Best Practices Case Study

Michele Snyder, *June 2009*

Johnson City Middle School Science
Johnson City Central School District

School Context

A positive attitude that all students can succeed and excel is a core value at Johnson City Middle School (JCMS). As described by one administrator:

> *Success is always defined in our school from our mission; we really want high standards for all of our students and one student at a time because we are really very committed to individualizing what goes on with our kids, taking each kid from where they are, and helping them get to the high standards they need to be at.*

The Middle School is one of four schools (elementary, intermediate, middle, and high) serving both city and suburban residents. The total student population for 2007-08 was 2,611, with the middle school enrolling 575 students, or 22% of the total student population. The village of Johnson City is located in the Southern Tier of New York State in Broome County, and is part of a region that is historically known as the Triple Cities, comprised of Binghamton, Johnson City, and Endicott, New York. According to the U.S. Census Bureau, Johnson City's population was estimated to be 14,826 in 2007[i].

The middle school sits on the north side of the Susquehanna River atop a hill that provides a picturesque view of the valley below. Just three miles east south east of Binghamton and 66 miles from Syracuse, Johnson City is easily accessible via Interstates 88 and 81 and the Southern Tier Expressway (Route 17).

Student Demographics 2007-2008: *Johnson City Middle School, Johnson City CSD[ii]*

	Johnson City Middle School	Johnson City Central SD	New York State
% Eligible for Free Lunch	36%	37%	36%
% Eligible for Reduced Lunch	10%	10%	8%
% Limited English Proficient	1%	2%	7%

Student Ethnic/Racial Distribution
  % African-American
  % Hispanic/Latino
  % White
  % Other
	
	13%
	6%
	76%
	6%
		
		13%
		5%
		76%
		6%
			
			19%
			21%
			52%
			7%

% Students Meeting or Exceeding State Standards on Intermediate-Level Science Examination	88%	87%	71%
Total Enrollment	575	2,611	2,714,385

In 2007-08, New York State Intermediate-Level Science Examination results showed that 88% of JCMS students achieve at performance levels 3 and 4 (meet the learning standards) and 42% achieve at a level 4 (meet the learning standards with distinction), compared to 79% and 29%, respectively, at schools serving similar students and with similar resources[iii]. However, the school faces challenges in its efforts to realize its mission and achieve its goals. In the 2006-07 school year, the estimated percentage of students from families receiving public assistance was 41-50%. Although recognizing this as a challenge, JCMS provides a positive learning environment and builds connections with parents and students by providing an environment of trust. As described by one staff member, "The danger is to allow the background of students, for example poverty, to take over goals (growing instead of excelling) and allowing that to be an excuse—instead we try to see it as *all* kids can excel."

The district's website states its mission:

Achieving high standards for all, one student at a time

and goals:

- *We will achieve distinctive learning results that exceed similar schools and all public schools.*
- *We will provide a positive nurturing learning environment for all student and adults.*

These core values of learning and achievement are shared by teachers and administrators. One administrator clarifies the success in middle school science as, "Our mission leads a lot to what defines success. Our aim is distinctive learning and high standards for all students." It is with this commitment to student excellence that the mission and goals of the district are embraced by all members of the learning community. Four main themes were identified that support the excellence in student achievement and directly link to the district mission and goals that define student success:

- Solid instructional processes
- Learning environments that enable student learning
- Core group curriculum development
- Utilizing a variety of strategies for success: professional development

Solid Instructional Processes
A philosophy that "excellence is achieved by all students when quality teaching practices and learning experiences are consistently implemented" (also from the district website) is palpable in consistent statements by teachers and staff that support an instructional process designed for mastery learning by all students. Strong commitment by teachers and administrators to the instructional process is evident in conversations with teachers and from classroom observations.

The teachers interviewed identified instructional process as being part of the reason for successful student achievement at JCMS. As one stated, "We're huge on instructional process, we have training, and when we're observed they're looking for best practices, and as part of instructional processes, it helps to focus and guide the lesson. . . . It's been a huge tool in our success." A mastery learning environment was evident across classroom observations and aligned with the strong commitment stated by administrators and teachers to place students at the center of the learning process rather than at the periphery.

