academic skills that are directly related to META-PR for the rest of the year, developing a countdown-like action plan.

For the principal, teacher commitment is fundamental since primary school students look up to their teachers as guides for their own behavior. According to the principal, "when they are so young, they let themselves be led by what the teacher tells them."

However, despite the students' interest in taking the tests online, the dearth of equipment, PREPA blackouts, and the bad Wi-Fi signal make it impossible to do this. The principal added, "I would not like the performance of the students to be adversely affected by technical problems."

Humacao - Low Proficiency School (LPS)

This LPS has a 55% weighted academic proficiency. According to the PRDE, of the 167 students in grades K-5, 76% live in poverty, and 29% are enrolled in the Special Education Program. At 10:1,² the LPS has a better student-teacher ratio than the HPS.

This LPS is located in a suburban area in Humacao,

four minutes from the HPS (0.9 miles). This "hybrid school" simultaneously incorporates two educational systems. It began transitioning to the Montessori system 5 years ago, so part of the school follows a Montessori curriculum, while another part follows the traditional curriculum. There is no fine arts program.

¹ The effects of employee turnover in schools are discussed in the aggregated results.

² We used the school's self-reported data to calculate this ratio due to errors in the PRDE data. For the calculation of this ratio we used data self-reported by the school because the PRDE data had errors.

Infrastructure

The school does not have a library, it only has 13 classrooms, and its five computers are there for the exclusive use of teachers. It does have a basketball court, a baseball field, and air conditioning in most classrooms. It is difficult for the school to obtain what it needs since the Montessori material is not included in the allocated school budget, which further complicates the curricular and methodological transformation. Like all of the schools surveyed, it needs basic technological equipment for instruction, as well as adequate materials

for both curricula.

In the survey, several parents complained about the lack of a library; the need for more parking spaces; and the size of the playground, as it is too small for the amount of enrolled students.,

This LPS scored 14 out of 36 points, for a total of 39% (F), on our new Infrastructure Quality Score. In addition, it scored 2 out of 15 points, for a total of 33% (F), on the Technological Infrastructure Score.

Grants, Donations, and Alliances

This LPS has several partnerships to improve academic achievement, reduce dropout rates, and promote parental involvement, among other initiatives. However, the principal would like to have more information on applying for federal grants and developing proposals.

The school has 3 initiatives that are financed with federal funding, such as PBIS (Positive Behavioral Interventions and Supports). The purpose of these programs is to provide substitute teachers, boost academic achievement, reduce dropout rates, involve parents, and improve school safety. It also has an alliance with the New School Institute (INE, by its Spanish acronym) that supports Montessori schools. The INE provides guidance on the Montessori system and submits proposals for schools to acquire the services and materials needed to implement the Montessori curriculum.

The school also partnered with the Department of Justice to launch the "Family Home Project," which provides services to children in this and other school communities. Its purpose is to manage the mediation of conflicts related to violence in any of its forms, including harassment and socio-emotional aspects. The project supports the school with psychological assistance and a social worker. Though this proposal was drafted by the INE, the school is responsible for the accountability reports. It took a lot of effort to maintain this alliance, which is an example of the will and commitment of the principal and the school team.

In previous years, they had an alliance with the Office of the First Lady, which offered academic reinforcement, arts, body movement, and social-emotional talks.

School Principal's Profile and School Environment

The LPS principal, a resident of Fajardo, has a little more general experience than the HPS principal. After 8 years of teaching, the principal stepped into this administrative position and has carried out the role for 10 years, 9 of which have been in this school exhibiting a high level of commitment and proactive way of finding resources, the principal is knowledgeable of school-specific facts and data.

According to the principal, the school environment is positive, and it has improved since they began the

transition to Montessori. On the other hand, there is still a need for a better understanding of technology integration in education and the use of data for decision-making.

In the abretuescuola.org index, this LPS obtained a score of "D" and "F" in the years 2018 and 2019, respectively. However, during our interview, ABRE witnessed the commitment and dedication of the principal, who has wondered "what do other principals do that I don't do to excel in the META-PR tests?"

Faculty

Most of the teachers surveyed live in Humacao, while the rest are from Las Piedras and Naguabo. Most of them also have a master's degree (58%) and, on average, have been working at the LPS for 4.5 years. They also scored higher than the HPS teachers on the psychometric scales of intention to quit and burnout.

The teachers believe that they need a better understanding of technology integration in teaching processes. Moreover, the principal believes that teachers must receive more workshops geared towards understanding the purpose and importance of instructional planning as a method of teaching rather than a mere requirement for compliance.

Parents

With 29% of children in the Special Education Program and 76% living in poverty, the school reports good parental involvement and community support. However, parents complained about the lack of space and technology, as well as the poorly-maintained infrastructure. Nevertheless, they agreed on the effective communication and great commitment from the principal and teachers. According to the parents

surveyed, 54% spend 1 to 5 hours a week studying with their children; 27% spend 6 to 10 hours; 16% spend 11 to 15 hours; and 3% spend more than 15 hours.

The LPS scored 82% (23/28) in ABRE's new Parental Immersion Index, demonstrating a high level of parental involvement and support highlighted by the principal.

Mechanisms to Improve Academic Achievement

Although the LPS seems to be more focused on developing the skill set to tackle the META-PR tests than practicing to take the test, the principal stressed that different strategies are already in place. Even though it takes time to see results from new strategies, outcomes need to be evaluated in order to determine if the new strategies are working out in regards to their performance score.

Since August, the school has begun to prepare and implement different strategies to improve test performance results. These strategies try to align operational and academic needs. For example, in order to address the issue of absences in the core classes due to morning traffic and student tardiness, the principal decided to schedule non-core classes during the first period so students would not miss any important academic content.

The school also created the "Skills Period." In this period of competencies, teachers must plan around blueprints, not the curriculum map. This allows them to follow the results of the diagnostic tests and work on the areas of need identified in that tabulation. Teachers should practice one hour a day with students to cover their area of need. The school demonstrated progress during the first year, which resulted in their removal from the "improvement plan." Because there were no state tests last year, they hope to find out if the established strategies will work once everything is back to normal.

They also work with parents in outreach and orientation activities. They even schedule individual meetings with some parents so that they can join and support the effort being made for their children and improve their results.

General Comparisons

Both principals were very knowledgeable about specific school facts and data, and both schools have similar absenteeism and tardiness rates for students and teachers. The principals also agreed that the issue of teacher absences is due to the elimination of the payment for unused or excess vacation and sick days³ in 2017. They both mentioned that they have different alternatives to deal with this situation so that students' school hours are not affected.

The LPS principal attributes the issue of student absenteeism to illness or family problems, while the HPS principal believes it is due to the lack of parental involvement. The parental profile from both schools is very similar, the only remarkable difference being that the HPS parents seem to have a higher overall educational level.

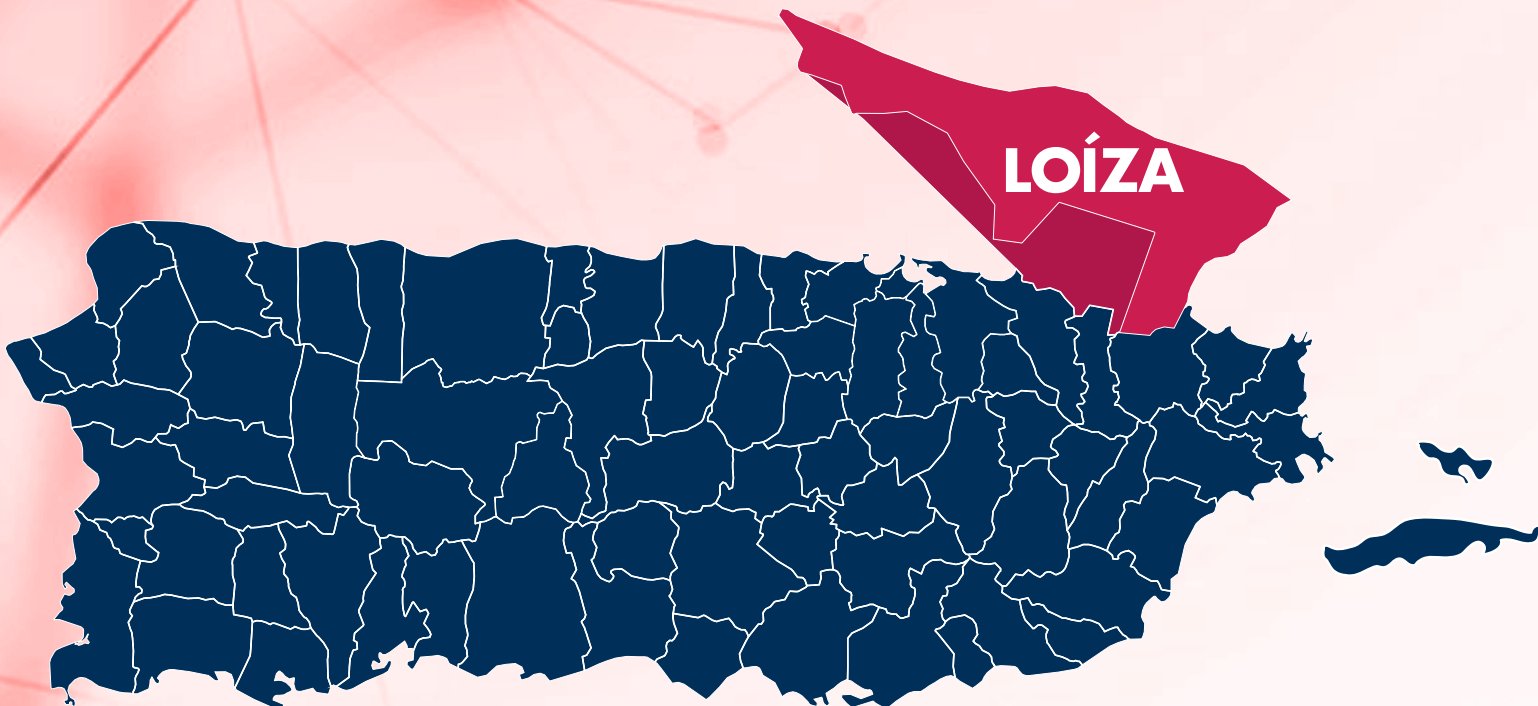
Parents from both schools complained about the lack of space and technology, as well the poorly maintained infrastructure. Likewise, the parents of both schools highlighted the commitment and effective communication of their principals and teachers. Both schools have a remarkable lack of autonomy and basic and limited resources due to slow, bureaucratic

processes. Both schools also agree on the need for appropriate technological equipment and materials for staff and students.

