



## Promising Practices from the Woodrow Wilson Early College Network

### **Increasing Curriculum Intensity** Flexible and Adaptive Academic Program

Manhattan Hunter Science High School – Hunter College

**School Type:** Public School District  
**Number of Students:** 406  
**Principal:** Susan Kreisman

**School Location:** New York, NY  
**Level:** 9-12

*by Frederick J. Frelow*

#### **School Context**

In 2003, funds were made available to the Woodrow Wilson National Fellowship Foundation (Woodrow Wilson) by the Bill & Melinda Gates Foundation for its Early College High School High Initiative. Subsequently, Woodrow Wilson granted funds to Hunter College to work in partnership with the New York City Department of Education to launch Manhattan Hunter Science High School (Manhattan Hunter), one of the first Early College High Schools in New York City. Manhattan Hunter, now in its fifth year of operation, is a public school serving a socially, economically, and racially diverse student body.

- 35% Hispanic/Latino/a
- 25% Asian American/Pacific Islander
- 21% Black/African-American
- 13% White/Caucasian
- 1% American Indian/Native American
- 5% multi-racial or unknown race/ethnicity

And 69% of students participate in the city's free or reduced lunch programs.

A New York City guide for high schools reports that:

*Manhattan Hunter offers students an unusual preparation for college: the chance to spend their entire senior year of high school on a college campus—with their high school teachers nearby to help them over the inevitable bumps. It's a new school designed to give students who are average (or slightly below average) solid academic skills, along with the hand-holding and support they need to succeed in college. With strong, creative teachers and nice, eager students, Manhattan Hunter is off to a promising start.<sup>1</sup>*

As noted by the guide, 2007 was a very good year for Manhattan Hunter. Virtually every student graduated from high school on time, and over 80%, 35% more than the city

<sup>1</sup> C. Hemphill. (2007). *New York City's Best Public High Schools: A Parents Guide*. Teachers College Press. Page 76.

average, were accepted at 4-year colleges. A total of 97% were accepted at 4 and/or 2 year colleges. In addition, this fall Manhattan Hunter received an A in the city’s new rating of New York City public schools and will receive a financial award for their efforts.

A 2006-07 parent survey provides further evidence of the school’s success. Manhattan Hunter’s parents are pleased with what they see and are buying into the Early College program: 85% believe the school has high expectations for their children; 90% believe their child is learning what he or she needs to know to succeed in later grades or after graduating from high school; and 69% believe that school staff helped their child select courses that he or she needs to graduate and to succeed after graduation (see chart below).

Teachers agree with parents. All teachers surveyed strongly agree or agree with the following statements:

