Quality Review Report

2019-2020

The Math & Science Exploratory School
Junior High-Intermediate-Middle 15K447

345 Dean Street
Brooklyn
NY 11217

Principal: Arin Rusch

Dates of Review:
November 13, 2019 - November 14, 2019

Lead Reviewer: Glenda Esperance
The Quality Review Report

The Quality Review is a two-day school visit by an experienced educator. During the review, the reviewer visits classrooms, talks with parents, students, teachers, and school leaders and uses a rubric to evaluate how well the school is organized to support student achievement.

The Quality Review Report provides a rating for all ten indicators of the Quality Review Rubric in three categories: Instructional Core, School Culture, and Systems for Improvement. One indicator is identified as the Area of Celebration to highlight an area in which the school does well to support student learning and achievement. One indicator is identified as the Area of Focus to highlight an area the school should work on to support student learning and achievement. The remaining indicators are identified as Additional Finding. This report presents written findings, impact, and site-specific supporting evidence for six indicators.

Information about the School

The Math & Science Exploratory School serves students in grade 6 through grade 8. You will find information about this school, including enrollment, attendance, student demographics, and data regarding academic performance, at http://schools.nyc.gov/Accountability/tools/report/default.htm.

School Quality Ratings

<table>
<thead>
<tr>
<th>Instructional Core</th>
<th>Area</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>To what extent does the school...</td>
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<tr>
<td>1.1 Ensure engaging, rigorous, and coherent curricula in all subjects, accessible for a variety of learners and aligned to State standards and/or content standards</td>
<td>Additional Finding</td>
<td>Well Developed</td>
</tr>
<tr>
<td>1.2 Develop teacher pedagogy from a coherent set of beliefs about how students learn best that is informed by State standards and the Danielson Framework for Teaching, aligned to the curricula, engaging, and meets the needs of all learners so that all students produce meaningful work products</td>
<td>Additional Finding</td>
<td>Proficient</td>
</tr>
<tr>
<td>2.2 Align assessments to curricula, use on-going assessment and grading practices, and analyze information on student learning outcomes to adjust instructional decisions at the team and classroom levels</td>
<td>Area of Focus</td>
<td>Proficient</td>
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### School Culture

<table>
<thead>
<tr>
<th><strong>To what extent does the school...</strong></th>
<th><strong>Area</strong></th>
<th><strong>Rating</strong></th>
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</thead>
<tbody>
<tr>
<td>1.4 Maintain a culture of mutual trust and positive attitudes that supports the academic and personal growth of students and adults</td>
<td>Area of Celebration</td>
<td>Well Developed</td>
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<tr>
<td>3.4 Establish a culture for learning that communicates high expectations to staff, students, and families, and provide supports to achieve those expectations</td>
<td>Additional Finding</td>
<td>Well Developed</td>
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### Systems for Improvement

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<thead>
<tr>
<th><strong>To what extent does the school...</strong></th>
<th><strong>Area</strong></th>
<th><strong>Rating</strong></th>
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<tbody>
<tr>
<td>1.3 Make strategic organizational decisions to support the school’s instructional goals and meet student learning needs, as evidenced by meaningful student work products</td>
<td>Additional Finding</td>
<td>Well Developed</td>
</tr>
<tr>
<td>3.1 Establish a coherent vision of school improvement that is reflected in a short list of focused, data-based goals that are tracked for progress and are understood and supported by the entire school community</td>
<td>Additional Finding</td>
<td>Proficient</td>
</tr>
<tr>
<td>4.1 Observe teachers using the Danielson Framework for Teaching along with the analysis of learning outcomes to elevate schoolwide instructional practices and implement strategies that promote professional growth and reflection</td>
<td>Additional Finding</td>
<td>Proficient</td>
</tr>
<tr>
<td>4.2 Engage in structured professional collaborations on teams using an inquiry approach that promotes shared leadership and focuses on improved student learning</td>
<td>Additional Finding</td>
<td>Well Developed</td>
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<tr>
<td>5.1 Evaluate the quality of school-level decisions, making adjustments as needed to increase the coherence of policies and practices across the school, with particular attention to State standards</td>
<td>Additional Finding</td>
<td>Proficient</td>
</tr>
</tbody>
</table>
Findings

The school community's approach to culture building, discipline, and social-emotional support is grounded in the belief that it is the responsibility of staff members and student leaders to teach tolerance, celebrate diversity, and provide peaceful solutions to conflicts. Structures are in place to support the coordination of social-emotional learning and youth development for academic success.