The need for support in these schools, both to improve the development of their facilities, as well as for the professional development of teachers, can be key to a more effective assessment in the future. It seems that the vastly different proficiency scores are due to factors that are unique to each school. Both schools would be great cases for a longitudinal study to find out if the implemented strategies work over time and accomplish the expected results, which would be managing their own budget (in the case of the HPS) and achieving better academic proficiency (in the case of the LPS).

According to our data, the only difference between the schools, that might be having an impact in the META scores, is the fact that the HPS dedicates more time practicing test exercises, while the LPS focuses more on skill development. This brings a continuing academic debate about the effects of teaching the test and the real impact of student learning.

CASE STUDY



Loíza Schools

School Type	Student:Teacher Ratio	Enrollment (Up to K-6)	Highest Grade Level	Location	%Special Ed from Total Enrollment	Poverty	Principal: Yrs at this school	Teacher: Average Yrs at this school	Teachers Academic Profile*	Infrastructure Index	Technology SUB-index	Parental Engagement Index	Average Overall Proficiency
HPS	22-1	419	k-5	n/a	13%	87%	n/a	n/a	n/a	n/a	n/a	n/a	73%
LPS	23-1	251	pk-5	Rural	14%	84%	2 months 1st year as principal	2	67%B	33%(F)	40%	68%	46%

*M=Master Degree / B=Bachelor Degree

Loíza - High Proficiency School (HPS)

The school principal and teachers were not available to complete the surveys, profiles, and interviews that formed this research. However, some parents from the HPS completed the parent profile, although participation was quite minimal. The parents, most of whom are unemployed, highlighted the good quality of teachers at the school. Nonetheless, they all complained about limited access to technology, as well

as poor security services and standards.

This HPS is located 1.6 miles away from the LPS, only a 4-minute drive away. The HPS proficiency level reached 64% and its faculty is made up of 45 teachers. Of the school's approximately 500 students, around 85% live below the poverty level, and 13% are enrolled in the Special Education Program.

Loíza - Low Proficiency School (LPS)

The school has an enrollment of 265 students with a self-reported 2% absenteeism rate and a 5.5% tardiness rate. This school is located 1.6 miles away from the HPS and both schools are located in urban areas. The LPS has 16 classrooms and OMEP is responsible for the building's maintenance. The principal, a resident of Loíza and teacher for 28 years, began carrying out this administrative position within the PRDE for the first time during the second semester of the 2020 academic

year. The principal points out the current need for an administrative clerk in order to accomplish daily duties and school responsibilities. The LPS needs more classrooms, parking spaces, and storage space for all materials and equipment. The school scored 33% (F) on ABRE's Infrastructure Quality Score as it has no library or sports facilities. Moreover, the LPS classrooms are not equipped with the required tools and materials.

Faculty

The school has a social worker and a school psychologist. On average, teachers have worked in the LPS for only two years. Most of them (9) reside in the municipality of Loíza, while the rest live in Río Grande (3), Carolina (1), and Fajardo (1). The school does not have enough staff to maintain continuity in its administrative and academic processes. Teachers need to enhance

communication with parents, improve their access to technology, and learn how to integrate it in the classroom.

Teachers from the LPS consider it a safe and comfortable working environment. However, they reported a lack of technology and teaching materials. The school scored 40% (F) on ABRE's Technological Infrastructure Score.

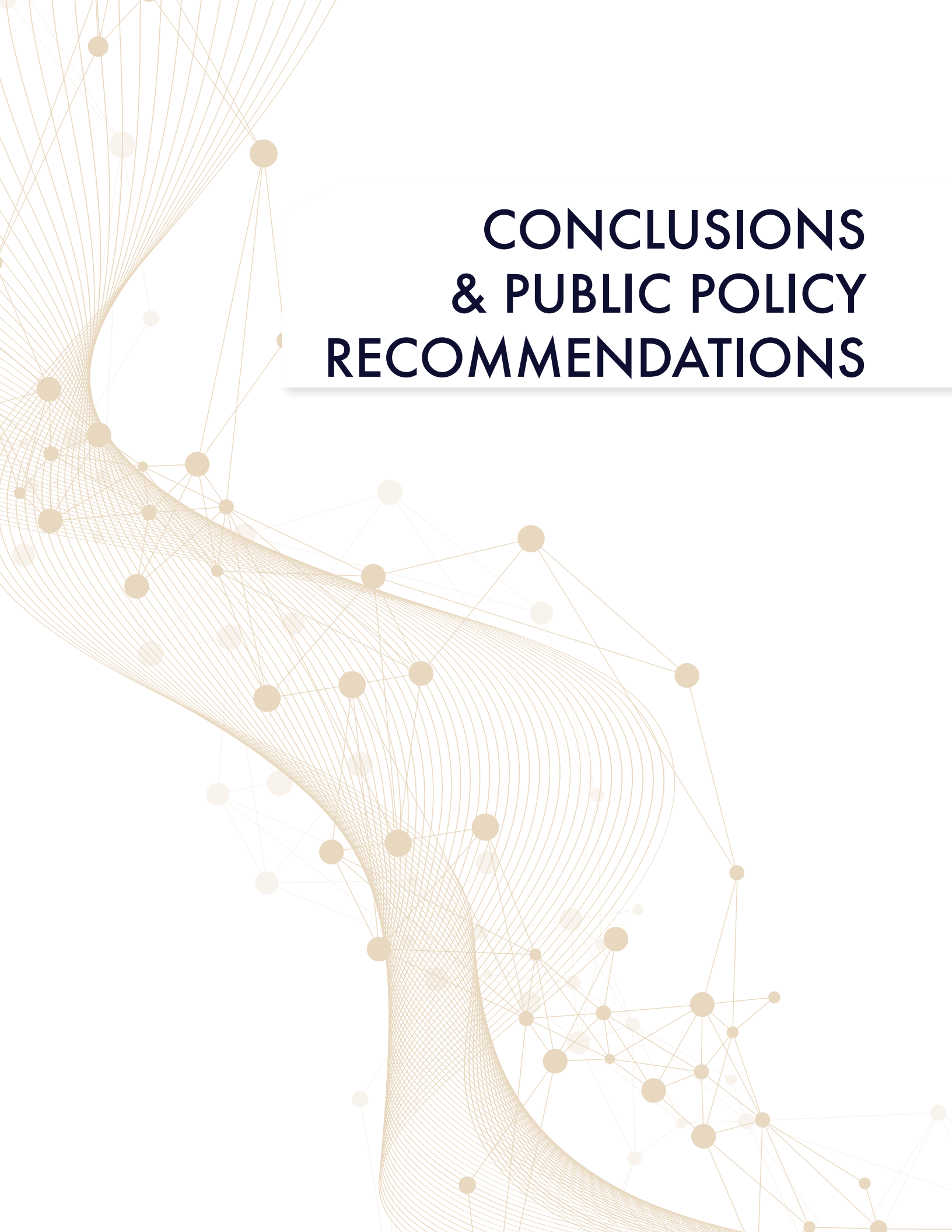
Parents

Most parents have a high school diploma and half of the respondents were unemployed. Parents showed to be satisfied with teacher performance. They complained about the lack of technology and the bathrooms' state of cleanliness. The LPS scored 68% (D) on ABRE's Parental Immersion Index, demonstrating a low level of involvement and interest.

The school principal considers Tuesdays, Wednesdays, and Thursdays as "productivity days" since students are usually absent on Monday and Friday. There was no information or data related to strategies or known formal processes with regards to the META-PR test practice and preparation.

This LPS demonstrates how school infrastructure can affect the students' academic performance. Infrastructure refers to the overall quality of the school's basic services, physical facilities for teachers and students, didactic resources, and materials for effective organizational operation. Studies have shown that the availability of basic infrastructure and services (water, electricity, sewage), as well as didactic facilities (sport facilities, labs, libraries), and the number of books and computers in the library have an effect on the achievement of primary education students in Latin America.¹

¹ Javier Murillo & Marcela Román (2011) School infrastructure and resources do matter: analysis of the incidence of school resources on the performance of Latin American students, *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice*, 22:1, 29-50, DOI: 10.1080/09243453.2010.543538

The background features a complex network of thin, light-brown lines connecting various-sized circular nodes. These nodes are scattered across the page, with a higher density in the upper-left and lower-right areas. The lines and nodes collectively form a large, sweeping, curved shape that resembles a stylized letter 'C' or a similar abstract form. The overall aesthetic is clean, modern, and technical.

CONCLUSIONS & PUBLIC POLICY RECOMMENDATIONS

Conclusions and Public Policy Recommendations

This study aims to find possible answers as to why schools with similar demographic characteristics perform so differently in their META test scores. The analyses performed confirm that the answer to that question is as complex as the public school system itself. That is, even though public schools operate under a highly centralized system, schools respond to their immediate context. This means that the local conditions, along with the internal context of the school, are strong drivers of academic performance. Our findings and the case-study approach suggest that even schools with similar needs and conditions are affected by these conditions in different ways and also, the designed response or coping mechanisms vary among schools. Since responses are “informal” or outside the rules and norms prescribed by the central system, then, such differences denote a policy vacuum for issues that require a higher degree of school autonomy. Furthermore, the case-study approach suggests that there are policy tools that can be established to benefit the majority of schools if the experiences or coping mechanisms of these schools are systematized into concrete policy actions. Such initiative will allow all schools a fair chance of improving their academic proficiency.

The above condition highlights the fact that there is

no such thing as a level playing field for public schools in Puerto Rico. Results suggest that even when the system remains under a “centralized” mantra, the individual responses from school units are driving test results, at least when compared via our case-study approach. For instance, a proactive school principal, who is also an effective instructional leader, could positively affect test results, while the lack of specific policies to tackle academic performance could be hindering the educational achievement of students in Puerto Rico. There is no single or isolated factor that could dramatically change school performance. In fact, results show that individual needs must be recognized and tackled accordingly. As part of ABRE’s long-standing tradition of contributing to the Island’s public policy debate, we have developed several policy suggestions that could help the PRDE and other organizations in their process of developing new strategies, particularly, when analyzing, designing, and implementing the proposed actions. Each policy recommendation is grounded in our data analyses and direct suggestions given by the participants of this study.

