

Best Practices Case Study

Susan Sherwood, June 2009

Thomas C. Armstrong Middle School Science Wayne Central School District

School Context

Wayne Central School District is in western New York State, just east of Rochester, with Lake Ontario as its northern border. Located in Wayne County, it is a sprawling district serving primarily rural areas and hamlets. Socio-economic status varies widely. Based on the 2000 census, the county's median household income was \$37,755ⁱ; this is 15-25% lower than the median household income in the two adjacent counties to its south and west: \$44,579 (Ontario County) and \$52,066 (Monroe County). According to the New York State Department of Labor, the unemployment rateⁱⁱ in April 2009 was 8.5% for Wayne County, up from 5.5% a year ago.

Despite having fewer economic resources than its neighbors, the district has many strengths. During a recent two-day research visit to the district, the assistant superintendent for instruction related, "Financially we are very strong. We are fortunate. . . . That has not been a challenge. We have a community that is very, very supportive. The school is at the center of the community. And it's interesting because it's a couple of different communities. The Ontario community and the Walworth community, which is about six miles up the road. The kids come together for the first time here at the middle school, so it's a neat experience. They really do come together, and it brings together both of those communities. We see a lot of support."

In addition to having a strong sense of community, Wayne Central School District has students who perform well on the state's high-stakes tests, including the (Grade 8) Intermediate-Level Science Examination.

Student Demographics 2007-2008: Armstrong Middle School, Wayne Central School Districtⁱⁱⁱ

	Thomas C. Armstrong Middle School	Wayne Central SD	New York State
% Eligible for Free Lunch	11%	13%	36%
% Eligible for Reduced Lunch	8%	8%	8%
% Limited English Proficient	0%	0%	7%
Student Ethnic/Racial Distribution			
% African-American	2%	2%	19%
% Hispanic/Latino	2%	1%	21%
% White	95%	96%	52%
% Other	1%	1%	7%
% Students Meeting or Exceeding State Standards on Intermediate-Level Science Examination	96%	95%	71%
Total Enrollment	623	2,615	2,741,385

This success has not always been the case, however. Within the past 10 years, say educators, the Thomas C. Armstrong Middle School has made tremendous strides in improving student behavior, physical plant, and exam results. For example, the school had four different principals during the 1999-2000 school year, until the current principal was hired. He recalled what he encountered as a new hire a decade ago,

When I first arrived here, this was a school out of control. There were huge behavior problems. . . . Parents did not want to send their children to this school. We did not have a viable infrastructure for school management. We didn't have leadership teams. Our instructional programs were very poor; the quality of instruction was sporadic at best. . . . The people who were here wanted to make it better; it was because they truly lacked leadership. They needed someone who was going to be decisive and really make a commitment. If I heard it once, I heard it a million times. "Will you stay? Will you stay?"

He stayed, and over the next ten years major changes occurred. He established a new behavior policy: "We brought in . . . 'the discipline ladder'. . . . If you [the student] do this, we're doing that. . . . Kids have to understand parameters. That's our job as adults. We can't tell them everything is negotiable. . . . They have to feel safe, they have to feel loved. I truly believe that there's not a kid in this school, if I sat down and asked, 'Do you think I care for you?' I'd get a 'No'. . . . 'Do you think your teachers care for you?' 'Yes'. . . . I think it's a cause-and-effect relationship: If you feel cared for and you feel safe, then chances are you're going to behave."

Improvements in the physical state of the building also impacted student behavior. He described the changes, "When I came here . . . the tiles were worn to the concrete. The doorframes hadn't been painted in sixteen years. . . . The cafeteria was dark and dingy. . . . They used to put duct tape down on the rugs to keep them in place. . . . If we want to change the kids' behavior, we have to create a good environment. There were no benches in front; it was all matted by the doors. There was no garden. . . . We purchased concrete to edge around the flagpole. We purchased benches because . . . kids would sit on the sidewalk. I would say, 'Don't sit on the sidewalk, you'll soil your clothes.' . . . It's a matter of respect. . . . If you want them to be respectful, you model. And you are respectful of them all the time."