Impact

Student academic and personal behaviors are being nurtured in a safe and respectful environment evidenced via student voice through initiatives such as No Place for Hate, student-led committees, and weekly advisory circles.

Supporting Evidence

- Students participate in schoolwide initiatives that support the inclusion of all students. Some initiatives include Black Lives Matter Week of Action, Peace and Diversity Day, and National Coming Out Day for safer schools. During a student meeting, an eighth-grade student shared that the school values diversity, and her participation in the 447 Gay and Sexuality Alliance (GSA) helped her feel supported with her decisions on sexuality. Selected students participate in the No Place for Hate council. This team embraces and upholds standards of high expectations for behavior and respect for all. The group meets to design, plan, and implement activities that promote tolerance. For instance, the team decided to transform empty hallway wall space into artwork to promote diversity and inclusion. Students across grade levels created drawings and painted images of symbols that highlighted the school community's values and promoted respect for all. Additionally, the team worked collaboratively with staff to facilitate the signing of the MS 447 Community Pledge of Peace which states, in part, "in making this pledge we hope that it will make us better people for our community and ourselves." The pledge is signed by all students across grade levels, and they are then posted throughout the hallways.

- School leaders have also fostered student-led events to ensure that student voice is incorporated into the school culture. Schoolwide initiatives such as Climate Action Day, Upstanders' Day, and Waste Free Lunch are planned and executed in ongoing collaboration with students. For example, the green team is currently researching ways to eliminate plastic utensils from the cafeteria. Students conducted cafeteria observations and are exploring alternatives to single-use plastic items. Students worked with teachers to execute a community outreach plan that includes sharing information on morning announcements as well as posting environmental tips around the school. These encourage people to reduce plastic use and possibly bring in their own utensils, reusable lunch containers, and water bottles. Additionally, selected students participate on the student council, a team charged with reviewing school tone and promoting a positive school culture. The team meets on a consistent basis and creates action plans to address identified concerns.

- Across grade levels, the faculty ensure that students are well known by at least one adult. Grades seven and eight students participate in advisory on a weekly basis. During these sessions, students engage in Circle, which is a time for people to share about themselves and get to know others in the school in new ways. There are also discussions about specific issues selected from a list of student-generated topics. Guidance counselors, teachers, and school support staff check-in with students on an ongoing basis to review attendance and address social-emotional concerns. Across all grades, it is a common practice for faculty to provide students with supports on strengthening organizational skills, meeting deadlines, and prioritizing projects and assignments. One student stated, "In grade six they give us planners to help create schedules to pace out our project deadline... now in grade 8 not so much... they are releasing us and preparing us for the real world."
Area of Focus

<table>
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<tr>
<th>Quality Indicator:</th>
<th>2.2 Assessment</th>
<th>Rating:</th>
<th>Proficient</th>
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Findings

Across classrooms, teachers consistently use formative assessments practices, including ongoing checks for understanding. Across classrooms, rubrics are used to provide actionable feedback to students.

Impact

While teachers are making adjustments to classroom instruction based on checks for understanding to meet the needs of all learners, effective in-the-moment adjustments were not evident in the vast majority of classrooms. Additionally, while students are provided feedback to encourage improved learning outcomes, meaningful feedback to students is not evident across the vast majority of classrooms.

Supporting Evidence

- Across literacy-based classrooms, student work is evaluated using common rubrics. There is evidence of a variety of feedback provided to students from both teachers and peers that is accurate, specific, and timely, and advances learning. Multiple samples of student work products had a content-specific rubric attached as well as a self-reflection form that required students to set a goal and create next steps. For example, grade eight students wrote a personal narrative vignette linking a common theme across a place, person, and object. One student set a writing goal that stated, “I want to successfully interconnect my object, character and place in multiple ways using a strong theme.” The student listed next steps that included incorporating feedback and suggestions provided from peers into his piece during the revision process. However, there is limited evidence of these practices taking place in vast majority of math and science classrooms. A review of student work samples from these content areas revealed feedback being provided in numeric form, offering limited next steps. Furthermore, some students were unable to articulate how the feedback they were provided in these subject areas improved their performance.