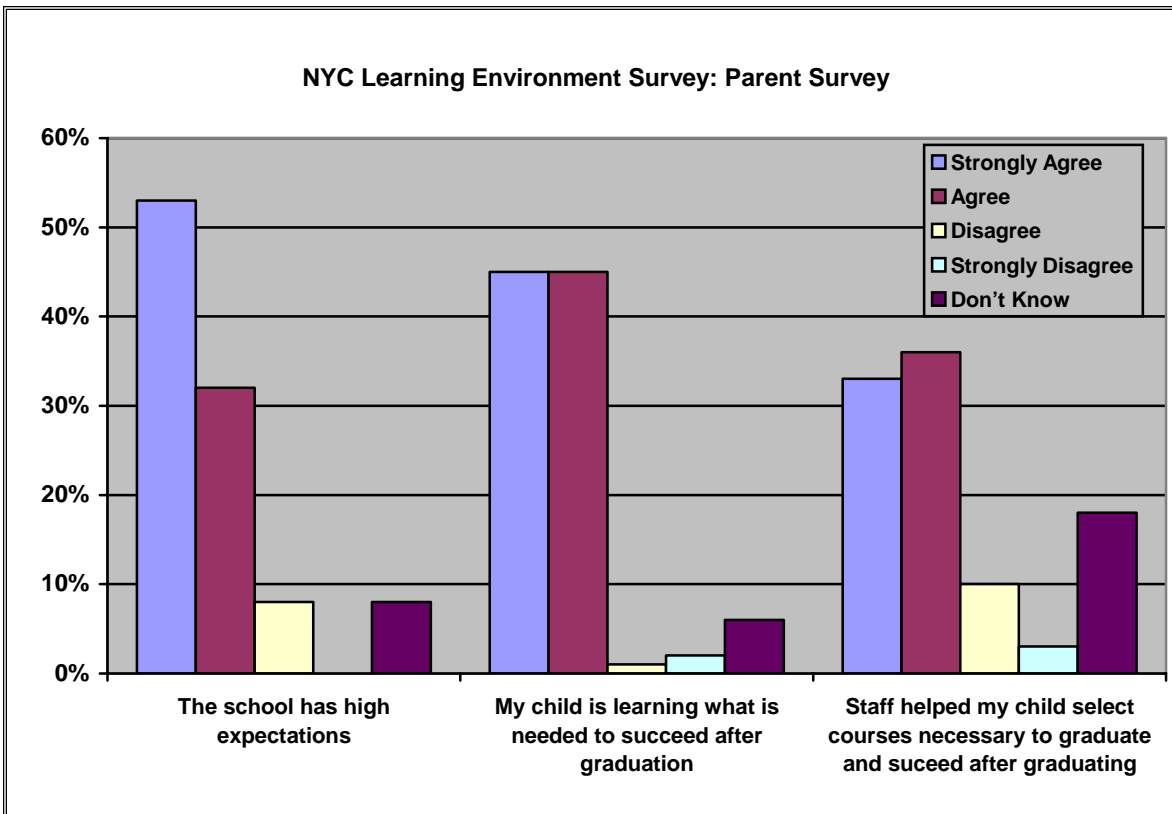
- My school has high expectations for all students.

- Teachers in this school set high standards for student work in their classes.
- This school makes it a priority to help students select the best courses to achieve their college or career goals.

These survey results suggest that the leadership at Manhattan Hunter and Hunter College have built a school community with shared values. The adults are organized to support students in their endeavor to be the best they can be.

**Why is Manhattan Hunter Succeeding? An Educational Philosophy that Focuses on the Ripening Functions**

There is a simple explanation for Manhattan Hunter’s success. Their philosophy is driven by a belief that all children in their school can learn, and consequently, college is an option for all students. They understand that the US postsecondary system offers a wide variety of college experiences for students to consider, and their job is to prepare students for the right



experience: one that will help them grow and develop into productive citizens and contributors to the broader community.

Vygotsky, a prominent developmental theorist,<sup>2</sup> provides the following guidance to all:

*If you want to know what a child is ready to learn we cannot look at what he can do when working alone; we must see how far ahead he can go when offered some assistance.*

He goes to add that one should cast “*light not so much on the ripe as the ripening functions.*”<sup>3</sup> Accordingly, if schools are to promote the optimal development for their students, they must focus on activities that “*children can accomplish with assistance ...under adult guidance or in collaboration with more capable peers.*”<sup>4</sup>

### ***Design Principles***

As Vygotsky counsels, the Manhattan Hunter program provides significant adult guidance and assistance to students and is a good example of the following Woodrow Wilson teaching and curriculum design principles:

- Habits of mind integrate cognitive, emotional and social development where teachers challenge students with increasing levels of independence and responsibility for their work
- Overall academic program design, course design, and classroom teaching is

---

<sup>2</sup> William Crane. (1992). *Theories of Development: Concepts and Applications*, Third Edition. Prentice Hall, Englewood Cliffs, New Jersey. p. 215.

*He (Vygotsky) tried to show how school instruction can promote child development, and he offered a new concept, the **zone of proximal development**, to assess each child's potential for new learning. If you want to know what a child is ready to learn we cannot look at what he can do when working alone; we must see how far ahead he can go when offered some assistance.*

<sup>3</sup> William Crane. (1992). *Theories of Development: Concepts and Applications*, Third Edition. Prentice Hall, Englewood Cliffs, New Jersey. p. 215.