The following are a series of general and public policy recommendations based on data from ABRE’s study and previous field research.



Instructional Quality Management

Increase school principals' autonomy over resources allocated to the school.

One of the main findings of this study is that no matter how similar they might be on paper, each school operates as an independent unit, as a sort of small island. As is the case with any other organization, schools are affected by internal and external variables that could define their performance. Unless they have control over those defining variables, there is very little that they can do to change their circumstances. On the contrary, they will be constantly reacting to imposed changes and dealing with the unique effects of those changes in their schools. As Robin Lake, director of the *Center on Reinventing Public Education at the University of Washington Bothell*, wrote for the *New York Times*: "Schools and communities need more autonomy. School leaders must be able to innovate, to hire teachers who believe in their mission, and to control their budget."¹

Our study found that school principals do not have control over key issues, that when managed "internally" -at the level of the school unit-, rendered positive results. The following are examples of issues which school principals, parents and/or teachers have positively managed² internally to bypass the inefficiencies of the centralized system:

- Employee selection
- Assigned budget
- Procurement processes
- Infrastructure maintenance
- Purchases for basic day to day materials
- Employee rotation
- Quality, quantity, and time the materials arrive
- Curricular top-down changes sent from DEPR

"In countries where schools account for their results by posting achievement data publicly, and schools that enjoy greater autonomy in resource allocation tend to show better student performance than those with less autonomy."³ ABRE's research shows that none of the schools have control over their budgets or personnel selection and recruitment. Many of the schools have not even received aid since Hurricane María, while others received resources late in the year. The results suggest that some proactive principals invested their time in different activities and strategies to be able to meet the school's needs without depending on the PRDE's bureaucratic procurement process. Some

of these leaders expressed their desire for more autonomy and control over the budget and staffing. They are aware that this is a big responsibility and are willing to be held accountable for the results. The Humacao HPS principal noted:

"I have even thought of writing to the Secretary of Education to see if they can make an example of our school or some kind of pilot project to give us control over everything related to acquisitions and that, as the administrator, I can handle the school's budget. That way, I can avoid all the bureaucracy each time we need something. I want that opportunity, at least for a year, and I am willing to accept the consequences if anything goes wrong."

The Puerto Rico Education Reform Act (*Ley de Reforma Educativa de Puerto Rico*; Act 85-2018) tries to confer more autonomy on OREs in order to meet the schools' specific needs. Nevertheless, as evidenced in this research, there is a substantial gap between legislative action and actual performance. Almost all the schools that participated in our study coincided regarding the lack of support from the ORE and the little to no involvement ORE personnel have when it comes to students' academic performance. In this regard, ABRE recommends stronger investments in the execution of Act 85-2018, particularly those features of the law which will enable an effective school autonomy and decentralized accountability. Previous studies have identified and recommend the analyses and improvement of these 5 areas: (1) level of autonomy in the planning and management of the school budget; (2) level of autonomy in personnel management; (3) role of school councils in school governance; (4) school and student assessment, and (5) accountability to stakeholders⁴.

¹ <https://www.nytimes.com/roomfordebate/2016/09/14/is-school-reform-hopeless/schools-and-communities-need-more-autonomy>

² Some of the examples are operational procedures that are typically dictated by the PRDE, but at least they have been partially managed and control via an "informal" mechanism by the school unit.

³ Organization for Economic Co-operation and Development (OECD) (2011). Program for International Student Assessment (PISA) in Focus. <https://www.oecd.org/pisa/pisaproducts/pisainfocus/48910490.pdf>

⁴ Demas, A., & Arcia, G. (2015). What matters most for school autonomy and accountability: A framework paper. (SABER Working Paper Series). Washington, DC: World Bank.

Set an efficient and effective procurement process.

Following decades of distrust in a centralized administration of resources, schools should be provided with digital tools to optimize the procurement process at the local level. That is, given the changing needs of the local context, greater flexibility, along with robust control mechanisms should be implemented at the school unit.

- When asked, almost all principals said they do not have what they need to improve the school's performance.
- They cannot assign technological equipment for the budget.
- Materials and tools are procured but take too long to arrive, are more expensive, and they do not necessarily get what they ordered.

Develop an accountability system for schools.

Both the administrative and academic performance of schools must be published in a consistent manner. By making public the success and failures of strategies developed at the school level, other schools and communities could adjust their programs and strategies. Moreover, the central system could use this information to develop sound policy. By improving the transparency associated with performance, schools can focus on creating the mechanisms that actually improve and support learning. The focus should not be limited to infrastructure, organizational structure or other conditioning factors, but rather on those structures that foster student learning. Keep in mind that each school has its own needs, or even further, each classroom and each teacher has its own specific needs, thus, any measure that improves accountability must consider the inherent differences between schools.

As previously noted, ABRE's findings suggest that some schools are aware that adding this layer of complexity is a big responsibility and are willing to be held accountable for the results. In other words, school principals are confident that if given the correct autonomy over their resources they can improve their school performance and recognize the responsibility of managing these resources accordingly. This is why we suggest that, if the explained autonomy is given, each school should be held accountable for their performance by making public their information about resource allocation and management. Studies have shown that students perform better in "schools that have freedom to make autonomous process and personnel decisions, where teachers have both freedom and incentives to select appropriate teaching

methods, where parents take interest in teaching matters, and where school autonomy is combined with external exams that provide an information basis allowing for well-informed choices and holding schools accountable for their autonomous decisions"⁵.

Foster the development of strategic alliances.

ABRE's findings suggest that there are substantial gains for schools that are able to create alliances with non-governmental organizations and acquire funding grants to meet their specific needs. Some of the interviewed principals knew more about these processes than others, but they all agreed that they require additional help in this area. While applying for and managing these programs, grants, or alliances is a full-time job in many organizations, the reality is that teachers and principals simply do not have the time and/or resources to focus on these opportunities. In such cases, the OREs can serve as facilitators for these sorts of programs, so that schools can benefit from all the available services they could be eligible for. As shown in our study, these alliances do not have to be solely in the economical or budget needs, apart from grants, there are different organizations that are willing to invest their resources or develop initiatives that cover the different needs that each school has.

- Some examples found in our research include:
- Computers of HPS Aguadilla by alliance with Microsoft.
- Given the differences in terms of unmet needs at each school, each school principal has managed to develop alliances that are relevant to their context, i.e. psychological services (Universidad Carlos Albizu), grants for purchases and trainings, alliances that provide school supplies directly to students (Acción Social de Puerto Rico), technology, academic improvement, parental involvement, safety, reduction of school dropouts, among others.

Enhance educational experiences.

The central government should provide schools with resources that are specifically destined to enhance the educational experience beyond the traditional curriculum. That is, by providing a wider range of after school services and activities, the civic and community engagement of both students and parents could be largely increased. Furthermore, ABRE's findings suggest that some HPS have established clubs and extracurricular activities that promote the well-being of green areas, recycling clubs, tutors-student clubs, and even financial education clubs. Other schools have a counseling club, technology club, conflict mediation club, health club, and some even had an after-school program dedicated to entrepreneurship.

In a few of the case studies presented, one of the main gaps between the LPS and the HPS were these sorts of activities that the students had a chance to participate in. Furthermore, most of the principals talked about wanting to improve the performance of the school beyond the traditional curriculum by focusing on fine arts, sport and STEM (Science, Technology, Engineering and Math) education. Although our study did not find a direct impact of these experiences on the schools' performance in META tests, extensive research has proved how extracurricular activities help improve students' educational performance⁶.

Give a higher priority to META tests.

There is a lot of debate on whether standardized tests are the best way of proving academic proficiency or not. Regardless, these tests are required by multiple regulations and our current system is designed to rely on the students' results from these tests to assess the schools quality of education delivery and make decisions of resource allocation. This study demonstrates the need for educating principals, teachers, parents, and students on the implications of these tests. Some principals do not consider the META-PR test important or valid and, therefore, do not invest their efforts on strategies for improving student test performance. Other principals talked about the struggles they face dealing with families that do not even bring the students to school during the week of the test, as well as the lack of motivation from students that do not take the tests seriously. This shows that there is a need for strategies and interventions to make all the stakeholders aware of the value that the META-PR test results can offer educators and the important systemic implications of students' test results. Together these factors indicate that it involves families and school leaders to and invest efforts on improving students' performance on the META-PR tests.

An example of these needed efforts was demonstrated when the Arecibo HPS principal explained the preparation processes for META-PR tests:

"I inform parents in August of the importance of these tests, the dates and everything so that they do not plan vacations or trips, so the students do not miss those weeks. I make parents and teachers aware of the importance of those test results for our school and take the time to talk and explain it to students. It's like a huge promotion strategy that starts early in the first semester to encourage that motivation to maintain our excellence. I tell teachers to use the blueprints as the central tool or guide to improve on specific student skills. Also, I want my children in front of a computer learning how to use them and how to answer the tests since August. And not only the one who takes the test. I want them to work on this from the time they are kindergarten. I make teachers take them at least once a week to work on those skills... There is a coordinator that works with me on all the details when we get closer to the test dates. For example, we manage the schedule so that there are no students in the playground interrupting kids that are taking the tests and coordinate so that their lunch is taken to their classrooms... Let's just say, it is a very intense process that we go through."

This HPS is an example of how a whole culture can be created towards the importance of supporting students to try their best on the META-PR tests. One of the principals even talked about how, in other countries, these kinds of tests are announced on television. When the moment comes, the whole community stops and even makes sure that there are no loud noises around the schools to limit the distractions children might face. Various principals suggested giving the test a higher standing by making them part of the students' grades. In the end, standardized tests are a "spotlight that help education leaders see the effect that schools are having on students and use such information to make data-driven policy changes that take into account the academic needs of students."⁷

⁶ Poh-Sun Seow & Gary Pan (2014) A Literature Review of the Impact of Extracurricular Activities Participation on Students' Academic Performance, Journal of Education for Business, 89:7, 361-366, DOI: 10.1080/08832323.2014.912195

⁷ <https://newyorkschooltalk.org/2018/05/need-standardized-tests/#:~:text=Every%20state%20uses%20standardized%20tests,in%20public%20schools%20are%20doing.&text=The%20short%20answer%3A%20Standardized%20tests,changes%20to%20address%20students'%20needs.>

Public Policy Recommendations for Instructional Quality Management

Increase the accountability of procurement and implement a pilot program to expand school autonomy, allowing school leaders to manage their own limited budget according to certain transparency indicators

The PRDE may consider implementing a highly decentralized procurement process where school principals share the increased responsibility of having more control of acquiring services and materials. Such a system could be limited (as a pilot program) to schools where the principal has demonstrated high competencies and managerial skills.

