

The Practical Guide to **Flipping Your Classroom**

Engaging Your Students
through **Unconventional Teaching**
and **Online Technology**

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Chapter 1:

The Classroom of

the 21st Century

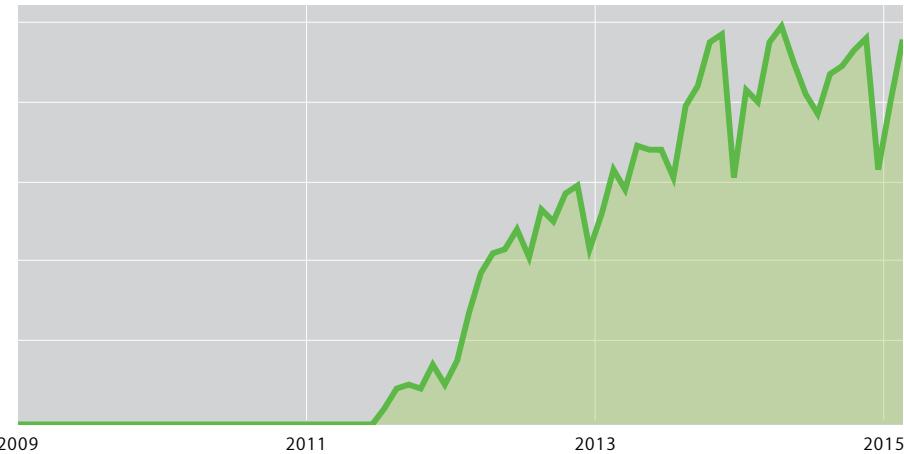
*The flipped classroom starts with one question:
What is the best use of my face-to-face class time?*

Jonathan Bergmann

Pioneer of the flipped classroom pedagogy

In the last decade, academic institutions at all levels have begun introducing non-traditional pedagogies that combine traditional brick-and-mortar teaching with online, on-demand learning. These new approaches to teaching, referred to as “blended learning,” have been driven by advances in video technology, increasing network speed, and changes in student expectations. They aim to improve student engagement, knowledge retention, and ultimately, academic achievement.

Among all of the approaches to blended learning, one has garnered more media attention, reported more tangible results, and gained the support of more educators than any other — the “flipped classroom.” In just the last four years, flipping the classroom has evolved from an obscure experiment to a mainstream model for improving the student learning experience in universities and school districts around the world.



Interest in search term "Flipped Classroom."

Source: Google Trends, August 17, 2015

What is the flipped classroom?

Conceptually, a flipped classroom turns the traditional learning experience on its head. Lectures are recorded outside of class, and then shared with students to review as their "homework." Classroom time is reserved for students to engage in discussions and activities.

The principal goals of flipping are:

- To make the classroom a more interactive learning environment.
- To enable students to learn at their own pace.
- To help the instructor tailor the course to individual student needs.

Said another way, the goal of flipping the classroom is to overcome some of the inherent shortcomings of the traditional lecture format, which dates back to the mid-fourteenth century.

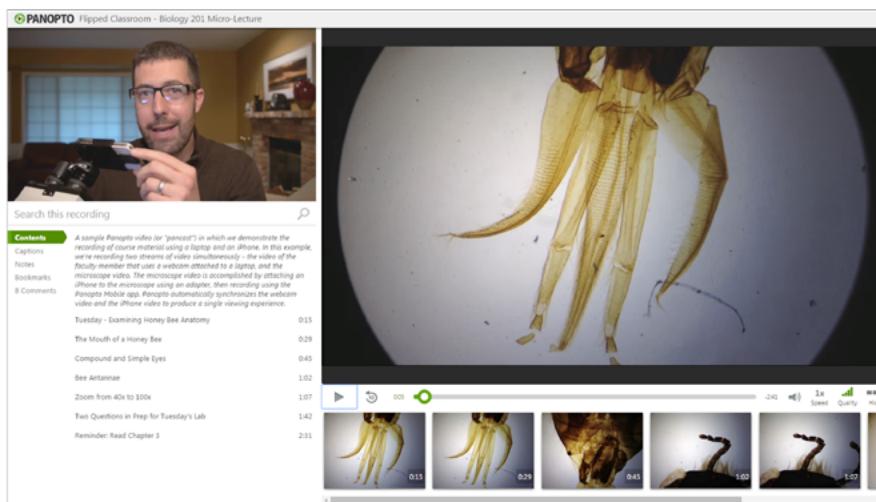
In a traditional classroom, teachers spend most of their time presenting information in the form of a lecture. Students passively receive the information, scribbling down notes as the teacher presents. Later, after students have left the classroom, they're challenged to recall the content of the lecture based on their notes and to apply the day's lesson as an individual homework assignment.

