



2014 Brock International
Prize in Education Nominee

**Jonathan Bergmann
and Aaron Sams**

Nominated by Elaine Hutchison

Our Story: Creating the Flipped Classroom

Jonathan Bergmann and Aaron Sams

Background

In 2006, we both started teaching at Woodland Park High School in Woodland Park, Colorado. Jonathan came from Denver and Aaron from southern California. We became the chemistry department at our school of 950 students. As our friendship developed, we realized that we had very similar philosophies of education. To make our lives easier, we began planning our chemistry lessons together, and to save time we divided up much of the work. Aaron would set up one lab and Jonathan the next. Aaron would write the first test, and Jonathan the next.

A problem we noticed right away about teaching in a relatively rural school is that many students miss a great deal of school because of sports and activities. The "nearby" schools are not truly nearby. Students spend an inordinate amount of time on buses traveling to and from events. Thus, students missed our classes and struggled to stay caught up.

And then one day our world changed. Aaron was thumbing through a technology magazine and showed Jonathan an article about some software that would record a PowerPoint slide show, including voice and any annotations, and then convert the recording into a video file that could be easily distributed online. YouTube was just getting started, and the world of online video was in its infancy. But as we discussed the potential of such software, we realized that this might be a way to keep our students who missed class from missing out on learning. So, in the spring of 2007, we began to record our live lessons using screen capture software. We posted our lectures online so our students could access them.

In all honesty, we recorded our lessons out of selfishness. We were spending inordinate amounts of time reteaching lessons to students who missed class, and the recorded lectures became our first line of defense. The conversation usually went something like this:

Student: Mr. Sams, I was gone last class. What did I miss?

Mr. Sams: I tell you what, go to my website, watch the video I posted, and come see me with any questions you have.

Student: OK.

Our absent students loved the recorded lectures. Students who missed class were able to learn what they had missed. Some students who were in class and heard the live lecture began to rewatch the videos. Some would watch them when reviewing for exams. And we loved it because we didn't have to spend hours after school, at lunch, or during our planning time getting kids caught up.

We never could have expected the side effects of posting our lessons online: the emails began. Because our videos were posted online, students and teachers from all over the world began thanking us for them. Students just like ours who had struggled with chemistry found our videos and started using them to learn. We participate in several online science teacher forums, and we began to share the links to the recorded lectures there. Teachers from all over the country began to take notice. Chemistry teachers began to use our video lectures as plans for substitute teachers, and some new teachers used them to learn chemistry content so they could teach it to their students. All in all, it was amazing to see that what we were doing in our small town was being noticed across the country.

The Flipped Classroom Is Born

In our combined total of 37 years of teaching, we have been frustrated with students not being able to translate content from our lectures into useful information that would allow them to complete their homework. Then, one day, Aaron had an insight that would change our world. It was one simple observation: "The time when students really need me physically present is when they get stuck and need my individual help. They don't need me there in the room with them to yak at them and give them content; they can receive content on their own."

He then asked this question: "What if we prerecorded *all* of our lectures, students viewed the video as 'homework,' and then we used the entire class period to help students with the concepts they don't understand?"

Thus, our flipped classroom was born. We made a commitment during the 2007–08 school year to prerecord all of our chemistry and Advanced Placement (AP) chemistry lectures. To make things easier on us, one of us would do Unit 1 of chemistry and the other Unit 1 of AP chemistry. Then we switched off for each subsequent unit. This meant many early mornings for Jonathan, the morning person, and many late nights for Aaron, the night person in our duo.

Our students are on a block schedule where we see them for 95 minutes every other day. Every other night our students watch one of our videos as homework and take notes on what they learned. Teaching science courses, we continued to conduct the same laboratory experiments that we had always done. We found that we had more time for both the labs and the problem work time. In fact, for the first time in either of our careers, we ran out of things for the students to do. They were completing all their work with 20 minutes left in class. Clearly, this model was more efficient than lecturing and assigning homework.

We also decided to give the same end-of-unit tests as we had done the previous year. We discuss the details in the next chapter—but, in short, our students learned more and we had some rough data that seemed to indicate the flipped classroom was a better model than the traditional approach.

We implemented the flipped model for one year and we were very pleased with how our students were learning. We had evidence our model worked and was better for kids. So you would think we would perfect this model and continue to teach that way—but you'd be partially wrong. More on that in a bit.

Before we proceed with our story, we would be remiss if we did not mention a few important facts: (1) We did not lecture exclusively in our classes before flipping; we have always included inquiry-based learning and projects. (2) We were not the first educators to use screencast videos in the classroom as an instructional tool, but we were early adopters and outspoken proponents of the tool, and for us, the flipped class would not have been possible without them. However, there are teachers who use many of the concepts you will read in this book and who call their classrooms flipped, but do not use videos as instructional tools. (3) We did not come up with the term *flipped classroom*. No one owns that term. Although it has been popularized by various media outlets and seems to have stuck, there is no such thing as *the* flipped classroom.

How Flipping Aids Personalization

Flipping the classroom establishes a framework that ensures students receive a personalized education tailored to their individual needs. Remember Enrique, Janice, and Ashley from our opening story? They represent the struggling students, the overscheduled students, and the students who get by with superficial learning. Educators are expected to find a way to reach these students with their very different needs. Personalization of education has been proposed as a solution.

The movement toward personalization has much merit, but for a single teacher to personalize education for 150 students is difficult and does not work in the traditional educational setting. The present model of education reflects the age in which it was designed: the industrial revolution. Students are educated in an assembly line to make their standardized education efficient. They are asked to sit in nice neat rows, listen to an "expert" expound on a subject, and recall the learned information on an exam. Yet somehow, in this climate, all students are expected to receive the same education. The weakness of the traditional approach is that not all students come to class prepared to learn. Some lack adequate background for the material, are uninterested in the subject, or have simply been disenchanted with the present educational model.

For the better part of a decade, educators have been told to provide a personalized education for each student, and most educators believe that personalization is a positive goal to reach for each student. However, the logistics of personalizing 150 different educations each day seems insurmountable to most teachers. Exactly how can a teacher personalize the education of so many kids? How can she ensure that every student learns when there are so many standards to cover? Personalization is truly overwhelming for most educators, and they end up taking the shotgun approach to teaching: present as much content as they can in the time they have, and hope that it hits as many students as possible—and sticks.

When we began flipping our classrooms, we quickly realized that we had stumbled on a framework that enables teachers to effectively personalize the education of each student—the goal of educators since the concept of individualized learning first appeared. As we present our flipped classroom model to educators around the world, many have said, "This is reproducible, scalable, customizable, and easy for teachers to wrap their minds around."

You may also have noticed some similarities between a flipped classroom and other educational models such as blended learning, reverse instruction, inverted classroom, and 24/7 classroom. All of these models have similar features and could possibly be interchangeable in certain contexts.

The Flipped Classroom Grows

As we began this journey, we had no idea that what we were doing was going to spread beyond our four walls. Then, out of the blue, we got an email from a neighboring school district wanting us to come and tell them about the flipped model.

They even offered to pay us! So we packed our bags and spent a day in Cañon City, Colorado. Most teachers have sat in staff development training where the principal or superintendent has brought in some "expert"—someone from out of town with a slide show. Well, we were those experts. When we started most of the teachers were sitting

there with glazed expressions, as if they were daring these two yahoos to capture their attention.

As we shared our story, their slumped bodies began to become straighter. Soon the teachers in the audience were asking questions and showing genuine interest in the flipped model. And then as we broke them into groups to begin practicing how to make their own videos, we realized we had stumbled on something that was much bigger than ourselves. One seasoned teacher told us that in 26 years of teaching, our presentation and workshop was the most valuable professional development day he had ever attended. I do not know if his comment had as much to do with our presentation skills as it did with the simplicity and reproducibility of the model we presented.

A few weeks later, our assistant principal came into our rooms and asked us, were we expecting anybody from Channel 11? Much to our surprise, the education reporter from one of the news stations had heard about us and had just shown up on our doorstep. The reporter made a short news clip about what we were doing ... and, as they say, the rest is history. We were invited to speak at conferences, asked to train educators at schools, districts, and even colleges, and spoke about the flipped classroom across the United States, Canada, and Europe.

The Flipped Mastery Class Begins

Then, one day, our world was rocked by conversations with some of our students. At the end of every year we give students a comprehensive project. In this project, they are asked to analyze a household substance and chemically determine some quantitative property of that substance. The year we implemented the flipped model, students were supposed to analyze a soft drink and determine the percentage of phosphoric acid in the beverage. We have done this project for years, and we were expecting that this group of students, the first who had learned in the flipped model, would set a new standard for good results. When students finish this project, each group has an oral interview with the teacher. In that interview, we ask some key conceptual questions that get to the heart of what students should have learned in chemistry. We were surprised and disappointed to find that, although this group of students had performed better on tests than students in the past, some of their responses in the interview made it seem that they had learned just for the test, instead of really mastering the essential concepts all chemistry students should learn.

On further reflection, we determined that despite our best efforts to meet the needs of all students, we were still pushing our kids through our curriculum whether they were ready to move on or not. We began to wonder if we could set up a flipped classroom that also had elements of a mastery-learning environment (students learning a series of objectives at their own pace). Our conversation went something like this: In the traditional flipped model (It feels strange to say that there is a "traditional" flipped model!), all students watch the same video on the same night. Then, in class, all students complete the same activity or lab. But now that we have a library of instructional videos, why does every student need to be on the same topic at the same time?

Another thing that got us thinking about the flipped-mastery model was the entrance of a foreign exchange student into Jonathan's class. The counselors came to

Jonathan and asked him if a student could join his chemistry class at the beginning of the second semester. When Jonathan asked about her previous chemistry class, he was told that she had no background. Before we made our videos, there would have been no way to allow such a student into class in the middle of the year. As Jonathan thought it through, he realized that he had a whole library of videos made for chemistry. She could work through them at her own pace. He took the student into his class. She started at Unit 1 and worked her way through the chemistry curriculum. In our course we have 10 units that cover the entire year. She got through 8 of the 10 in one semester. As we observed her work, we began to think about a system where all students worked through the material as they mastered the content at their own pace. Our ultimate goal is for all students to really learn chemistry. We wondered if we could set up a system in which students progress through the course as they master the material. You must understand that we had never been trained in how to implement a mastery system of learning. Subsequently, we discovered that mastery learning has been around for a long time. A great deal of research has been done on how to implement such a system. We didn't consult the literature, we didn't do any research: we simply jumped in.

Our first year of teaching with the flipped-mastery model was a year with a steep learning curve. We made a lot of mistakes. When that year was over, we looked at each other and asked, "Should we continue with this?" Both of us realized that we could not go back. We had seen our students learning chemistry more deeply than ever before, and we were convinced. Our method was changing students' abilities to become self-directed learners.



Aaron Sams – An educator since 2000, FLN chair [Aaron Sams](#) recently became the Director of Digital Learning and Director of Admissions at the Reformed Presbyterian Theological Seminary in Pittsburgh, PA. Prior to this, he was a chemistry teacher at Woodland Park High School in Woodland Park, CO. He was awarded the 2009 Presidential Award for Excellence in Math and Science Teaching and served as co-chair of the Colorado State Science Standards Revision Committee. He frequently speaks and conducts workshops on educational uses of screencasts and the Flipped Classroom concept. He believes strongly in student-centered learning environments, where students are encouraged to learn and demonstrate their understanding in ways that are meaningful to them. He holds a B.S. in Biochemistry and an M.A.Ed. both from Biola University. Additional information can be found at www.aaronsams.com.



Jon Bergmann – Secretary/treasurer for the FLN, [Jonathan Bergmann](#) is considered one of the pioneers in the Flipped Class Movement. He is co-author of the book, *Flip Your Classroom: Reach Every Student in Every Class Every Day*. Jon believes educators should ask one guiding question: What is best for my students in my classroom? To the best of his abilities he has done this in his twenty-four years as a high school science teacher. He received the Presidential Award for Excellence for Math and Science Teaching in 2002 and was named Semi-Finalist for Colorado Teacher of the Year in 2010. He serves on the advisory board of TED Education. He hosts “The Flip Side,” a radio show which tells the stories of Flipped Educators. He is the father of three and is happily married to the love of his life. He blogs at jonbergmann.com.