<sup>4</sup> William Crane. (1992). *Theories of Development: Concepts and Applications*, Third Edition. Prentice Hall, Englewood Cliffs, New Jersey. p. 214.

flexible and adaptive and provides the programmatic structure to support increasing levels of independence and responsibility

### ***Adult Guidance and Support***

The words of Manhattan Hunter teachers assigned to help senior students on the Hunter College campus provide powerful testimony describing how teachers are supporting students.

*We just keep putting out feelers and keep pressing for things to happen for them. They know they're not lost, because we listen to them. I mean when they say they're struggling with something, we don't just say, well, it's okay, it doesn't matter. I mean we work with them until we feel like we've at least made them feel more comfortable. That doesn't necessarily ensure they'll pass the class, but at least they're more comfortable and they feel like they have the tools to at least try their best. And that's ultimately what we all want to do here.*

*We're an omnipresent force. We know their scores [on tests in college courses]. Students wonder, how did you know? And they know since we know [their test scores], they never try to hide anything anymore.*

*You have to be very flexible in this job. We're now able to constantly change every day. I remember the first week with the study groups, we just were like, okay, this is not working and less than 24 hours we just changed the entire system... Every week, you just need to be able to say, okay, this isn't working, let's do something different. But I feel we've raised the bar for ourselves. You know we get frustrated a lot more, but it's a good frustration.*

*They get extra support and we're trying to help them. We're with them. So*

*they're not alone, and they need to understand that.*<sup>5</sup>

The students acknowledge and are very appreciative of the support they receive from teachers.

*All the high school teachers, they're like don't give up, come on, try harder and they take up time in their classes to give us time to study for college classes. They're right next door. They've been really, really incredible as far as problem solving.*<sup>6</sup>

**The Manhattan Hunter Early College Program**

*All of our tenth graders, all of them, there is no sorting system, no secret thing that I'm going to tell you in the end that says all of them, except for those who haven't. Every single tenth grader is currently in a dual crediting courses. –Susan Kreisman, principal*<sup>7</sup>

Manhattan Hunter’s focus on the “ripening functions” begins with high expectations for all students. Three strategies provide a flexible and adaptive platform to scaffold the college transition:

1. *A four part program*—including a core curriculum, and three structures to deliver the content: dual credited courses, cohorts of college credited courses, and integration into mainstream college courses with regular college students.
2. *Curriculum mapping and redesign*—focused on blending high school curriculum and expectations with the partner college
3. *Habits of mind*—guiding teaching and student work

<sup>5</sup> Manhattan Hunter teachers interviews at Hunter College, December 5, 2006.

<sup>6</sup> Manhattan Hunter student interview, December 5, 2006. (Her senior year on the Hunter College campus)

<sup>7</sup> Kreisman Interview, 2006.

**1. The Four Part Program**

*“Our mission is to bring alive the power of curiosity and passion in each and every student and to help maximize their academic potential.”*

Deborah Meier’s book, *Power of their Ideas*, describes how one school, Central Park East High School, organized its program to promote student learning. Tapping into the natural curiosity and passion of children was a key strategy. Manhattan Hunter’s four part program is the platform they have put in place to make real on this vision.

Manhattan Hunter's Four Part Program	Program Objectives
<b>Core Regents Curriculum</b>	<ul style="list-style-type: none"> <li>• See <a href="http://www.emsc.nysed.gov/ciai/pub/pubsci.html">http://www.emsc.nysed.gov/ciai/pub/pubsci.html</a></li> </ul>
<b>Dual Credited Courses</b> These courses are taught in collaboration with college courses and meet the state and college curriculum mandates for quality control.	<ul style="list-style-type: none"> <li>• Helping students with the transition to postsecondary schooling, beginning in a protective, comfort zone and teaching the skills required for college success.</li> <li>• Strengthening the coherence between high school and college curricula.</li> <li>• Aligning curriculum and testing requirements.</li> <li>• Building and implementing a common agenda for high schools and colleges in support of changes that will improve student success at all levels.</li> </ul>
<b>College Credited Courses</b> Courses taught at the college	<ul style="list-style-type: none"> <li>• Providing cohort groups of high school students with the college course.</li> <li>• Providing on-site high school counselors to ease the transition to college and facilitate application of habits of mind and self regulatory behavior.</li> <li>• Selecting college staff open to working with “emerging” mature thinkers.</li> <li>• Crafting schedule that mirrors college life and allows for high school activities.</li> </ul>