Good teachers, of course, can read their class's level of comprehension during lectures and make adjustments to direct their teaching to the "average student." Likewise, teachers can gauge students' understanding of the subject as demonstrated in homework and curve the classroom to cover what will be valuable for most students. However, many educators and parents have begun voicing concerns that this "teaching to the middle" can only ever be a one-size-fits-all approach and will nearly always fail students at the top and the bottom.

That's what makes a flipped classroom so promising.

By making lecture materials available on-demand, students can watch them whenever and wherever fits their needs. They can also review important or unclear details as often as needed until they're well understood. As a result, students come to class with a better grasp of the topic and can participate in discussions and activities that apply what they've learned.

Classroom activities may include group work, comprehension tests, presentations, and other applications of the subject matter. As individual questions arise, the teacher and fellow students are able to respond, providing each student with a more personalized learning experience.



[Click for a sample recorded flipped classroom biology lecture](#)

Why flip?

While breakthroughs in technology have made the flipped classroom possible, what has made it popular is something far more fundamental: **flipping enhances the learning experience for both students and teachers.** Through the use of on-demand video, peer-to-peer collaboration, and individualized instruction, flipping provides a more student-centric approach to learning and enables educators to engage with their students like never before.

Faculty and institutions experienced in the pedagogy typically cite four key benefits to flipping the classroom.

1. Flipping allows students to learn at their own pace

Traditional teaching requires students to keep up with the pace that the instructor sets for each lecture. It also requires instructors to communicate lecture material within the limited time allocated for each class. When students have questions, they're forced to either interrupt and ask for the material to be repeated, or do their best to keep up and ask for another explanation outside of normal class time.

In contrast, students in flipped classrooms can review any part of any lecture as many times as necessary. If they still need clarification, they can come to class knowing that interactive questions and answers are part of the in-class experience.

Students don't all learn at the same rate...and we can't adjust the pace of our live lectures to accommodate the entire range of student abilities. Having a recorded version allows students to control the presentation themselves and learn at their own pace.

Frank J. Fedel

Assistant Professor Health Promotion and Human Performance
Eastern Michigan University

2. Flipped learning is customized and engaging

With foundational material covered before class, instructors create learning activities that allow students to apply what they've learned. Group problem solving, student presentations, and whole-class discussions shift the focus of learning to the students themselves so that they can learn through experience and critical discourse. These exercises help students solidify what they've heard, test their comprehension and master the content.

In-class activities can also be customized based on insights from students' lecture viewing behavior and performance on pre-class, online quizzes. For example, a biology professor may see that students repeatedly watched a 2-minute segment from a 15-minute photosynthesis lecture. The segment, which covered cell respiration, also stumped many students in a pre-class, online quiz. Based on this, the instructor could gear in-class activities to focus on the fundamentals of cell respiration.

3. Recorded lectures help student review for exams

For years, universities have recorded traditional classroom-based lectures and made them available on-demand for students. Statistics from universities and lecture capture vendors show that students rely heavily on these recorded lectures as a study aid during midterms and final exams.

Flipped classroom recordings offer the same benefit as recorded classroom lectures. Throughout the course of a semester, instructors typically accumulate hours of recorded content that students can review in preparation for tests.