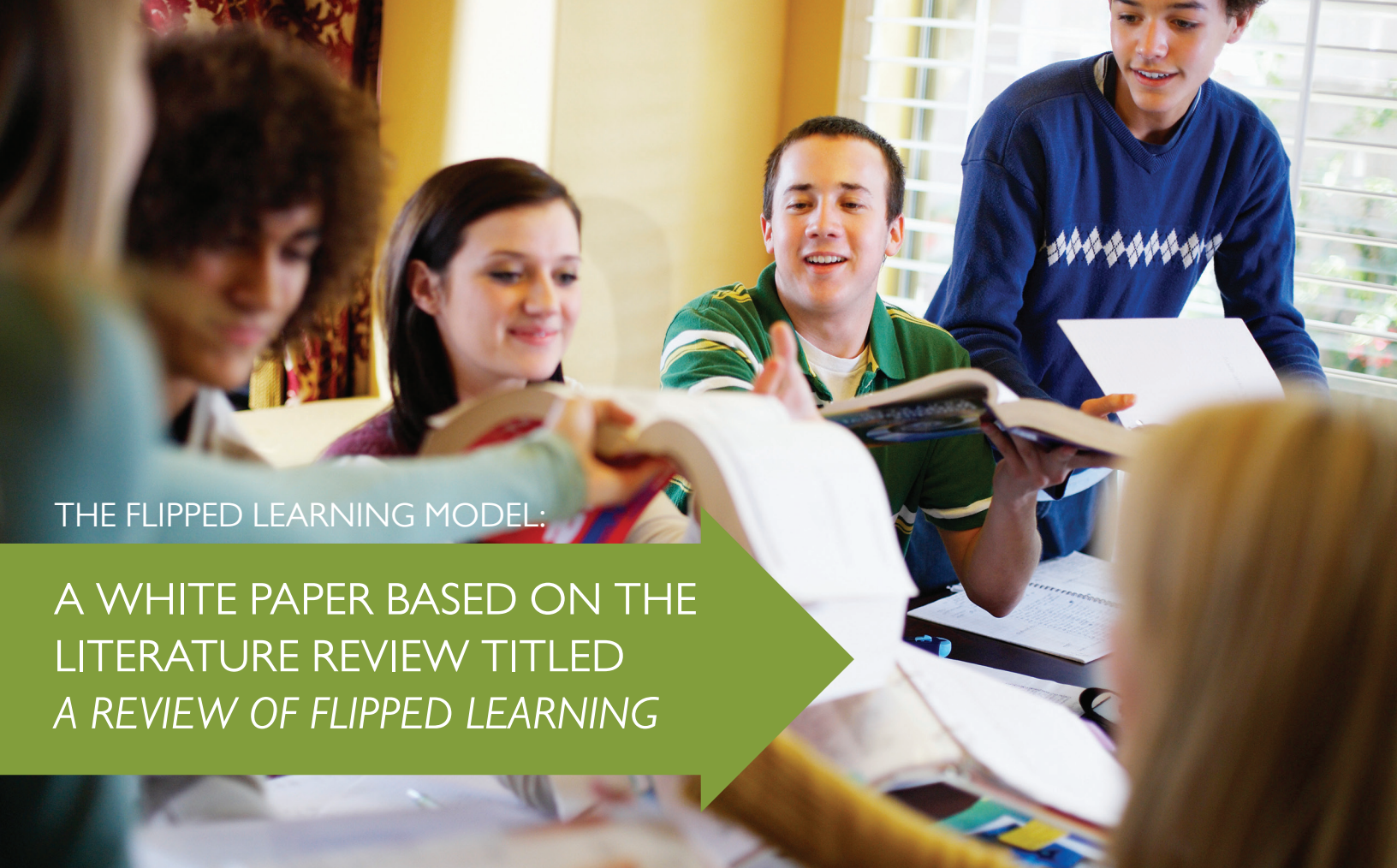


Flip YOUR Classroom

Reach Every Student
in Every Class Every Day

Jonathan Bergmann
Aaron Sams

 **iste.** **ASCD**



THE FLIPPED LEARNING MODEL:

A WHITE PAPER BASED ON THE LITERATURE REVIEW TITLED
A REVIEW OF FLIPPED LEARNING

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PEER REVIEW SUPPORT FROM

the FLN's Research Committee





ACKNOWLEDGEMENTS

Thank you to the following educators who reviewed various versions of this literature review, white paper and executive summary. Their input was invaluable to the creation and editing of these documents.

Special thank you to the following for their editorial assistance and careful review:

Lori Brown, Ed.D., Pearson School Achievement Services (Asheville, NC)

Richard Lee Colvin (Washington, D.C.)

Barbara Hockstader, Pearson (New York, NY)

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A teacher stands at the front of the classroom, delivering a lecture on the Civil War and writing on a white board. Students are hunched over desks arranged in rows, quietly taking notes. At the end of the hour, they copy down the night's homework assignment, which consists of reading from a thick textbook and answering questions at the end of the chapter. This dramatic, defining period in our nation's history, which left questions unanswered that are as relevant today as they were then, has been reduced to a dry, familiar exercise. The teacher is acutely aware that many students do not understand the day's lessons, but does not have the time to meet with them to help during the 50-minute class period. The next day the teacher will collect the homework and briefly review the previous night's reading assignment. But if students have additional questions there won't be time to linger; the class cannot fall behind schedule. There is a lot of material to cover before the test at the end of the unit.

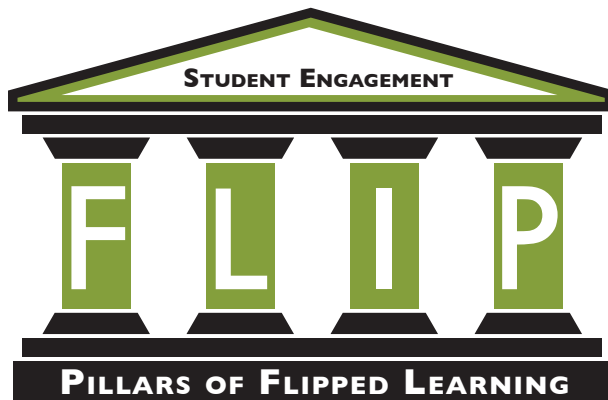
Although it conflicts with decades of research into effective practices, this model of instruction remains all too common in American K-12 and postsecondary classrooms. However, more and more educators now recognize that the learning needs of students, rather than the curriculum pacing guide, should drive their instruction. Educators are developing ways to personalize learning, using technologies such as video, digital simulations, and computer games. However, unless the traditional teaching model is altered, technologies such as these will have limited effects. One alternative model gaining attention and advocates is called Flipped Learning. In this model, some lessons are delivered outside of the group learning space using video or other modes of delivery. Class time, then, is available for students to engage in hands-on learning, collaborate with their peers, and evaluate their progress, and for teachers to provide one-on-one assistance, guidance and inspiration.

Two rural Colorado chemistry teachers, Jonathan Bergmann and Aaron Sams, are often referred to as the pioneers of Flipped Learning. Concerned that students frequently missed end-of-day classes to travel to other schools for competitions, games or other events, they began to use live video recordings and screencasting software in 2007 to record lectures, demonstrations, and slide presentations with annotations. Those materials were then posted on the then-nascent YouTube for students to access. In a book on their work called *Flip Your Classroom: Reach Every Student in Every Class Every Day* (2012), Bergmann and Sams reported that after they flipped their classroom, students began interacting more in class and, because time could be used more flexibly, students who were behind received more individual attention while advanced students continued to progress.

In 2012, Sams and Bergmann started the not-for-profit Flipped Learning Network™ (FLN) to provide educators with the knowledge, skills, and resources to successfully implement the Flipped Learning model. The online Community of Practice called the FLN Ning, is a free website for educators who have flipped or wish to flip their classes. To gauge the growth of interest, in January 2012, about 2,500 educators were members; by March 2013, more than 12,000 educators were participating in the Network's Ning.

With interest continuing to grow, the Flipped Learning Network™, with the support of Pearson and researchers at George Mason University, undertook a comprehensive review of research relevant to the model.¹ This white paper defines and describes the Flipped Learning model, briefly note its historical foundations and address common misconceptions. We discuss some of the learning theories that underlie Flipped Learning and describe limited empirical research findings.

¹ See www.flippedlearning.org/review for full length review.



DEFINING FLIPPED LEARNING

In a Flipped Learning setting, teachers make lessons available to students to be accessed whenever and wherever it is convenient for the student, at home, in class, during study hall, on the bus to a game, or even from a hospital bed. Teachers can deliver this instruction by recording and narrating screencasts of work they do on their computers, creating videos of themselves teaching, or curating video lessons

from trusted Internet sites. Students can watch the videos or screencasts as many times as they need to, enabling them to be more productive learners in the classroom. Since direct instruction is delivered outside the group learning space, teachers can then use in-class time to actively engage students in the learning process and provide them with individualized support.

Those are the basic elements of a flipped classroom but, as with traditional classrooms, no two flipped classrooms are identical. While there is no “how-to” list associated with the Flipped Learning model, there are unifying themes. A cadre of experienced educators from the Flipped Learning Network, along with Pearson (2013), identified those four Pillars of F-L-I-P™, an acronym of Flexible Environment, Learning Culture, Intentional Content, and Professional Educator.²



FLIPPED LEARNING REQUIRES FLEXIBLE ENVIRONMENTS

Flipped classrooms allow for a variety of learning modes; educators often physically rearrange their learning space to accommodate the lesson or unit, which might involve group work, independent study, research, performance, and evaluation. They create Flexible Environments in which students choose when and where they learn. Flipped educators accept that the in-class time will be somewhat chaotic and noisy, as compared with the quiet typical of a well-behaved class during a lecture. Furthermore, educators who flip their classes are flexible in their expectations of student timelines for learning and how students are assessed. Educators build appropriate assessments systems that objectively measure understanding in a way that is meaningful for students and the teacher.

² The four Pillars of F-L-I-P™ are Flexible Environment, Learning Culture, Intentional Content, and Professional Educator.



FLIPPED LEARNING REQUIRES A SHIFT IN LEARNING CULTURE

In the traditional teacher-centered model, the teacher is the main source of information, the teacher is the “sage on the stage” (King, 1993), i.e. the sole content expert who provides information to students, generally via direct instruction lecture. In the Flipped Learning model, there is a deliberate shift from a teacher-centered classroom to a student-centered approach, where in-class time is meant for exploring topics in greater depth and creating richer learning opportunities. Students move from being the product of teaching to the center of learning, where they are actively involved in knowledge formation through opportunities to participate in and evaluate their learning in a manner that is personally meaningful. Students can theoretically pace their learning by reviewing content outside the group learning space, and teachers can maximize the use of face-to-face classroom interactions to check for and ensure student understanding and synthesis of the material. Flipped educators help students explore topics in greater depth using student-centered pedagogies aimed at their readiness level or zone of proximal development, where they are challenged but not so much so that they are demoralized (Vygotsky, 1978).



FLIPPED LEARNING REQUIRES INTENTIONAL CONTENT


Flipped educators evaluate what content they need to teach directly, since lectures are an effective tool for teaching particular skills and concepts, and what materials students should be allowed to first explore on their own outside of the group learning space. They continually think about how they can use the Flipped Learning model to help students gain conceptual understanding, as well as procedural fluency. Educators use Intentional Content to maximize classroom time in order to adopt various methods of instruction such as active learning strategies, peer instruction, problem-based learning, or mastery or Socratic methods, depending on grade level and subject matter. If they continue to teach using a teacher-centered approach³, nothing will be gained.



FLIPPED LEARNING REQUIRES PROFESSIONAL EDUCATORS

Some critics of Flipped Learning have suggested that the instructional videos employed in the model will eventually replace educators. That is misguided. In the Flipped Learning model, skilled, Professional Educators are more important than ever, and often more demanding, than in a traditional one. They must determine when and how to shift direct instruction from the group to the individual learning space, and how to maximize the face-

³ The teacher-centered approach as described by Huba and Freed (2000) emphasizes a passive student role in learning as teachers transmit knowledge, outside of the context in which it will be used. The teacher is the primary information giver and evaluator, and assessment is used to monitor learning, with an emphasis on the right answers.



to-face time between teachers and students. Gojak (2012) noted that the right question for educators to ask themselves is not whether to adopt the Flipped Learning model, but instead, how they can utilize the affordances of the model to help students gain conceptual understanding, as well as procedural fluency when needed. During class time, educators continually observe their students, provide them with feedback relevant in the moment, and continuously assess their work. Professional Educators are reflective in their practice, connect with each other to improve their trade, accept constructive criticism, and tolerate controlled classroom chaos. While Professional Educators remain very important, in a Flipped Learning model, they take on less visibly prominent roles in the classroom.