<b>Students Integrated into Regular College Courses</b>	<ul style="list-style-type: none"> <li>• Allowing students to integrate into the regular college community and classes.</li> <li>• Continuing to provide transitional support.</li> <li>• Facilitating the creation of student-directed study and support groups.</li> </ul>
---------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### *Core Regents Curriculum*

Since the early 1990's, core curriculum was developed by the state of New York to ensure that all students in the state had access to a rigorous curriculum. The new direction focuses on interdisciplinary learning and problem solving. (See sample chemistry core curriculum below and <http://www.emsc.nysed.gov/ciai/pub/pubsci.html> for New York State physics and chemistry curriculum guides) Now state policy mandates a core curriculum for all students, and Early College High Schools, like Manhattan Hunter, have raised the standard even higher by connecting the Regents curriculum to Hunter College's general education program. The three program delivery models—dual credit, cohort college classes, and integration of high school students in regular college classes—serve as bridges to smooth the transition to college.

- organize, graph, and analyze data gathered from laboratory activities or other sources
  1. identify independent and dependent variables
  2. create appropriate axes with labels and scale
  3. identify graph points
- measure and record experimental data and use data in calculations
  1. choose appropriate measurement scales and use units in recording
  2. show mathematical work, stating formula and steps for solution
  3. estimate answers
  4. use appropriate equations and significant digits
  5. identify relationships within variable from data tables
  6. calculate percent error

### *Dual Credited Courses*

Providing students with dual credit courses is the first step along the way to preparing students for college. Dual credit courses help build programmatic coherence between the high school and college. High school and college faculty from Manhattan Hunter and Hunter College align curriculum and testing requirements (see *Curriculum Mapping*, p. 6). As a consequence, students can clearly survey the difference between high school and college curriculum and expectations.

### **CHEMISTRY CORE CURRICULUM PROCESS SKILLS: STANDARD 1**

Science process skills should be based on a series of discoveries. Students learn most effectively when they have a central role in the discovery process. To that end standards incorporate in the Chemistry Core Curriculum a student-centered, problem-solving approach to chemistry.

#### **Standard 1-Analysis, Inquiry, and Design**

Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to post questions, seek answers, and develop solutions.

#### **MATHEMATICAL ANALYSIS**

##### *Key Idea 1:*

Abstraction and symbolic representation are used to communicate mathematically.

(Two examples from NY State Core Curriculum Guide)

Use algebraic and geometric representations to describe and compare data.

### *College Courses in Cohorts*

The creation of college cohort courses supplies a second step to ease the transition from high school to college. Cohort courses foster student confidence and habits of mind in a more independent setting—on the college campus. In this way, students move closer to the college environment, and they get a first hand glimpse at what college really is like. If successful, they are ready for the next step.

### *Students Integrated in Regular College Courses*

The final step allows students to fully integrate into the college community and take regular college classes. Importantly, the Manhattan Hunter faculty continues to monitor each student's experience and teach them how to manage themselves and their responsibilities on the Hunter College campus.

## 2. Curriculum Mapping

*One of the great things that they've [the college faculty] been doing is debunking some of the dearly held beliefs of my high school teachers that there is something beyond reach about this college curriculum. And it fascinates me that among the college people we work with are people who in some ways are more grounded in it's not such a giant leap [to college courses] than some of our high school teachers.*  
 –Susan Kreisman, principal<sup>8</sup>

Curriculum mapping is an important strategy used to ease student transition to college. At Manhattan Hunter a few high school teachers and college faculty had to be convinced that the college curriculum is in reach of the high school students. Importantly, mapping the high school and college curriculum lay bare for all to see the curriculum landscape. For example, the table below identifies the topics that the high school and college chemistry curricula have in common.