- Across most classrooms, teacher assessment practices include ongoing checks for understanding to accommodate the learning needs of students. For example, in a grade 8 math Integrated Co-Teaching (ICT) class teachers circulated the classroom throughout the lesson and took notes on student performance based on their work products. If students struggled completing a task, then they were provided with remediation. Conversely, if students demonstrated mastery then they were provided an extension activity. However, there is limited evidence of this practice taking place across the vast majority of classrooms. For example, in a math class, students were correcting an examination. They were directed to correct the errors on their page. Although there were some students who had all the questions correct, they were still assigned that same task. Additionally, in a grade seven English Language Arts (ELA) class students were reviewing the the use of literary devices in a common text. Some students demonstrated an understanding of the content, as evident in their work products. However, there were no extension opportunities offered to high-preforming students who completed the activity early and demonstrated mastery.

- Across content areas, teachers make effective in-the-moment adjustments based on data to meet the learning needs of a range of students, including English Language Learners (ELLs) and students with disabilities. For example, in a seventh-grade social studies class, students were working on an essay. Students were given graphic organizers, as well as scaffolds for additional support. During the lesson, the teachers checked-in with students, tracking their specific responses to the task. In a seventh grade ELA class students were provided with modified graphic organizers to help them organize their thoughts. This support was provided based on their demonstrated needs. In a science class teacher provided students with graphic organizers and selected students with word banks to assist them in creating a storyboard on organelles.
Findings

Curricula emphasizes rigorous habits and higher-order skills for all, including performance tasks, projects, original research, and student self-reflection. Across content areas, curricula is refined on a consistent basis using student work.

Impact

Individuals and groups of students have access to the curricula, and academic tasks are designed so that all learners, including students with disabilities, must demonstrate their thinking.

Supporting Evidence

- Across classrooms for all grades and content areas, units culminate in writing that asks students to either make claims, provide solid textual evidence to support claims, or create a narrative piece. This practice is evident across grades six-to-eight. For example, a grade-eight ELA unit plan requires students to complete an end-of-unit performance task responding to the prompt, “How does my identity impact my reactions to social and political issues in the world?” In a grade-seven ELA unit plan, students are required complete an original coming-of-age narrative project which includes writing an original short story with a complex main character who grows and changes over time. In a grade-eight social studies unit, students have to construct an argument in response to the quote, “A strong government is needed to protect the rights and well-being of citizens.” A grade-eight math unit plan requires students to create a storyboard about graphing. They also need to explain the math approaches used. As a result, curricula provide students with multiple opportunities to think critically and make fact-based decisions on a consistent basis.

- School leaders and faculty have incorporated interdisciplinary units that provide opportunities for students to conduct research and share their findings with the school community. For example, grade-six students conduct a research unit that explores how climate and geography impact the food a community grows and eats. The unit was designed to deepen students’ understanding of the human cost of food consumption. Students plant seasonal plants in the school courtyard, interview local farmers’ market workers, and talk to experts in order to understand local food systems. Upon completion of the unit of study, students undertake a group project that requires them to create a menu that uses as much local and seasonal foods as possible and produces the smallest carbon footprint. The unit plans also incorporate articles that range in text complexity levels, graphic organizers, and scaffolds for students with disabilities, ensuring all learners have access to the curricula. These activities support cognitive engagement for all learners.

- Analysis of curricula shows that lesson plans across all content areas and grade levels are designed to include supports that address the needs of all students, including those with disabilities and ELLs. These are determined based on a review of student data and work products at team meetings. A seventh-grade social studies unit plan includes leveled readings, graphic organizers, images, and tiered work products. A grade-eight math unit on functions in the real world requires students to analyze graphs and tables and explain their thinking. The task created incorporates scaffolds for selected students struggling with the concept. Supports in a grade-seven math unit include algebra tiles and graphic organizers with labeled workspaces. Decisions on task refinement are made after a six-day learning cycle during content and grade-level teacher team meetings. Curricular adjustments made at these meetings ensure that all students have access to learning.
Across classrooms, teaching strategies such as scaffolds consistently provide multiple entry points into the curricula. Students engage in high levels of thinking and participation.