RESEARCH ON FLIPPED LEARNING

Quantitative and rigorous qualitative research on Flipped Learning is limited, but there is a great deal of research that supports the key elements of the model with respect to instructional strategies for engaging students in their learning. As mentioned throughout this paper, a key feature of the Flipped Learning model is the opportunity to increase active learning opportunities in the classroom by shifting direct instruction outside of the larger group learning space. A significant body of research on active learning strategies supports the effectiveness of these approaches in increasing student learning and achievement (e.g., see Prince, 2004).

Active learning provides students with opportunities to interact with content through reading, writing, listening, talking, and reflecting (University of Minnesota Center of Learning and Education, 2008). Evidence indicates that active learning also improves student academic performance (Hake, 1998; Knight & Wood, 2005; Michael, 2006; Freeman et al., 2007; Chaplin, 2009); increases student engagement and critical thinking; and improves student attitudes (O'Dowd & Aguilar-Roca, 2009). Akinoglu and Tandogan (2006) showed that problem-based active learning in science courses has a positive influence on student academic achievement and attitudes and conceptual development. The researchers also found that students who engaged in active learning had significantly fewer misconceptions.

Eric Mazur at Harvard University is a leading researcher on “peer instruction” (1996), which emphasizes the kind of in-class interactional elements made more practical in a flipped classroom. In a talk he gave in 2011, he discussed how assistive technology allowed students to respond and give feedback during the peer instruction session, demonstrating how the process maximizes time with the instructor and increase the focus on higher order thinking skills. In traditional settings, students use such time for note taking and repeating information.⁴

In Mazur’s model, students are engaged by having them confront the logical progression of their thinking and their misconceptions. “Once you engage the students’ minds, there’s an eagerness to learn, to master,” Mazur explained (Berrett, 2012). Bloom (1984) observed that the constant feedback and correction students receive significantly improves learning and achievement. Additionally, decades of research on how student misconceptions can interfere with learning, indicate the importance of strategies to identify and overcome those misconceptions (e.g., Lohead & Mestre, 1988).

⁴ Keynote at the Building Learning Communities conference in Boston, 2012.

In addition to research on active learning and peer instruction that supports several proposed mechanisms of the Flipped Learning model, Ramsey Musallam, a chemistry teacher in San Francisco and adjunct professor of education at Touro University, researched the effects of pre-training (receiving instruction prior to in-class instruction) on in-class learning. His study found, not surprisingly, that students who had studied material outside of class found it to be easier to learn new material in class (Musallam, 2010). This and other studies (Ayers, 2006; Mayer, 2009) suggest that pre-training may be an effective means of managing intrinsic cognitive load, thus facilitating learning.

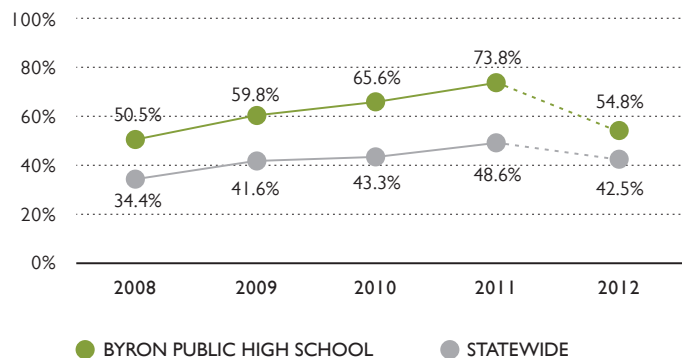
Little formal data exist to show the effect of Flipped Learning on special populations, such as English language learners. But it is reasonable to think that they would benefit in several ways. Marshall and DeCapua (2013) note that, in traditional classrooms, English language learners “put most of their effort into the lower levels” of Bloom’s Taxonomy (understanding and remembering) as they attempt to follow the teacher’s instruction. In the flipped classroom, the teacher moves lower levels of the taxonomy outside of the class where students work on mastering concepts and can pause, rewind and review the lesson at any time. In class, the teacher and students can focus on the upper levels of the taxonomy (applying, analyzing, evaluating, and creating). The researchers also note this model increases opportunities for in-class interaction with native speakers, which can help English language learners further develop their academic language proficiency and confidence in their speaking abilities. As more classes are flipped and data are collected on learners with diverse needs and backgrounds, it will be important to monitor the effects and possible benefits.

FLIPPED LEARNING RESULTS

K-12 EDUCATION

While there is little empirical research on the effects of Flipped Learning on student achievement, the research that does exist generally consists of teacher reports on student achievement after adopting the model (based on course and/or state test scores), descriptions of flipped classrooms, course completion

MATH II ALL STUDENTS



* Test format changed in 2012, and are not equally comparable to previous year scores

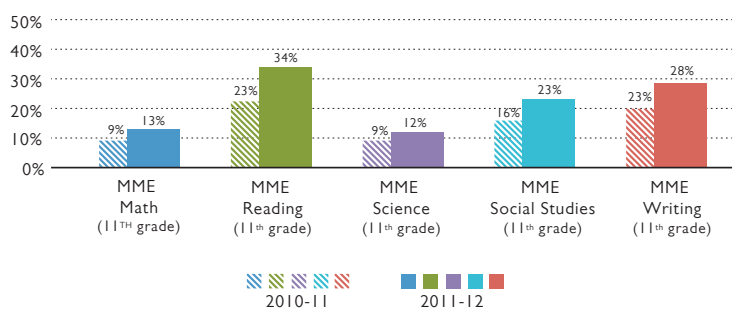
rates, and survey research measuring an array of outcomes, such as teacher, student and parent attitudinal changes. This research, as well as case studies such as the following, further suggests that the Flipped Learning model is promising and warrants further inquiry.⁵

Byron High School in Minnesota embraced the Continuous Improvement model in 2006 in an attempt to improve student achievement in mathematics. In 2006, less than one-third of students (29.9%) passed the state mathematics test (Minnesota Comprehensive

⁵ More detailed descriptions of these as well as several other case studies, are found in the full literature review of Flipped Learning, available at www.flippedlearning.org/review. Likewise, an executive summary is available at www.flippedlearning.org/summary

Assessments) and ACT composite scores averaged 21.2. The school's textbooks were outdated but no money was available to replace them. In 2009 the math department decided to eliminate textbooks. The teachers wrote a curriculum, identified materials available for free on the Internet, and flipped their high school math classrooms (Fulton, 2012). The teachers committed themselves to monitoring achievement data and analyzing students' needs. By 2011, the percentage of students passing the state test had increased to 73.8%, and the school's average ACT composite score had improved to 24.5. Moreover, by 2012, 86.6% of Byron's seniors had completed four or more credits of math. In recognition of these gains, Byron High School was designated a National Blue Ribbon School in 2010. The school also won the Intel Schools of Distinction award for High School Mathematics in 2011 (Fulton, 2012).

CLINTONDALE ACHIEVEMENT INCREASES ON MICHIGAN MERIT EXAM (MME)



Teachers at Clintondale (MI) High School struggled to connect with students using lecture-centered teaching models. Located in a suburb of Detroit, three-quarters of Clintondale's students were from low-income families. To better address the students' needs, the school flipped all of its 9th grade classes in 2010


(Clintondale High School, 2013). By the end of the first semester, they were seeing results. According to the school's principal Greg Green (2012), failure rates dropped by as much as 33 percentage points. Additionally, the number of student discipline cases dropped from 736 in 2009 to 249 in 2010 and to 187 in 2011, a drop of 74% in two years. Parent complaints also dropped after the change in instructional models, from two hundred down to seven. Encouraged by these results, the principal converted the entire school to a Flipped Learning model in fall 2011.

HIGHER EDUCATION

Flipped Learning is also being used in higher education and, similar to the early indications from K-12, seems to be resulting in improved student performance and student and instructor morale. In one example (Papadopoulos & Roman, 2010), students in an electrical engineering class watched lectures on their own and worked on exercises and problems during class time. The professors observed that students progressed faster enabling them to cover more material at a greater depth. Three-quarters of the students in those classes said they frequently or always helped their peers with their learning. Test scores exceeded those of students in the traditional learning environment.

The Introduction to Digital Engineering course at California State University, Los Angeles for freshmen and sophomores has been largely devoted to collaborative project-based learning since 2008. The class was flipped to increase professor-student interactions and make learning more active. The shift seems to have been deepened students' understanding and improved their design skills (Warter-Perez & Dong, 2012).

Not all research on Flipped Learning in higher education has indicated positive effects. It may not be the best structure, for example, for an introductory course. Most students who enroll in those courses may not have developed deep interest in them. Also, they may not have the skills they need to solve problems that are not clearly defined. For example, students in a flipped college introductory statistics course reported being less than satisfied with the way they were prepared for the tasks they were given (Strayer, 2012).



Students in a research methods and statistics class were unsatisfied with the instruction they received on line but appreciated the opportunity to collaborate with peers in the classroom (Frederickson, Reed, & Clifford, 2005). There were no significant differences found in improvements in knowledge and reductions in anxiety between the two versions of the course.

A study of a computer applications course in which some students took a flipped version and some did not also found no significant differences in test scores (Johnson & Renner 2012). One reason might have been that the course instructor was asked to offer the two versions, absent any perceived need.

PERCEPTIONS FROM TEACHERS, ADMINISTRATORS, AND PARENTS

A modest amount of research exists from individual educators who practice the Flipped Learning model and their views on behalf of their pupils. Until recently, Flipped Learning has been mainly a grassroots movement, but now principals and superintendents are inquiring more about this model, as well as parents of students in flipped classes. A number of surveys have been conducted with these three groups and are highlighted below.


Teachers: In fall 2012, over 466,000 K-12 students, parents, teachers, and administrators participated in the annual Speak Up online surveys facilitated by the national education nonprofit organization, Project Tomorrow© (2013). Specific questions about Flipped Learning were asked for the first time. The survey defined Flipped Learning as a model in which students watched instructional videos as homework and class time was used for “discussions, projects, experiments and to provide personalized coaching to individual students.” Of the more than 56,000 teachers and librarians who responded, 6% indicated they were using videos they found online and 3% said they had already created videos as part of flipping their classroom.

“This new model is challenging teachers to reflect on their practice and rethink how they reach their students. It is an approach that encourages students to set the pace for truly individualized instruction. It is a catalyst for teachers, administrators, and students to change the way things have always been done.”

*Joe Corcoran, Principal,
Harriet Gifford Elementary School, Elgin, IL*

The survey also found that 18% of teachers and 27% of administrators said they were interested in trying Flipped Learning this year. Twenty percent of teachers said they wanted to learn more about how to create instructional videos for their students to watch and 15% wanted to learn how to implement a flipped classroom model.

Nearly 60% of the students in grades 6-12 who participated in the Speak Up surveys agreed with the statement that Flipped Learning “would be a good way for me to learn.” The May, 2013, issue of the School Administrator, published by the American Association of School Administrators (AASA) (www.aasa.org) dedicated the publication to Flipped Learning: Upending time on task in school and at home. <http://www.aasa.org/>



A survey of 450 teachers, conducted by ClassroomWindow in conjunction with the Flipped Learning Network (2012), found that teachers who were using Flipped Learning associate it with improved student performance and attitudes and increased job satisfaction. Of the teachers surveyed, 66% reported their students' standardized test scores increased after flipping their classrooms. Eight in 10 perceived an improvement in their students' attitudes towards learning. Nearly 90% reported an improvement in their own job satisfaction, with 46% reporting significant improvement.

Students: Nearly 60% of the students in grades 6-12 who participated in the Speak Up surveys agreed with the statement that Flipped Learning “would be a good way for me to learn.” Close to 80% of student respondents to the Flipped Learning and Democratic Education survey in 2012 said they experienced more frequent and positive interactions with teachers and peers during class time.⁶ All of the 26 educators surveyed agreed that, since flipping their classrooms, learning has become more active. Over 90% said that positive interactions between students and teachers have increased. The survey was small but it does suggest that Flipped Learning is changing the mode of in-class instruction. The students surveyed said they have more access to course materials and instruction; more opportunities to work at their own pace; more choices of how to demonstrate their learning; and that they were more likely to view learning as an active process. (Child Trends, 2010).