Topics in both the New York State Regents Chemistry and Hunter College Chemistry 100 Curricula	
Metric System <ul style="list-style-type: none"> <li>• Significant figures</li> <li>• Conversions</li> <li>• Measurement</li> <li>• Density</li> <li>• Temperature</li> <li>• Scientific notation</li> </ul>	Other Topics <ul style="list-style-type: none"> <li>• Atomic Concepts</li> <li>• Molecules and compounds</li> <li>• Chemical equations</li> <li>• Stoichiometry</li> <li>• Elements in Atoms</li> <li>• Chemical Bonding</li> <li>• Acid Bases</li> </ul>
States of Matter <ul style="list-style-type: none"> <li>• States</li> <li>• Mixtures</li> <li>• Elements<sup>9</sup></li> <li>• Metals, non-metals, metalloids</li> <li>• Ionic</li> <li>• Covalent/molecular</li> <li>• Diatomic</li> <li>• Solubility</li> <li>• Colligative properties</li> </ul>	

Manhattan Hunter's experience with curriculum mapping helped the faculty focus on

<sup>8</sup> Kreisman interview, 2006.

<sup>9</sup> Gardella Interview, 2006. p. 7.

curriculum and instruction to support student learning. For example, during the 2003-04 school year Frank Gardella, faculty at Hunter College, examined the New York State Regents Math A curriculum requirements and the college requirements with the high school faculty. Dr. Gardella formed a team with school's math teachers. The objective was to develop a curriculum and instructional program aligned with Regents and college requirements. They worked together to identify those elements critical to learning calculus and the Math A Regents test.

*We wanted to rework it [the Math A curriculum] because we felt that there were things in there that never showed up on the Regents. Not only didn't they show up on the Regents, they really didn't have any impact down the road....We wanted to make sure that they were going to get through the Regents, as well as be ready to take the next course... what do they need for calculus, what kind of mathematics?<sup>10</sup>*

Factoring polynomial expressions, graphing equations, working with complex numbers, and simplifying regular expressions became the focus of math instruction at Manhattan Hunter. And sequencing instruction in ways that respond to student learning styles became a norm.

*Dr. Gardella used... the topics that he felt students are most deficient in when they come to a college level math class. And these are topics that students must master, must be very comfortable with, before they step into a college level math class. ...If the faculty think that one topic should not be introduced at a certain point, they'll pull it out and reinsert it somewhere else in a place that does make sense. They found that students need this feeling of continuity and building and development.<sup>11</sup>*

The way teachers handled the teaching of algebraic structures and irrational numbers

<sup>10</sup> Gardella Interview, 2006. p. 8.

<sup>11</sup> Vogt summary of Manhattan Hunter interviews. 2006. p.2.

provides another example as to how to sequence learning to build instructional continuity and momentum for students.

*It's the positive and negative numbers. That's why the kids get the answers wrong. It's not that they don't understand the algebraic structures. Not all the time. But in the main, they keep forgetting that a negative times a negative is a positive, and a negative minus a negative is whatever that's going to be, so the answer has the wrong sign... So what we decided to do was take that big stumbling block and put it after the algebraic structures.*

*Most books start with this business with real numbers. Very important material, radicals and irrational numbers, but they do irrational numbers in chapter one, and then the kids don't see irrational numbers until chapter 8 when they do quadratic equations. Why are you doing that to kids?... So we said no. When we need irrationals, we'll do them. When we need integers, we'll do them, because we're trying to build a real life curriculum. Most problems in real life, real world problems are positive numbers—fractions, decimals, and percent.<sup>12</sup>*

### **3. Focus on Habits of Mind for Everyone**

The Manhattan Hunter staff believes that students must develop new habits of mind to succeed in college, as described by the school principal.