4. Students in flipped classrooms are more satisfied and perform better

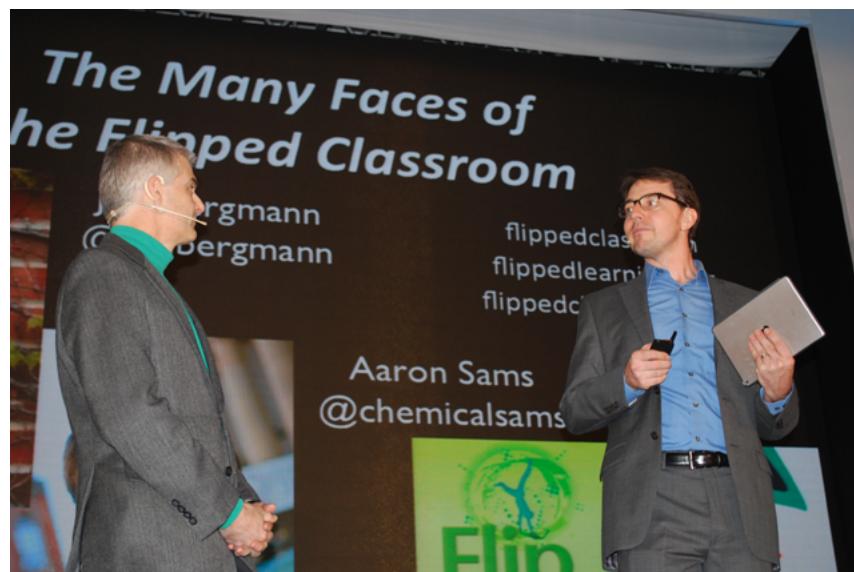
Recent research indicates that students are happier using the flipped class methodology, and that this satisfaction translates into higher achievement. In a 2012 survey by the Flipped Learning Network, 80% of teachers reported that their students had shown attitude improvements through the flipped classroom. The same survey showed that 67% of primary and secondary

school teachers reported higher test scores among their students. And a follow-up survey in 2014 reported that 71% of teachers saw an improvement in students' grades.

Not surprisingly, these improvements in student attitudes and grades correlate with a high level of satisfaction among educators. According to a 2012 report, 99% of teachers who flipped one year plan to do so again, and 88% said that their overall job satisfaction had improved.

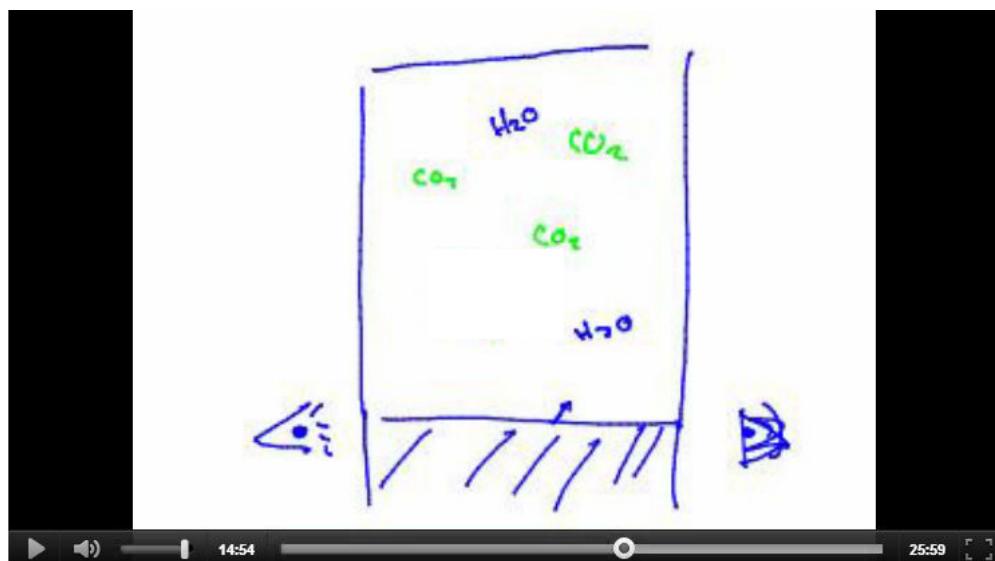
A Brief History of the Flipped Classroom

The first well-documented flipped classroom rang into session back in 2007. A pair of chemistry teachers at Woodland Park High School, Jonathan Bergmann and Aaron Sams, were looking for a way to provide lecture materials to students who had missed class. Using simple screen recording software to capture their PowerPoint slides, the two uploaded the recordings to a relatively new video sharing site called YouTube, and then shared them with their students.



Since developing the flipped classroom, Aaron Sams and Jonathan Bergmann have helped thousands of other teachers do the same.

Right away, the teachers noticed a change in the tenor of the classroom. Students came to class prepared with a better understanding of the day's material. Class time no longer revolved around one-way lectures and frenetically-scribbled student notes. Student interaction increased through in-class discussions and activities. In short order, a new pedagogy was born and its adoption in the years since has been nothing short of astonishing.