FLIPPED LEARNING AND DEMOCRATIC EDUCATION SURVEY

80% of students agree that they...

- Have more constant and positive interactions
- Have greater opportunities to work at own pace
- Have greater access to course material and instruction
- Have more choice in how they demonstrate their learning
- View learning as a more active process

70% of students agree that they...


- Are more likely to engage in collaborative decision making
- Are more likely to engage in critical thinking and problem solving
- Teacher is more likely to take into account their interests, strengths, and weaknesses
- Are more likely to have a choice in what learning tasks they engage in

Parents: The Flipped Learning model differs from the traditional classrooms in significant ways. Whenever children's homework changes, as it will with Flipped Learning, parents need to be on board. With Flipped Learning, parents may welcome the opportunity to watch videos with their children to gain a better understanding of what they are learning and may become more involved as a result. Parents of 5th grade math students who participated in a pilot project in Stillwater, Minnesota reported that their children's attitudes

towards math were either the same or improved, their children were doing better in math, and wanted the flipped approach to be continued (Stillwater, 2012).

Karen Cator, former director of the office of educational technology for the U.S. Department of Education, also says that Flipped Learning may increase parents' participation in their students' learning. Cator acknowledges that while the trend is growing, more research is required in order to determine its effectiveness (Baker, 2012).

⁶ Flipped Learning and Democratic Education survey conducted by Tom Driscoll at Teachers College, Columbia University in 2012 was completed by 26 educators and 203 students from across the United States.



Administrators: Of the more than 6,000 administrators who responded to the same SpeakUp survey, 23% said that their teachers are using videos they found online and 19% reported that their teachers are creating their own videos for use in Flipped Learning. Teachers and site administrators agreed that the following hindrances, however, are keeping them from flipping their classrooms: concern that students might not have access to the Internet at home; the teachers' needs for professional development to help them learn to make or find high quality videos; and how to best utilize the additional classroom time (Speak Up survey, 2012).

“I am certain many of my colleagues across central Illinois thought I had indeed flipped out... We were proposing the entire high school staff. Our failure rate was simply too high to accept. Principal Don Willett and I set out to change the course of our education content delivery system — and ultimately the lives of our 350 students.”


*Patrick Twomey, Superintendent,
Havana School District #12 Havana, IL*

CONCERNS ABOUT FLIPPED LEARNING

Skeptics of Flipped Learning say that there is little that is new in it. They say that good teachers always try to meet the needs of individual students and use the tools that will help them do that. That is true. And, as noted previously, the potential of Flipped Learning lies not in the videos but in how delivering direct instruction in a different environment opens up time and space inside the classroom to engage in higher leverage instructional practices and individualize learning. Teachers need to be thoughtful about how to maximize the opportunity for students to become active learners who are empowered to take charge of their own learning. Even critics acknowledge that the changeover to the Flipped Learning model encourages teachers to re-evaluate their teaching (e.g., Stumpfenhorst, 2012).

Another concern is voiced by teachers and others who believe Flipped Learning undervalues the power of good, engaging, face-to-face Socratic teaching. Critics worry they won't have the opportunity to do that kind of teaching because class time is devoted to students collaborating, student-generated and -led activities, and other interactive exercises. However, Marshall (2013) points out that teachers are more important than ever in Flipped Learning. However, instead of the teacher lecturing to students, their role is to “lead from behind.” In other words, the teacher has the tasks of “observation, feedback, and assessment” and guiding the learners' thinking, in the best spirit of the Socratic Method. The difference, and perhaps a major benefit, according to Marshall (2013) is that this instruction is spontaneous, cannot be planned out, and is relevant for the learners at that moment. Furthermore, the learners themselves can fill these same three roles as they observe and provide feedback to each other during class and as they assess their own learning.

Gary Stager, an educator, speaker, and journalist, is a critic of Flipped Learning. He voiced three major concerns during a 2012 radio debate with Aaron Sams on Southern California Public Radio (2013). First, he asserts that, the model emphasizes traditional homework and lectures, although their position is flipped. Second, he says that the demand for Flipped Learning results from flaws in the curriculum, which require that students study ahead of time. Finally, he argues that the Flipped Learning model is a means of standardizing learning. He worries that in the future that the direct instruction delivered via video will be outsourced to mediocre, low-cost teachers to replace more highly paid veteran teachers.



Should Flipped Learning devolve into little more than lectures and routinized, low-level homework exercises, Stager would certainly have a point. An instructional model is but a framework and, whether it succeeds or not, depends almost entirely on the implementation. Boring lectures can be delivered digitally almost as easily as they can be presented in class and class time in a Flipped Learning model could be taken up with filling out worksheets and doing computerized drills. But that is not the intent nor is it inevitable. Indeed, teaching successfully in a flipped classroom is even more demanding than is traditional teaching. So, if Flipped Learning is to succeed, teachers will need to be trained and supported in how to engage students more deeply in content.

In regard to Stager's concern about mass-produced, cheaply made videos becoming the mainstay of flipped classrooms, Sams and Bergmann think that the model works best when teachers make their own videos for their own classes. However, the use of videotaped lessons does make it possible for the teacher to find great instruction produced by others, such as those found on Khan Academy or TED-Ed. Those lessons could introduce students to an alternative style of teaching or supplement lessons on subjects or provide lessons in areas in which their teacher is not expert.

Another concern that is raised is that not all students have access to the high-speed Internet or computers. While this is a legitimate concern, it should be noted that home access to computers and the Internet has expanded greatly over the last two decades. In 2010, almost six out of every ten children ages 3 to 17 used the Internet and almost 85% had access to a computer at home. Moreover, the ways that even low-income students can access digital content are increasing rapidly. (Child Trends, 2012)


Flipped Learning might not work for all educators and students. Not all educators are successful in their implementations and there have been students who after trying the flipped classroom experience, prefer traditional learning. In their book, Bergmann and Sams (2012) noted that for lower elementary grades, Flipped Learning might be appropriate for certain lessons or units, but not entire classes.

Moreover, as we illustrate throughout this paper, more qualitative and quantitative research needs to be done to identify how the potential of the model can be maximized. The existing research clearly demonstrates that the Flipped Learning model can be one way to create a classroom environment that is learner-centered. This is something that most teachers want to do but are constrained by the current organization of schools and other barriers. Michael Gorman (2012) observed that any learner-centered educator would provide activities in the classroom that are action based, authentic, connected and collaborative, innovative, high level, engaging, experience based, project based, inquiry based, and self-actualizing. The Flipped Learning model provides that bridge to a learner-centered classroom environment, thereby enabling deeper learning (Bergmann & Sams, 2012) that educators are seeking.



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THE FLIPPED LEARNING MODEL: EXECUTIVE SUMMARY

With interest continuing to grow around this topic, the Flipped Learning Network™, along with researchers from George Mason University and with support from Pearson, undertook a comprehensive review of research relevant to the Flipped Learning model. Members of the FLN's Research Committee contributed to the extensive bibliography and reviewed the full length Literature Review. A list of the authors, contributors and committee members can be found in the Literature Review and accompanying White Paper.

DEFINITION

The Flipped Learning model of instruction, while virtually unknown a few years ago, is gaining attention and adherents among teachers and administrators in American K-12 and postsecondary classrooms. In this model, some or most of direct instruction is delivered outside the group learning space using video or other modes of delivery.

Class time, then, is available for students to engage in hands-on learning, collaborate with their peers, and evaluate their progress and for teachers to provide one-on-one assistance, guidance and inspiration.

The shift is from a teacher-centered classroom to a student-centered learning environment.

In 2007, two rural Colorado chemistry teachers, Jonathan Bergmann and Aaron Sams, often referred to as the pioneers of flipped learning, were concerned that students frequently missed end-of-day classes to travel to other schools for competitions, games, and other events. They began to use live video recordings and screencasting software to record lectures, demonstrations, and slide presentations with annotations. In their book *Flip Your Classroom: Reach Every Student in Every Class Every Day* (2012), they reported that after they flipped their classrooms, students began interacting more in class, and because time could be used more flexibly, students who were behind received more individual attention while advanced students continued to progress.

RESEARCH AND RESULTS

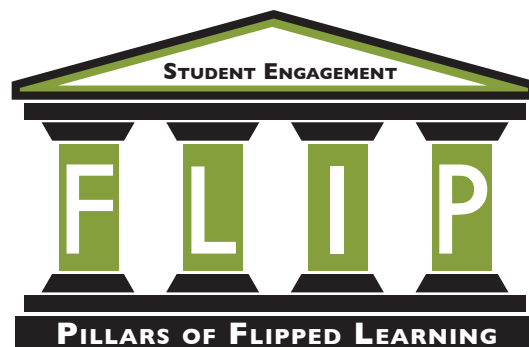
Quantitative and rigorous qualitative data on Flipped Learning is limited, but there is a great deal of research that supports the key elements of the model with respect to instructional strategies for engaging students in their learning.

The research on Flipped Learning that does exist generally consists of teacher reports on student achievement after adopting the model (based on course and/or state test scores), descriptions of flipped classrooms, course completion rates, disciplinary actions, and surveys measuring an array of outcomes, such as teacher, student and parent attitudinal changes.

In general, teachers who are flipping their classrooms report higher student achievement, increased student engagement, and better attitudes toward learning and school. Many flipped teachers report that their job satisfaction has improved and are feeling re-energized by their heightened interaction with students. This initial research suggests that the Flipped Learning model is promising and warrants further inquiry.

Experienced educators involved in the not-for-profit Flipped Learning Network™, along with Pearson identified four essential elements of Flipped Learning. While there is no “how-to” list associated with the Flipped Learning model, there are several unifying themes identified as the four Pillars of F-L-I-P™, an acronym for Flexible Environment, Learning Culture, Intentional Content, and Professional Educator.

THE FOUR PILLARS OF F-L-I-P™



FLIPPED LEARNING REQUIRES:



FLEXIBLE ENVIRONMENTS

Flipped classrooms allow for a variety of learning modes; educators often physically rearrange their learning space to accommodate the lesson or unit, which might involve group work or independent study. They create Flexible Environments in which students choose when and where they learn. Furthermore, educators who flip their classes are flexible in their expectations of student timelines for learning and how students are assessed.



LEARNING CULTURE

In the traditional teacher-centered model, the teacher is the main source of information. In the Flipped Learning model, there is a deliberate shift from a teacher-centered classroom to a student-centered approach, where in-class time is meant for exploring topics in greater depth and creating richer learning opportunities through various student-centered pedagogies. As a result, students are actively involved in knowledge formation through opportunities to participate in and evaluate their learning in a manner that is personally meaningful.



INTENTIONAL CONTENT

Flipped educators continually think about how they can use the Flipped Learning model to help students gain conceptual understanding, as well as procedural fluency. They evaluate what they need to teach and what materials students should explore on their own. Educators use Intentional Content to maximize classroom time in order to adopt various methods of instruction such as active learning strategies, peer instruction, problem-based learning, or mastery or Socratic methods, depending on grade level and subject matter.



PROFESSIONAL EDUCATORS

The role of Professional Educators is even more important, and often more demanding, in a flipped classroom than in a traditional one. During class time, teachers continually observe their students, providing them with feedback relevant in the moment, and assessing their work. Professional educators are reflective in their practice, connect with each other to improve their trade, accept constructive criticism, and tolerate controlled classroom chaos. While Professional Educators remain very important, they take on less visibly prominent roles in the flipped classroom.

FOR MORE INFORMATION

The full length Literature Review titled *A Review of Flipped Learning* includes a review of the research base upon which the Flipped Learning model is built, including student-centered, active learning and Cognitive Load theory, among others; how the model serves diverse student populations; and the role of technology. We also provide an analysis of implementations and results in K-12 schools and institutes of higher education. We address shifting attitudes towards Flipped Learning by educators, administrators, students and parents, and discuss the concerns about the Flipped Learning model.

www.flippedlearning.org/review

A shorter version of the Literature Review is provided in *The Flipped Learning Model: A White Paper*. All of these documents are free, licensed under the Creative Common License.

www.flippedlearning.org/summary

"The biggest and best change in my teaching practice in 25 years!"