After behavior and environment were addressed, he extended his leadership into the classroom and encouraged many reforms. These reforms emerged as reoccurring themes during interviews with teachers and administrators as well as classroom observations. They include:

- implementation of district-wide practices, including an emphasis on literacy, differentiation, and "backward design";
- identification of real-world connections to the curriculum;
- development of a cooperative, collegial, and dedicated professional community;
- focus on the New York State standards and assessments.

Under consistent and long-term leadership, the staff of Thomas C. Armstrong Middle School project a shared vision, commitment to their students, and tremendous energy.

A Closer Look

District-wide Practices

Literacy. “I’m not a science teacher, I’m an ELA teacher.” That phrase was echoed by almost every teacher interviewed. Literacy was a problem for the district a decade ago. The principal reminisced, “Our scores in literacy didn’t really improve [at first]. In the year 2000, I think we were at 37% [meeting the standard on the state ELA Assessment]; then we went to 42%. I’m thinking, ‘I can’t live with this.’ So . . . I started reading stuff on ELA. . . . We started the school year with the mandate that every teacher will be doing writing. Every teacher will be a literacy teacher; every teacher will learn strategies. We really pushed this. . . . Everybody started having kids write. They had to write in complete sentences because literacy was the key.”

He continued:

I said [to my reading teachers], “Listen, this is my vision. You’re going to make it happen, because if a kid can’t read and write, they can’t do life. And it’s all about literacy.” We’ve really worked very, very hard. This year has been very successful for us: two of our three grade levels are in the nineties on the state assessments [in ELA]; I remember 37%. So that’s quite an achievement. I think given what was here, it’s a tribute to the staff because they worked so hard, and they believed. I hope they feel good about what they’ve been able to change, because they’ve really changed it.

Since its inception, the literacy movement has spread throughout the school, with a focus on literacy in all classes, from physical education to physical science. The science teachers have found the new emphasis helpful. As one teacher observed, “The difficulties they were having in science weren’t so much the content in science; they weren’t having the skills to understand the reading and to draw inferences.” Another science teacher remembered the struggle: “How do we get them to approach a paragraph, if they’re a poor reader, without panicking? . . . [When] they panic, ‘Oh my gosh I can’t do this!’ Let’s slow down, let’s underline some key words. You don’t know the answer, but let’s make an inference like you would in ELA. They show you a diagram; before we even read a question let’s make an inference about what the question might be asking if you see this diagram.”

All teachers were not automatically equipped to teach literacy, so professional development was provided. Some of it centered on reading and writing in the content areas; some of it, as recounted by one teacher, was hard-core ELA review: “We actually . . . became ELA students again. . . . We’ve been provided professional development to show us some basic skills, even just going back and reviewing the basic ELA grammar. The basics that we need to know and then the tools and how to use them.”

Once all the teachers committed to the literacy push, they noticed results: “We were all pretty much the same as far as what we accept, what we don’t accept. Because of that, the students are coming out with literacy in science, literacy in math, literacy in social studies. That helps them to perform well on their tests. It also helps them understand the

questions that we ask. When we use our textbooks, and we use our different writing materials, they are able to gain more knowledge because they understand what piece they are actually getting from that.”

Teachers approach literacy in the science classroom in a variety of ways. One teacher spoke of a recent unit: “When we were building circuits, we were underlining key things: how many bulbs, how many batteries, what type of circuit were we building. Whenever I give any written text [other than the textbook], they’re always using strategies, such as finding the answer right in the text and highlighting it. Making sure they’ve got backup for the answer they are putting down. I think that really helps them to make sure they have the correct information.”

Another teacher compared the current literacy program to earlier efforts, “When I first started teaching, we didn’t do very much writing in science. So over the past few years we’ve increased the writing. On worksheets now [the directions indicate to] restate the question and answer using complete sentences. We do other type of writing activities; we even do some creative writing. Pretend you are a rock; tell your story as you go through the rock cycle. . . . Some students are going to pick things up in different ways. Plus, the writing is good practice and a little bit different than they might do in ELA. We also often try to relate things in ELA. If they are doing appositives in ELA . . . I’ll reinforce that by saying, ‘In this writing, I’d like you to use an appositive in your sentence.’”

In most of the observed classes, students completed tasks that traditionally would be found in an ELA class. For example, in one class, students were asked on the post-assessment to “Make sure you’re re-stating the question, a nice complete sentence.”

