



**Department of
Education**
Carmen Fariña, Chancellor

**Office of School Quality
Division of Teaching and Learning**

Quality Review Report

2014-2015

The Bronx High School of Science

High School X445

**75 West 205th Street
Bronx
NY 10468**

Principal: Jean M. Donahue, Ph.D.

**Date of review: May 1, 2015
Lead Reviewer: Leticia Pineiro**

The School Context

The Bronx High School of Science has 3,014 students from grade 9 through grade 12. The school population comprises 3% Black, 6% Hispanic, 22% White, and 63% Asian students. The student body includes 1% English language learners and 1% special education students. Boys account for 57% of the students enrolled and girls account for 43%. The average attendance rate for the school year 2013-2014 was 97.0%.

School Quality Criteria

Instructional Core		
<i>To what extent does the school...</i>	Area of:	Rating:
1.1 Ensure engaging, rigorous, and coherent curricula in all subjects, accessible for a variety of learners and aligned to Common Core Learning Standards and/or content standards	Additional Findings	Well Developed
1.2 Develop teacher pedagogy from a coherent set of beliefs about how students learn best that is informed by the instructional shifts and Danielson Framework for Teaching, aligned to the curricula, engaging, and meets the needs of all learners so that all students produce meaningful work products	Additional Findings	Proficient
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	Additional Findings	Proficient
School Culture		
<i>To what extent does the school...</i>	Area of:	Rating:
3.4 Establish a culture for learning that communicates high expectations to staff, students, and families, and provide supports to achieve those expectations	Celebration	Well Developed
Systems for Improvement		
<i>To what extent does the school...</i>	Area of:	Rating:
4.2 Engage in structured professional collaborations on teams using an inquiry approach that promotes shared leadership and focuses on improved student learning	Focus	Proficient

Area of Celebration

Quality Indicator:	3.4 High Expectations	Rating:	Well Developed
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Findings

School leaders always communicate high expectations to staff, provide training, and are mutually accountable for the expectations. School leaders and staff successfully convey elevated expectations connected to college and career readiness and partner with families.

Impact

Frequent feedback and professional development align to the school's goals of strengthening pedagogical practices and creating quality units of study aligned to Common Core Learning Standards and new College Board Standards for Advanced Placement courses. School leaders and staff develop structures to effectively communicate a trajectory to college and career readiness by establishing supports and leveraging relationships to partner with families

Supporting Evidence

- Updates to curriculum maps are ongoing. Professional development time in teachers' programs ensures that teachers in the same departments have common planning time to align curricula with Common Core Standards, College Board Standards, and the instructional shifts. The impact of this work includes, the use of all departments utilizing data and creating academic tasks in which students use text-based evidence to form arguments. Rubrics are used in all courses and instruction has shifted to incorporating small group work and assessment.
- The administrative team provides frequent feedback via regular observation rounds. Teachers can observe the model classrooms of assistant principals or peers. Assistant principals and teachers have visited model classrooms together to observe practices aligned with the Danielson Framework for Teaching with an emphasis on the school-wide instructional foci: questioning and discussion techniques and using assessment in instruction.
- High expectations are reflected in the school's course catalog that lists 31 Advanced Placement courses. Eighty seven percent of students take Advanced Placement Courses and 90% receive a mastery passing score.
- New initiatives were undertaken this year to provide supports for underclassmen. A new freshman guidance course was created to help freshman adjust to high school and make healthy choices. Sophomores were invited along with juniors to the in-house college fair where 175 colleges attended. The goal was to broaden students' and families' understanding of diverse opportunities, including smaller private colleges.
- This year, the College Office met with many college admissions officers to strengthen the articulation process. An alumni speaker series focused on college and career opportunities. The school partnered with alumni to implement *Project Accepted Sunday* in which over 400 seniors participated in two mock interviews with alumni.

Area of Focus

Quality Indicator:	4.2 Teacher teams and leadership development	Rating:	Proficient
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Findings

The majority of teachers participate in inquiry-based professional collaborations that advance the attainment of school goals and the implementation of the Common Core Learning Standards. Teacher leaders function as decision makers across the school responsible for making decisions that affect student learning.

Impact

Teacher teams are not yet utilizing a systematic, structured cycle of inquiry with a focus to guide their work. Teacher team collaborative work improves teacher practice, increases student learning, and builds teachers' leadership capacity within the school.