IMPROVE

student learning and teacher satisfaction in one Flip of the Classroom

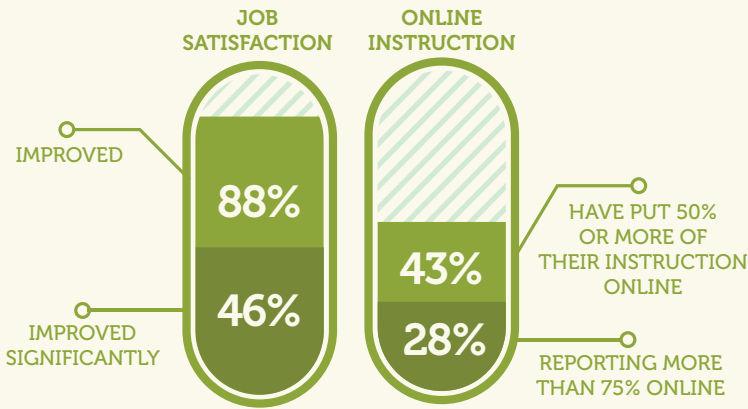
"Game-changing! I can meet more students' needs more often."

What do teachers who've flipped their classrooms have to report?

TeacherView™ Survey On Flipped Classrooms Reveals...

(preliminary data as of 6/21/12, with responses from 453 flipped educators)

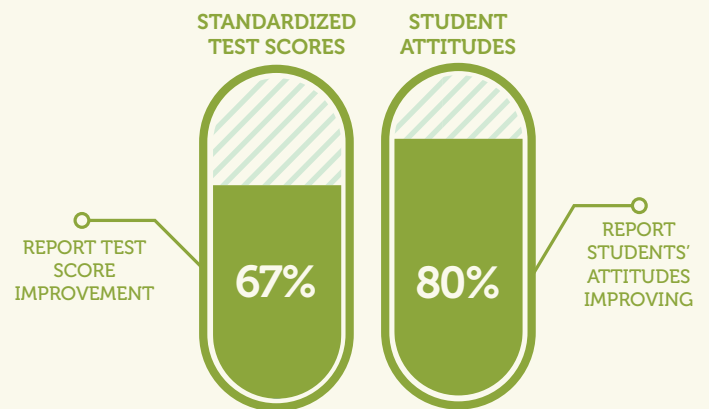
Impact on Teachers



"I will never go back to traditional teaching methods."
"It's differentiation on steroids!"

 **99%** would use it again next year

Impact on Students



"I have taught math for 10 years, and have never seen my students work this hard or learn this much."
"Flipping my classroom has dramatically improved the number and quality of interactions with individual students."

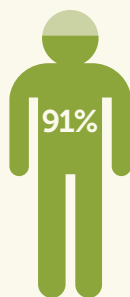
Teachers reported benefits for all students, and in particular AP and Special Needs students. 

Who's Flipping?

"The more I flip, the more I want to flip!"

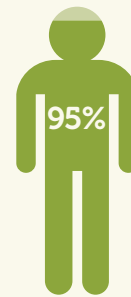
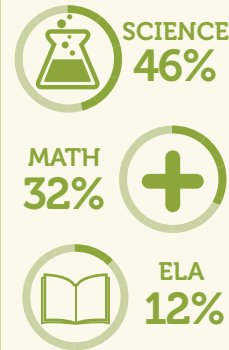


7+ years of teaching



Have used the flipped model less than 2 years

SUBJECTS MOST FREQUENTLY "FLIPPED"



of respondents are secondary school teachers



from suburban schools
25% urban
25% rural

Bergmann and Sams Flipped Learning Websites

<http://flippedlearning.org/site/default.aspx?PageID=1>

<http://flippedclassroom.org>

<http://jonbergmann.com>

<http://www.aaronsams.com/about-aaron/>

Bergmann and Sams Flipped Learning Videos

Teaching for Tomorrow: Flipped Learning

http://youtu.be/4a7NbUIr_iQ

Flipped-Mastery Classroom

<http://www.youtube.com/watch?v=nEfojG9ckYA&feature=share&list=ULnEfojG9ckYA>

The Flipped Classroom is Born

<http://youtu.be/v-y9vR7YTak>

Taking a Risk on At-Risk Kids

http://youtu.be/y2QgtPyk_Gk

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Teachers From 25 Countries Around the Globe Are Flipping Learning Today, the First “Flipped Day”
Hundreds Take the Pledge to Use this Innovative Instructional Model

WASHINGTON, D.C. – Sept. 6, 2013 – Today nearly 400 teachers from 25 countries around the globe are flipping learning in their classrooms in celebration of the first “[Flipped Day](#).” They have taken the pledge to use this innovative model of instruction with their students and discover the ways that it increases student engagement and, ultimately, improves student achievement.

In the Flipped Learning model, some or most of direct instruction is delivered outside the group learning space using video or other modes of delivery. Class time, then, is available for students to engage in hands-on learning, collaborate with their peers, and evaluate their progress and for teachers to provide one-on-one assistance, guidance and inspiration.

Hosted by the Flipped Learning Network, TechSmith, Pearson and the companies listed below, Flipped Day aims to increase awareness of this student-centered instructional model by asking teachers to take the pledge to flip one with the expectation this leads to further flipped units or an entire course.

Teachers flipping lessons today span the subject areas from computer/technology to world languages and teachers at all grade levels took the pledge. The countries represented on “Flipped Day” span the globe with teachers from Argentina and Italy to Singapore and Zimbabwe participating.

While they had the opportunity to use the curated lessons listed below, the majority of educators reported that they were using lessons and videos they created themselves. Topics included: back-to-school procedures; library skills; poetry; mythology; polynomial functions; comparing and ordering whole numbers; adding fractions; self-defense; scientific measurements; aquatic ecology; diet; maps; and life in the colonies.

A recent [review of the literature on flipped learning](#) concluded that while quantitative and rigorous qualitative data on Flipped Learning is limited, there is a great deal of research that supports the key elements of the model with respect to instructional strategies for engaging students in learning. The research that exists demonstrates that teacher who are flipping their classrooms report higher student achievement, increased student engagement and better attitudes toward learning and school. In addition, the teachers report that their job satisfaction has improved.

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GAME CHANGER OR VAPORWARE?
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About the Flipped Learning Network

Founded in 2012, the mission of the Flipped Learning Network™ is to provide educators with the knowledge, skills, and resources to successfully implement Flipped Learning. The goals of the FLN are to provide professional learning opportunities; conduct, collaborate and disseminate relevant research; and act as the clearinghouse for distributing promising practices for current and future “flipped” educators. The FLN’s online professional learning community currently has 15,000 members; growing at a rate of 1,000 per month. For more information, visit www.flippedlearning.org

###



- [Conceptua Math](#) On Sep 26 2013 2:36PM

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- [Califone International, Inc.](#) On Sep 23 2013 2:34PM

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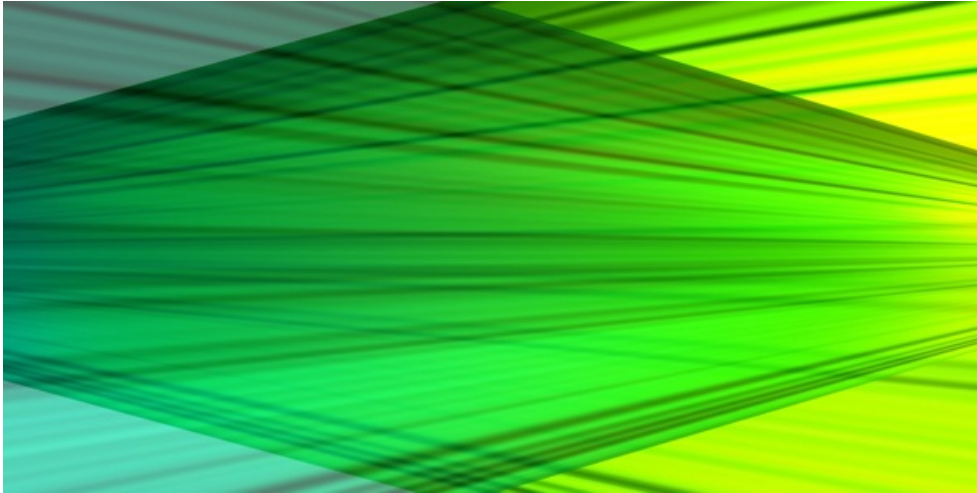
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BOMBS & BREAKTHROUGHS

How the Flipped Classroom Is Radically Transforming Learning

April 15, 2012 11:55 AM



Editor's Note: Posts about the flipped class on The Daily Riff beginning in January 2011 have generated over 240,000 views to-date - thanks contributors and readers . . . See our other links related to the flipped class below this guest post. Since this post was written, Bergmann and Sams have released their book, [Flip your Classroom: Reach Every Student in Every Class Every Day](#). Do check it out. - C.J. Westerberg

How the Flipped Classroom was Born

by Jonathan Bergmann and Aaron Sams

In 2004, we both started teaching at Woodland Park High School in Woodland Park, Colorado. Jon came from Denver and Aaron from Southern California. We became the Chemistry department at our school of 950 students. We developed a friendship and realized that we had very similar philosophies of education. To make our lives easier we began planning our Chemistry lessons together, and to save time we divided up much of the work. Aaron would set up one lab and Jon the next. Aaron would write the first test and Jon the next.

One of the problems we noticed right away about teaching in a relatively rural school is that many of our students missed a lot of school due to sports and activities. The nearby schools are not nearby. Students spent an inordinate amount of time on buses traveling to and from events. Thus, students missed our classes and struggled to stay caught up.

*"And how the Flipped Classroom changes
the way teachers talk with parents . . ."*

And then one day our world changed. Aaron was thumbing through a technology magazine and showed Jon an article about some software that would record a PowerPoint slide-show including voice and any annotations, and then it converted the recording into a video file that could be easily distributed online. As we discussed the potential of such software we realized this might be a way for our students who missed class to not miss out on learning. So in the spring of 2007, we began to record our live lessons using screen capture software. We posted our lectures online so our students could access them. When we did this YouTube was just getting started and the world of online video was just in its infancy.

Flipping the classroom has transformed our teaching practice. We no longer stand in front of our students and talk at them for thirty to sixty minutes at a time. This radical change has allowed us to take on a different role with our students. Both of us taught for many years (a combined thirty-seven

years) using this model. We were both good teachers. In fact,

Jonathan received the Presidential Award for Excellence in Math and Science Teaching while being the sage on the stage, and Aaron received the same award under the Flipped model. Though as we look back, we could never go back to teaching in the traditional manner.

The flipped classroom has not only changed our classrooms, but many teachers from around the world have adopted the model and are using it to teach Spanish, Science, Math, elementary, middle, high school, and adults. We have presented all over North America and have seen how flipping your classroom can change kids' lives.

Flipping has transformed our classes in so many ways. In this post we will address just two: Student interaction and parent responses to flipping.

Flipping Increases Student Interaction

One of the greatest benefits of flipping is that overall interaction increases: Teacher to student and student to student. Since the role of the teacher has changed from presenter of content to learning coach, we spend our time talking to kids. We are answering questions, working with small groups, and guiding the learning of each student individually.

When students are working on an assignment and we notice a group of students who are struggling with the same thing, we automatically organize the students into a tutorial group. We often conduct mini-lectures with groups of students who are struggling with the same content. The beauty of these mini-lectures is we are delivering "just in time" instruction when the students are ready for learning.

Since the role of the teacher has changed, to more of a tutor than a deliverer of content, we have the privilege of observing students interact with each other. As we roam around the class, we notice the students developing their own collaborative groups. Students are helping each other learn instead of relying on the teacher as the sole disseminator of knowledge. It truly is magical to observe. We are often in awe of how well our students work together and learn from each other.

Some might ask how we developed a culture of learning. We think the key is for students to identify learning as their goal, instead of striving for the completion of assignments. We have purposely tried to make our classes places where students carry out meaningful activities instead of completing busy work. When we respect our students in this way, they usually respond. They begin to realize, and for some it takes time, that we are here to guide them in their learning instead of being the authoritative pedagogue. Our goal is for them to be the best learner possible, and to truly understand the content in our classes. When our students grasp the concept that we are on their side, they respond by doing their best.

Flipping Changes the Way We Talk with Parents

We both remember sitting in parent conferences for years and parents would often ask us how their son or daughter behaved in class. What they were really asking was does my son or daughter sit quietly, act respectfully, raise their hand, and not disturb other students. These traits are certainly good for all to learn, but we struggled answering this question when we first started flipping the classroom.