Success in literacy has been demonstrated within classes and across classes. The assistant superintendent for instruction stated, “We have found . . . if they are very literate, they are going to be successful in any area. . . . We have had an intensive focus on having kids become readers and writers . . . [and be able] to transfer those skills into being mathematicians or scientists, or historians, and using those skills to really . . . deepen their understanding of those areas.” One science teacher summed it up, “I think without the ELA skills that we teach, the science would just fizzle out.”

Differentiation. One of the newer district reforms is differentiated instruction. This refers to managing a classroom so students of all levels are challenged and successful. In planning instruction, teachers consider the academic and skill levels, interests, and learning styles of each student. Students are offered choices of appropriate activities and assessments.

Although differentiation originated for the gifted and talented population, its reach has broadened and now is used to address the needs of all students. The assistant superintendent for instruction revealed her view of the value of differentiation: “[Some people] want to tell us that some kids can’t do certain things, and we’ve just had to really say, ‘No, we really believe they all can.’ So I think it’s getting over some perceptions of those hard-to-teach kids, saying that we have to [expect] something different from them. [Instead,] we say, ‘No. No we can. We can have the same expectations.’ We might have to

do something different so that they can achieve where they need to be. But they are perfectly capable of doing it.”

She continued:

It lends itself, obviously, to inquiry-based instruction. Providing lots and lots of opportunity for that is something we have also been honing in on. Again, occasionally, you just run into -- perceptions, I would say. It could be community; it could be teachers. It could be even some administrators who say, “Are we going to push these kids too far, too hard?” Especially for those kids who struggle, we tend to want to protect and not push. But we have to make sure that we aren’t changing our expectations just because of that.

Within the science classrooms, teachers attempt to differentiate instruction. Since it’s relatively new to the district, it’s often viewed as a work in progress. One teacher admitted she was still developing: “I feel like I don’t know what each individual child’s learning style is. That’s one thing I need to work on. But . . . I’m trying to expose as much as possible, each unit; try to touch base with each learning style.” Another teacher noticed improvement: “Teaching to the student’s learning styles, paying attention to the modalities: we’re getting much better at differentiation . . . changing our lessons to three or four different tiers, to teach to the different modalities and the different readiness levels. Especially at this age level, we’ve got kids that are such concrete learners, and we’re trying to give them very abstract concepts like density.”

Homework took on a new twist through differentiation, providing an opportunity for students to demonstrate understanding in a mode that is meaningful and interesting to them. A teacher clarified the process: “We use an interactive notebook. ‘Here are your notes on this side of the page. Your homework is this blank piece of paper; you need to [represent] the notes. You can draw pictures, captions, labels, color, take this information turn it into test questions . . . different graphic organizers. You should take the information and show me that you understand it.’ I think for the lower students, it’s not as overwhelming to get a blank page. They don’t see front and back and a stapled packet. . . . They just take it at their level. If they’re unmotivated, maybe they like to draw. They can do their science homework and draw at the same time.”

As with other district programs, professional development is offered to support teachers’ study of differentiation. One teacher reported: “I’ve taken a bunch of differentiation workshops. Some of them were provided through the teacher resource center. In staff meetings right now, different teachers volunteer to show how they’re doing differentiation in their classroom to other staff members.”

Differentiation is one of the ways special education links to regular instruction. One of the special education teachers shared: “I was part of a team that went to a summer institute and actually learned a lot about differentiated instruction and then actually provided instruction last year [to our teachers]. . . . We came back and then our task for all of last year was developing lessons or activities to do with the staff throughout the year.” Special education teachers are each part of a grade-level team and share teaching responsibilities with the classroom teacher when special needs students are present. As one special education instructor remarked, “It’s not just: ‘Okay, we’re the core teacher and you’re the

special ed teacher, tell us what to do.’ They become an integral part of that team. I know that there are many special ed teachers who take on a leadership role in the classroom.”

Understanding by Design. Another district-supported program, Understanding by Design (UBD), is a process of instructional design that begins with standards and assessment and, as commonly described, ‘works backward’ until the instructional activities are identified. UBD offers a non-traditional view of curricula with the intention of creating coherent, connected programs with aligned goals, assessments, and teaching and learning components.

