

Think Different

In 2008, a volunteer baseball coach in Michigan named Greg Green was looking for a better way to coach his son's sixth grade team. The South Oakland A's were a competitive club team made up of promising young players, some of whom hoped to eventually play baseball at the collegiate or even professional level. But Green found that, promising as his young players might have been, they were still eleven year old boys. And eleven year old boys are easily distracted. For instance, they were (*very*) easily distracted from learning about the subtleties of proper defensive alignment when scattered across a baseball diamond on a brisk Michigan spring day. A minor problem, perhaps, but a problem none the less, and one that Green found himself thinking about more and more. Green's solution to this problem would have implications far beyond the practice field. It would change not just how one man coached a team of eleven year olds, but how schools across the country taught their students.

The connection between baseball and radical educational innovation is something of a happy coincidence. When not coaching Green stayed busy as principal of Clintondale High School, a financially disadvantaged school outside of Detroit. Three quarters of Clintondale students qualify for free lunch program. 70 percent are African-American, and many commute over twenty miles each way from the inner-city to the suburbs and back. In 2010, 52 percent of Clintondale freshman entered the school with below grade level reading skills. 92 percent were below grade level in math. One in five was projected to not graduate. The school had been designated in the bottom 5 percent in the state. Green's school was in many ways unexceptional. Given that Clintondale served some of the poorest students from one of the nation's poorest cities, its struggles were sadly to be expected. It was a pattern repeated in schools across the country. Clintondale was failing and there was little reason to expect much improvement.

The occasional difficulties faced by a youth baseball team paled in comparison. But as long as he was the team's coach, Green figured he may as well be an effective coach. "I realized that I had a number of players who came from a great distance away, and so I needed to go through actual information before the practice so we could make the best use of our time," Green said. He discovered baseball videos on Youtube that made use of annotated drawings, and decided to make his own. "I was fascinated by the pretty videos and drawing on the screen. You can see the big picture, he explained. "You can actually see what each position does." Green would go on to make nearly 200 videos with titles such as "Defense: Fly Balls, Man on First and Third" and "Pitching: Throwing Arm Rotation, 2." Most of the videos feature members of the South Oakland A's, though some use footage of professional players like Albert Pujols to illustrate proper technique. Together, they have been viewed over 100,000 times.

Green could see that the videos worked. "I saw the value of it. I realized that I didn't have to repeat myself over and over. I also realized that the players could go back and review periodically if they needed to. And then also, parents could have access to it, so that they're all on the same page." Eventually, he began to wonder if he might use a similar method at his other job. "The team was successful, and the parents were happy, so I began to explore the ways we could implement this in the classroom."

The "this" that Green wanted to implement in the classroom was something more radical than the use of instructional videos. He wanted to fundamentally change how students spent their time at home and in the classroom. "These students needed a different platform format," he said. "Students told us right out that they just couldn't replicate the learning environment at home." At home, students faced many distractions and lacked access to teachers who could help them as they worked. And yet it was at home that students were told to complete the most critical step in the learning

process; actually practicing the concepts they had been taught in class. Green and the Clintondale teachers asked, “why do we keep sending homework home when students are not doing it, when they’re not going to be successful at it?”

Green and his teachers had begun to question the way things had always been done at their school. At every school. Then they asked another question. “We said, ‘why don’t we just reverse it?’ Let’s try posting information to a discussion board, let’s try videos using screen capture technology, videos that we find outside - and then we’ll have all those discussions and assignments right in class.” In the new model, homework would not be done at home, but in class. Classrooms would be less like lecture halls, more like practice fields. Teachers no longer had to stand in the front of the room and hope that some of what they were saying would stick with their students. Instead, they would become coaches. The classroom would flip.

This all ran counter to hundreds of years of practice. Whether it was a elementary school teacher demonstrating simple arithmetic on a blackboard, or a university professor delivering a lecture to hundreds of undergraduates, all levels of schooling used the classroom as a place for students to observe their instructors. The flipped classroom would be a place for students to teach themselves.

To test the new system, Green enlisted a social studies teacher to run a sort of experiment. "He had a class that was full of chronic failure," Green explained. "Students really had a last chance for graduation. He also had a similar class that was doing fairly well. Well we're not going to change the class that's doing well, but we're going to innovate with the class that isn't doing well." The two classes were given identical material and assignments, but the struggling class would use the flipped classroom model. As Green thought at the time, "we had nothing else to lose, so why not?"

