

K.J. Clarke Middle School

Chickasaw, Alabama



INTRODUCTION

With a stutter, then a whoosh, a pink glittered model rocket accelerates to the sky. It disappears for a moment into the sun, then wafts earthward under a plastic parachute. Two fifth-grade girls traipse after the rocket, which alights a few hundred yards away. A dozen other fifth-graders sit in a row ten feet behind the launching pad, each awaiting the call to launch his or her personally accented missile. "Now who can tell us again the four phases of propulsion?" asks the teacher overseeing the ignitions, while he beckons for the next student to ready his launch. "Activation explosion, thrust explosion, tracking-smoke explosion, and recovery!" chant several observing rocketeers.



A student rocket demonstrates the phases of propulsion.

The rocket launch is great fun. Visitors chat easily with the assembled students, pausing the dialogue to join the applause students give to each successful launch by their peers. Their teacher, a licensed professional engineer and former university instructor, explains that the rocket launch accompanies a study of astronomy. For the past several lessons prior to the launch students have learned about the physics of propulsion and tested hypotheses in the laboratory. Astronomy comprises one quarter of the fifth-grade science curriculum, completed by geology, meteorology, and oceanography.

Such hands-on learning tasks and fifth grade curricula tackling nebulae and lunar phases may be common at magnet

Student Demographics

K.J. Clark Middle School
Chickasaw, Alabama
<http://clark.mcm.schoolinsites.com/>
698 students, 4-8

African American	53%
White	41%
Asian	3%
American Indian/Alaskan Native	2%
Hispanic	1%
Students eligible for free/ reduced price meals	57%
Special Education Students	2%
Student/Teacher Ratio	20:1

schools across the country, but the Clark School of Mathematics, Science, and Technology is not your common magnet school.

Chief among the differences is the school's admission policy: Students are randomly selected through an open lottery; all third-graders in the county are eligible to apply. Fifty-seven percent of Clark's 698 students receive a free or reduced-price lunch; fifty-three percent are African American. Clark sits in Chickasaw Alabama, a 7,000-person sliver of the 390,000-person Mobile County. A free public school under the Mobile County School District auspices, Clark draws students from a bevy of surrounding towns. Though incomes in Chickasaw rise nearly 50% above the Mobile County average, the school's immediate neighborhood is gripped by poverty.

Each morning a remarkable phenomenon sees birth at Clark. Students from the neighborhood walk the hardscrabble streets to school as buses tote students from bordering towns, joined by middle-class parents who drive, not out to the suburbs, but into this poor neighborhood—from no fewer than 25 miles each way—to escort their students to Clark. Something even more powerful and rare unfolds at Clark. According to the former Mobile County superintendent, Alabama's statewide scores on the National Assessment of Educational Progress (NAEP) show a 40% gap in student achievement between low- and high-income students. At Clark Middle School, serving fourth through eight grade students, there is almost no gap.

If Clark isn't typical, neither is its principal. Standing five foot one, Diane McWain, turns the image of the arms-crossed, ex-football coach principal on its head. Now in her seventh year as principal at Clark and thirty-first year as an educator, not only has she erased the achievement gap, but overall student achievement has climbed above other middle schools in the district and middle schools in Alabama serving similar populations. Even in the hallways her voice seldom rises louder than the hum of the air conditioner that keeps her office a welcome shelter for penguins. Nor does she speak in charismatic cadenzas. What she does do is quietly nourish Clark with a vision, set clear expectations for teacher and student performance, put in motion the resources and support for people to achieve that performance, and monitor and reward progress. Clark's teachers, parents, and district personnel report that her leadership is a chief determinant of the school's success. In 2000 she was named Alabama



Principal Diane McWain has led Clark in essentially closing the achievement gap.

Middle School Principal of the year. Besides her leadership four other factors have spurred Clark's success: 1) challenging science and math curricula, including the intentional use of out-of-class learning opportunities; 2) a safe and orderly school environment; 3) a whatever-it-takes approach to promoting each student's success; and 4) strong school pride and sense of community.

RIGOROUS CURRICULUM

Be-goggled trios of seventh graders are piling pennies on unequal sides of a fulcrum. It's not remedial counting class: Before they the stack Lincoln-heads, students make predictions about how many pennies it will take on the short side of the fulcrum to balance one penny on the long side. After each trial students compare their predictions to the results, then successively shorten the loaded side and make new predictions. Opportunities like this, where students delve into rigorous content under the direction of a knowledgeable teacher who scaffolds learning through active tasks and peer-to-peer collaboration, exemplify Clark's science program

Across the hall, eighth graders peer into microscopes, hunting for evidence of life in droplets of water. The droplets are extracted from one of three micro environment tubes: one scooped from a pond and left uncapped, another uncapped sample of distilled water, and a third sample of sealed distilled water. Students identify, count, and categorize organisms in the tubes by behavior, appearance, and movement. All this eyeballing is part of a 30-day succession investigation where students track changes to the ecology of three water samples. A student looks up from sketching his microscope to summarize the project for a visitor. "We're learning about biotic and abiotic effects—autotrophs and heterotrophs," he explains. Students ultimately transfer the accumulated data on the succession to spreadsheets, graph results, make comparisons, and formulate conclusions.