The district has adopted UBD fully: its teachers have received professional development in the program; new curricula have been developed employing UBD principles; and teachers are expected to apply these principles while creating units and teaching lessons. One middle school science teacher described the district support for UBD: “We’ve been transitioning through that, given some time to take the units we already have and put them into the UBD format. . . . It helps when we change, to reexamine some of the things we do and see if there are any gaps or any ways to make it better. Professional development has allowed us to do that.”

The principal has clear expectations of seeing UBD principles at work when visiting a classroom: “We want to see the objective on the board. We want to see the agenda. We want to see the assessment.” In fact, in all the classrooms I observed, that day’s goals and essential questions were posted and discussed with the students. For example, in one science class, the questions: “What is the boss of the cell?” and “Where are chromosomes found in the cell?” were listed on the whiteboard. As the class settled in, the teacher asked the students to discuss these questions with their table partners. At the conclusion of the activities, the teacher revisited the questions with the students.

Teachers are supportive of UBD; as one science teacher enthused, “I love backwards design . . . because it makes the most sense to me. If . . . I’m trying to go to Disneyland, then I’m going to try to figure out how I get there. Well, I want to start with 100% of my students being successful. So I see what the standards are that say this is success for a science student, then I figure out where I go from there.”

The advantages of UBD for students are apparent. For example, they understand what the overall goals are, how any day’s lesson is designed to meet those goals, and why the learning is significant to them. Students are aware of how they will be evaluated and what criteria will be utilized. As the assistant superintendent for instruction explained, “It is having the teachers think about their content in a broader level as far as: What is the enduring understanding on this? Why do we want kids to learn this? Not just to pass this test, but how is this fitting into their real life experiences? What kinds of authentic experiences can we give them or have them experience to actually see how this makes sense in the real world?”

Real-World Connections

Helping students make real-life connections is common practice at the Middle School. The principal discussed the problem when schools have a division between classroom learning and real-world experiences: “[Then] there’s a huge disconnect between school and reality,

and kids see the disconnect. Because of that disconnect, they don't become invested in school. . . . We [as an educational system] develop curriculum in isolation, and we have manufacturers of books who make books, not for kids, but for teachers. We keep this adult world and try to pull the kids up into it, rather than look at kids and think about, with all their potential, how can we provide them with opportunities to demonstrate knowledge?"

During interviews, teachers offered examples of how they help students make real-life connections. Often, they are 'teachable moments,' where teachers' personal situations are employed to illustrate learning, ranging from illness to a beloved pet's crisis. 'Teachable moments' can also emerge from classroom life. I observed such an incident in a science classroom: A student entered the classroom bleeding from the leg. The teacher looked at the wound, assessed the injury, and sent the student to the school nurse. The student, however, had scattered many drops of blood, and the floor needed to be sanitized. While giving directions for the start of the class, the teacher also seamlessly described the protocol being used to cleanse the floor, and why it was essential to follow that procedure.

Another science teacher was concerned with preparing students for life, especially if many more science classes did not seem to be in their future: "I want them prepared with life skills. I want them to see why wearing a seat belt is so important. Why should they buckle up their children or their little brothers and sisters in a safety harness? Why don't you fall out of a roller coaster? Why is it important to slow down on slippery or rainy days, even when driving with four-wheel drive? I want them prepared in physics and chemistry for adulthood, because a lot of them aren't going to go on in high school and take physics. A lot of them drop out of school next year. We have kids that are already sixteen who are planning on dropping out of school. I try to prioritize what's going to best prepare them for high school and for college, but I also look at the population that I have that's not going to high school and certainly not on to college. How am I going to give them the science skills so they can survive real life? How can they read and understand a medicine label? Do they understand why 'going green' is important?"

During all the observed science classes, I had the opportunity to witness how teachers connected classroom activities for students, either through incorporating the outside world into the lesson or using spontaneous 'teachable moments' like the aforementioned blood drop incident. In a lesson on DNA and its role in determining how humans develop, one teacher used some current heartthrobs to interest students: "So, we're going to figure out: if Zac Efron and Ashely Tilsdale got married, what would their children look like?"

