

Geneseo Middle School Science *Geneseo Central School District*

School Context

We have an environment where teachers will do what's best for kids; we will go above and beyond. Again, we have a very supportive community from the taxpayers to the school board . . . so we have small classes, we really do.

Early in a discussion of the successful middle school science program, the principal of the Geneseo Middle School/High School underscored the importance of relationships, a reoccurring theme in interviews with faculty and administration. A small school district within a small community, the Geneseo Central School District uses its size to advantage.

The district is about 30 miles southwest of Rochester, NY. Located in the rolling Genesee Valley region, the town of Geneseo has a picturesque village, the State University of New York Geneseo campus, working farmlands, and a growing commercial area, which is expanding with chain restaurants and stores. The U. S. Census Bureauⁱ estimates the population of the town of Geneseo as 10,068 for 2007.

The school district has one campus, housing approximately 1,000 students in grades K-12 as well as the district offices. Slightly more than half of those students are in the Middle School/High School. The district serves a primarily white, English-speaking population; approximately one-quarter of students are eligible for free or reduced lunch. The most recent New York State School Report Card for Geneseo reveals an overall high level of achievement on state assessmentsⁱⁱ.

More specifically, the 2007-08 results for the New York State Intermediate-Level Science Examination (generally taken in the eighth grade) indicate that 97% of the Geneseo District students met or exceeded expectations, compared to a state average of 71%. What accounts for the science assessment success within the Geneseo Middle School? During recent research visits to the district, the faculty and administrators consistently expressed

Student Demographics 2007-08: Geneseo Middle/High School, Geneseo SDⁱⁱⁱ

	Geneseo Middle/High School	Geneseo Central SD	New York State
% Eligible for Free Lunch	13%	20%	36%
% Eligible for Reduced Lunch	3%	4%	8%
% Limited English Proficient	2%	3%	7%
Student Ethnic/Racial Distribution			
% African-American	3%	3%	19%
% Hispanic/Latino	4%	5%	21%
% White	91%	89%	52%
% Other	2%	2%	7%
% Students Meeting or Exceeding State Standards on Intermediate-Level Science Assessment	97%	97%	71%
Total Enrollment	540	967	2,741,385

support for and commitment to the middle school program. Four themes were prominent:

- alignment of goals and learning experiences,
- student engagement,
- dedicated staff, and
- thorough curriculum work.

Though discrete positive influences, these four areas continually intersected.

A Closer Look

Alignment of Goals and Learning Experiences

According to the district website, the “mission of Geneseo Central School is to enable all members of the school and community to become lifelong learners and valued contributors within a global society.” No matter the length of service within the district (which ranged from two months to many years), the interviewees’ goals for their middle school students reflected this mission, as they emphasized high expectations for individual learners, life skills, and personal connections to learning. One factor supporting this unity is the district-wide focus on goals. According to the middle school principal, this focus includes “goal meetings with the board of education, where administration has to come in and present how we are meeting each goal; our superintendent does that as well. We have constant communication during our staff development days; we talk a lot about are we doing these things. We have a team leader. . . . Once a month all the department heads meet with me.” He continued, “I think . . . our philosophy is try to have each student meet their highest potential regardless of any disability and create an academic program that best fits their needs...making learning success[ful] for all is our number one goal.”

The three middle school science teachers independently advocated this principle; each is primarily responsible for one grade. The small department size seems to encourage strong

cohesion; all the teachers espoused similar objectives. Achievement for all students had priority, but it was often considered on an individual basis and not limited to test scores, as described by one teacher who also defined success as “a student who is really quiet, who enjoys my classroom and begins participating.” This was supported by Geneseo’s new director of learning in the Office of Curriculum and Instruction, who believes that students are not being challenged merely to obtain high test scores, but to “exceed their own expectations.”

This is not to minimize academic success within the middle school; students’ cognitive processes are important to and encouraged by teachers. Again, however, success is not reflected solely and passively by exam scores but actively by students thinking critically, making connections, learning to access and evaluate information, monitoring their own learning, and making observations. Teachers’ aspirations for students moved beyond the classroom walls, as illustrated by the teacher who expected students to “think and question the world around them.”