There's a lot of rich content flowing in this laboratory, but the teacher believes the student learning extends beyond just science content knowledge. "Our students know the lab equipment, how to use it, how to behave in a lab, and work in cooperative groups. In labs students are responsible for figuring out steps [they'll need to conduct an experiment]."

Science students can't sleepwalk once they step outside the lab, either. "That was good reading, but what does it mean?" presses a science teacher giving a classroom lesson on lunar phases. In the classroom or in the laboratory the young Clark scientists are taught to synthesize, evaluate, and create. "We are trying to get them to ask the right questions; they can always look up the answers," says another science teacher.

All this business is not just the product of a few brilliant teachers' masterminding. Teachers and administrators at Clark have mapped a curriculum for each grade based on the Alabama state learning standards. Teachers from across grade levels conferenced to ensure curricula were aligned from one grade level to the next and lessons and assignments appropriately fit the learning objectives. Finally, Clark staff met with high school faculty to

ensure that Clark's curriculum readied students for the demands of high school. Once mapped out, the newly aligned curriculum took time to unfold in classrooms. Some teachers had to give up their favorite lessons to comply with the new program.

Today Clark is the only middle school in Mobile County offering honors Biology, normally a 10th grade course. Clark students score at the 95th state percentile. At Clark every 8th grade student takes algebra, and all students take math courses a year above the standard district course. The alignment with state standards work hasn't put students on a conveyor belt. In the sixth through eight grades students can select from a menu of electives, which includes a course in technology where students design and build their own robot that's put to the test in statewide competitions. Not to be criticized for a math and science monomania, Clark offers art, physical education, band, and French to all students.

Getting students to write in content areas outside of English class is a hot topic in education circles these days. Clark douses its curriculum with writing. Like scientists, students write abstracts summarizing the methodology and results of their experiments as part of their lab reports. All students must keep a science journal, which they update throughout the year. "They have to write everyday," states a science teacher. Teachers provide students with writing rubrics so student can track the progress of their writing. Journals find particular vibrancy when it comes to field trips, also called informal science education.

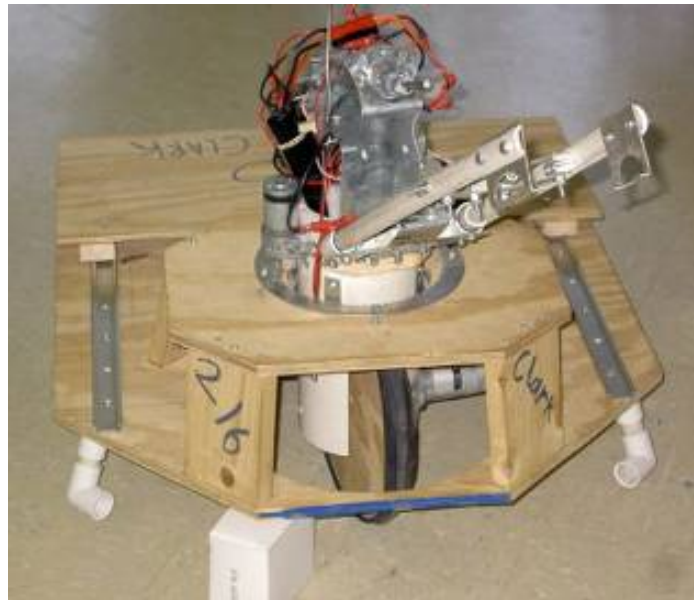
In the annual seventh grade trip to Disney World students respond in their journals nightly to such prompts as "How were acoustics used in a ride you experienced today?" or "How did friction play a role in a ride?" Scheduled interactions with Disney engineers enrich students' journal entries. Students use wireless writers – a simplified word processor—while on field trips to inscribe their observations. Entries can then be saved, organized, and searched on the school's server.

Beyond serving as incentives for good behavior, promoting out-of-school relationship- building between students and staff, and encouraging students write about science, informal science experiences like Disney World trips make science come to life. The sense that science is relevant to students' lives galvanized by informal science opportunities is essential to Clark's academic program.