The importance of the instructional process as an intentional reflective learning process for both teacher and student was a common thread in discussions of classroom instructional practices. One administrator explained, "We have an instructional process. . . . We all talk the same language/verbiage, and we have a workshop for new teachers in the district. Every teacher knows the meaning of 'cue set,' 'best shot,' 'guided practice'; the sameness we have helps them in their lesson plans, etc. Using the same language helps in their instruction—we have the instructional process for best practices." And as stated by a teacher leader, "Our instructional process is a constant monitoring system; teachers make sure they re-teach, and this drives instruction."

During observations of classroom practices, teachers modeled the instructional process, providing problem-solving strategies, checking for understanding, and offering guided and independent practice experiences. A culture of constant formative assessment during the instructional process was part of a developing strategy for maximizing student learning within each of four classroom lessons observed. As described by one teacher, support for student learning resides within a framework of well-developed instructional practices, and if the "instructional process [is] in place, if that is tight, it helps align students with constructing their own knowledge."

Each of the teachers interviewed reported using formative assessments to establish student learning during instruction and to make adjustments in the instructional plan as necessary. One teacher described the assessment process as, "I think just about every day there's informal assessment going on. There's a lab report; it can be very informal, too, like answering questions on a white board, quizzes and test, exit slips (answering a question on the way out), homework. Some is individual, and some are group. Recognition of participation during informal assessment is not based on 'getting the correct answer.'"

Teachers are further encouraged to independently monitor their successes in the classroom through yearly evaluations and the availability of data item analysis. The latter helps them evaluate gaps in the curriculum and identify where teaching practices may need to be strengthened.

Respectful Learning Environments That Enable
Classroom observations provided insight into the nurturing environment provided by teachers to affect positive student learning outcomes. A second key element that contributes to student success at JCMS is that teachers, too, are offered opportunities to offer ideas and suggestions on how to improve student performance. They are

encouraged to grow professionally in a "positive and nurturing environment" that supports "a culture of collaborative thinking and communication." The principal described the environment as "a very welcoming place for people who have ideas; it's not about positional power, we have a flattened organization." This aligned with viewpoints expressed by the teachers.

She elaborated:

> *If they [teachers] have a great idea they'll bring the right people to the table. . . . We can make it happen if we have research to support that it would be good for kids. . . . We always keep it centered on what's going to be best for our kids. . . . It's very welcoming in that people can bring their ideas to the table.*

A professional environment governed by respect for ideas and individual professional growth extends into the student learning environment. Students are the primary focus for teachers and administrators, with decisions based upon research-driven best practices. As described by the principal, "The center of the conversation is always how can we help kids do better . . . keep that the focus all the time and it really helps direct where we need to go." This collaborative process extends into the classroom, where teachers and students seamlessly work together to share ideas and support learning. Classroom observations repeatedly showed how teachers and students work together in an effort to have students be an active part of the learning process. Teachers effectively solicit and use students' ideas during instruction. In one classroom observation, students shared their learning strategies with the teacher, who then shared the strategy with the entire class.

A feeling of working together to achieve the best student learning gains was evident in each of the four classroom observations. Another teacher described the learning environment in the classroom as beginning with respect and expressed the idea of an effective learning environment in this way,

> *My biggest thing is the daily atmosphere you have in your classroom -- respect, making kids feel comfortable, infuse some humor, sometimes it's the nature of the middle school kid, flexibility—these things have to be in place before any content. Science content will fall into place after this environment is set; kids have an interest in it, it's hands on, and if they feel comfortable walking into your classroom, they're going to be receptive to anything you have to say.*

Another teacher expressed an effective learning environment as one in which "communicating the material with them tends to be more of a discussion, I try to talk less *at* them. I try to talk with them."

The principal summarized the educational community this way: "I think our organization is unusual in that we have amazing relationships with our staff, administration, and parents and that really pays off for us."

Classrooms at JCMS are inclusive, with mixed levels of student ability. "Really it's the same expectation for special ed and regular ed students, just some modifications and supports are there to help special ed students," said one teacher. Classroom observations supported the inclusive nature of the learning environment, with special education teachers and teaching aides in place in three of the four classrooms observed. "It's extremely important to get students with disabilities to be involved in the regular classroom with lots of support, for them to feel successful, and do it in a way that everyone feels like they are being supported—so students are comfortable, not like they're singled out in the classroom," said one teacher.