Impact

Teachers’ use of multiple entry points ensures accessibility to high-level academic tasks for all learners, including students with disabilities. Across classrooms, students produce meaningful work products and discussions.

Supporting Evidence

- Across classrooms, teachers incorporate instructional strategies that offer multiple entry points to engage all students, including students with disabilities. In a grade-seven ICT math class, students created visual representations of algebraic equations in simplest forms. Students were given the choice to draw models or use manipulatives. Students were seated in groups but also had the option to work in pairs or alone. Additionally, teachers distributed fidgets and made special seating available to accommodate the diverse learning styles of learners. In a grade-seven ELA class, students were seated in groups working on reading comprehension. Students read a common text and then had to identify the coming of age theme. The teacher created two versions of the activity, one including scaffolding. These teaching strategies ensured that a variety of learners were engaged in appropriately challenging tasks.

- Across most classrooms, student work products reflect high levels of thinking and participation. In a grade-eight ICT ELA classroom, students were writing an argumentative essay. Students selected their own topics, created a list of questions related to the topic, and conducted research to find evidence to support their ideas and formulate their responses. Students had laptops and some used headphones to listen to audio versions of articles and to view content-related videos. Students were able to use the Brooklyn Public Library online database to conduct research independently. In a grade-seven social studies class, students were seated in groups working revising their essays. Students had laptops and were working in Google classroom. Students worked at different stages of the revision process at their own paces. Some students were updating the writing template/outline and while others were updating the draft. Some students had already transferred the details from their templates into an essay structure and were making revisions to their drafts. Prior to beginning this task, the teacher conducted a mini-lesson centered on unpacking the scoring rubric for the essay. The teacher highlighted the characteristics of a level 2, a level 3, and a level 4. Students were also provided with models of each expectation to use as guidance. The teacher encouraged students to incorporate the characteristics of a level 4 into their essays, which resulted in students producing meaningful work products.

- In a grade-eight social studies ICT class, students held multiple conversations to affirm or negate the statement, “A strong government is needed to protect the rights and well-being of citizens.” Students participated in a whole class discussion and were then divided into mini-discussion circles consisting of five students. Students were directed to further elaborate on their views and share their wonderings with peers. Both teachers circulated among groups, posed questions, and encouraged students to revisit their notes to help them gain a deeper understanding of the topic and strengthen their positions. In a grade-eight math ICT class, students worked collaboratively to complete a task that required them to compare functions. Students posed questions to one another, took turns sharing their responses, and asked peers to justify their thinking. For example, two students engaged in a back and forth dialogue about exponential functions after analyzing a graph and answering questions independently.
Additional Finding

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<tr>
<th>Quality Indicator:</th>
<th>3.4 High Expectations</th>
<th>Rating:</th>
<th>Well Developed</th>
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Findings

School leaders consistently communicate high expectations through a weekly newsletter, professional learning (PL), and intervisitation. School faculty establish a tone for learning that systematically communicates and supports high expectations for all students.

Impact

A culture of mutual accountability stemming from clear expectations, targeted PL, student-led conferences, and teacher afterschool office hours prepares students for the next level.

Supporting Evidence

- At the beginning of the school year, school leaders present the schoolwide goals and instructional foci to the entire staff. Additionally, leaders communicate their expectations to staff through a faculty handbook and distribute via email a weekly newsletter entitled *The 447 Weekly* that updates staff on schoolwide events, PL opportunities, and compliance concerns. This newsletter also includes a principal's summary of upcoming events, pictures/videos of events from the previous week, and faculty shout-outs. In addition, school leaders have created a PL plan to support faculty in meeting high expectations. Training is provided for leadership, teachers, and paraprofessionals as a means of strengthening their craft and building teacher capacity in meeting the school goals. For example, the school created a PL series to educate staff on culturally responsive practices in order to increase equity at the school. PL activities are aligned to school goals and the schoolwide initiative of supporting the social-emotional needs of students by ensuring their cultural identities are intentionally incorporated in the educational process to help drive student achievement.