The term "informal" belies the intentionality Clark teachers bring to these opportunities. Hands-on learning, they report, is about students and teachers working together to make learning creative, active, relevant, fun, and—most important—engaging and challenging. On Disney World's roller coasters students don sensor-laden vests that track the acceleration and direction of the wearer. Back at Clark, serrated graphs depicting the wearer's acceleration decorate a wall outside one classroom. One teacher notes that putting on the vest and seeing the graphs activates students' understanding that science is real and everywhere.

Clark students don't just get to see that science is real; they get to do real science. Through the Jason Remote Sensing project NASA selected Clark as one of ten schools to collect satellite imaging data on river delta salt marshes. Clark students study the marshes of Dauphin Island, a hairpin stretch of land that guards the western entry to Mobile Bay. Students deploy tools loaned from NASA, including, a remote plane to measure water quality, beach erosion, dissolved oxygen, and sample four water types: fresh, brackish, estuary, and salt. Clark then conveys its data to NASA researchers for analysis. Throughout the process students interact with researchers around the world.

Expeditions to the island at night have also given students sight of the strange and wonderful bioluminescence emitting from the plankton and dinoflagellates that make their home on the barrier island. In order for students to want to protect environment, explains the teacher supervising the study, "they have to fall in love with it first."



Clark students' design for the robot armature was ultimately adopted by the winning (high school) team.

A final factor drives Clark's informal science program. Many students arrive at Clark without exposure to estuaries and planetariums and, consequently, without the background knowledge such experiences furnish. Clark ensures students get these experiences while under its care.

SAFE AND ORDERLY ENVIRONMENT

If all of these opportunities and hands-on, collaborative learning opportunities suggest a need for a well-behaved studentry and safe environment, that's because they do. Walking out of the school building to view the rocket launch, Ms. McWain tells visitors that a drug store adjacent to the school was robbed just two weeks ago. Thirty years ago the community across the street from Clark attracted newlyweds aspiring to buy first homes. Hard times have now beset the cluster of residences. But Clark has responded differently from many U.S. schools in tough neighborhoods.

At Clark there are no security guards, no metal detectors. Like most middle schools, between classes the hallways at Clark vibrate with the voices and bodies of adolescents. Yet, during this hourly mishmash no pushing or shoving or teasing is visible; no yelling adults vie for vocal ascendancy. In the cafeteria the principal converses with two visitors through two lunch periods without interrupting herself to flash an admonishing eye—let alone rise from her seat. "Being proactive—not reactive—is my theory of discipline," says Ms. McWain. If Clark's discipline policy

doesn't seem harsh, it's not because it lacks definition. McWain explains, "We try not to give students an easy out for disobedience. For example, we require that student explain why something they did was wrong rather than just writing up a detention slip."

For minor misbehavior—for example, failing to follow classroom instructions— students receive three warnings, which parents must sign. Three warnings result in an afterschool detention; three more, an out-of-school detention. Finally, three of those prompt a suspension. Stronger incidents find no such gradualism. "If you push or hit, you go home; disrespect a teacher, you go home. No child keeps another from learning and no child keeps a teacher from teaching," says the principal, quietly enough to convince a visitor she's made good on the promise before. More than its sternness, the consistency of the behavior policy gives it its purchase. "It was not always that way," says a teacher, referring to times before Ms. McWain's arrival. Parents tout the clear structures for class transitions, accessing lockers, and gym class clothing changes. "There are no worries when my kids are here. You know your kids are safe," summarizes one parent. The safe and orderly environment lets Clark focus on the important business of ensuring the academic success of each student.

WHATEVER IT TAKES

Henry Ford is said to have commented that his success was merely a function of solving one simple, manageable problem at a time—and that anyone could do this. Turning the glib proclamation that "all children will learn" into reality requires diagnosing and resolving problems as they emerge. Clark embraces a whatever-it-takes, solve-one-problem at a time approach. To hear teachers describe the lengths they go to is nearly daunting. Teachers commonly tutor students after school without additional compensation and the lunchroom finds with teachers and students sitting shoulder to shoulder, giving and getting extra help. One math teacher asked the principal's permission to tutor on Saturdays.

A representative from the district described the Clark approach: "It's not just noticing, it's taking time to respond, to be inconvenienced. These teachers love to be inconvenienced." A student with a single parent who goes to work at 4 a.m. fretted that he couldn't bring his science project to school on the bus. Ms. McWain drove to the student's house to transport the student and science project, but discovered the science project was too heavy for her to move. Before long the Clark custodian arrived at the student's house. In another case, Ms. McWain arranged for a student with an unhealthy home life to stop at an elementary school on the student's way home so the student would have a safe place to study. "We want every student to receive the education I want my child to have. Whatever needs to be done we take care of it," asserts McWain. Teachers and administrators aren't the only ones doing whatever needs to be done. One Clark student gave up athletics to tutor a Spanish-speaking peer. While Henry Ford is probably right that anyone *could* achieve success, Clark teachers and students aren't making it happen without sacrifice.