During a lesson on heat transfer, another teacher repeatedly brought the learning directly to the students' lives. During the introduction, the instructor asked, "How can you keep cool in the summer?" That led to a lively exchange, with students suggesting a wide variety of methods from sweating to swimming to doing nothing. Later, after a video describing conduction, convection, and radiation, the teacher explained lake effect snow within their area and why some localities get much more snow than the students' community. Also during that lesson, a student made a connection and explained how her sleeping bag once ignited while she was sleeping in front of a bonfire despite not touching the flame.

One teacher summarized the connection process: "My goals are to give children a basic background for the natural world so when they see things happening they understand:

simple things, such as what happens when we have a thunderstorm? What's actually happening?"

Professional Community

It's evident that the middle school teachers are valued and supported by administrators. The assistant superintendent for instruction opined: "The overall climate in this district . . . is like a family. This is a district that is going to rally around itself and give support. It's very hard working; it has a highly competent and talented staff. It is very child centered. . . . People take pride in the district and in our accomplishments. We collaborate well."

The middle school principal is enthusiastic about the staff and emphasized the importance of having talented and dedicated teachers to maintain stability year after year: "It's an environment where teachers feel supported and successful. If we can create that, and teachers feel valued, then they'll stay. They'll stay because they can teach. It's about kids; it's not about money. I always hit on that. Teachers relate to that. I think, fundamentally, teachers are of that belief. We want to impact kids forever. We'll never say that. No, I'll be bold enough to say it. Yes, we want to impact kids forever."

The teachers interviewed were unanimous in the view that they were backed by the administration. One special education teacher viewed the teacher-administrator relationship as respectful and open: "I feel it's a great place to work. I feel like I'm heard. I can have professional discussions with my peers, my administrators. . . . I feel that I can go to them, and I am treated very professionally. There are times I might go to them with something, and initially they say, 'No you can't do that.' Then, after a professional discussion, they say, 'Oh, yeah, I guess that is right.' I feel like I can be heard."

With respect come high expectations. As one teacher revealed, "We are held to the same high standards as the students are. Our principal has expectations for us, down to the simplest things. We must have an agenda on the board; we must have our objectives posted, an assessment posted. We are expected to incorporate ELA, incorporate differentiation." Teachers are not abandoned and expected to achieve these goals on their own. Professional development is pervasive. The teacher continued, "And with these high standards, we are provided the opportunities to learn about them, too. We are held to this high standard, but they give us the materials to achieve to that level. . . . Once a month we have a different kind of professional development. . . . Right now, [it's] differentiation . . . we've been working on that . . . on our regular staff professional development day. We take the whole day."

Much of the professional development is research- and data-driven. A teacher described this process: "[We've done professional development on] how to do data analysis . . . so we can better target our instruction. They're constantly driving us professionally to show that 'professional' means always striving for better. Ninety-five percent [passing] might be great, but there's always room for improvement. . . . Once you're successful, getting that extra 5 or 10% is very, very difficult. But we're not happy at 90%; we're not happy at 95%. We're not even going to be happy if we reach 100%. We're always seeing ways that we can be more professional, that we can improve. That's really stressed in our school district."

Professionalism among peers was also marked by compassion. One teacher recapped those feelings: “As for my colleagues, I definitely say that they are very professional. . . . We’re a fairly tight-knit group here. That helps, because everyone is familiar. If someone is down, they help you out. The science department has had its medical issues in the last few years; people being out for an extended period of time. People stepped in to take over to help out. This year we had someone who left in the middle of the year, so we had to come together. Professionally, we’ve done very well at supporting ourselves. Teaching is hard enough as it is. If you have someone else that you can confide in and is very professional at helping you and an administrator who supports you, it makes some of those hard things easier to get through. I would definitely say that’s one of the positives here.”

Teachers work in grade-level teams and find this to be advantageous. As one teacher observed, “We’re constantly communicating and sharing. . . . It helps to keep students in check, too, and keep tabs on them.” The principal underscored the importance of the teams and the consistency they create, “Okay, all sixth-grade teachers will teach that lesson [on fossils]. Their personalities will be different, but the content of that lesson, the assessment of that lesson, what they want students to know and be able to do as a result of that lesson? Straight as an arrow. I use them as an example because if you can get a department to be that clearly defined in what they need to do by using New York State learning standards, making their curriculum aligned to it, coming up with assessments that measure those performance indicators and you can verify that, you have it made.”