Under this arrangement, schools would be able to buy and acquire certain materials and supplies on their own, instead of waiting for the Regional and Central Level Procurement Offices to process all requisitions, as they currently do. The PRDE could still monitor those purchases, as it will still have oversight over the procurement systems. A predetermined list of categories for materials and services would be agreed upon before the pilot program.

- A preliminary list could include basic common materials such as:
- Cleaning and bathroom supplies that each school needs according to its enrollment numbers
- School supplies
- Technological equipment for teachers and students
- Basic infrastructure maintenance supplies
- Other materials that will benefit from a centralized procurement process could be distributed to all schools during July and early January, before the start of each semester. The Procurement Office should oversee the process of requisitions, approval, and purchase orders submission, so materials and supplies arrive on time. This expense must be included in the PRDE's budget to be institutionalized as a regular procurement activity that takes place twice a year.
- Related findings

- All the principals interviewed believe that the PRDE's procurement process limits their access to necessary materials and services. On the other hand, the amount of budget allocated to the schools is not sufficient to cover the necessary basic services, materials, and supplies schools need. Principals understand the process of making a requisition, but obstacles arise when said requisition calls for ORE approval, as it takes longer than it should. As a result, sometimes it takes more than a year for the distributor to deliver the procured materials and/or services. There are schools that still have not received materials since Hurricane María and there are others that require the principal to arrange for the pickup of materials to receive them on time.

Two years ago, the central administration of the PRDE discontinued the use of the SIFDE⁸ card for purchasing materials. This card allowed school principals to buy products on a previously approved list. If they needed materials outside the list, they either had to use their private funds or organize fundraising events to acquire the necessary capital.

When the SIFDE purchase card was implemented, the school principal and another member of the school personnel (conciliator) were trained on how to use it. They could use it for shipping costs, office equipment maintenance and repair, unclassified miscellaneous service, office and sanitary supplies, instructional resources, and materials needed for building and construction (padlocks and chains, among others). However, schools were not able to buy any kind of technological equipment. After eliminating the SIFDE card, principals lost autonomy and had no way of buying the approved materials directly from a supplier using their school's budget. This resulted in having to procure materials and supplies through the bureaucratic process that still exists today at the central level.

A typical solution some schools have implemented is to raise their own funds, opening a bank account managed by their School Councils (Consejos Escolares), which authorized the use of the funds for a specific purpose, mainly for the maintenance and operation of the schools (not for private activities). The money that is deposited in this account are funds raised at activities carried out at the school, donations from companies or individuals, and interests accrued on the bank account).

META-PR A detailed META-PR Readiness Guide should be drafted and shared by the Assessment Unit at the PRDE's central level. Such a tool would guide principals and teachers from the beginning of the semester (August) on the required steps to guarantee that students are well prepared to take the META-PR tests.

Every student should have the opportunity to develop test-taking skills, regardless of the grade they are in. They should all be aware of what is expected from them. They should also be familiar with the test's blueprints, so they know how to perform when they take the test. Every school should analyze the previous year's results, identify the gaps by grades and make sure that content needs are reinforced before the end of first semester. This would allow students to have a clear understanding of what they should expect from the test and what is expected from them. This would also provide them with a higher level of motivation because they will understand the importance of META-PR, feel prepared, and give their best.

Additional professional development on analyzing test results and other types of data is recommended, as it is the only way to develop an efficient work plan and provide assistance to low-performing students. The ORE offices could provide specialized support to schools.

Incentives should be placed at the school level (principals and teachers) highlighting the importance of taking META-PR tests, as well as the importance that the whole school community should place on the tests. Incentives could take the form of additional funding, attaching test results to teacher and principal evaluations, establishing uniform rules on test-taking conditions, among others. None of our findings support the idea of placing the burden of test results on students. That is, students should not be conditioned or affected by their test results or their capacity/willingness to take the tests.

Related findings

Schools that achieve high META-PR scores get no recognition for their excellent participation. Some school principals feel that they do not have time to analyze their results in detail, or understand the blueprints for tests. Sixty-seven percent (67%) of the principals interviewed (8 out of 12) believe that students need greater motivation to take META-PR tests, as they do not understand their purpose or relevance.

Sixty-seven percent (67%) of the principals interviewed believe that the META-PR content is not aligned with the existing curricula, as it does not resemble what is taught in the classrooms. Only 50% of school principals believe that META-PR scores are not a reflection of students' grades. Most of the HPSs

invest a lot of time and effort in creating strategies for using the tests' blueprints and improving proficiency. These processes are different for each school, reflecting their individual needs. Nonetheless, several strategies seemed to follow similar steps in terms of analyses and preparations. Furthermore, parents do not seem to give greater importance to their school's academic proficiency, since the majority understand that their children's education has improved regardless of whether they attend a HPS or LPS.

Parental involvement

A uniform School Parent Involvement Policy should be created by every region (ORE) and adopted by every school based on their own reality. The policy should improve parental involvement by keeping parents informed on academic standards and META-PR test requirements, as well as teaching them how to monitor their children's progress and how to collaborate with their teachers. Family nights and parental training should be planned every year based on the school assessment used to develop its yearly academic action work plan (DEE).⁹ Parents should be able to participate regularly doing volunteer work at the schools, answering surveys, and visiting the school for PTA meetings to promote fluent communication within the learning network of each student.

Related findings

ABRE's Parental Immersion Score demonstrated that, although some parents appear to be involved in the academic life of their kids, there are opportunities to increase engagement. Seventy-five percent (75%) of the principals interviewed (9 out of 12) believe that a positive school environment, effective communication, and constructive feedback about their performance, promotes better student achievement. Ninety-two percent (92%) of principals interviewed (11 out of 12) believe that a lack of parental motivation affects student absenteeism, which in turn leads to poor academic performance. Ninety-two percent (92%) of the principals interviewed (11 out of 12) believe that further parental involvement leads to better academic performance.

Human Resources

Empower parents and communities to improve their schools.

Parents and communities play a key role in the education of the students and are definitely an important human resource that can affect change. The Parental Immersion Score that ABRE developed shows the level of involvement that parents have in their students' academic lives, as well as how actively they collaborate with their school's curricular and extracurricular activities. By reviewing these scores and studying the data, it is possible to identify major opportunities to increase the engagement of parents, students, and the overall community with their schools. As evidenced in this study, many previous investigations have shown that parental involvement is key for reducing student absenteeism,¹⁰ improving academic performance,¹¹ and they can play an active role in improving schools' infrastructure through PTAs or COOPs. With these in mind, strategies must be developed to empower these stakeholders and increase their involvement and engagement with the schools.

This research exposes a level of conformity with regards to the schools' performance and the students' academic improvement in both HPSs and LPSs. There were many common complaints about the schools' services, yet principals highlighted the fact that most of the parents are not that actively involved with their school and the education of the student. Thus, educating parents and communities about the power they hold and how they should get involved to improve their school and students' performance is of paramount importance. Results show that, when parents and the community are committed to the school, it is easier for schools to meet their needs and improve overall performance:

"In my school, parents have a key role and they are the ones who get things done. I have a COOP with them. They have built roofs for our buildings, gazebos for the children, repaired classrooms, painted, and even cleaned the school."

-Arecibo LPS principal

"My parents respond very well to school activities...they participate in workshops with their children... they show a commitment to the students' education... When we lost janitors due to Act 7,¹² they came to clean the school, paint, and cut the grass... I have second-generation parents who studied here when they were kids and are now very committed to the school."

-Carolina HPS principal

The analyses showed the predictive power that parental involvement can have on improving the students' performance on META-PR test scores. But more than involvement, we need to achieve parental and community engagement in our schools, particularly between parents and teachers. Creating this engagement is a way for the school to gain partners and produce even better results for students, families, and communities.¹³ Children with engaged parents have proven to earn high grades or test scores,¹⁴ graduate from school,¹⁵ develop self-confidence,¹⁶ and need less redirection in the classroom.¹⁷

Reduce employee rotation and turnover

It is estimated that employee rotation and turnover cost about 7.3 billion a year to American public-school system¹⁸. Although we cannot say the amount of money is currently costing in Puerto Rico, our study demonstrated that schools struggle with the consequences of employee rotation and turnover. For example, 57% of LPS principals were in their first year and had less experience as a school principal within the PRDE while the majority (83%) of school principals from HPS have more years in that position in their current schools and more years of experience being a school principal under PRDE overall. In addition, our study showed negative relations between the principals who brought more job experiences from outside the PRDE. Many of the newer principals were still in the process of getting to know their school, which can take a whole year, but with the earthquakes and pandemic it has been an abnormal process. Also, our study showed that teachers in higher proficiency

10 Epstein, J.L., & Sheldon, S.B. (2004) Getting Students to School: Using Family and Community Involvement to Reduce Chronic Absenteeism. *School Community Journal*, 14, pp 39-56

11 Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: a meta-analytic assessment of the strategies that promote achievement. *Developmental psychology*, 45(3), 740-63. Henderson, A., & Berla, N. (1995). *A New Generation of Evidence: The Family Is Critical to Student Achievement*. Washington, DC: Center for Law and Education, pp. 14-16.

12 Act 7-2009 declared that Puerto Rico was in a State of Fiscal Emergency and resulted in the termination of over 30,000 public employees.

13 Ferlazzo, J. (2011, May). *Involvement or Engagement?* ASCD, pp. 10-14.

14 American Psychological Association. *Parent Engagement in Schools*. Retrieved from [apa.org: https://www.apa.org/pi/lgbt/programs/safe-supportive/parental-engagement/default.aspx](https://www.apa.org/pi/lgbt/programs/safe-supportive/parental-engagement/default.aspx)

15 Grand Rapids Public School District. *What Is Parental Engagement?* Retrieved from [grps.org: https://www.grps.org/parents/parental-engagement](https://www.grps.org/parents/parental-engagement).