A critical part of this exploration is reflected in a district academic goal: advancing use of technology for both teachers and students. According to the technology director, technology is “a driving force in what we do.” Integration of technology has become an expectation: “When that message [technology] is delivered . . . from the top . . . the rest of the teachers see it’s not just shallow conversation.” The support for technology is financial as well. Two out of the three middle school classrooms (sixth and eighth grades) have smart boards that encourage interactivity for all members of the classroom.

Classroom observations noted students, teachers, and a guest lecturer interacting with the smart boards. Examples include connections to Internet web sites, links to an in-class ECG machine readout, and student illustrations of classroom learning. Also available is a portable classroom laptop cart, transporting enough computers for each student to work independently. One of the observed classrooms, a classroom that included several students classified for special education services as well as aides, brought together the two technologies, linking current and recent weather information from a web site (accessed using the smart board) to individual student work with the laptops. Regardless of learning challenges, most students were absorbed in the activity. As the technology coordinator noted, “I think we’re really pushing our staff to say, ‘Get rid of the chalk board, make learning engaging for students.’”

Student Engagement

Increasing use of technology is a major component of another of Geneseo’s reflections of success: student engagement. Within the middle school, the principal described engagement: “Teachers who foster an environment where students want to participate . . . they want to be enthusiastic about learning and they enjoy science.” Other staff members shared that view of engagement, hoping to see students asking questions, wondering about the world, initiating investigations, discussing their interests, and continuing to enroll in elective science courses in high school. According to the principal, student engagement has been established. “I measure success as I walk in a classroom [by asking], ‘Are students

enthusiastic about learning?’ And I can say that when I walk into our middle level science classes, sixth through eighth, students display a tremendous enthusiasm for learning.”

As previously mentioned, advancement of technology is a major district goal. It’s no coincidence that technology is seen as a path toward engaging student interest through the use of smart boards and individual laptops. The technology director highlighted the appeal to all students, including those with special needs: “making it [the learning] more hands-on, making it more student-focused, making it . . . so the students are going to be producing something.”

The use of technology in middle school science, however, is not limited to classroom computers and smart boards. Recently, an experiment in teleconferencing connected the classes to NASA; students were able to converse with an astronaut in real time. Students were profoundly impacted by this experience. The technology director observed, “It just increased that level of engagement for students . . . in that twelve, thirteen range, when obviously school isn’t at the forefront of what they want to be doing. . . . Keeping it different and unique and fresh is the key piece of it.”

Student interest in science is sparked and fanned without technology, as well. Teachers reflected enthusiasm for their subject matter and hoped that they could instill that interest in their students by presenting science in ways that are both interesting and personally relevant to students. Students of all achievement levels have benefited from the variety of presentation methods, hands-on activities, and connections to their lives. One teacher reflected that the middle grades are, “social, so social. And if they can find a way to bring it [science] into their social life or a social setting, then that’s . . . even better.”

After-school activities are also important. Geneseo has a science fair with strong participation and a middle school science club. Considering all extra-curricular activities available (e. g., academic, music, drama, athletic), the principal estimated, “I would probably say that over 80% are involved in one activity or another.”

Keeping students connected to their school is key. Since the school is relatively small and the class size range is approximately 15 to 17, teachers have the opportunity to know their students, establish rapport, and build relationships. This is crucial to the principal and is part of his staff evaluation: “I always place that [building relationships] at the top. You know, we talk a lot about rigor, we talk a lot about relevance. I put relationships above both of them. I think if we have the relationships, we can get to the relevance and then rigor. . . . Kids who feel they are part of something special will learn, they’ll come to school, they’ll engage in multiple activities. We have students who don’t want to leave after school, and to me that’s a real good sign. . . . At two-thirty, you can walk by each of our science rooms and find students in each one.” After-school sessions for tutoring, review, or encouraging individual interests are common within the department. At the end of one lesson I observed, the teacher reminded the students that there would be an after-school gathering to review for the next day’s unit test; the session would last as long as the students required to feel prepared.