You see, the question is a non-issue in our classroom. Since students are coming with the primary focus on learning, the real question is now: Is your student learning or not? If they are not learning, what can we do to help them learn? This is a much more profound question and when we can discuss this with parents, we can really move students into a place which will help them become better learners.

There are a myriad of reasons why a student is not learning well. Do they have some missing background knowledge? Do they have personal issues that interfere with their learning? Or are they more concerned with "playing school" rather than learning. When we (the parents and teachers) can diagnose why the child is not learning we create a powerful moment where the necessary interventions can be implemented.

The Flipped Classroom Book

As of right now we are almost done with a book about flipping the classroom. It will be published by ISTE. We anticipate a fall of 2011 release.

Editor's Note: Since this post was written, Bergmann and Sams have released their book, [Flip your Classroom: Reach Every Student in Every Class Every Day](#). Do check it out.

###

***Jonathan Bergmann** has been an educator for 25 years and holds a masters degree from the University of Colorado in Instructional Technology. He currently teaches science at Woodland Park High School in Woodland Park, Colorado. In 2002 he was awarded the prestigious Presidential Award for Excellence for Math and Science Teaching. He is a national board certified teacher in Adolescent and Young Adult Science. In 2009 he was named a semi-finalist for Colorado Teacher of the Year.*

***Aaron Sams** has been an educator for 12 years. He currently teaches science at Woodland Park High School in Woodland Park, Colorado where his peers consider him to be an innovator in the implementation of technology in the classroom. He has taught many staff development courses, primarily in the area of technology integration. He was*

awarded the 2009 Presidential Award for Excellence for Math and Science Teaching. Aaron recently served as co-chair of the Colorado State Science Standards Revision Committee.

Contact info and further Links

Twitter: @jonbergmann, @chemicalsams

Websites: Flipping: <http://educationalvodcasting.com>

Quality Learning Videos: <http://learning4mastery.com>

Originally posted by The Daily Riff 1/12/2011

Related posts from The Daily Riff:

[The Flipped Class Manifest](#) by Brian E. Bennett, Dan Spencer, Jon Bergmann, Troy Cockrum, Ramsey Musallam, Aaron Sams, Karl Fisch, Jerry Overmyer

[The Flipped Class: Shedding light on the confusion, critique and hype](#) by Aaron Sams

[Are you Ready to Flip?](#) by Dan Spencer, Deb Wolf, and Aaron Sams

["The Flipped Class: Myths vs. Reality"](#) by Jon Bergmann, Jerry Overmyer and Brett Wilie

["The Flipped Class: What Does a Good One Look Like?"](#) by Brian Bennett, Jason Kern, April Gudenrath and Philip McIntosh

[Private School Math Teacher Flips Learning](#) by Stacey Roshan

[The Flipped Class: Show Me the Data!](#) by Stacey Roshan

[Teachers "Doing the Flip" to Help Students Become Learners](#)

[Reflecting on the Flipped Class through Student Feedback-](#) by Stacey Roshan

[The Best Way to Reach Each Student? Private Math Teacher Flips Learning](#) by Stacey Roshan

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16 comments



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micheal clark · 4 months ago

I would like to provide a clarification. While this may be the story of how the flipped classroom came to your attention in 2007, the phrase "inverted classroom" and the model you describe were first articulate in a 2000 article in the Journal of Economic Education titled "Inverting the Classroom". This model was not developed in 2007, but was clearly elucidated and documented in our work in 2000. Please see the aforementioned article if there is any question as to the ownership and authorship of this concept. For more information you can visit: <http://www.sidney.cervantes.es...>

^ | v Reply Share >



Staci · 5 months ago

Please anonymously provide your input about "flipping the classroom" here <https://docs.google.com/forms/...> for a preservice

teacher project. Thank you!

^ | v Reply Share ›

Avatar Brandi Whitewolf · 11 months ago

As a former Technology Curriculum Specialist, I love how flipped classrooms have increased interaction and participation, as well as promoted content retainment.

I've since moved roles and am an associate producer for The Smart Girls Channel on Youtube. We have recently launched a new show called "Girls of the World" that elucidates how different girls from a myriad of cultures, ethnicities, and groups utilize their heritage and intelligence in being themselves. For classrooms, it serves as a great resource for students to learn geography and culture firsthand from kids their age.

^ | v Reply Share ›

Avatar Alaa Sadik · a year ago

I am very pleased to share with all of you this research-based project for producing and sharing video presentation, PresentationTube at <http://presentationtube.net>. PresentationTube provides a desktop presentation recorder and video sharing network to help instructors, students, virtual presenters, and business professionals record, upload and share quality, accessible, and interactive video presentations. Video presentations can be used in regular classrooms, flipped classrooms, home revisions, e-learning courses, blended learning environments, distance education settings, virtual conferences, and business orientations.

^ | v Reply Share ›

Avatar Welearners · a year ago

Learning can never stop right? Actually we must learn from our lives, or surroundings like our parents, teachers, elders or younger even!

Professional website: Welearners.com

^ | v Reply Share ›

Avatar Glenn Platt · 2 years ago

I would like to provide a clarification. While this may be the story of how the flipped classroom came to your attention in 2007, the phrase "inverted classroom" and the model you describe were first articulate in a 2000 article in the Journal of Economic Education titled "Inverting the Classroom". This model was not developed in 2007, but was clearly elucidated and documented in our work in 2000. Please see the aforementioned article if there is any question as to the ownership and authorship of this concept.

^ | v Reply Share ›

Avatar ColoradoDan · 2 years ago

Sorry, not seeing what's new here. It's great that you record your learning and make it available to students that are absent. You can even use these recordings to learn to improve your teaching, for example, really sit through your own lectures and learn how to avoid talking for 30-60 minutes straight without interacting with your students, giving them time to process, activities, etc. This is not new. Nor revolutionary.

What could be new, is if you plan to have the learning/lecture take place at home and then the reinforcement of learning happen in the classroom. AND this would be a travesty. New learning needs to happen in the classroom, under the direct guidance of the teacher. Work at home, IMO, needs to reinforce that learning, meaningfully. Parents should not be put in the position to teach or clarify new content learning for which they are not qualified to teach. This is why we have classroom teachers.

And I don't think classroom teachers should be expected to be available 24/7 outside of the classroom to answer questions. Though if this were sustainable, this WOULD be revolutionary.

Work at home, again in my opinion, ought to provide opportunities to trigger informal learning related to personal interests. And why assess on this, if you really want to inspire learning in a way that meets the needs of the modern world. Yes, it's more fun for the teacher to get to do the fun activities. But you should learn how to make your teaching fun enough to engage your students while they are in the classroom, and differentiate IN THE CLASSROOM. And then turn them loose in the real world to find the joy of continuing the learning.

^ | v Reply Share ›

Avatar MomOfMathLD · 2 years ago

This might be a new concept to public schools but it's not to private. I'm 50 and the schools I attended taught this way. A better term than flipping might be modeling private, or incorporating modern tech.

^ | v Reply Share ›

Avatar bcteacher · 2 years ago

Wondering why you never figured out long before technology that lecturing wasn't the best way for kids to learn about science?

^ | v Reply Share ›

Avatar Greg Green · 2 years ago

I had the pleasure of meeting Jon and Aaron at ISTE through TechSmith and the flipped classroom is the key to the future. We have flipped our ninth grade center and have seen a reduction in our failure rates, improve grades, a decrease in our discipline rates and increases in our standardize testing scores. We are flipping our entire school next year. It properly aligns the students needs with a school's resources. It is a game changer for at-risk students! Find us at www.flippedhighschool.com.

^ | v Reply Share ›

Avatar Sarah Valdivia · 2 years ago

I am currently looking at taking over a K-12 charter school as a site director. Our school is in a low socioeconomic area with 60% of the students lacking access to internet outside of the home; what would anyone suggest for my site in order to have success with this plan? I would like to implement this strategy school-wide.

^ | v Reply Share ›

Avatar Naomi Epstein · 3 years ago

This is a fascinating idea. Do you have any experience using it with special ed. students or students from "underprivileged " homes?

As a teacher of English as a foreign language to deaf students, who has begun giving very brief online homework (I focus each time on one specific thing and keep the homework short) I have discovered all sorts of surprising things. Deaf pupils use computers for communication so almost all pupils have one. But some don't have WORD - I paste exercises for them into the email. Not all have powerpoint. A few use FACEBOOK but are surprisingly illiterate about anything else. And then there are the pupils whose home life is so disruptive that even attractive, short (or easy, as the case may be!) homework is never done. The last group never studies for tests either.

I'd love to hear your input on these populations.

^ | v Reply Share ›



Jonathan Bergmann → Naomi Epstein · 3 years ago

Naomi: we have trained folks all over North America on the flipped model and this includes English teachers, special ed teachers, etc. My best advice would be for you to join our NING and ask them. We have over 600 teachers who are either flipping their class or thinking about the flip. Go to: <http://vodcasting.ning.com> and see all the great conversations happening.

^ | v Reply Share ›



Nicole P · 3 years ago

This is so great! I wish I had flipped lessons in my chemistry class. I could never soak it in during class, and I think it would have been a great way to really learn it, rather than just trying to absorb some random facts from the chalkboard.

I also think you're offering a fantastic model for collaboration-- neither of you were considered about "who get the credit"-- and all of the wonderful things that it can do for both teachers and students.

The learning-directed questions you are now asking are wonderful as well. Glad you chose to share what you're doing with us. =)

^ | v Reply Share ›



Russ Antracoli · 3 years ago

This is an exciting new learning tool. In looking at the process as well as the organization my one question is how can this be done for all classes? However the ability to provide student support, immediate feedback, collaboration among students, and providing the support students don't get when they do difficult tasks as apart of homework is real encouraging. I have been reading about this technique for a while and am ready to share with staff as an alternative we might take the time to do some research, careful planning, and use in some areas.

^ | v Reply Share ›



Jonathan Bergmann → Russ Antracoli · 3 years ago

Russ: If you are interested, we are conducting a conference on the Flipped Model this summer. You can find more info at: <http://vodcasting.ning.com/events/mastery-learning-the-flipped>

^ | v Reply Share ›

ALSO ON THE DAILY RIFF

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1 comment • 6 months ago



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History

The Short History of Flipped Learning

As told by Jonathan Bergmann and Aaron Sams

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Continue to read **[How the Flipped Classroom Was Born \(http://www.thedailyriff.com/articles/how-](http://www.thedailyriff.com/articles/how-)**

Best Practices for Legal Education

Flipping Law School Classes

Posted on August 27, 2013 by Michele Pistone
I flipped my class yesterday. And I think it worked!

The class was on persuasive lawyering. Over the summer I made a video about persuasive lawyering. It talks about persuasion in relation to classic rhetoric, and the elements of logos, pathos and ethos. The video is available on [LegalED \(http://legaledweb.com/practical-lawyering-skills/\)](http://legaledweb.com/practical-lawyering-skills/).

Here is what I did during the 55-minute class segment that I allocate in my syllabus for introducing the topic:

I assigned the video for students to watch as homework. It is less than 5 minutes long. Then, when we got to class, instead of starting the discussion of persuasion with a short lecture on the topic, I started with an exercise. The students were asked to work with a partner to persuade my co-teacher (I am very fortunate to be co-teaching with Harriet Power from our university's theater department this semester) and I that we should serve wine and cheese during each class. The student teams had two minutes to come up with their arguments. Then, each student team had one minute to stand up and persuade us, with each partner contributing equally to the argument. Most argued about the health benefits of wine, others about how drinking wine would make the students more relaxed and open, which would facilitate better in class discussions, and others pointed out how the professors could benefit from the wine as well, at the end of a long, busy day. The theme of culture was raised as well; some arguments tied the wine and cheese to our abilities to learn about different cultures through their food and drink.

My co-teacher and I then facilitated a discussion of the arguments in relation to the theory of persuasion. We used the students' arguments as jumping off points – we broke them apart to identify what worked and why, relating everything back to the theory the students had learned from the video and the tactics of persuasion – logos, pathos and ethos. For example, the argument drew on logos when it referred to the research on the health benefits of drinking red wine. The part of the argument that was more personal about us as professors and how we could also enjoy the wine, was about pathos, appealing to the audience's emotions.

I have taught a class on persuasive lawyering about ten times before and this one seemed different; it was better. Instead of my talking at the students about the foundations of persuasive argument, by flipping the classroom my students could learn the foundational information before coming to class. That opened up the class for an activity in which the students could actually try it out.