16 Wairimu, M.J., Macharia, S.M., Muiru, A. (2016, November 27). *Analysis of Parental Involvement and Self-Esteem on Secondary School Students in Kiari West Sub-County, Nyeri County, Kenya*. *Journal of Education and Practice*, Vol 7. (82-98).

17 Sheldon, S. B., & Jung, S. B. (2015). *Parent Involvement and Children's Academic and Social Development in Elementary School*. Johns Hopkins University, School of Education.

18 Carroll, T. (2007), *Policy Brief: The High Cost of Teacher Turnover*. Retrieved from <http://nctaf.org/wp-content/uploads/2012/01/NCTAF-Cost-of-Teacher-Turnover-2007-policy-brief.pdf>.

schools have been in their current school significantly longer (5 years on average) than teachers in lower proficiency schools (3 years on average). When these findings are put together, the fact that employee rotation and turnover is taking a toll on the schools becomes more concrete.

Schools must take measures to retain employees and give the necessary time for the changes to have an effect on the overall school performance. Also, we need to think about the students and the possible negative effects that these staff changes could be having on their education. There are scientifically proven strategies to reduce employee turnover, for example¹⁹:

- Strengthen teacher preparation.
- Improve hiring and selection processes to attract and retain effective teachers.
- Have a strong induction, mentoring and support program for new teachers.
- Improve working conditions and leadership.
- Give as much classroom autonomy to teachers as possible and provide direct support with challenging students.

In the interviews, most of the principals talked about the challenges of getting new teachers and other staff (i.e. librarians, janitors, psychologists, social workers, etc.) assigned to their schools. They expressed the efforts they put in to work with those new teachers that arrive to improve their lesson planning skills. The newer principals also talked about their struggles and provided more ambiguous or generic answers to our questions. With this in mind, schools must take measures to create processes, systems and internal policies to store information and ensure that the many employee changes they can go through, affect as little as possible. An example of a possible initiative is having teacher work on and store unit plans of the curriculums instead of daily lesson plans that get lost with the passing of each employee. By doing these sorts of initiatives, new principals and teachers can at least have all the information needed available and schools will have the ability to retain the knowledge acquired by other employees.

Allow principals to recruit and select teachers

One of the basic traits of the organizational structure of a school is that it is intensive on human capital. Thus, the selection of human resources is even more important than control or autonomy over infrastructure and other operational systems. However, the selection of teachers and other schools' staff is currently beyond the realm of autonomy of

school principals. New policies should be enacted (via a pilot program) which allow schools to select the teachers and operational staff that best respond to the needs of their local environment or community. By dismantling the centralized control, further community involvement should be expected as more staff could potentially come from the immediate community.

In our regression analysis, teacher education positively and significantly predicted school proficiency scores. Meaning that the higher education level of the teacher tends to predict higher proficiency META scores. Moreover, there were statistically significant differences in the proficiency of the school according to the teachers' academic degree. Those with a master's degree have higher proficiency scores than those with a bachelor's degree. These findings highlight the importance of hiring personnel that is well prepared for the job and that has the competencies that each school requires depending on their needs. If principals are allowed to select their staff, they can put a process in place to make sure they hire the correct candidate for the job.

Public Policy Recommendations for Human Resources

Implement effective human resources management systems and policies

The PRDE should consider the acquisition of a reliable time and attendance system in order to identify certain absentee patterns and, thus, plan an effective substitute teacher policy. Also, the department could develop policies such as a No Turn Around Policy for teachers and principals establishing a minimum number of years that they are required to remain employed at the same school. This would help retain as many teachers as possible in the same school and provide a sense of stability within the school environment. Moreover, Act 26-2017, which eliminates the incentive to pay for unused or excess sick days, increased teacher absenteeism. The PRDE's Office of Human Resources needs to provide real-time data to improve the management of the tardiness and absenteeism processes. Currently, there is no effective structured process for how to handle attendance and tardiness in schools.

Related findings

The total number of principals (100%) interviewed indicated that the elimination of the incentive to pay teachers for excess sick days resulted in an increase in the number of absences. Teachers saw the incentive as a productivity bonus. Due to the removal of this incentive, principals are forced to create alternate instructional plans to comply with school hours, as well as develop administrative strategies to allow teachers

19 <https://learningpolicyinstitute.org/product/the-cost-of-teacher-turnover>

to take sick days²⁰.

On October 24, 2019, SB 1432 was submitted to the Senate of Puerto Rico to authorize PRDE teachers to use the pre-existing balance and/or excess of sick leave as time worked for their retirement system. On August 3, 2020, the governor signed the bill and turned it into an amendment of Act 26-2017, known as the “Fiscal Plan Compliance Act,” for the participants of the Teachers Retirement System.

Develop mentor programs for school principals and create a vice-principal or assistant principal position in every school

The PRDE should consider designing a Pilot Mentorship Program in which, for instance, more experienced principals can collaborate with less experienced ones. This mentoring would promote or enable the transfer of knowledge associated with management strategies and overall best practices in the school setting. An already established example of a mentorship leadership program is *The School Leaders Collaborative*.²¹ This public-private collaborative network is dedicated to building the capabilities of school leaders and their communities through the sharing of learning experiences that will improve academic outcomes for all students in Puerto Rico.

Moreover, public policy should be established to create a new position for school vice-principals or assistant principals. If such a policy is created, new school principal candidates could be required to have 2-3 years of experience as a vice-principal or assistant principal (in addition to other qualifications). A vice-principal or assistant principal provides support wherever needed. Sometimes, assistant principals are assigned to work with more administrative or operational tasks, while the school principal supervises

the academic program.

Related findings

Four of the 12 principals interviewed (33%) believe that they can learn from the experiences of others. Two of those principals lead low-performing schools. Some of them noted: “What do they do that we do not?” This question is asked by principals who plan, schedule, and execute test-aligned curricula but still do not get the expected results.

Principals identify the following determinants of school success:

- Constant reforms to the curriculum
- The sense of belonging students and teachers have with regards to the school campus
- Faculty commitment to their work
- Parent participation in school affairs
- The presence of the school principal
- Other studies, such as the *XIII Puerto Rican Congress of Research in Education at the University of Puerto Rico* (Río Piedras, March 2015), indicate that, among the tasks and responsibilities of a successful principal, the most relevant are tasks:
 - to lead the school as a team,
 - to guarantee the promotion of social responsibility among the members of the learning community, and
 - to coordinate and provide training in the field of technology and its integration into the teaching-learning process, as well as optimal physical facilities from the school. (Berríos, 2015)²²

²⁰ With the enactment of Act 26-2017 (Compliance with the Fiscal Plan), the marginal benefits of Act. No 8-2017, known as the “Law for the Administration and Transformation of Human Resources in the Government of Puerto Rico”

²¹ <https://leadcolab.org/>

²² Berríos, R., Carrión, J., Carroll, J., Lucca, N. & Macksoud, S. (March 2015). Estudio internacional sobre liderazgo exitoso en escuelas públicas.

Infrastructure

Improve schools' infrastructure and maintenance

For this study, infrastructure was defined as the schools' basic services, physical facilities for teachers and students, didactic resources, and materials for effective organizational operation. The fact that most schools scored a D or F in ABRE's Infrastructure Quality Score does not mean that infrastructure is not a key variable for academic achievement, but rather that academic performance for all schools would increase if sound infrastructure investments are made. The fact that some schools perform better than others, even with a lackluster infrastructure, is evidence that proactive school principals have managed to create coping mechanisms to "informally" meet those pressing needs. It is important to keep in mind that infrastructure is not limited to physical endowments; it includes the systems and processes associated with adequate usage and maintenance. In addition, in an era in which technology plays a major role in the quality of education and access to opportunities for students, every school except for the HPS in Carolina received an F on ABRE's Technological Infrastructure Score²³, exposing the poor state of these schools' technological equipment.

Improving schools' infrastructure is not just about investing money on initiatives to give schools the resources they need. Although many schools require initial investments or purchases to meet their needs, many also require follow-up and maintenance. One example of this was the HPS of Arecibo, which had a computer lab with the capacity for 65 computers, yet more than 25 of them were damaged, unusable, or in need of repairs. Survey data shows that the schools' equipment is poorly maintained. This fact provides a reasonable foundation for including additional flexibility in the schools' budgets to acquire the necessary equipment and resources. The potential influx of federal funding from previous natural disasters could serve as a pilot project to experiment with a greater degree of autonomy in procuring this type of infrastructure improvements.

According to results, regardless of whether PBA or OMEP is responsible for school maintenance and cleanliness, all of the schools are in dire need of basic services for their physical facilities. In addition, many schools lack basic educational resources and materials for teachers, and some even lacked the necessary learning spaces to render services. In addition, this research highlights many inconsistencies with the fine arts and sports programs or facilities in schools. All of these factors must be resolved, as research has

shown that the availability or unavailability of such services, resources or facilities, generate significant differences in students' achievement, irrespective of their economic and sociocultural circumstances, the country, or place where the school or center is located.²⁴

Public Policy Recommendations for Infrastructure

Technological capacity

Puerto Rico's Office of Management and Budget should allocate enough funds for the PRDE to include a specific expense item in its annual budget to provide comprehensive technology to 100% of the public school system. This should not only include access to computers and traditional technological equipment but also its proper maintenance and capacity-building activities. Also, the PRDE should guarantee that all schools are adequately connected to the internet and that the necessary bandwidth is in place. The internet should be recognized as a basic infrastructure necessary for a school's operation.

Secondly, institutionalizing the use of technology for administrative and operational purposes should be set as a high priority in schools, as well as developing consistent educational technology workshops for principals and teachers. All personnel should be supervised by professional experts on this matter, so that teachers receive adequate feedback.

It is a challenge to effectively use technology, whether it is virtually or in-person, as teachers need to have technological, pedagogical, and content knowledge to guarantee an effective learning process and experience.²⁵ After receiving their training, each teacher should have a tailor-made professional development plan. This will guarantee that all faculty and administrative level personnel enjoy a positive and constant professional development.

Given the importance of technological infrastructure for the day-to-day operations of any given organization, each region should have an IT specialist assigned to a limited number of schools in a predetermined area.