Much in the way of positive reinforcement of behavior and academic success was posted in the classrooms, for example, "You may never know the answer if you don't ask the question" and "Characteristics of a good peer tutor." As described by the teacher, the characteristics of a good peer tutor were developed in conjunction with the accelerated students in a 'math helper' project. Accelerated math students became peer tutors for some of the lower-achieving students in preparation for the state math assessment. Prior to the accelerated students working with their classmates, they had guided discussions with teachers about the characteristics of a good peer tutor, where students being tutored might have issues in the problem-solving process with particular types of math problems, and where common mistakes might be made. The accelerated students in essence had 'training' in peer tutoring prior to working with fellow students. The learning environment at JCMS is one of a community of learners working together so that excellence can be achieved by all students.

Additional support for student success comes in the form of an intervention period. The intervention period is "everyday and for every kid." This period was described as:

> We have an intervention period—not regular instruction. It changes based on the state test schedule. We focus on whatever test is coming up.

> We have an intervention in place. We have an intervention period for every kid in the building, the accelerated kids have labs then, but everyone gets an extra shot of something, before English Language Arts test (ELA) they get extra ELA help, etc. Whatever is needed more at that point, the teachers will meet at that time. This time is available for all kids everyday, so it's catered to help kids at what they need help with.

Core Group Curriculum

Teachers are at the core of curriculum development at JCMS and have control over how to best align curriculum with state standards. At the center of curriculum development is the Science Core Group, a group of teachers at each grade level who work collaboratively to align the curriculum to state standards and provide consistency between and within each grade level. Within core groups, state standards are considered. As described by one teacher:

> I think it gives focus and gives continuity across curriculums; it gives us a basis to jump off into our own curriculum; it sets a standard of what should be and what

needs to be covered. It helps with transition, so we know what is taught in the previous years. We have curriculum maps aligned with the standards; they drive the whole program.

While state standards may drive the curriculum, "They [teachers] really are the decision makers. They get some feedback from administrators, but as far as curriculum goes, they decide," reports a teacher leader. And another teacher states, "The curriculum is solely decided by science core, they let us make all the decisions about our curriculum."

The overwhelming consensus is that the school's success in middle school science rests with the teachers and their efforts to align curriculum to the state standards through core group collaboration. State assessments are seen as a moment-in-time snapshot of student success. Success, in general, is an intentional coordinated effort of curriculum mapping and development that aligns not only with the state assessments, but includes all students in each of the grades having the same assessments and same lab experiences. There is thorough alignment among and within the grade levels.

At the administrative level, much of the credit for student excellence is given to Science Core Group teacher conversation: "When I think of our science program and how well they do, I do believe it's because we have Core Groups. . . . We're always looking at what each other is doing so that we make sure that we're covering the curriculum, we're covering it in the right places, people are revisiting it, and the kids are getting everything they need so that they can be successful on those assessments. We've become really consistent as far as the experiences and that has really tightened up the science curriculum," stated one administrator.

Within the Science Core Group, teachers have developed a 'science packet work book' approach to guided instruction. As described by one teacher, "The packet is kind of like a work text we developed, our own textbook, and kids write in it and that mode of instruction seems to work really well with them. The packet is new material and when material is presented it is tied back to past material." The science packets are an integral part of the curriculum delivery method for students.

Utilizing a Variety of Strategies for Success for All Students: Professional Development
The Johnson City School District has its own Teacher Center, which is funded though a New York State Education Department grant. Teachers have district-level opportunities for professional development and other opportunities for growth that include mini-grants, professional development teams, and 'go and grow' programs. According to the 2008 Technology Plan, "Digital technology has become an integral part of achieving high standards for all, one student at a time," which is part of the district's mission.

Use of technology in the classrooms is modeled by instructional practices that guide students through effective use of the technology. During one classroom observation students used individual laptops for a class project.