- School leaders have created an intervisitation calendar to provided targeted PL and further support to meet the individual needs of staff. Teachers across grades and/or subjects participate in cycles of peer observations to ensure alignment and consistency across content areas. Additionally, all staff participate in the school's annual citywide intervisitation day. On this day, all teachers and paraprofessionals visit colleagues in other public schools across the city to observe best practices. Upon return from their visits, staff members are required to reflect on the insight gained from the experience and its implication on their own teaching practices. Staff members are also encouraged to identify the additional supports needed to implement their new learning. For example, a science teacher reflected on ways to include more opportunities to create lab experiments after a visit to another middle school science class and brainstormed ideas to make experiments more engaging. Another teacher reflected on ways to increase the number of projects incorporated into the math curricula. This practice provides training that fosters a culture of mutual accountability among staff.

- The school’s culture for learning communicates high expectations to students that help prepare them for high school and beyond. In September, all students set their own academic and personal goals in reading, writing, and mathematics. Teachers assist students in creating their action plans and provide them with individualized tips that will help them reach their goals. Students are provided with leadership binders and track their own progress on an ongoing basis. Students review their overall performance at the end of each marking period with their teachers and reflect on their strengths and challenges. The binder is shared with parents during student-led conferences with teachers. Teachers host afterschool office hours twice a week to support students in meeting goals by offering academic remediation, additional support, or extensions. During a student meeting, one student shared, “All of our teachers open their doors during office hours…. We can get help whenever we need it…no appointment necessary.”
Additional Finding

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<th>Quality Indicator</th>
<th>4.2 Teacher Teams and Leadership Development</th>
<th>Rating:</th>
<th>Well Developed</th>
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Findings

The vast majority of teachers engage in inquiry-based, structured professional collaborations through weekly teacher team department meetings. Distributed leadership structures, such as spring planning committees, are embedded throughout the school community.

Impact

Teacher collaborations have strengthened schoolwide instructional coherence and improved student achievement. Shared leadership allows teachers to have a voice in decisions that affect student learning.

Supporting Evidence

- School leaders facilitated a PL session on the expectations for inquiry. During the training, teacher teams were provided with resources on the identified the schoolwide focus, Multi-Tiered System of Support (MTSS). School leaders also shared tips on establishing team protocols and offered guidance on effectively organizing student data. Teacher teams participate in collaborative inquiry to review curriculum pacing and make adjustments based on student performance on each unit on a consistent basis. Student work is also reviewed at these sessions to ensure it is aligned to the school’s instructional expectations. As an outcome of this, team members discuss next steps. For example, the special education teacher team created individualized learning targets for students with disabilities, identified by their performance on the schoolwide ELA common assessment. This work is aligned to the school's Comprehensive Educational Plan goal to diminish the number of at-risk students. All teachers have a minimum of two teacher team planning periods embedded in their programs. Grade teams have frequent opportunities to systematically analyze student work and data, resulting in increased student achievement.

- Teacher teams used an established protocol to analyze student work and provide instructional implications and next steps. During an observation, the 8th grade Math Lab team conducted an assessment analysis of a unit on proportionality and rate of change. A lead teacher served as team facilitator to ensure that norms were upheld and inquiry work was done with fidelity. First, the team reviewed student work products and listed their noticings and highlights. Then, teachers charted the misconceptions and created a plan detailing the action steps needed to remediate student misconceptions, along with allotted time frames. For example, the team noticed that students misinterpreted the term average in the phrase “average rate of change” and, as a result, the teachers planned to go over the term as well as restructure how they emphasize vocabulary in lessons. Afterwards, the teachers identified the low achiever and high performing students and created supports and extensions accordingly. One teacher stated that using this process forced the teachers to look at data and make smart choices about how to use time during whole-class and small-group instruction. At the end of the meeting, the team shared reflections and final thoughts on the list of instructional implications that they had agreed on collaboratively.

- Teacher leadership teams are deeply rooted in day to day school operations and provide opportunities for teachers to voice ideas about programs that affect student achievement. Content-specific planning teams are comprised of administrators, instructional coaches, and teachers from across grade levels. These teams work collaboratively to develop and adjust curricular materials based on students’ needs. Every year, the school launches a spring planning initiative and staff members are invited to manage committees centered on school improvement. For example, the Literature Lab Committee organizes classroom libraries and develops systems to support targeted literacy instruction across grade levels. The student-led Conference Committee gathers feedback from teachers, parents, and students and the data is used to improve conference structures. Other committees have established policies related to Diversity, Curriculum Mapping, Programming, Restorative Practices, and Student Grade Transition.