Regardless of the grade taught or the achievement level of their students, all teachers interviewed spoke of the importance of forming connections with their students. One special education teacher spoke of having “heart-to-heart” conversations with students struggling with motivation, goals, and plans. Another teacher emphasized the importance of respect and understanding, which would encourage students to “feel comfortable...value their language and their culture, too. And then they’ll be open to learning.” Describing classroom climate, a teacher explained, “They can ask questions, and they can put an answer out there that they think might not quite be right. But they know that nobody’s going to come down on them for it and that nobody’s going to laugh at them. . . . We’ve just kind of set that precedent that it’s okay to take risks.”

The emphasis on teacher-student relationships at the Geneseo Middle School is part of its success, but, according to the principal, those relationships are possible because of the staff. As he indicated in the quotation that opens this report, teachers “go above and beyond.”

Dedicated Staff

The principal believes the science teachers are not only excellent teachers but are also committed to the philosophy of the school; it’s a good “fit.” Two of the three science teachers have been there less than two years (the other is a long-term veteran), and the district sought applicants who could “build relationships with students. . . . They’re creative and thoughtful and also very dedicated to what the district goals are. . . . It’s hard to work in our structure if you want to work independently; you have to be collaborative, you have to work in the team approach in the science department as well as within your own grade-level department.”

A special education teacher conveyed that the cooperation between special education and general education teachers has benefited all students. Teachers at the same grade level have common planning time and meet weekly, “There’s not a single gen ed teacher in the building who doesn’t do great strategies that originated in . . . the special ed spectrum that are now so good for all kids . . . and I don’t even think they think of them as special ed practices anymore. . . . It’s just good practices that teachers here do.”

Professional development is another area of teacher involvement. Some teachers have formed educators’ study groups. These teacher-initiated and teacher-guided groups investigate areas of interest; a middle school identity group is currently running. Teachers are further involved with their peers during superintendent’s conference days, where workshops are often led by Geneseo staff. As the technology director indicated, “I can’t really say enough about having it run by teachers and in-house people. . . . I think that there’s a credibility factor that comes into place where sometimes . . . outside presenters come in . . . they’re disconnected from the classroom. . . . But when you are using it on a day-to-day basis, and you are still working with the students, and you know the impact that it’s having, I think that people can sense that right away and connect to it.”

The dedication shown by staff is not just academic, but interpersonal, as well. Every interviewee spoke highly of the staff, using words such as “professional,” “supportive,” “easy to get along with,” “comfortable,” “collaborative,” and “helpful.” A new staff member recalled the first day at work at Geneseo Middle School, “It’s such a small district, the day I started, everybody called me by name.” Feelings of camaraderie, respect, and professionalism were apparent among teachers and administration.

Academics and personal connections combine within Geneseo’s three-year mentoring program for new teachers. This surpasses the state requirements and pairs up new teachers with experienced teachers, often at the same grade, usually in a different subject area. The mentor serves as an advisor, a sounding board, a reflective ear, and an answer key. There are monthly meetings for all mentors and new teachers that center on specific topics, such as “checking for understanding.” One new teacher expressed her belief that the mentoring program, “opens up that communication across different content areas so you can share ideas and maybe learn something that you didn’t know.”

This dedicated middle school staff has produced excellent exam results. When asked to offer advice to other districts regarding student success in science, the principal recommended, “Hire the right people. Hire the right people. . . . I truly believe our middle level is as strong as it is only because of the teachers. . . . We have wonderful students, we have a very strong community, but we have outstanding middle level teachers.”

Thorough Curriculum Work

The Geneseo Middle School teachers and administrators have spent a great deal of time and effort improving and formalizing their science curricula. During the past two years, the middle school and high school teachers have used released time, superintendent’s conference days, monthly department meetings, and summer sessions to coordinate what is taught. As the principal related, “They know what the sixth grade is doing. . . . Now the tenth-grade biology teachers will know what the eighth-grade teacher is teaching.” The principal further observed that without the support of the community, the school board, and the superintendent, such extensive work would not be possible because of the cost. Alignment is currently focused on middle school-high school transitions; the plan is to examine elementary-middle school connections next.

The science curricula at Geneseo do not simply contain the intended content; in addition, the curricular templates include skills, assessments, and resources. One science teacher clarified how they incorporated “microscopes, the progression of how to use a microscope, from sixth to twelfth grade. Research, what are we doing with research, bibliographies, lab reports? . . . We meet as a department to talk about . . . what do you want . . . to be able to do in terms of Excel, PowerPoint, graphing?”