Supporting Evidence

- Teacher teams across departments analyze curriculum maps to ensure increased alignment with Common Core Learning Standards and College Board Standards. For example, members of the science department worked collaboratively on improving curricula to include new Common Core-aligned rubrics to assess lab reports, argumentative writing tasks, and the creation of a new project-based engineering curriculum. Advanced Placement Physics courses were aligned with the new College Board Standards. The English department added learning activities to ensure that students were using counterclaims in argumentative essays. The social studies department revised curricula to ensure that documents are used extensively in all courses and revised the Advanced Placement United States History curriculum to ensure its alignment with the new College Board Standards for this course.
- Teacher Teams also promote the implementation of the instructional shifts. For instance, the math department has included more real world applications in their unit plans and small group or pair work to facilitate opportunities for students to discuss their mathematical thinking or engage in error analysis with their peers.
- During an observation of an Advanced Placement United States History team meeting, teachers reviewed assessment data from a mock exam presented by a colleague. They conferred and noted that student responses were including information from a time period outside of the question prompt. They agreed to reinforce chronology by annotating texts, giving students more practice with time frame questions, and extending the time frame within a particular question to include the Cuban Missile Crisis. However, the school does not yet include use of instructional foci to guide the work of teacher teams through a structured cycle of inquiry.
- Distributed leadership structures build teachers' leadership capacity in several ways. Teacher leaders create agendas and facilitate team meetings. Although, not consistently practiced across the school, teachers visit each other's classrooms to observe effective pedagogical practices. Teachers play an important role on the Professional Development Committee and use data to create opportunities for adult learning. For example, teacher-led workshops have focused on using Webb's Depth of Knowledge tool to create more opportunities for students to engage in higher order thinking during lessons and effective discussion techniques to promote student-to-student discourse.

Additional Findings

Quality Indicator:	1.1 Curriculum	Rating:	Well Developed
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Findings

School leaders and faculty ensure that curricula are aligned to the Common Core Learning Standards and/or College Board Standards and purposefully incorporate the instructional shifts. Rigorous habits and higher order skills are emphasized in curricula and academic tasks in all grades and content areas.

Impact

A Sequence of Science, Technology, Engineering, and Math (STEM) courses results in a coherent college and career readiness curriculum across the school. Critical thinking skills and the scientific method are embedded into academic tasks, so that all learners demonstrate their thinking.

Supporting Evidence

- The Common Core-aligned STEM curriculum demands four years of Laboratory Science, three years of Math (all freshman enter already having taken algebra), one year of Applied Science, Computer Science, or Science Research. Out of two required senior electives one must be math or science, and three years of a foreign language, in addition to the other New York State requirements. All students take and pass nine Regents exams.
- In the ninth grade, students take Research Literacy and Writing Seminar in addition to Biology and Freshman English. These Common Core aligned courses serve as foundational courses that are strategically designed to teach students to think scientifically and develop analytical writing skills such as exposition and argumentation that they will use in advanced courses. In ninth grade English, students write argumentative essays about which characters in *Animal Farm* demonstrate more effective leadership; however, in Advanced Placement English students are not given a topic to construct an argument around. They make observations in the text, assert claims, and then devise arguments.
- Approximately 300 students are in specialized research programs that provide students with the experience of conducting independent research with scholars at various colleges, universities, hospitals, and organizations, after school and during the summer. Students accepted into the program take a rigorous three-year sequence of courses emphasizing problem-solving skills and culminating in a substantial research project that is presented.
- All curriculum maps are aligned to the Common Core learning Standards and integrate the instructional shifts. Recent revisions to the curricula include incorporating more non-fiction sources across the English curriculum, adding more Socratic seminars and debates in English and social studies unit plans, integrating more real world applications to daily lesson plans in math courses, and incorporating more argumentative essays on controversial topics like, genetic engineering in science unit plans.
- A review of unit plans reveals that rigorous habits and higher-order skills are emphasized in academic tasks across the curricula. A rigorous Common Core-aligned academic task in a Geometry unit on logic asks students to “Assess, grade, and offer actionable feedback” to their peer’s proof by utilizing a rubric. In Advanced Placement Human Geography, students use documents to write argumentative essays about the impact of the nineteenth century industrial revolution on individuals and society.

Quality Indicator:	1.2 Pedagogy	Rating:	Proficient
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Findings

Across classrooms, teaching practices are aligned to the curricula and are informed by the Danielson Framework for Teaching and instructional shifts. Student work products and discourse reflect high-level thinking and engagement.

Impact

Across grades and subjects, collaborative learning activities illustrate an articulated set of beliefs about how students learn best. Content area discussions deepen students' understanding and encourage students to use higher-order thinking skills.