A still from one of Bergmann's early flipped classroom lecture videos

But what drove the meteoric rise of the flipped classroom? Certainly, trends in faculty satisfaction, student attitudes and academic performance played a major role over the course of several years. A more immediate catalyst, however, was technological in nature. Specifically, the timing of early flipped classroom experiments coincided with the launch of two technologies that have transformed the way people share information.

The first is YouTube. By the time Bergmann and Sams began their flipped class experiment, YouTube (which had launched only two years prior) was streaming well over 100 million videos every day. Since then, YouTube has become the third-most popular website in the world and the number one source for instructional video content. In the US, three out of every four students visit YouTube at least monthly,

spending an increasing amount of time on informational, how-to, and other content geared for self-led learning.

The second technology advance came in 2009 with Apple's introduction of the iPhone 3GS. Included with the phone was a relatively high-performance camera that dramatically simplified the shooting and sharing of video. Subsequent Android smartphones would offer similar video capture capabilities.

Eastern Michigan University makes the classroom more interactive and efficient

Frank J. Fedel, an Assistant Professor in the Health Promotion and Human Performance department at Eastern Michigan University, first experimented with flipping his classroom in the fall of 2009 to address a basic pedagogical problem: a lack of time.

"Students are with you for a limited time, so how do you make the best use of that time?" asks Professor Fedel. "It occurred to me that providing information to students doesn't necessarily require a two-way interaction. Take the case of textbooks and video — are lectures fundamentally any different?"

Professor Fedel and his colleagues at EMU now deliver their lectures outside of classroom hours, and have reclaimed that precious in-class time for group discussions, collaborative projects, and practical demonstrations. The move, he notes, has been well-received. "Former students still revisit previous class lectures, presumably to help them review for subsequent classes. More than a few students have mentioned that they felt more secure and confident having the lecture recordings available as a resource throughout the semester. Many have asked for the capability in all of their classes."

Professor Fedel has noted an additional critical marker of success: "I have anecdotally noticed a real difference in the classroom presence of my students after including the lecture capture option," he confides. "They're asking more sophisticated, in-depth questions during discussions."

If you'd like to know more about how Eastern Michigan University uses video across campus, [download the case study today](#).

The launch of YouTube, the smartphone video camera, and the dizzying array of video sharing websites, social networks, and mobile apps they inspired have fundamentally changed the cultural norm for how people share information. In less than a decade, these advances have made today's students a particularly receptive audience for the flipped classroom, and help explain the exploding popularity of this pedagogy.

Notebook:

The flipped classroom inverts the traditional classroom model, delivering lecture materials before class and utilizing classroom time for interactive learning. Why?

- Students benefit from the flipped classroom by being able to review lecture materials on-demand and at their own pace, and by having their instructor and peers nearby during active learning
- Instructors benefit from the flipped classroom by being freed to customize lessons and more directly engage individual students instead of "teaching to the middle"
- Research shows that the flipped classroom has a positive impact on students grades and other performance indicators.

Chapter 2:

Preparing to Flip

a Classroom

The flipped classroom isn't a single methodology. It's an ideology.

Brian Bennett, flipped classroom educator

For instructors and administrators who've never flipped a classroom, making the switch (even on a trial basis) can seem daunting. After all, flipping redefines what's required of the educator twice. First, it requires that lecture materials be made available ahead of class time. Second, it requires teachers to replace passive in-class time with active learning strategies. Fortunately, the technologies that make the pedagogy possible are increasingly accessible to anyone willing to try.

In addition, faculty new to flipping can learn from the experiments and lessons of thousands of teachers across all levels of academia who have already made the switch. This growing community is contributing an ever-increasing body of knowledge to help other instructors make their first flipped classrooms a success.

As with any classroom change, preparation is essential. Establishing expectations for yourself, your students, and your institution will be instrumental to ensuring everything runs smoothly.

Preparing yourself

In a flipped classroom model, the traditional boundaries between lectures, assignments, activities, and assessments are fuzzier than with traditional teaching. That change will produce a few unexpected challenges, and require a few adjustments to established working styles.

To assist in making these adjustments, and to help you plan for a successful flipped classroom, here are a few things to expect:

Plan to spend more time preparing content and in-class activities

As with any course material, the first step to planning a flipped classroom is to identify what you will and won't cover.

Here, though, the flipped classroom diverges from traditional teaching. Using the traditional model, every in-class lecture has a fixed duration and a common menu of formats, the most common being a slide presentation.