SCHOOL PRIDE AND DEVELOPED SENSE OF COMMUNITY

The high academic achievement and whatever-it-takes climate give Clark students and staff much to feel proud about. Their school pride further fuels the engagement and focus students and teachers bring to their work, giving the impression that success and pride are inextricable and mutually reinforcing. A visitor can't escape hearing about pride when talking to people at Clark. "We brag about the school to the students. They know they are in a special place," says a teacher. This pride isn't a haughty "I'm-proud-I-go-to-Clark" thought silently while looking over one's shoulder. Rather, it's an

amiable, admirable "I'm proud of Clark," pride that's exclaimed publically in celebration not in comparison. It's a pride that fosters community, not self-involvement. "The clear expectation about dress and the way students comport themselves," builds the sense of community, says a teacher. When you combine the advanced science curriculum, the well-behaved students, and the sense of community and pride, it's hard not to come to the same conclusion one

teacher comes to: "This school

has the feel of a small college prep school, but with a different demographic." Parents don't need researchers to confirm that private school parents generally value the way their students are known and individually attended to.

Clark parents find and value these qualities in their school too. "You know the children are more than numbers [at Clark]; [teachers] know all the students by name—the office workers too. They treat your kids like their [own]." This ethos starts at the top. Before a visitor spends more than an hour chatting in Ms. McWain's office, it's likely she's said, more than once, "They're all our kids."

LEADERSHIP

Visit Clark and you won't be merely handed a map of the school and wished good luck. Ms. McWain will personally escort you from class to class. She'll likely observe some classes with you too. Call it southern hospitality, but there's



Fourth grade Clark students collaborated to produce a pointillist mural.

a sense it's more than that, that it's personal assurance. She isn't leaving it to chance that a visitor will find his way around and see what he needs to see.

Educators have long known, and research has confirmed, that leadership makes a difference on student learning. There are many qualities this small, quiet Harley-Davidson rider gets lauded for by her staff. "The principal is a step ahead of the county with what is going to happen," says a school specialist. McWain brings confidence and enthusiasm to her staff and she leads by enabling and empowering, not dictating.

But catch the glint in her eye when she talks about removing the teacher who wasn't creating a positive learning environment for Clark's students and the image of her wielding the handlebars of a late model Night Train becomes easy to conjure. McWain's willingness to act decisively when necessary aside, the refrain among is teachers is that Ms. McWain listens to her staff's ideas. One place she won't be swayed to new perspectives, however, is on high expectations for all students. "We expect our 8th graders will go to college. We put it out there; they will get there," she says.

The fifth-grade teacher leading the rocket launch left his career as a college instructor and professional engineer for two reasons—Clark's curriculum and its principal. That McWain creates conditions where teachers can apply their knowledge and skill to solve problems on their own sounds a rondo from teachers across subject areas and grades. Put simply, faculty feel supported by the principal. Perhaps that's why there is almost no teacher turnover at Clark. Essentially, teachers leave only to retire or move away.

Like many of its southern counterparts, Mobile straddles history and the future. The past saw Mobile as a center of shipping and manufacturing—and a city of constancy. If that constancy came in part from carefully defined social classes, they were no less a source of certainty for their discomfiture. The future sees Mobile as an active contributor to the 21st century knowledge economy, beholden to no social pre-packing, and shipped with no guarantees. As one district representative reflected, "We're not just the sweet little southern town with moss on the oak tree anymore." Though Mobile seems better poised to respond to economic changes than other cities in Dixie, uncertainty eddies. What Clark tries to offer is the certainty that college is possible for all its students.

A rigorous science curriculum, orderly school environment, whatever-it-takes approach, and strong school community—not only do these things impress a visitor, they leave the impression that at Clark they're inseparable, a *gestalt*. Remove one and the others would unthread, suggesting that these factors weren't stitched together piecemeal in the first place, but developed as a whole. The synergistic nature of successful schools is exactly what makes their success difficult to harvest and transfer. Still, the formula, if it can be called that, of a safe environment filled with highly trained, enthusiastic teachers who make learning come to life through lessons that demand active

management of multiple skills and conceptual knowledge—all guided by a principal who sets the conditions for continuous improvement and models a whatever-it-takes-approach—has worked for Clark.

K.J. Clark				
Alabama Reading and Mathematics Test (ARMT)				
% proficient and above: 8th grade Reading				
	2004	2005	2006	2007
All	88	96	98	99
African American	83	91	98	
Reduced or Free Lunch	81	96	100	
State Scores				72
% proficient and above: 8th grade Math				
	2004	2005	2006	2007
All	41	98	98	98
African American	41	98	97	
Reduced or Free Lunch	43	96	98	
State Scores				66