Others have input into the science curricula. As a special education teacher described, “Here at Geneseo, special ed teachers are generally included . . . to continue to learn the curriculum, know the changes, know how Geneseo wants to present [the curriculum] . . . and then they have that special ed perspective to share with those science department

members.” The principal added to the list of participants; both he and Geneseo’s director of learning are involved: “We even extend it throughout [to] our superintendent. He has input to what’s going on in classes. Being small it’s a luxury we have . . . if I am in a larger school, I’m not so sure that I’m familiar with each curriculum. Most discussions take place at our team leader meetings, at our administrative meetings, so . . . the superintendent is aware of what we’re doing. And being a former science guy, that helps too.”

Geneseo’s director of learning, who oversees all curricula work, did not view the science curricula as a project with an end in sight. “We’re going to constantly be revisiting and adding... I think what we’re really stressing is that it has to be a living, breathing document. It has to be something that we don’t just put on a shelf, in a binder.”

Conclusion

Geneseo Middle School students test far above the state average on the Intermediate-Level Science Examination. There are multiple reasons for that, and the causes range from unique and obvious to interconnected and multi-faceted. In some ways, it’s an ideal setting: there’s a supportive community and school board. Because of this support, the district is able to keep class size low. Discipline is not a problem; according to the principal, the students are well behaved: “We don’t have fights, we don’t have things like that.” There are local resources, including a four-year state college in the village, and nearby there is a community college and a vast state park.

Our interviews and observations, however, make it clear that much of Geneseo’s success is due to its teachers and administrators and their shared educational viewpoints:

- There are clearly developed and accepted goals with which students’ learning experiences are aligned:

To get them to grow and become better young adults and see the connections in everything they do. (science teacher)

- These learning experiences are often hands-on, interactive and technology-rich, which engages student interest, whatever their achievement level. Students become connected to their learning and to their teachers.

Each student has a voice. Again, I know that’s more difficult in some schools; our structures are in place [so] that you can do that. (principal)

- The staff is dedicated to their students, their school, their subject, and each other.

Excellent, strong, collaborative, very professional. (director of learning)

- On-going curriculum work seeks to align instruction throughout all levels in a

comprehensive yet dynamic way.

Making sure that our curriculum is staying up to date, with . . . science, I would think that we're going to constantly be revisiting and adding. (director of learning)

Teachers at the Geneseo Middle School expect more than good exam results and strive to engage and challenge their students. When asked to specify the most important learning in middle school science, none of the interviewees identified content or specific scientific skills. Rather, they proposed abilities that would support students throughout their lives, as summarized by one teacher, to “be able to think, take initiative, be responsible, and problem solve.”

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4050 Avon Road
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<http://www.geneseocsd.org/Middlehigh.cfm>

ⁱ U. S. Census Bureau Population Finder. Retrieved March 19, 2009 from:
[http://factfinder.census.gov/servlet/SAFFPopulation?_event=ChangeGeoContext&geo_id=06000US3605128629&geoContext=&street=&county=Geneseo%2C+NY&cityTown=Geneseo%2C+NY&state=&zip=&lang=en&sse=on&ActiveGeoDiv=&useEV=&pctxt=fph&pgsl=010&submenuId=population_0&ds_name=null&ci_nbr=null&qname=null®=null%3Anull&keyword=&industry=.](http://factfinder.census.gov/servlet/SAFFPopulation?_event=ChangeGeoContext&geo_id=06000US3605128629&geoContext=&street=&county=Geneseo%2C+NY&cityTown=Geneseo%2C+NY&state=&zip=&lang=en&sse=on&ActiveGeoDiv=&useEV=&pctxt=fph&pgsl=010&submenuId=population_0&ds_name=null&ci_nbr=null&qname=null®=null%3Anull&keyword=&industry=)

ⁱⁱ New York State Education Department. Geneseo Central School District. Retrieved March 18, 2009 from:
<https://www.nystart.gov/publicweb-rc/2008/02/AOR-2008-240401040001.pdf>.

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.