With a flipped classroom, you aren't bound by a fixed-duration lecture or by traditional delivery formats that work well in class. Your lecture materials may include a short video presentation, curated recordings, podcasts, pointers to other websites, or virtually any other resource you choose. Class time is no longer built around one-way presentations, and instead can be dedicated to conversations, experiments, activities, and demonstrations. We'll detail some of the more common options in later chapters, but for now, remember that you'll need to spend more time and thought outlining how you'll structure the lessons you'll be sharing.

Plan to experiment and iterate

When you begin planning the content for your flipped course, it may not be obvious which topics would benefit most from the flip, which activities students will find most engaging, which content should be developed from scratch and which should be curated, how to pace your material, and how to structure pre-class and in-class assessments.

As with any change to your pedagogical approach, experimentation and

iteration will be critical. This is particularly the case with the flipped classroom, an approach that introduces new complexity and is highly people-dependent.

Chances are, things won't go perfectly on your first iteration. That's okay. If you review each activity and content block, eliminating things that don't work, trying new approaches, and mixing up your content sources and delivery styles, you'll see improvements with each subsequent iteration.

Engage teaching assistants

Should you be fortunate enough to have the support of a student working in a teaching assistant or graduate assistant role, take time to walk that person through your plan for flipping, and what their role will entail. Because the in-class lecture will be minimized or eliminated, the TA should expect to take a more active role during class time, engaging with students in problem solving, discussions, and labs. Outside of class, TA participation can take many forms, from recording mini-lectures to assisting in the coordination of the digital classroom.

Find a champion in IT

While an increasing number of technologies give you the power to flip your classes independently, it's also important to know how to get technical support when it's needed. Your academic technology team can help. From setting up a computer for recording your videos to integrating them into your school's LMS, having a solid relationship with someone in the technology department will make it easier to fully explore the potential of the pedagogy.

Preparing your students

Once you've prepared yourself, the next step is to set clear expectations and lines of communication for your students.

It's easy to imagine students as infinitely flexible and always open to something new, particularly when it comes to adopting a new technology. However, the traditional learning model is quite familiar to students too, and it's not uncommon for some to express reservations about a change. It's therefore important that

students understand the benefits of the flipped classroom, and when they do have concerns, that you and your teaching staff are ready to respond.

Spend a class session setting expectations

Along with the standard discussion of the course syllabus, plan to spend the first day of class explaining the reason for the flip and how students can best approach the new format. Come prepared to share examples of what they'll see in the lecture recordings, and what they can expect for in-class activities. Just knowing what to expect will help boost student confidence when it's time for the actual lessons to begin.



*Share an introductory video with your class to show them
what to expect in recorded lectures*

Let students know what they stand to gain

For students new to the flipped class model, emphasizing the benefits upfront will help foster a sense of enthusiasm. For example, most students are excited to hear that they'll always have access to recorded lecture materials. This aids in their study and enables them to learn at their own pace. Students are also often interested to know that they won't be subjected to "death by PowerPoint" during class time, nor will they be required to spend class time frenetically scribbling or typing notes. The message to students should be clear: the flipped classroom

model is a more engaging way to learn with the potential to dramatically improve their performance.

Using Panopto to flip the classroom gave my students the chance to view the material multiple times if they needed to, allowing them to learn the content at their own pace. It also freed up that lecture session to focus on other things. My students loved it and I got lots of positive feedback.

Dr Jeremy Pritchard, Senior Lecturer & Head of Education
School of Biosciences, University of Birmingham

Emphasize student responsibility for coming to class prepared

Students may not immediately recognize how essential it is to watch pre-class lecture recordings. Once they realize that in an interactive classroom they'll only be able to participate if they've put the work in upfront, the majority will happily watch the video content.

67% Watched 75-100% of Pre-Lecture Videos	85% Watched More than 50%
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In a year-long pilot, Ball State found that the vast majority regularly watched their flipped classroom lectures.

As part of this, you should provide details on how students can access pre-class recordings and other materials. Then, to avoid the trap of becoming the de facto IT support for your students, you should explicitly make them responsible for completing the online lessons, regardless of computer or network problems. Just

as students are responsible for getting to class on-time in spite of traffic and other external factors, they should be accountable for accessing their lecture materials.