Another added benefit was that we could provide feedback on the students' presentation skills as well. We told them whether their tone was appropriate and authoritative. By getting the students out of their chairs, we could provide feedback to the students on their posture and stance and how body language can enhance or detract from the persuasiveness of an argument.

I hope to make shorter videos on each of the three elements – ethos, pathos and logos – in which I flesh each out in more detail in the coming weeks.

If you have any questions, ask them in the comments section below. I'd be happy to share more about the experience. I also welcome comments on the video.

Filed under: Uncategorized Tagged: | blended learning, flipped learning, law schools, legaled, Pistone, practical lawyering skills, reforming legal education

« New Blog Client Interviewing — Costume, Setting and Posture »

5 Responses



Wes Porter, on August 27, 2013 at 9:42 am said:

Thank you for this post. Flipping the classroom is possible – and highly beneficial – in the law school setting. I haven't offered much lecture in several of my recent advocacy courses – more time for student presentations, peer feedback, critique, and redos. One question is, did you consider making the videos publicly available (ie. YouTube)? Why or why not?

Reply



Michele Pistone, on August 27, 2013 at 4:26 pm said:

Wes, glad to see you are flipping the classroom too. As to your question about whether or not to make the videos public, I advocate making the videos publicly available. The video I used in class this week, on persuasive lawyering, is available here, <http://legaledweb.com/practical-lawyering-skills/>.

In fact, I am working with a group of law professors (including some of my co-bloggers on this site) from around the country to create a central repository for videos and other resources that can be used in legal education. The website is LegalED, legaledweb.com. We think that by



Flipped Learning Model Dramatically Improves Course Pass Rate for At-Risk Students

Clintondale High School, Clintondale Community Schools,
Clinton Township, Michigan

Foundations of Flipped Learning™

Demographics

- › Urban school in greater Detroit area
- › Grades 9–12
- › 31 teachers
- › 553 students
- › 74% free and reduced lunch
- › 73% African American
- › 26% white
- › 18% special education

Challenge

In 2009–2010, the pass rate for students at Clintondale High School (CHS) in Clinton Township, Michigan, was low across all subject areas. Among freshmen, only 48 percent of students passed English language arts, 56 percent passed math, 59 percent passed science, and 72 percent passed social studies.

CHS teachers, led by Principal Greg Green, decided that the situation was no longer tenable. “We looked at our low pass rate and decided it was unconscionable,” said Mr. Green. “We had to find a new way to educate our at-risk students. We were asking them to process information in an environment that was often not conducive to learning.”

Teachers recognized that students lacked a safe and effective learning environment at school and at home, as well as supportive relationships, collaboration opportunities, and consistent access to instructional technology. “We realized that the flipped learning model, unlike the traditional lecture model, could provide what our students needed,” said Mr. Green.

Implementation

In September 2010, CHS tested the flipped learning model in one freshman at-risk social studies class, and every student passed the class. In a freshman social studies class made up of students performing on grade level in which a traditional lecture model was used, the pass rate was unchanged.

That fall, CHS made the decision to implement the flipped learning model in all its freshman classes, and then it expanded the implementation to every grade in the 2011–12 school year. Teachers now videotape their classroom lectures and have students watch the videos for homework, along with using other resources. In the classroom, teachers work with students on individual assignments and facilitate collaborative learning in small groups.

Math teachers, for example, create videos outlining the steps in a set of sample problems, post the videos online, and ask students to watch them at home. In class the next day, students work together in groups to solve similar problems, supported by their teacher and their classmates, with individual help provided as needed.

Approximately 82 percent of students use their own devices to watch the videos at home. For other students, CHS makes computers available before and after school in the media center. Teachers use screen-capture software as well as graphics tablets and pen displays to demonstrate concepts and simulate the classroom experience in their videos.

The amount of one-on-one time teachers spend with students has increased by a factor of four, allowing them to get to know students better, personalize learning and assessment, and improve students’ skills and understanding.

According to Mr. Green, teachers' lives have changed dramatically. "Teachers feel good at night knowing they have done something very positive for students. The flipped approach frees up classroom time so teachers can help students master topics, deepen relationships, and build critical thinking skills," he said.

"The flipped approach frees up classroom time so teachers can help students master topics, deepen relationships, and build critical thinking skills."

—Greg Green, Principal, Clintondale High School

Under the Michigan School of Choice program, students from across the metropolitan Detroit area are attending CHS. "We believe students are choosing us because our flipped environment offers a new level of support," said Mr. Green.

Results

Test scores, graduation rates, and college attendance have increased at CHS, student engagement has improved dramatically, and discipline problems have declined in both number and severity. In the freshman class in the first flipped learning semester, the pass rate increased to 67 percent in English language arts, 69 percent in math, 78 percent in science, and 81 percent in social studies, representing an increase of 9 to 19 percentage points across the subjects. Discipline referrals declined by 66 percent.

In 2012, although the graduating class had participated in the flipped learning model for only about six months, the graduation rate increased from 80 to 90 percent, college attendance jumped from 73 to 80 percent, and college readiness improved substantially.

On the Michigan Merit Exam in 2012, the pass rate for students in the eleventh grade increased in every subject area over the prior year. The most notable gain was in reading, where the percentage of students passing increased by 11 percentage points.

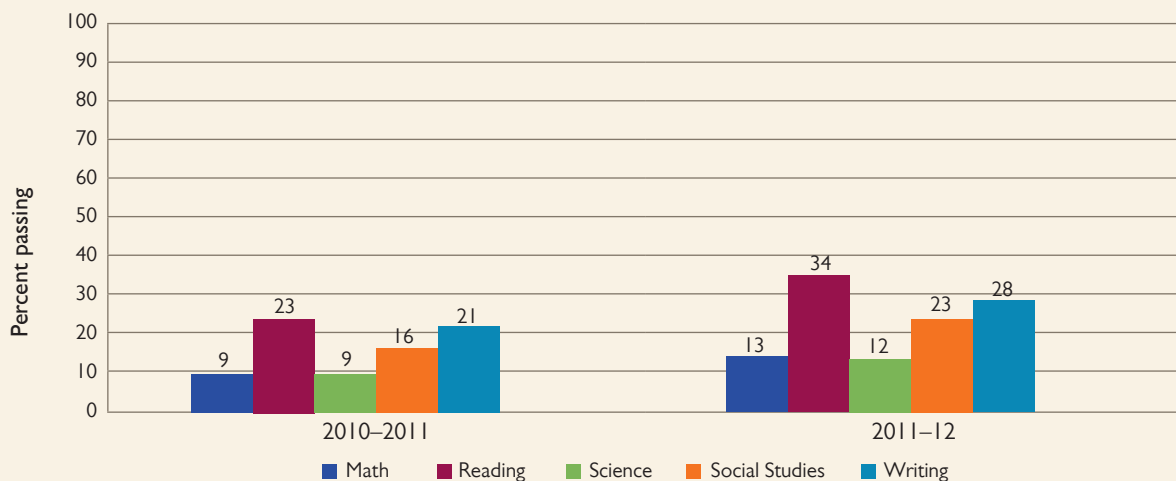
Flipped learning has brought several additional benefits. "We can now share classroom materials more easily, serve students when they are absent, and ensure a consistent curriculum, as well as accurate classroom content for substitute teachers," said Mr. Green. The benefits also extend beyond the student body, because parents often watch the online videos with their children at home. "Not only are we educating our students, but we are also educating the entire community," he said.

"Not only are we educating our students, but we are also educating the entire community."

—Greg Green, Principal, Clintondale High School

Mr. Green is a cadre member of the Flipped Learning Network and participated in the development of the Foundations of Flipped Learning™ blended course, which assists educators in implementing flipped learning. "I believe flipped learning has the potential to help struggling students across the country improve their academic performance," he said.

Passing Rate Increases in All Subject Areas on State Test



Percentage of students in grade 11 who passed the Michigan Merit Exam



Flipped Learning Model Increases Student Engagement and Performance

Byron High School, Byron, Minnesota

Foundations of Flipped Learning™

Demographics

- › Rural/suburban school in greater Rochester area
- › Grades 9–12
- › 32 teachers
- › 525 students
- › 11% free and reduced lunch
- › 95% white
- › 8% special education

Challenge

In 2006, when only 30 percent of students at Byron High School were rated as proficient in math on the Minnesota Comprehensive Assessments, the math teachers committed to a process of continuous improvement. In 2009, however, Byron High School faced substantial budget cuts. The school was unable to replace its outdated math textbooks, although the books no longer matched state standards and were not meeting student needs.

According to Troy Faulkner, the math department chair, “We needed to change our curriculum, but there was no money available. So we decided to write our own.” Recognizing that they would need new resources, the math teachers created units aligned to state standards and based on student data. They also recorded all their lessons and posted them online during the summer of 2010 so the lessons would be available for students in the fall.

Over the summer, when one of the math teachers, Jen Green, came across the pioneering work on flipped learning by Jonathan Bergmann and Aaron Sams, the team realized that the flipped learning model could take their work to a whole new level.

Implementation

In the fall of 2010, Mr. Faulkner piloted flipped learning using one unit in each of his math classes in grades 10, 11, and 12. He liked the flipped learning model right away. “With flipped learning, students were actively doing math rather than passively watching me do math on the interactive whiteboard,” he said.

“With flipped learning, students were actively doing math rather than passively watching me do math on the interactive whiteboard.”

—Troy Faulkner, Math Department Chair, Byron High School

In the spring of 2011, encouraged by improvements in student engagement and performance, Mr. Faulkner switched to the flipped learning model in almost every one of his classes, and the other math teachers began to make the transition as well. Teachers recorded their classroom lectures, posted them online, and assigned the videos for homework. In class, they worked with students on individual and group assignments.

In January 2012, when another math teacher, Rob Warneke, came across Eric Mazur’s book *Peer Instruction: A User’s Manual*, he and Mr. Faulkner decided to try the methodology, since peer instruction was an integral part of the flipped learning model. Students answered questions individually and worked in groups to try to convince their peers that their answers were correct, and the teacher quickly went over the answers with the whole class. Peer instruction soon became part of the flipped learning model in every math class.

Mr. Faulkner now implements flipped learning in every course, right from the start. In January 2013, when the first two days of a new course were snow days, he sent an email to all his students, including new students he had not met, asking them to watch the online videos at home and do the homework. On the first day back in school, one class took a quiz on the material. “One of the many benefits of flipped learning is that we don’t have any downtime due to weather,” said Mr. Faulkner.

Flipped learning was soon adopted by middle school math teachers in the district and is now spreading to social studies, science, and English. “Math is the most flipped subject area, but the others are in process,” said Mr. Faulkner.

Results

Flipped learning has been a success with teachers, students, and parents. In surveys administered by Byron High School math teachers, 87 percent of parents and 95 percent of students said that they preferred flipped learning to the traditional lecture format. Some students said they preferred interacting with others to sitting through classroom lectures, others said they liked re-watching the videos when they needed to, and still others said they appreciated always having help available.

Teacher-student relationships have improved with the implementation of flipped learning. “We have been able to build better relationships with students because of the increased one-on-one time in the classroom,” said Mr. Faulkner, who is now training other educators as part of the Foundations of Flipped Learning™ course developed by the Flipped Learning Network.

The gains that can be obtained from flipped learning are clear when results from Mr. Faulkner’s math classes from 2007–2010, when he used a lecture format, are compared with the results from 2010–2013, when he used the flipped learning model. The number of students scoring proficient or above in Algebra 2 increased by 12 percentage points, in pre-calculus the number increased by 11 percentage points, and in Calculus I the number grew by 9 percentage points. “The increase in Calculus I proficiency is a testament to flipped learning, since students are coming in with significantly lower test scores but outperforming students who learned calculus the old way. More students are now taking the higher-level math courses because their overall proficiency has increased,” said Mr. Faulkner.

“More students are now taking the higher-level math courses because their overall proficiency has increased.”

—Troy Faulkner, Math Department Chair, Byron High School

In 2011, Byron High School was named an Intel School of Distinction, in recognition of the school’s exemplary instruction in math.