Supporting Evidence

- During a grade 10 Global History lesson, the teacher used engaging primary sources on a slide show to stimulate student-to-student small group discussions about the system of Apartheid and Nelson Mandela's evolution as a leader. Students' understanding of the topic was deepened as they were asked to analyze, compare, and evaluate. The teacher asked a wide range of questions such as, "Is oppression in India the same as South Africa... When are violent methods acceptable? Why?" While students engaged in meaningful discourse at their tables, there was ongoing mediation from the teacher who did not step out of this central role to give students more time to explore and interpret the documents on their own. The teacher also refrained from asking students probing questions to justify their reasoning.
- During an observation of an Advanced Placement Literature and Composition course, students were comparing two poems' themes regarding "coming of age". They were asked to consider the poets' use of tone, literary devices, and the speakers' point of views to analyze and compare the poems. The structure of the class enabled students to move from one analysis to the next before synthesizing ideas from both poems. The teacher transitioned the class from small group discussions to a class discussion. While the teacher facilitated a whole classroom discussion in which he encouraged a variety of students to build off each other's ideas and created space for different perspectives to be considered, the small group discussions were not as rigorous. In fact, in some small groups all of the students did not speak. While students exchanged ideas, they gave little evidence to support their ideas, challenge the ideas of others, or ask questions. In this collaborative learning activity, there was little evidence that students were expected to hold each other accountable for sufficient rigorous discussion.
- In classrooms visited, students worked in groups or pairs to engage in collaborative learning. Student work products and discourse made student thinking visible and illustrated high levels of reasoning and engagement. This was evident in a Regents Biology lesson in which students worked with partners to design an experiment to investigate how the pancreas works as a gland. In an Advanced Placement United States History class, students worked in groups of three and conducted four rounds of timed, structured debates about the effectiveness of presidents during the Cold War. Two students served as debaters and the third student utilized a rubric to judge who won the various rounds as the debaters cited evidence from sources to evaluate the relative merits of presidents during different stages of the Cold War. During a grade 9 Geometry lesson, students worked in pairs to solve a real world problem by using a system of equations. Later in the lesson, pairs worked together to describe the different solutions that result from a system of equations and to contemplate the potential limits of solving a system graphically.

Quality Indicator:	2.2 Assessment	Rating:	Proficient
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Findings

Across classrooms, teachers utilize and create assessments, rubrics, and grading policies, that are aligned with the school's curricula. Teachers regularly use checks for understanding to make instructional adjustments.

Impact

Teachers' ongoing use of formative and summative assessment data promotes effective adjustments to the curriculum and instruction at the team and classroom levels, and directs action planning to meet all students' learning needs.

Supporting Evidence

- Teacher teams develop common assessments such as unit exams, quarterly exams, and midyear exams. Teachers routinely complete an item analysis of common assessments to determine content and skills that students have not mastered. Teacher teams use this data to inform curricular and instructional adjustments. Along with marking period grades, this data is also used to target individual students for enrollment in Small Group Instruction (SGI). SGI is utilized to teach reengagement lessons focused on concepts and/or skills that students are still mastering.
- Teacher Teams have created or adapted common rubrics. For example, there are common rubrics to assess science labs and argumentative essays in English and history classes. There are uniform grading policies for all courses.
- Data from New York City Performance tests, Regents exams, and Advanced Placement Exams is also examined to drive instruction. For example, New York City English Performance tests have revealed that students are having difficulty with embedding and analyzing counterclaims in argumentative essays; therefore, explicit instruction in this writing skill has been added to the curriculum as well as the addition of more speaking and listening activities in daily lessons such as debate, which supports this skill. An analysis of student work on the Biology Regents exam indicated that freshmen need more support in distinguishing information for the results section of a lab versus information for the discussion section of a lab. Teachers addressed student misconceptions by adding scaffolds to lessons and providing students with additional feedback in this area using a rubric that targets this skill.
- Across classrooms, teachers were observed using checks for understanding. For instance, after student presentations on a topic in an Advanced Placement Spanish, the teacher instructed students to use the online site *Schoolology* to respond to a writing prompt and then react in writing to the online responses of their peers. In real time, the teacher monitored the online conversation and was able to assess students' mastery of specific grammar points and usage. In a grade 9 Research Literacy class, the teacher wanted to ensure that students understood that the *Methods* section of a scientific research paper was written in the past tense versus an experimental *Protocol*, which is written in the imperative tense. To check for understanding she had two students demonstrate an action as the class observed them. She asked students to write sentences as she asked questions during the demonstration to check that students understood the past tense versus the imperative tense. During a Geometry lesson, the teacher was observed utilizing a medial summary. At the midpoint of her lesson, she checked for understanding of a key skill before the students transitioned to application of the skill.