New York State Standards and Assessment

Emphasis on the state standards, though pervasive throughout the district, is not a newly implemented practice, the way differentiation is. In the view of the principal: “I think one of the things about science -- they were always high achieving.” Reliance on the standards is an established system that has been labored over, reviewed, and updated regularly. The state standards are heavily relied upon at the school. Each classroom teacher interviewed expressed a very similar opinion, that the standards “guide everything for us. Our whole curriculum, everything that we do, is guided by New York State standards. We really try to line up everything as far as our curriculum, right down to our assessments.” The principal, when interviewing prospective science teachers, will ask, “How do you know what to teach? [If the reply is] ‘I’ll talk to my colleagues.’ Wrong answer. I better hear ‘I would go to the New York State learning standards and look at the district curriculum.’”

It is important to the district that the instructors create the curricula with which they will work. As one teacher observed, “Teachers need to be the ones to write the curriculum.” In that way, teachers become experts on what must be taught, and there is a connection to it that might be missing if the curriculum were imposed from above or outside the classroom. The assistant superintendent for instruction agreed: “[The curricula] are very articulated, and it’s been great because the teachers who are writing them are teaching them, so it’s not like they’re getting something from someone who is saying ‘Do this.’”

But state standards are used not just for creation of the curricula. The standards are “always in the front of our minds, and, obviously, we go from there,” said one teacher. Teachers refer to the standards to create their daily lesson plans, and even share the standards with students: “Every day we put our objective on the board; here’s what we’re

covering today. This is what you should be able to do by the time you leave. The standards are pretty much what guide what we teach, rather than the textbook.”

As useful and important as the standards are, though, they are sometimes seen as incomplete or vague. When writing a curriculum, sometimes teachers have to guess at what grade level certain content is best taught. The assistant superintendent for instruction related, “We begin with the standards and take a look at where it is that the state would like us to be, and then we try to be mind readers with the state and figure out what would fit best with what grade level.” At times, it is unclear how far teachers are intended to delve into particular content. As one teacher remarked, “The more specific the standards are, the more I understand the level at which the student has to be.”

Both staff and administrators have handled lack of clarity within the standards by going beyond what is written; a teacher declared that “the standards really help me to pinpoint the right level, the bare minimum that all students should know.” This is a common viewpoint: “It gives me a core, what is important that the students need to learn at this stage. . . . They’re the backbone. We just fill it out from there as far as developing the curriculum.” One teacher provided an example of how they develop content further: “It’s interesting to see that a lot of other schools skim what the New York State curriculum covers. We go more in depth. We cover, we repeat a lot, but we go a little more in depth than what New York State requires. For instance, New York State requires us to make sure the students know the digestive system. Well, what do they need to know according to New York State? What is the digestive system? Students need to know what that process is. We go into more detail. We break down each organ, make sure they know what is going on with each organ. Students need to know chemical and mechanical digestion, but they should be able to take the food, go through the whole body, and explain what is happening. I think that piece also helps them to do well on the tests, because the tests, for the most part, don’t ask very specific questions. I think that helps them to really grasp the concept.”

A teacher considered going beyond the state standards so important that she identified it as specific advice to share with other districts seeking to improve student performance in science: “I think that the biggest thing is go a little bit deeper than what the curriculum asks, so that the kids really understand the whole concept.”

The well-developed curriculum is considered a ‘living document’ and open to revision at any time. One teacher emphasized, “We’re always tweaking things.” This received elaboration during another teacher interview: “Now we are at the point where the students just took the state test [Intermediate-Level Science Examination]. We are realizing that there are a couple of misconceptions out there that we thought we did a good job addressing, yet we’re going back now, and we’re going to fix our curriculum based on misconceptions that we’ve observed.” The principal confirmed the importance of using assessment data to adjust curriculum: “Two seconds after that [state] test was graded yesterday, when they had the results, the first thing the department chair did was data analysis. Where are the areas of weakness? Each grade level will pick an area of weakness: ‘Okay this is what we teach, we have to work on this.’”