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Education

Focus on Teachers: Katie Christie, Using Technology to "Flip" Her Classroom

[Vicki Phillips](#)

August 01, 2013

Elementary teacher Katie Christie credits her school district of Littleton, CO for providing “amazing support for technology in the classroom.” Students receive their own online accounts in 2nd grade to produce, collaborate and share their work, an email account in 4th grade and then their own netbook computer in 5th grade. Each student keeps their work in an e-portfolio that follows them from year to year.

For teachers, Littleton hosts “Inspired Learning Cohorts” on technology-related instructional strategies. Participating teachers meet four to five times per year and then present their work at the district’s annual technology conference. The conference has grown so popular, according to Katie, teachers from other districts are now attending on their own time.



While she doesn’t say it herself, Katie also deserves much credit for her role in Littleton’s vanguard approach to technology. This past year she was a mentor for an Inspired Learning Cohort and is poised to co-lead the same team next year. Katie also is pioneering a “flipped classroom”—a strategy that uses technology to minimize the class time used for lecturing and maximize the class time for students to work on challenging problems either with the teacher, in pairs or groups or individually.

So, what does Katie’s “flipped classroom” look like? Each day, Katie assigns students homework in the form of a video mini-lesson she either conducted or adopted from teaching sites such as [LearnZillion](#). Students watch the lesson (and re-watch or fast forward as necessary) and then complete a few problems on their own.

The next day, Katie looks at the preliminary student work and leads discussions to see which students are beginning to acquire the skills and concepts from the video and which aren’t. Students are then grouped based on what they need: whether it is an opportunity to apply their new skills to more challenging problems, time alone to just practice what they learned or time with her directly so she can address misconceptions or reteach a step a student might find confusing.

“The idea of the ‘flipped classroom’ is that students do the deep, hard work of practicing, applying and expanding upon the new concepts in class with me, not at home alone or with their parents.” Katie explains. “It doesn’t mean that students are just doing their homework in class but, instead, we are taking class time for more meaningful and real-world problem solving that would be difficult for students to do without my support or the support of their classmates.”

Katie easily remembers the day she became “hooked” on the flipped classroom approach. “During my division unit last fall, my class had just watched a mini-lesson video on partial quotients for homework.

During class, I was reviewing the concepts with a small group of students who were struggling with it. At the same time, two students were identifying a more advanced set of problems and new concepts to work on together. Others were busy practicing what they had just learned. And, a fourth group was working on computers and breaking down both the videos and the math problems step by step. Basically, when I looked around the classroom, there were four groups of students who were directing themselves in their math learning and engaging with me when they had questions, were confused or were proud of their work and wanted to share it. I remember thinking, "This is what differentiated instruction is supposed to look like!"

Katie's approach grew out of her own participation in Littleton's Inspired Learning Cohorts. At one of the conferences, Katie presented her use of recorded lessons. At the time, she was posting videos of her teaching online so that students could review the lesson at home before they did their homework and parents could see what their children were learning. At the end of her presentation, a colleague asked Katie if she ever thought about assigning the videos for homework either as a mini-lesson itself or as a preview to the next day's lesson. Katie took it from there.

Katie sums up the experience, "It was this one teacher and one conversation that shifted my thinking and prompted me to change my approach. And it is working. I wouldn't go back to the other way."

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EDUCATION WEEK
DIGITAL DIRECTIONS

Published Online: June 11, 2013

Published in Print: June 12, 2013, as **Flipped PD: Building Blocks to Success**

FEATURES

'Flipped' PD Initiative Boosts Teachers' Tech Skills

A Minnesota district relies on video and job-embedded coaching to improve teachers' tech skills

By Robin L. Flanigan

Anna Wilcek was comfortable instructing her students on how to interview residents of a nearby retirement community and write biographies of those people. How to integrate technology into the project was another story.

The 6th grade teacher recalls asking, "What ideas do you have for me?" during a recent face-to-face workshop with Wayne Feller and Kristin Daniels, the technology-integration specialists in the 8,500-student Stillwater Area Public Schools, in Minnesota.

The collaborative, technology-driven nature of the relationship between teachers and the technology coaches is the hallmark of what the Stillwater district calls "flipped professional development." Known as job-embedded coaching in educational leadership circles, flipped PD offers face-to-face support and personalized online resources, such as how-to videos on using interactive-whiteboard software or the iPad's multi-tasking bar. Teachers watch the videos to find new or better approaches and then discuss developing those approaches with the technology-integration specialists.

Under that system, Wilcek, who teaches at the 347-student Andersen Elementary School, learned how to edit student-shot movies in iMovie, export them into iBooks Author, and post the finished products on her website for downloading.

"I wouldn't have had the knowledge or time to pull all of that together," she says. "It's such a gift to have the specialists sit right next to you. They give me the confidence to move forward because I know I can have support whenever I want it."

Stillwater started flipped PD in 2011-12. Here's how it works: Feller and Daniels meet with 200 classroom teachers and specialists in small groups each month for structured, two-hour coaching/training and workshop sessions that focus on individual projects, then offer additional guidance by request. So far, the model is used in all nine of the district's elementary schools, with 93

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EDUCATION WEEK
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percent of classroom teachers participating.

Coaching support is essential if teachers are to use technology effectively in the classroom, according to a **2011 white paper** released by the International Society for Technology in Education, a Washington-based membership association that promotes innovative uses of educational technology. To support that idea, ISTE now has benchmarks for technology coaches seeking to give effective guidance and support to teachers in a digital age.

Attitude Shifts

Unlike in traditional professional development, context plays a critical role in flipped PD. Content area, grade level, technological expertise, and the interests of each teacher and specialist affect the type of online training offered.

"We don't come in dictating what they're here to learn and work on," Daniels says. "When they realize they're being given time to think about what they want to be doing, and to grow at their own pace, they're absolutely relieved. And there's been a remarkable shift in attitude toward personal growth because of that."

Stillwater embraced flipped PD because "it had the largest impact and really was the highest return on investment," says Michael Dronen, the coordinator of educational innovation and technology in the district.

The district was inspired by research from the 1980s, still cited today, that showed only 10 percent to 15 percent of teachers added a new classroom practice to their repertoire when given professional development but no follow-up support. That figure jumped to 90 percent, however, with sustained support.

Bruce Joyce, who helped conduct the research, reinforces that statistic in a book he co-wrote, *Realizing the Promise of 21st-Century Education: An Owner's Manual*, which was published in 2012.

Stillwater's personalized professional development is "extraordinarily ambitious, and worth everybody taking a look at," says Joyce, the director of Booksend Laboratories, based in St. Simons, Ga., which partners with school districts on projects for long-term staff development and improvement.

The district produces four types of videos. "Proactive" videos are typically tutorials covering the basics of Stillwater's most-used technology tools. "Reactive" videos are created in response to a specific request; one teacher, for example, learned how to create a video about online bullying after an incident the day before. "Spontaneous capture" videos document best practices, project ideas, and success stories.

And "individual backpack" videos are raw, unedited snippets created on the fly to answer specific questions.

'Try Something New'

Although teachers are still warming up to the idea of watching videos to learn, the technology-integration specialists have noticed an appreciation among them for being able to determine the direction of their own professional development.

As a nod to that role, Feller, who is writing a book that identifies promising classroom practices created in Stillwater through flipped PD, uses the term "teacher client" when

Lessons Learned

As with any new initiative, there are lessons to be learned from one year to the next.

referring to teachers.

Substitute teachers rotate classrooms on formal training days to allow small groups of teachers and specialists to learn side by side.

"When we bring them together, there's a real dynamic synergy that happens," says Daniels. "They can go right back to their classroom and try something new later that day."

To increase collaboration and transparency, the technology specialists guide teachers through the use of Google Docs to set goals for the year, link to videos and other resources, and chronicle their progress.

Feller points to a dramatic increase in innovative, multimedia projects over the past two years as evidence that flipped PD is working.

In the first year, three teachers began helping students publish their own books using text and images. That number jumped to nearly two dozen this school year. Meanwhile, students are collaborating more, some are blogging, and their tech-related vocabulary is expanding, says Feller.

"A fifth grade student was talking to a group of adults, and in a matter-of-fact way referenced the idea of creating and sharing a document with his teacher and classmates," he says. "He was referring to Google Docs. He had this new way of expressing a concept that was nonexistent a few years ago."

Like technology itself, flipped PD continues to evolve.

A complete overhaul of the way in which instruction is planned and delivered takes time and is laden with risks, Dronen acknowledges.

"It's not unlike asking someone without any training to walk out on a tightrope," he says. "But once you're on the rope and have those basic skills, it's a really thrilling place to be. And it allows for deep reformational changes."

The Stillwater school system in Minnesota, in its second year of using a professional-development model called "flipped PD," learned several lessons:

- **Include principals, not just teachers.**

In the first year, conversations with principals in schools that used flipped PD often shifted from how it was helping teachers to the way technology could help school leaders be more efficient and manage personnel more effectively.

- **Strengthen the use of online resources.** A collection of such resources is useful, but teachers and specialists would learn even more if those resources were available through an online course.

- **Allow teachers to self-reflect.** It took until the second year to realize a self-reflection process would be invaluable for teachers and specialists. Now they're asked to write in online journals throughout the school year about their flipped-PD experiences.

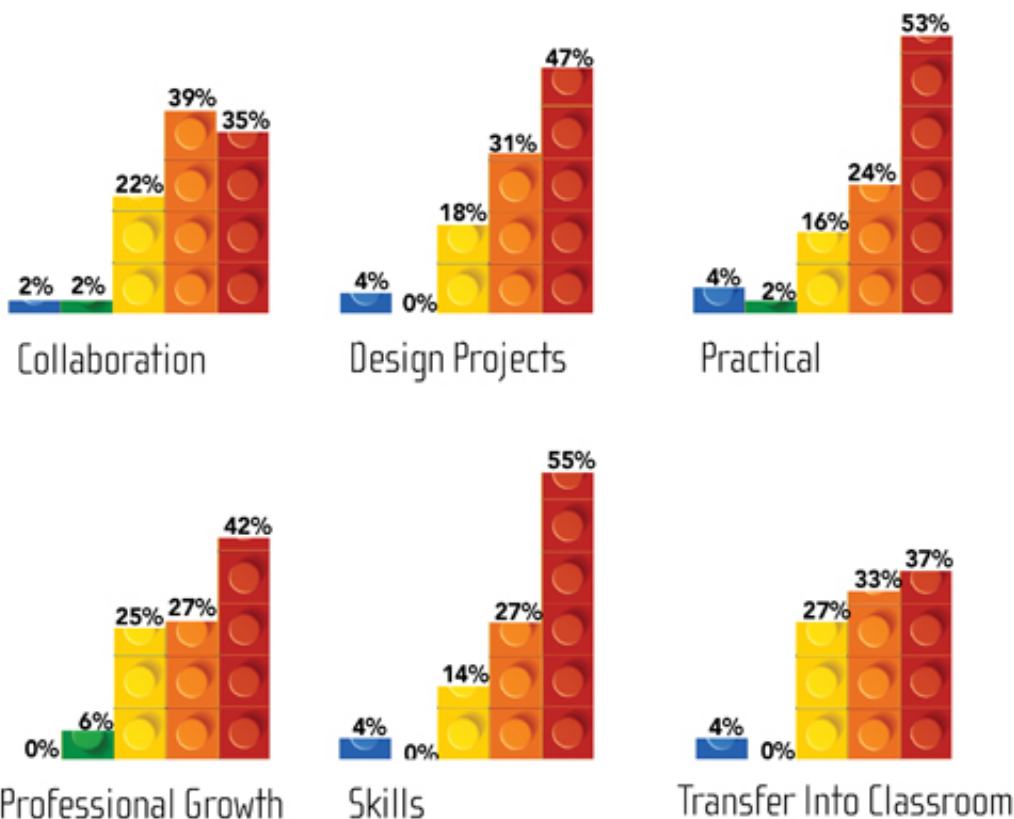
- **Realize the potential for continuous growth.** Michael Dronen, Stillwater's technology director, says that had the district understood earlier how much of an impact flipped PD would have on continuous growth, it would have accelerated the rate of adoption.

Source: *Education Week*



HOW FLIPPED PROFESSIONAL DEVELOPMENT STACKS UP

An end-of-the-year survey was sent to all teachers who participated in flipped professional development in the Stillwater, Minn., district. The overall results of this survey indicated that teachers favored this approach over traditional professional-development methods.



 SOURCE: Stillwater, Minn., Schools



EDUCATION WEEK

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Vol. 06, Issue 03, Pages 16,18