After 20 weeks, the students in the flipped classroom was outperforming those in the traditional classroom. The previous semester, 13 percent of students were failing the course. Now the lowest grade was a C. Encouraged by these results, Green decided to expand the scope the experiment. The majority of students in the incoming freshman class were below grade level in math and reading skills and Clintondale administrators were dreading "another abomination as far as classroom failure." Once again sensing that there was nothing to lose, Green flipped six more freshman classes. Why not?

As it turned out, there were several reasons why skeptics might have expected such a plan to not work. Green and his team worked to overcome all of them. Clintondale's flipped classrooms would need to be equipped with the right technology, so Green approached TechSmith, the company that manufactured the screen-capture software he used to make his baseball videos. TechSmith donated software for Clintondale's pilot program, while noting that no school had ever attempted a complete flip.

Most importantly, Green needed to convince his teachers that it was good idea to reverse the way things had always been done. Green knew he couldn't "force something down their throats." To be successful coaches in the classroom, the teachers would have to believe in the ambitious plan. "We didn't attack it by saying, hey, you should create a video for your students," Green recalled. "What we said is, 'you should create a video for yourself, because you've done that lecture 5,000 time, and you're probably tired of doing it, so let's do it one more time, and then move on to something different.'" Teachers who might have felt skeptical of, or threatened by, the change were shown how it could benefit them, as well as their students.

Clintondale was entering uncharted territory. There were many details that were initially unclear to Green. For instance, would Clintondale's teachers all make their own lecture videos, or rely on a common set? Should there be a

place for material produced by outside sources? And how long should the videos be? An hour? 30 minutes? 30 seconds? No one could know for sure. Freed from the constraints of the traditional classroom, Clintondale teachers might have found themselves lost in endless possibility. For the school's new model to work, it would need to remain adaptable. Rather than the potential complexities of the plan, Green stayed focused on the key principles. Students were failing. Anything that worked to fix the problem should be considered. On the most basic level, Green and his teachers knew from experience that students learned best by doing. Set up the classroom to let students teach each other, and the details would sort themselves out.

Green explained to his teachers, "whether you want to use technology or not, that's really up to you." He proposed a simple rubric called the 80/20 Rule. 80 percent of class time should be for students working actively, with the remaining 20 percent left to the teacher's discretion. This small rule is at the heart of Clintondale's big innovation. Green believes that the flipped classroom is not so much about utilizing technology as it is utilizing teachers' most fundamental asset: time. Teachers have only few hours a week with their students, so those hours should be spent as effectively as possible. "People like focus on the videos," he said. "Well that's the shiny new race car out there. But really, if you get 80/20, you have a framework for decision making."

Not knowing what to expect, Clintondale flipped its ninth grade classes. The results were astounding. Failure rates dropped across the board: from 52 percent to 19 percent in English, 41 percent to 19 percent in science, 28 percent to 9 percent in social studies, and 44 percent to 13 percent in math. Incidences of bad behavior in the classroom also decreased. "That's when we said, woah," remembered Green. With a larger sample size of 140 showing improved results, Green decided to expand again the next fall.

In 2011, Clintondale became the first school in the country to flip completely. School wide failure rates dropped from approximately 30 percent to under 10 percent. Graduation rates rose from 80 percent to over 90 percent, meaning the dropout rate had been cut in half. College attendance also rose, from 63 percent in 2010 to 80 percent in 2012. External metrics of performance confirmed that something extraordinary had happened at Clintondale High School; SAT, ACT and state standardized test scores all rose, and Clintondale students are doubling the national average from year to year growth, Green said. All this despite that the school now has a higher proportion of low income students, whose standardized test scores tend to be lower. The flipped classroom seems to benefit both at-risk and advanced students. If a student is struggling with material, he can repeat the lesson as often as he likes by rewatching videos at home. If another student masters the lesson quickly, she can move on to the next lesson at her own pace. Teachers provide in-class coaching customized to each type of student.

What is remarkable about Clintondale's experience - aside from the success - is that it was developed independently of the major players in education reform. A principal in Michigan discovered a better way to coach his son's baseball team and wondered if the same technique might work in the classroom. Clintondale flipped the traditional model, aggressively expanded the scale of their experiment, and saw dramatic results. Similar things were happening at other schools across the country. By dreaming big, Principle Green helped lead the way. Today, massive open online courses (MOOCs) such Khan Academy, edX, Coursera and Udacity bring the best educational material to anyone in the world who wants it. In 2012, a year after Clintondale's school wide flip, the Bill and Melinda Gates Foundation announced a million dollar grant in support of a flipped classroom initiative. The future of education, whatever form it may take, will look very different than its past.