Related findings

Due to the COVID-19 pandemic and its social distancing policy, mastering technology has become crucial. Even before the pandemic, teachers were certain that they needed workshops on all technological matters. But with the new reality demanding virtual education, knowledge in these areas is imperative, and the need for equipment and technology access

²³ Due to policy changes at the PRDE, schools are no longer able to procure technology equipment from their budgets. The new processes require schools to submit their needs to the central office, and then the PRDE procures the equipment. This causes substantial delays of product delivery.

²⁴ F. Javier Murillo & Marcela Román (2011) School infrastructure and resources do matter: analysis of the incidence of school resources on the performance of Latin American students, *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice*, 22:1, 29-50, DOI: 10.1080/09243453.2010.543538

²⁵ Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A new framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.

for teachers, principals, and students has been further exacerbated. Thus, it is no longer simply a question of the need for equipment but also the need for access.

Ten of the twelve principals interviewed (83.3%) believe that technological equipment is not only necessary because of the situation they are currently experiencing, but that students feel more motivated when their teaching techniques vary. Students are

more motivated to learn when they use computers, electronic boards, and other devices that take them out of the daily learning routine.

Only two HPSs (17%) of the schools surveyed offer META-PR tests online. They both indicate that students are more motivated by taking tests online, which they believe has helped improve their scores.

Operational Management

Promote data-driven decision-making

As the concept of “big data” (larger, more complex data sets, especially from new data sources)²⁶ keeps growing and acquiring more attention in business, governments, and organizations, we need to make sure our school systems are gathering, analyzing, and implementing decisions based on data. One of the main challenges ABRE has faced is the dearth of data available from schools and the poor quality of the available data, which renders it useless. One example of this situation has to do with the teacher and student absenteeism and tardiness issues. ABRE could not use the PRDE data for their current research because of proven problems with its data collection process and its inconsistencies with the schools’ realities.

However, we could not rely 100% on the data provided by schools in the surveys since many of them did not know, keep track of, or systematically record such information. Most responses are based on self-reported possible estimates. These issues expose the need of designing and implementing better standardized data collection systems for our schools to gather and use information. The potential solution is not necessarily acquiring new information systems, but rather adapting and optimizing the data that is currently stored and marginally used for internal compliance procedures.

The second opportunity in this area is data management and decision-making. For example, some of the HPS principals showed more knowledge regarding the use of the META-PR test score blueprints to develop improvement plans, interventions for students, and even to adapt their lesson planning. Other principals were really assertive when expressing:

“I would like to learn more about data management for effective decision making. Knowing how to use the data that I acquire during the school year. I need support in that area.”

In other words, school principals need to know how to use the data from their schools as a main decision-making tool to improve their performance. As noted in our research, schools have multiple reporting

protocols, however, such data is not readily available, and management consistently based their decisions on experience, perception, intuition, and customs.

The research community should pay attention, not only to the investigations of the PRDE as a system, but also to the individual characteristics of schools and their communities to give them information and research-based recommendations that they can apply to their day to day.

Overall, the research done in Puerto Rico should be focused on creating or gathering quality and reliable data and using it to make more complex predictive statistical analyses to facilitate decision making. Moreover, this study shows the counterproductive effect that generalized rules can have in certain areas. For example, the elimination of the sick leave incentive triggered teacher absenteeism and, therefore, inflated the risk of students missing classes or elective periods. Thus, general public policies should be analyzed in their effects for our particular educational system and the individual effects on schools as independent units. The fact that Puerto Rico’s public educational system has multiple decades of a centralized tradition means that rules, regulations, processes, and protocols have not adapted to the individual conundrum of schools and the communities they serve.

Manage schools as individual (public) companies and provide direct support mechanisms for school principals

Regular organizations are structured in a way where the person in charge manages the business and usually responds to a Board of Directors. The strategies, policies, or procedures a director implements will be in response to the specific needs of the company. Using this analogy, principals should act like the leader of a singular organization and the School Council and ORE (as institutionalized by Act 85-2018 or the Puerto Rico Education Reform Act) as the Board of Directors. However, for principals to fulfill this role, besides their knowledge in education, they must have a grasp of or be advised on the administrative and organizational side of the company.

Our research shows that principals from the HPSs were knowledgeable on how to run the operational

part of the school and felt empowered to be more proactive and solve problems systematically. As noted in this report, the HPSs consistently had a greater number of systems, processes, and amenities that complemented the typical academic curriculum. Furthermore, the LPSs have systems, processes, and facilities which comply with the minimum conditions required by the PRDE. From the differences noted in the case studies, the HPSs operate as sophisticated institutions, that is, each school's profile shows strong traits of a well-managed institution that goes beyond the minimum operational requirements of the PRDE. The reflection of greater institutional capacity is evidenced by the fact that several HPS provide specialized resources in the areas of nutrition, psychology, social work, and nursing, among others.

Based on ABRE's findings, the PRDE should invest in mentorship or counselling programs that assist school principals and provide them with the necessary tools to manage their school unit. This provides additional skills associated with managing the complexity of the PRDE's administrative norms, as well as stronger community involvement. It could be inferred that the greater the amount of years within a single school, the better understanding of the community's needs. Likewise, lacking many years of experience within a single school creates a high turnover rate, which negatively affects school performance.

Given the current institutional arrangement of the PRDE, the ORE could provide the administrative and operational support needed by principals. However, the ideal system should be entirely based at the school, and principals should get the support from staff that is specifically hired for operational or administrative responsibilities. Based on the results of this research, schools can improve their academic proficiency if principals are able to perform some of the following actions:

- Structure and implement a policy for teachers to request special licenses (such as sick days for schedulable doctor appointments) to have a contingency plan in place with substitute teachers and lessons to give to students.
- Build a strategic plan aimed only at the improvement of META-PR test scores.
- Make sure that the School Council is operating as it is supposed to.
- Take measures to stop depending solely on the budget assigned by the PRDE and create other sources of income for the school's needs.
- Dedicate efforts to building alliances with other non-governmental organizations that can provide different services or equipment for students and teachers.
- Make curricular adjustments that align with the specific needs of the students and structure

teachers' lesson planning.

- Promote activities for parental and community involvement with the school and establish an open-door policy for parents to come and meet with the administration.
- Give continuous daily feedback to teachers to assess their performance and to provide support for students' cases.
- Implement strategies to build a healthy organizational culture focusing on the employees' wellbeing, so that they can take care of the students.

These recommendations are just a few examples of the type of actions that company leaders take to effectively manage their organization. To see positive effects from these actions, they should be institutionalized or formalized within the school context. When they are left as informal practices, the school can fall victim to constant changes that destabilize their operation and decrease academic proficiency. Also, all of the strategies should be customized to their needs (ideally based on factual data) and given the time to take effect and start providing positive results. When developing strategies and implementing new processes, it should be emphasized that "managing change is a process that takes time and the question that leaders need to ask themselves is if they want long-term sustainable change or short-term change that often reverts back to the old way of doing things."²⁷

Public Policy Recommendations for Operational Management

Creation of a permanent position for an external affairs facilitator in each regional office

Principals would benefit from an external affairs facilitator to identify opportunities to submit grant proposals so they can obtain extra help or resources that meet each schools' independent needs.

Related findings

More than 50% of the interviewed principals have no idea about where to find information regarding proposals and grants, or other regular funding opportunities. Few school principals stated that they were able to develop their own proposals for grant award purposes. None of the participants indicated that ORE's personnel provide any support in this matter. However, this type of specialized resource could be shared between a set of schools in a pre-defined geographic area. Moreover, systems and processes could be set in place to develop a yearly needs assessment that could be used for every proposal that gets submitted. As of today, the only technical assistance schools have access to is the one offered by Federal Affairs Office personnel at the PRDE central offices.

Equate performance incentives

The PRDE has directly or indirectly influenced the performance of school principals by enacting multiple rules and norms. The department should consider establishing a set of budgetary incentives for schools that have increased or improved their academic performance. By incentivizing school leaders with increased funding or higher flexibility in the use of funds, school units that are currently on a positive track could further expand their initiatives and potentially institutionalize their actions in the medium- and long-term.

Related findings

Interviews with school principals indicate that schools with low test results tend to receive additional aid from the PRDE. Though this may be perceived as sound policy, when other factors are considered, it could be perceived as a pervasive incentive. That is, high-performing schools will not receive any additional resources, while confronting somewhat similar unmet needs as low-performing schools.

Finally, schools are more than their test scores

Regardless of whether the school is a HPS or LPS, it is important to remember the human beings behind those scores that are committed to the education of their students. These human beings get up every day to try to contribute to future generations. The COVID-19 pandemic has highlighted the ongoing problems and extreme circumstances teachers must work under to be able to teach their students. At the same time, it has made clear how the socioeconomic inequalities impact the access that students have to quality education. This is why, more than studying the numbers or results of tests, it is necessary to start focusing on the "human factor." For example: What are the health needs of students and teachers? How do their circumstances influence their performance? What resources do principals need to improve their leadership and enhance their schools? How can we handle the emotional needs of teachers and students? What strategies do they follow to deal with the challenges of students' socio-economic levels? How are psychological variables impacting teacher performance? How can we improve the health and well-being of the school staff?

ABRE's scores are not designed to determine the quality of a school principal, its teachers, and

related personnel. As noted in our research, schools are complex systems that are constantly influenced by internal and external factors. Current rules and regulations have officially limited the autonomy that schools have and the actions they can take. Thus, school leaders that are highly proactive and willing to operate without the direct support of the PRDE tend to improve school performance. Under multiple circumstances, teachers, and school principals alike could be highly proactive. However, their actions have not translated into improvements in META-PR test scores. This is no surprise given that there is no single recipe for improving META-PR test scores, as well as the myriad of issues that are constantly affecting a school and its community. For instance, due to the socioeconomic challenges of students at the HPS of Aguadilla, the school has developed strategies and formal programs for:

- preventing students from taking work home and providing classwork instead,
- establishing tutoring services within the school's business hours (making teachers available for the students),
- providing fine arts programs and sports so that students have things to do and learn after school, and
- constantly integrating parents in students' educational performance to present them with the necessary tools to help them improve.