The middle school is supported by various workshops that help teachers develop pedagogical understanding of the use of technology in the instructional process. At the

district level, there are robust professional development opportunities for teachers to become familiar with and link technology to instruction. Past workshops have included enhancing instruction through presentation and publishing software, podcasting, and other applications. Each classroom has three student computers and a teacher computer for in-class use, television, and DVD player. In addition, the middle school has four mobile computer labs. The district has a well developed technology plan that includes providing ongoing support for professional development activities as an essential step towards excellence in student achievement.

Coupled with core curricular standards, writing-to-learn strategies are a part of teachers' classroom practices. Two teachers expressed the importance of writing when asked about how to enhance students' understating about science and one stated, "A writing-to-learn program—it makes sense to me. I'm trying to use at least one writing-to-learn strategy in each unit." The other added, "Writing and reading in the content area is also important along with constant formative assessment." Students are expected to go beyond what is normally expected to gain deeper understanding of scientific concepts. Through writing-to-learn strategies and integrating best practices across content areas students excel at JCMS.

The learning environment in the classrooms requires that students use all their skills and cognitive abilities to understand science. As one teacher put it, "They're beyond just experiencing things; they're really starting to read to learn now in middle school. They have to start looking at more abstract concepts; their brain is trying to figure out how to think, but its tough; they're trying to learn how think at a higher level."

When asked in what ways teachers 'go beyond' what is expected on state tests, a teacher leader stated, "I believe what they [teachers] do is give lots of rich lab experience, lots of literacy connections, lots of neat things like that, and a science fair where each kid gets to explore off on their own . . . doing all kinds of exploratory things in the classroom."

Teachers talked about their use of inquiry in the classroom:

I've been very intentional with using inquiry; I'm trying really hard to incorporate that into their lessons. If they're figuring it out on their own, it's better.

Hands on is a huge role, they'll remember it better, make better connections.

They have to be hands on with things and see the application to their own lives, making that connection to their own lives.

The most important thing is making [science] applicable to them, I try hard as I can to relate to them. They like cool stuff, I like cool stuff.

In a Nutshell

Looking at the ways in which JCMS teachers and administrators work together to ensure students not only pass state exams, but excel, success at Johnson City Middle School can be expressed in terms of providing opportunities for coordinated efforts in the instructional and curriculum processes integrated into a community of empowered learners and an atmosphere of respect.   When asked for advice to pass along to other schools, the principal provided this advice: "Listen to their science teachers because they really have a lot of knowledge on the best way to help kids enjoy and be interested in science. . . . Give them the opportunity to sit and talk about that, to devise things to do in their classroom and ways to approach it, so that the kids will learn from it and enjoy it."

Johnson City Middle School
601 Columbia Drive
Johnson City, New York 13790
http://www.jcschools.com/Schools/middleschool.asp

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[i] U.S. Census Bureau Population Finder. Retrieved May 30, 2009 from U.S. Census Bureau Web site: http://factfinder.census.gov/servlet/SAFFPopulation?_event=Search&geo_id=01000US&_geoContext=01000US&_street=&_county=Johnson+City&_cityTown=Johnson+City&_state=04000US36&_zip=&_lang=en&_sse=on&ActiveGeoDiv=geoSelect&_useEV=&pctxt=fph&pgsl=010&_submenuId=population_0&ds_name=null&_ci_nbr=null&qr_name=null&reg=null%3Anull&_keyword=&_industry.

[ii] Demographic data are from the 2007-08 New York State Report Card (https://www.nystart.gov/publicweb/AllDistrict.do). This case study was conducted in spring 2009 as one of a series of studies conducted by Just for the Kids-New York since 2005. For the study of middle school science, research teams investigated seven consistently higher-performing and three average-performing schools based on student performance on the New York State Intermediate-Level Science Examination in 2006, -07, and -08. Researchers used site-based interviews of teachers and administrators, as well as classroom observations and analyses of supportive documentation, to determine differences in practices between higher- and average-performing schools in the sample. In 40% of these schools, the percentage of students qualifying for free or reduced-price lunch exceeded the state average. Average-performing schools were matched as closely as possible to the higher performers in terms of student poverty levels, geographic location, size, and student ethnicity. In 2009 Just for the Kids-New York changed its name to Know Your Schools~for NY Kids.

[iii] Similar schools as defined by New York State on each school's individual report card: www.nystart.gov/publicweb/.