*They [the students] move from days defined by forty-minute segments to days that vary in durations and foci of responsibilities. ... From a world of neatly defined expectations that are collaboratively developed and common ...into a world where such collaborations are limited.*

As a consequence, they pondered:

*How do we build a program that helps youngsters make the transition from the*

*comforts, neatness and persistent monitoring of high school into a world that depends on self regulation, self directedness, and comfort with ambiguity?*

The answer is clear-cut. In addition to gradually building their ability to be independent learners, the school developed habits of mind to focus teaching and student work on problem solving and disciplined inquiry.

*New visions of educational practice engage the energy and attention of education reformers. These visions depart substantially from conventional practice and frame an active role for students as explorers, conjecturers, and constructors of their own learning. In this new way of thinking teachers function as guides, coaches, and facilitators of students' learning through posing questions, challenging students' thinking, and leading them in examining ideas and relationships.<sup>13</sup>*

Manhattan Hunter's habits of mind have created an instructional focus for teachers to guide student learning. Teachers use what will be helpful in the college setting. They want students to think like experts in the discipline. This is achieved by posing questions common to specific disciplinary areas.

Students report that the Early College program puts them in control of their education.

*This program at Hunter College teaches you how to change your previous work habits, become acquainted with a university setting, and transfer these skills to the college you decide to attend once you graduate. These are life lessons that help put you in control of your education.*

<sup>12</sup> Gardella Interview, 2006. p. 9-10.

<sup>13</sup> Cohen, D. K., McLaughlin, M. W., & Talbert, J. E. editors. (1993). *Teaching for Understanding: Challenges for Policy and Practice*. Jossey-Bass Publishers. San Francisco. p. 1.

Manhattan Hunter's Habits of Mind		
Habit	Generic	Thinking Like An Expert in the Discipline
<b>Problem Posing:</b> Perceiving and defining a problem (or potential); Asking a fruitful questions defining an effective theme	Understanding what a problem or theme is, and having some strategies for anticipating or discerning problems	<ul style="list-style-type: none"> <li>• What kinds of problems are addressed by this discipline?</li> <li>• What do mathematicians, biologists, etc. wrestle with?</li> <li>• How do members of specific disciplines talk to each other?</li> </ul>
<b>Inquiry:</b> Determining what information is necessary and obtaining it	Ability to gather information from a variety of sources. Ability to ask and address: <ol style="list-style-type: none"> <li>What does it mean?</li> <li>How do you know?</li> <li>So What?</li> </ol>	<ul style="list-style-type: none"> <li>• How do chemists, political scientists, etc. go about their work?</li> <li>• How do they collect and organize data?</li> <li>• How do they come to know what they know?</li> </ul>
<b>Creative Thinking:</b> Generating alternatives	<ul style="list-style-type: none"> <li>• Ability to "break a mind-set"</li> <li>• Familiarity with strategies and schemata that could be varied to fit new situations</li> <li>• Brainstorming &amp; insight-generating techniques</li> <li>• Making a plausible decision for sound reasons, assessing one's own work correctly</li> </ul>	<ul style="list-style-type: none"> <li>• How have historians, linguists thought outside the box?</li> <li>• How many different routes do economists, physicists, etc. use to solve a problem?</li> <li>• What does it take for members of a discipline to accept a conclusion?</li> </ul>

In closing, a Manhattan Hunter student's poem mimicking transcendentalist philosophy and thinking is an example of how this approach to learning is working.

*Thrusting the leaves  
 The clear blue sky  
 The sun is coming out  
 Over the horizon*

*The wind in the leaves whispering  
 "Majestic beauty"  
 The stones beneath my feet  
 Echo the footsteps of the wild*

*The color of the leaves  
 Like no beauty of colors  
 I've ever seen  
 Drifting in the wind*

*It's no majesty I've known before*

*This is pure  
 I can hear the birds chirping  
 Leaves rustling  
 This is the beauty of nature*

Vicky Lau, October 13, 2007