ABRE's scores are intended to aggregate what would otherwise be fragmented data. The objective is to simplify and provide better access to facts that could serve as potential decision-making tools for schools' stakeholders. Through these analyses, researchers have witnessed the struggles that schools' personnel must face every day and the efforts made by teachers and principals to be able to teach. Researchers have felt the sadness, anger, and frustration of principals that give their all to improve their schools and yet, with tears in their eyes, asked for help to know what to do and how to do it. This is why it is important to remember that the people behind the scores are only human. Even though it was a small number, during our research we met school principals who showed limited empathy regarding their school's condition or, even worse, had no plan for or interest in improving the current condition if additional actions were demanded.

Further Research

Additional research is required to analyze the factors that are impacting the schools' academic proficiency. The current research was limited to a set of 14 schools distributed around the island. Consequently, the research instruments developed for this study could be used for a larger and statistically-representative sample size. Increasing the sample size could provide additional insights and substantially reduce statistical errors. Moreover, the PRDE could internally replicate this research and use the surveys as program evaluation tools or instruments to gather basic data that is currently unavailable at the department.

The scores developed by ABRE as part of this study (i.e. the Parental Immersion Score and the Infrastructure Quality Score) should be strengthened to assess these factors in a bigger sample and measure their impact on schools' proficiency. Moreover, additional comprehensive scores should be developed to assess how variables, like the quality of principals and teachers' performance, affect proficiency. The type of tools used to collect data for the scores can go through a scientific validation process so they can be used as organizational questionnaires for schools in Puerto Rico and as instruments of scientific studies.

Per our results, there is a strong need to perform further research regarding the role of the school principal. This exercise is not merely academic, but rather practical and with robust public policy implications since small improvements in the managerial structure of a school could render long-lasting benefits to its entire community. Moreover, previous research has focused on teachers and other components of the school system, but with limited visibility on the individuals (principals) who are

responsible for the performance of the entire school.

It is still necessary to improve data quality in order to conduct better predictive and statistical analyses. For example, having reliable longitudinal data of student and teacher absenteeism would allow a better measurement of their impact in academic proficiency. However, this data is influenced by all the changes that schools have gone through in recent years and their conditions (quantity of students, classrooms, grades, teachers, structure, etc.) have changed so much that any data from previous years is too outdated.

Since many principals talked about the correlations between students' grades and META-PR test scores, in-depth analyses should be done to verify if, in fact, school grades predict the performance on META-PR. Additionally, the strategies used by principals to prepare for META-PR (i.e. how they use blueprints) should be measured to prove their effectiveness on score improvement.

Finally, this study demonstrates the need to further investigate other schools as individual organizations to be able to determine how those specific processes or implemented strategies are key determinants of each school's performance. There are things like the way a school utilizes its budget, META-PR blueprints, or the services received from strategic alliances that, according to the results, are probably making a difference in the academic proficiency. Also, other organizational factors like employee rotation and turnover, employee well-being and leadership should be assessed to see how they are impacting the school. When these factors are determined, a policy landscape analyses should be conducted to make the appropriate recommendations for the PRDE.



An abstract graphic on the left side of the page, consisting of a dense network of thin, light-brown lines connecting various-sized circular nodes. The nodes are also in shades of light brown and tan. The overall shape of the network is roughly triangular, pointing downwards, and has a textured, mesh-like appearance.

GLOSSARY

Glossary

1. **Academic proficiency:** Percentage score that demonstrates the academic performance of a school, based on its META-PR tests results.
2. **Puerto Rico Education Reform Act (Act 85 of March 29, 2018, as amended):** Public policy of the Government of Puerto Rico in the area of education that develops the framework for the public education system.¹
3. **Blueprints:** A specification sheet that details how the test has been divided by content area based on grade standards and expectations. It presents the number of points per content standard and the total percentage that must be covered in each grade. They are based on the content standards and grade expectations (2014) of the PRDE and take into consideration the instructional time and the amount of skills assigned to each standard.
4. **COOP:** A store that is managed by the School Council, which must approve the budget of income and expenses for the school to spend that money according to current regulations.
5. **El enfermito bonus:** payment for excess vacation and sick days that public employees received for the excess of accumulated (not taken or unused) sick days under law. The Fiscal Plan Compliance Act (Act 26-2017) eliminated the cash liquidation of these excess days and established that, if they were not taken during the natural year, they would be lost. The law states that: "The payment for excess vacation and sick days is eliminated. However, the implementation of measures by supervisors is mandatory to ensure that our employees do not lose the accumulated days and can enjoy them."
6. **Higher Proficiency School (HPS):** School which has an academic proficiency, as computed by the META-PR ABRE score, of 66% or higher.
7. **Infrastructure:** Schools' basic services, physical facilities for teachers and students, educational resources, and materials for effective organizational operation.
8. **Lower Proficiency School (LPS):** School which has an academic proficiency, as computed by the META-PR ABRE score, of 65% or lower.
9. **META-PR tests:** Standardized tests used in Puerto Rico to evaluate students' academic performance and measure the quality of the educational processes. They are part of the Measurement and Evaluation for the Academic Transformation of Puerto Rico system (Sistema de Medición y Evaluación para la Transformación Académica, META-PR").
10. **Own funds:** Current account managed by the School Council, which determines the use of the funds for a specific purpose of the maintenance and operation of the schools, not for private activities. This money is raised from activities carried out at the school, donations from companies or individuals, and interest accrued on the bank account.
11. **Office of Public Buildings Management (OMEP):** Agency in charge of the grounds and maintenance and repair of the building.
12. **Parental immersion:** The level of involvement that parents have in the academic life of their children and how actively they are collaborating with the school's curricular and extracurricular activities.
13. **Parental involvement:** The level of participation that parents have in the academic curricular

and extracurricular activities of their children.

14. **Parent-Teacher Association (PTA):** An organization led by the parents of the community to collaborate and contribute to school initiatives and activities.
15. **Public Buildings Authority (PBA):** Agency in charge of the building structures and gardens, as well as of plumbing, electric system, and everything else that entails labor or repairs.
16. **Puerto Rico Department of Education (PRDE):** Public agency in charge of Puerto Rico's public education system.
17. **Puerto Rico Electric Power Authority (PREPA):** Public agency in charge of providing electric power to the island.
18. **Regional Educational Office (ORE):** Administrative office that gives direct support to schools and serves as a liaison between the schools of an assigned region and the PRDE central office agency. There are 7 regional offices which evaluate and address the specific needs of each school. These regional offices are located in Caguas, Humacao, San Juan, Mayagüez, Arecibo, Bayamón, and Ponce.
19. **School community:** Refers to the principal, teachers, parents, students, and any other employee who contributes to the school.
20. **School Council:**² School entity composed of between 5 to 11 members of the four components of the school (student, academic, administrative, and external). It must approve the school's income and expense budget, authorize the disbursement of own funds, evaluate management and efforts, encourage community participation, and establish alliances, among other responsibilities, in accordance with the PRDE Regulations established under Article 6.04 of Act 85-2018, as amended, known as the Puerto Rico Education Reform Act.
21. **Student-teacher ratio:** The number of students for each available teacher at the school. For example, "25:1 ratio" means that there is an average of 25 students per teacher.
22. **Technological infrastructure:** Technological equipment students and teachers have (or need), how it is being used, and the quality of the internet services.

2 Reglamenteo de Consejos Escolares, Departamento de Educación de Puerto Rico, <https://de.pr.gov/wp-content/uploads/2019/12/9-publicado-reglamento-consejo-escolar-rev-10-revisado-nov-27.pdf>



APPENDIX

ADDITIONAL METHODOLOGICAL NOTES

Appendix – Additional Methodological Notes

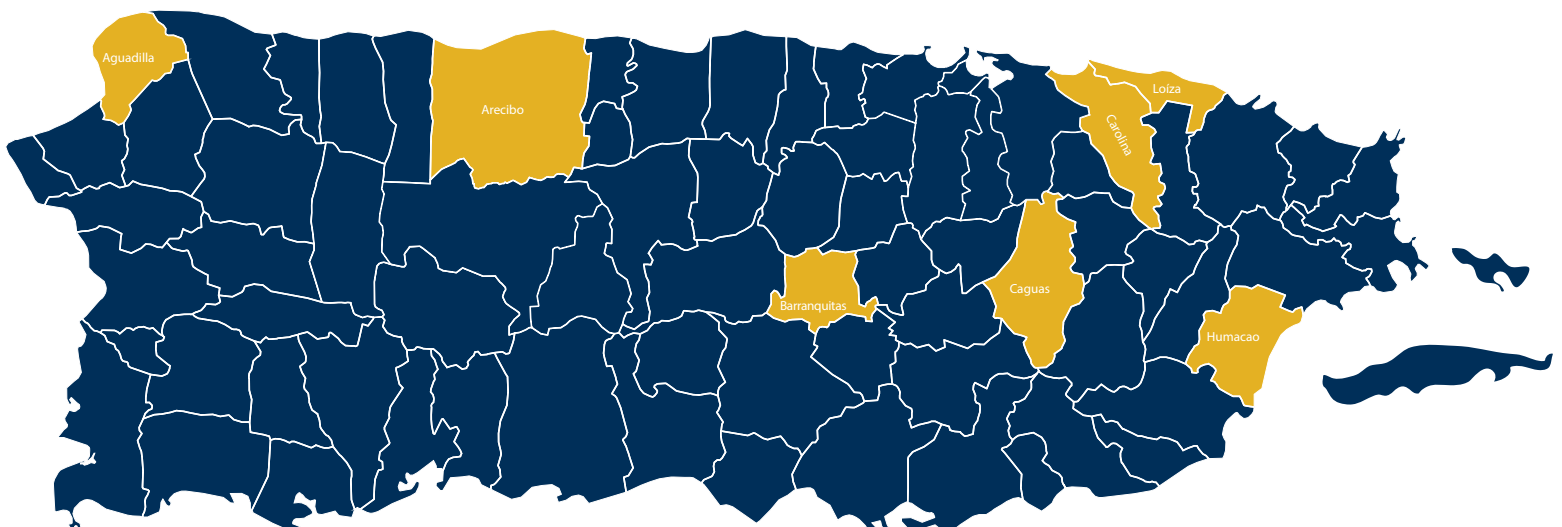
PRDE Authorization for Research

In order to obtain the PRDE's authorization, we first requested a meeting with Puerto Rico's Secretary of Education and his team. We presented the proposal and followed the established steps to obtain the necessary letter of authorization that we had to present to each school before starting the research. This is the list of steps and actions that we followed, in the order they were performed, to obtain the final authorization letter:

1. Meeting with the Secretary of Education and his administrative team to present a proposal.
2. Orientation from the Center for Research and Educational Innovations to submit the required documents for approval of the research.
3. Submission of the following documents for the PRDE's approval to carry out the study:
 - a. ABRE Presentation Letter
 - b. Principal's Consent, Parental or Guardian's Consent and Teacher's Consent
 - c. Questionnaires
 - d. List of 14 schools
 - e. Project's scope of work
 - f. Research validation
4. Receiving of authorization letter.