He continued, “Yes, the teachers are very proud of the 95.6% passing rate, and they should be. Very, very proud. We’re very proud of them. But they’ll work on it. The goal is that all

students will be successful. Failure is not an option, because principals do not go into AIS [Academic Intervention Services]. Superintendents do not go into AIS. Boards of education do not go into AIS. Teachers don't go into AIS. Parents don't go into AIS. Kids go into AIS. The message that is sent to students by going to AIS is that they're not as good as other kids. So if you love kids, keep them out of AIS."

Data analysis of state assessments and the resulting curricula revision are important within the school district, and it is financially supported by the administration. One teacher noted, "We use data analysis much more than other school districts do. We're always looking at what we do well, what we do not do well. Our district gives us extra days [for this]. We work 188 days, whereas I know a lot of school districts only work 185."

To prepare students for the Intermediate-Level Science Examination, all middle school teachers model their own measures of student performance upon it. As a teacher explained, "We've been preparing three years for [the Intermediate-Level Science Assessment]. When we designed our assessments, we took samples from state test questions and looked at them. Here's the type of information they're asking, and here's how they're asking it. If you look at our grade-level tests, they're very much like chunks of the state assessment."

Another teacher disclosed specific examples of teacher-created assessments intended to simulate the state exam: "There's a station with two plants, because we do a plant unit. One has been in a drawer, the other in the sunlight. Then students get to take a look at those plants and answer a question: What are possible reasons that one plant is white and the other one is green? . . . We have students measure the width and length of a fossil. It's a plastic fossil so it's very uniform. It's a brachiopod. Another thing that students have to do is read a thermometer and a barometer. . . . I guess the biggest way that we're influenced by the state assessment is that we try to set up assessments so they align with it. On the midterm and final we have a part 1, 2 and 3: there's a multiple choice section, a written section, and a performance test."

Having teachers who work cooperatively to create and revise curricula, develop classroom exams that resemble the state science assessment, and utilize data from the state assessment can develop instruction that is consistent and coherent across the board. The middle school principal portrayed the science department: "They are very much a tight-knit group. No matter how the players changed over the years, they're embraced in a culture, and they are very much dependent on each other. They know each other's strengths, and they know each other's weaknesses. They are truly a team because they compensate and they complement each other so well. And their curriculum is very structured."

Conclusion

Wayne Central School District serves a diverse socioeconomic community. "We have two trailer parks, and we have students living in hotels, and we have students living in \$400,000-plus homes on the lake," said the principal. But any divisiveness should end at the school doors: "They're young people, and they need to be treated with respect. They have to understand what respect is. You have to demonstrate it. It's not a choice. It's an

expectation. . . . They should expect respect. . . . If they come back [after completing school] and live here because it was their choice, great. But if they're forced to live here all their lives, then we've failed." This was echoed by the assistant superintendent for instruction: "I think more than anything you have to develop a culture where you believe that these kids will succeed and that you will do whatever it takes so that they will."

Success is evident here. During the last ten years, the middle school has adopted practices that have resulted in consistent high scores on the New York State Intermediate-Level Science Examination. It's no coincidence that the principal has been in the position for a decade. Under strong yet respectful leadership, the staff has achieved:

- widespread, consistent use of literacy, differentiation, and backward-design;
- emphasis on real-world science applications;
- an energized and supportive professional climate; and
- instruction, curricula, and assessments aligned with New York State standards.

For teachers and administrators, the focus is on students: how to help them succeed academically, how to provide a secure and safe environment, and how to encourage life-long learning. As one teacher mused, "You don't see toddlers bored with learning. Why do you see eighth graders? Because somewhere in there we must have sucked it out and made it not fun to learn anymore. And we're trying to put the fun back into 'learn.' We're trying to tap into that natural curiosity that all human beings have. Bring them back to being toddlers. Well, why *does* a ball roll down a ramp? What is this thing called gravity? Why do some things sink when other things float? I think that's part of the big picture."

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<http://wayne.k12.ny.us/index.php?section=11>

ⁱ <http://www.nylovesbiz.com/nysdc/census2000/DemoProfiles234.asp#counties>.

ⁱⁱ <http://www.labor.state.ny.us/workforceindustrydata/Pressreleases/prtbur.txt>.

ⁱⁱⁱ 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.