FLIPPED classroom method wins attention as one of the world's most innovative teaching methods.

Flipping classrooms is a trend in K-12 education that is gaining traction and showing promise.

"It (flipping) is the only thing I write about that has broad positive agreement," says Justin Reich, who studies technology and education as a fellow at the Berkman Center for Internet and Society at Harvard.

When he and Richard Halverson, co-founder of an education policy research group at UW-Madison, discussed the flipped classroom for public radio in the Delaware Valley, they concluded: "Teachers who experiment with flipping their classrooms are taking a step toward using technology to reorganize how they use classroom time, a step toward classrooms with more engagement and student ownership of learning."

What is flipping? It turns the current education process upside down. Instead of teachers
lecturing and sending students away with homework to do on their own, the students watch lectures on video and do their homework problems in the classroom with the help of teachers. In other words it allows for high quality of interaction between student and teacher and more of it.

"It sure sounds logical doesn't it? Have you tried to help your children with the new common core standards? I'm a former teacher and I can't help with homework anymore. Most parents can't," described an animated proponent of flipping.

Some say flipping isn't something new. It has been used in foreign language classes for years. Students attended language lab to learn vocabulary and came to class to practice their conversational skills.

Flipping, however, hasn't been considered by the mainstream, until recently.

The poster child for flipping is Clintondale High School, north of Detroit. Three years ago the school flipped all classes in all grades.

Clintondale Principal Greg Green introduced flipping based on his experience as a baseball coach. He had been recording videos on baseball techniques and posting them on YouTube for his son's baseball team. Team members watched the videos to grasp the

*Above: Principal Greg Green uses data to document the success of the flipped method with his students at Clintondale High School, north of Detroit.*
The students in the flipped class, despite their disadvantages, were outperforming the students in the traditional classroom.

ideas then came to practice to hone their skills.
This way of preparing for baseball practice worked so well, Green asked one of his social studies teachers to run two classes with identical material and assignments, but one would be flipped and the other traditional. To truly put flipping to the test, the flipped class would include students who had failed at least once and sometimes multiple times.

After 20 weeks, the students in the flipped class, despite their disadvantages, were outperforming the students in the traditional classroom. In fact all students in the flipped class received at least a C+ or better.

With this kind of reinforcement, Green decided to move forward. Clintondale had been designated among the worst 5 percent in Michigan with more than half of the ninth graders failing science and almost half failing math. He knew something had to be done. And he had to do it at zero cost because the district had a budget deficit.

A survey of students found that 85 percent could view videos at home. For those without access, the school made accommodations to have the computer lab open before and after school. Having used software by TechSmith to do instructional videos for his baseball team, Green contacted the company headquartered in nearby East Lansing, Mich.

Wacom donated drawing tablets to help teachers "draw" on their screens while recording videos. WizIQ, specialists in online education, provided coaching for the teachers as they prepared for their flipped classrooms. And Steelcase, a school furniture maker in Grand Rapids, Mich., sent a representative to help Clintondale rearrange its classrooms to facilitate better collaboration among students and teachers.

Clintondale started by flipping the ninth grade and when Green saw failures in English drop from 52 percent to 19 percent and failures in math drop from 44 percent to 13 percent, he decided it was time to flip every class and every grade.

After a year, failures throughout the school dropped by two-thirds. Graduation rates went up over 90 percent, and college attendance went from 63 percent in 2010 to 80 percent in 2012. Results on standardized tests
fluctuated possibly because of dramatic changes in demographics within the district.

Naysayers have surfaced. A research team at Harvey Mudd College in Claremont, Calif., compared a flipped classroom and a traditional classroom as a pilot during the 2012-2013 academic year and gathered some first impressions. According to one of the researchers, they found "no statistical difference" between the two ways of teaching. On Oct. 1, 2013, the Mudd College team was funded by the National Science Foundation to continue its research for three years.

Just two weeks later, after a New York Times blogger profiled Clintondale, Principal Green got a call from Gautam Thakur, a computational data analytics researcher at Oak Ridge National Laboratory. Famous for the production and separation of plutonium for the World War II Manhattan Project, Oak Ridge is considered the nation's leading research lab with 4,400 staff members including 1,600 scientists and engineers and a budget of $1.65 billion.

Thakur was interested in collecting data from Clintondale and developing a platform to share with other schools. (See "U.S. researchers are beta testing software to help teachers personalize lessons for greater student success," page 10.)

The data expert sees the flipped approach as a cost-neutral way of bringing customized education to each of the nation's students.

David McKinney, principal at Havana High School, outside of Peoria, Ill., uses the flipped model because it:

- Allows teachers to use more project-based mastery learning in the classroom
- Maximizes students' roles in their education by increasing their participation and encouraging self-discovery

McKinney reports that attendance is up, discipline referrals are down, and student grades are better.

Engaging projects and activities tied to outcomes keep student interest. Basically, the flipped format leaves more time for discovery and the self-fulfillment that comes with it. That fulfillment also means understanding the value of education.

Some of the most resounding endorsements of flipped classrooms come from educators in Korea and Japan. In keeping with their national reputations for pushing students to succeed, educators in those countries are always looking for innovative teaching methods. In fact a Korean film crew was recently in the U.S. to film flipped classrooms for its documentary on the world's most innovative teaching methods.

"We've started flipping, but the U.S. is one step ahead," an associate producer explained. Advocates for flipping, particularly Principal Green, must have smiled.