Data Gathering Efforts and Participants

The official data gathering started one week before the pandemic hit in March 2020. During that week, we were able to go to the pair of schools in the municipality of Carolina and gathered the school and principal profiles. This was the only pair of schools that we could visit and observe. When the COVID-19 pandemic started, we readjusted our efforts and changed the original processes of the methodology. The surveys' format shifted to gather the data online and we contacted schools over the phone and/or through email. The pandemic created additional challenges in our research because all of the schools were going through a difficult time, which made it harder to reach teachers, principals, and parents. We worked on multiple efforts to obtain contact information so the PRDE could send an email blast to parents from these schools. We ended up using multiple platforms like Google Forms, Psydata, and Zoom to gather all the information. Below there is a list of the surveys and efforts that took place to collect the data, as well as the number of participants for each survey.



School and Principal Profile Survey	Outcomes
<p>A Google Form was created, and the link was shared with principals. Principals were contacted by phone, email, and with the collaboration of some regional directors. Some of them answered by directly engaging with the provided link and others answered through the phone.</p>	<ul style="list-style-type: none"> · 13 of the 14 schools participated. · The HPS of Loíza chose not to participate.
Teacher Profile Survey	Outcomes
<p>A Google Form was created, and the link was shared with principals so that they could share it with their teachers. Teachers were contacted mainly with the collaboration of the principals, and our survey link was shared with them over email and group chats. Principals shared the survey link with all school employees.</p>	<ul style="list-style-type: none"> · A total of 231 teachers answered this survey. · The teachers from the HPS of Loíza could not participate.
Parent Profile Survey	Outcomes
<p>A Google Form was created, and the link was shared with principals so that they could share with parents, but not all principals had access to their contact information. Additional efforts were made to get the PRDE to send the survey link to the parents from these schools through their internal system as an email blast.</p>	<ul style="list-style-type: none"> · A total of 566 parents from all the schools answered this survey.
Organizational Psychometric Scales	Outcomes
<p>To motivate teachers and employees to fill this second survey, we created a flyer and shared a link for the survey. To gather the data of these questionnaires, we used Psydata. Teachers were contacted mainly with the collaboration of the principals, and our flyer was shared with them over email and group chats. Principals shared the survey link with all school employees.</p>	<ul style="list-style-type: none"> · A total of 209 teachers answered this questionnaire. · Teachers from the HPS of Loíza and the LPS of Arecibo did not participate in this second survey.
Semi-Structured Interviews	Outcomes
<p>Principals were contacted through the phone and a meeting was scheduled to conduct the interviews. The interviews were conducted using Zoom and lasted an hour, on average. An industrial organizational psychologist (consultant) conducted the interviews with the ABRE team.</p>	<ul style="list-style-type: none"> · 12 of the 14 school principals participated in the interviews. · The principals from the HPS of Loíza and Caguas did not participate.
Additional Data Gathering	Outcomes
<p>After reviewing the gathered data, we carried out additional efforts to correct unintelligible or incomplete data. Principals were reached through the phone and asked about specific data from their schools that we needed to clarify to conduct our analyses. In addition, we performed a research of all the information available on the PRDE website or school networks to gather additional relevant data that could help explain our results or added value to our research study. One of the main sites used was: https://de.pr.gov/edata/.</p>	<ul style="list-style-type: none"> · 12 of the 14 school principals were reached. · The principals from the HPS of Loíza and Caguas did not participate. · We could not find quality data of all the schools on our web search, but we included what we found and compared the information obtained online with what we had.

Data Analyses

As part of our analyses, we first compared and contrasted our data with all the available information that the PRDE had published for each school. There were two types of analyses made with all the gathered data. The first analysis consisted of the case studies of each pair of schools to compare the data and find out possible explanations as to why their META-PR tests performances differed so much. The second analysis was focused on aggregating all the data to observe the factors that could be influencing META-PR tests proficiency in our entire sample. We used the META-PR proficiency score that we built using data provided by the PRDE for all the analyses. All ABRE scores are explained in the next section. We used IBM SPSS and Excel to analyze the quantitative data and NVivo for the qualitative data. The following is a description of the different analyses performed to draw conclusions and recommendations for our study:

- Case Studies
 - For the case studies, we pulled out every piece of collected data for each pair of schools to compare and contrast the main differences between them. For the analyses we used the data from all the profiles, the psychometric scales, interviews, the PRDE and general observations.
 - The process consisted of evaluating the possible impact that each item, at a descriptive level, could be having on the META-PR tests and overall school proficiency. The analyses were done by a multidisciplinary team of four experts that assessed and discussed each piece of data and reached a consensus regarding the possible impact or importance of each result.
 - The multidisciplinary team was comprised of 4 reviewers:
 - Reviewer A- Lawyer proficient in data management and research, and a leading expert in economics and public policy.
 - Reviewer B- Experienced teacher, educational therapist, and consultant with 5 years of experience in administrative and managerial positions within the PRDE.
 - Reviewer C- Operations and project management expert with a lot of experience working with the public school system and on previous PRDE investigations.
 - Reviewer D- Industrial-organizational psychologist consultant proficient in statistics, investigations, and organizational behaviors or management.
 -
 - After reaching a consensus of the results that could be positively or negatively impacting

the META-PR tests and proficiency of each pair of schools, we drafted the conclusion narratives. We wanted these narratives to present the story behind each school pair's differences, as well as provide possible answers as to why they performed so differently despite generally similar characteristics. For these purposes, we also created our own scores that would help us present the results. The narratives include insights of previous investigations or scientific theories that can explain some of the results. Although they all share a similar format, the conclusion narratives are meant to be different from one another because, as we proved with our study, each school operates within its own system and has different variables that can be influencing their performance.

- Aggregate Analyses
 - For the aggregate analyses of the quantitative data we used descriptive and inferential statistics to find common factors that could be influencing the schools' META-PR proficiency scores.¹ To achieve this, we analyzed the data in three ways:
 - ◇ Using descriptive statistics, we calculated averages and medians (if the distribution of the data was not normalized) to observe the differences and tendencies. In addition, we divided the data between the HPSs and the LPSs and computed the averages and medians to find out if there were any aggregate differences between the results of all the variables. For the results, we highlighted the main differences and most important variables as possible influencing factors in schools' performance.
 - ◇ Using inferential statistics, we performed Pearson Correlations and Regression Analyses with the Stepwise method using the ABRE's proficiency scores as a dependent variable. Because of the exploratory nature of this study, we first performed the correlation analyses with all the variables of the study to see which ones had a positive or negative impact on academic proficiency. Afterwards, all the variables that had a statistically significant correlation ($p < .05$) were entered into regression analyses to observe which one could predict an increase or decrease of the META-PR proficiency score. To explain the results, we used the qualitative information gathered in the interviews and previous scientific investigations. Results

¹ Since the data gathering process was not randomized and we only gathered data from 13 schools, we cannot scientifically extrapolate our results to every PRDE elementary school. In addition, to correctly predict numeric variables, such as the META-PR proficiency scores, we need a bigger quantity of data for the sample and historic information.

that did not have any sort of valid or possible explanation were eliminated from the report.

- ◇ Using inferential statistics, we divided all the data from the sample between the HPSs and LPSs and performed group comparisons. The objective was to analyze if there were any statistically significant differences between the average result variables of the HPSs and LPSs. Because of the exploratory nature of this study, we performed the analyses with all the variables of the study. The objective was to find out if there were significant differences between the resources, actions, or overall feelings of the HPSs versus the LPSs. We wanted to see if the HPSs and LPSs were carrying out specific actions as a group that could explain their academic performance. Depending on whether the data was categorical, continuous, distributed normally or not, we used t-tests, ANOVA, or non-parametric tests, all at a significance level of .05.
- The main and significant results of these 3 analyses are presented in the report with the proper explanation for each one. Some of the explanations came from our own research, while others resulted from previous scientific investigations or theories.
- For the aggregate analyses of the qualitative data, we used NVivo and Excel with a methodology based on the Grounded Theory. This methodology allowed us to discover the subjective reality of the participants by identifying related social processes of the investigated variables. The analysis process consisted of creating general categories of the answers that were mentioned the most during the overall interviews and in each question. In addition, we created specific categories by topic and included relevant descriptions for each one. It is important to clarify that we did not have a ready-made list of the categories or answers that we wanted to look for; all the categories were created and modified while doing the analyses.
- All the qualitative data was also used to explain different factors, quantitative results and draw conclusions for each case. Many of the findings that may look like opinions, are in fact conclusions supported by the qualitative data obtained throughout the investigation on interviews, surveys, calls, visits, observations, etc. It is normal for the analyses of qualitative data to be used in this manner to be able to construct hypotheses that can be further studied in the future. Our analyses take into account that, although the

qualitative data is built on perceptions and opinions of the respondents, those conclusions make up the reality each school is living and how the people feel about it.

Public Policy Recommendations

- There were public policy recommendations directly made by the participants of the study and others that came from the collected data. Since ABRE is a non-profit organization with a mission statement of "...cultivating informed citizens who are active in Puerto Rico's public policies debate," we analyzed the opportunities that our data presented in terms of public policy recommendations that affect the PRDE. The process to arrive at the final recommendations was the following:
 - We gathered all the direct public policy recommendations provided by the participants of our study.
 - We analyzed all the data to extract possible public policy opportunities. For example, if data showed high levels of teacher burnout, a recommendation could be made for a program that addresses teachers' health needs.
 - We used the analyzed data to draft a list of possible public policy recommendations.
 - With the list in hand, as a filtration process, we researched existing policies that could already fulfill our recommendations.
 - Lastly, our team of reviewers evaluated each recommendation to gauge its importance and viability, reaching a consensus to come up with a final list of public policy recommendations.

Final Conclusions

- The final conclusions of the report are a summary of all our study's findings and recommendations, which are backed up by previous investigations and scientific theories to explain them.