For K12 classrooms, keep parents in the loop

As parents increasingly seek to understand their children's learning environments, teachers who flip should expect to get questions from curious moms and dads. As with students, you can help mitigate concerns by being proactive in communicating the benefits of the pedagogy, and transparent in communicating your expectations. As part of this, you may want to encourage parents to follow along, watching videos throughout the semester in order to gain a better understanding of what their child is learning.

Five frequently asked questions about the flipped classroom

Whether you're preparing your students, their parents, or your institution for a shift to the flipped classroom, there are a few questions that almost invariably enter the conversation. Here are five of the most common questions you should be prepared to answer.

Will flipping take the teaching responsibility away from teachers and place it on the students?

No. A common misunderstanding is that flipping the classroom requires less instructor engagement, leaving students to fend for themselves. As experienced educators and students know, the opposite is true. The flipped classroom provides teachers with more time to cover content in greater depth, to foster discussion and collaboration, and to spend time tending to individual student needs and questions.

Won't students learn more effectively if they're hearing the lecture in person, directly from the instructor?

Not necessarily. The flipped classroom actually brings teachers and students closer together. With lecture materials reviewed at home, educators no longer have to teach "to the center," accommodating the average student while boring the more advanced learners and overwhelming those who need extra time. With flipped class recordings, students can drive the pace of their own learning.

What happens to homework?

"Homework" in the flipped classroom may have multiple meanings. Most often, the work done outside of class will be watching the recorded lecture. Traditional homework, such as assignments, essays, and other exercises, still exists; however, in many cases, students will work on those assignments while in class where they can ask questions, learn from peers, and actively apply their knowledge in a collaborative environment.

Without lecture, what do students do during class time?

The most valuable element of every flipped classroom is the opportunity for enhanced learning during class time. While classroom time can take many forms, it is always an engaging experience where students consult their teacher and collaborate with classmates. It can take the form of case-based learning, problem solving, role-playing, demonstrations, peer instruction, and more.

How will students be evaluated?

Student retention of material will most often be tested through in-class tests and quizzes. Depending on the technologies used to support the flipped classroom, some assessments may be done online. Along with traditional midterm and final exams, graded assignments often make up the majority of students' final grades. Note that in a flipped classroom, however, some of these assignments may take the form of recorded video presentations. More on the topic of student recording is covered in the next chapter.

Preparing your institution

If you're among the first faculty members at your institution to flip your classroom, gathering the support of your colleagues and administration is an important step to ensuring your own success, and to expanding the use of the pedagogy among your peers. So how can you convince them that flipping the classroom is a good idea?

Reference research on student performance

School boards and department heads are understandably driven by student performance. Citing recent studies, surveys and articles from other institutions will help allay fears that student performance will suffer under the flipped classroom model. The Flipped Learning Network offers a comprehensive and regularly updated list of the latest flipped classroom research.



*Download studies conducted by
the Flipped Learning Network at
their website: flippedlearning.org*

Address attendance concerns

When lectures are available outside of class, another oft-raised concern is whether students will feel that their attendance in the classroom is no longer essential. Of course, nothing about the flipped classroom makes skipping class acceptable. If anything, flipping makes the in-class experience more valuable to the student and more critical to their success.

Many instructors have found that flipping the classroom actually improves attendance. This is often driven by student perception that in-class time is more engaging when they have an opportunity to work with their peers. Additionally, students have reported improved confidence and lower stress levels when they can come to class prepared with a foundational understanding of the material.

Offer to pilot the pedagogy through a “part-time flip”

Many of the best-known flipped classroom case studies feature schools that have made the pedagogy core to the learning experience. However, flipping has also been embraced as a tool that educators can turn to on a part-time basis, supporting their lessons as best fits the material.

It's okay to start by dipping a toe into the shallow end of the flipped classroom pool. Experimenting with this new format enables instructors to gauge student and administration receptiveness to further flipping, and incorporate their feedback into future lessons.

Butler University turns to the flipped classroom for student skills assessments

At Butler's College of Pharmacy and Health Science (COPHS), Associate Professor Jennifer Snyder records brief 7-10 minute videos that her students review before her Clinical Medicine course. Class time is spent discussing the concepts from the videos or applying the information in case presentations.

And Professor Snyder doesn't stop there. Any time a class session is used for students to practice the skills they are learning (through role playing with other students, or with simulated patients), she records those sessions as well so that students' proficiency can be evaluated by their peers as well as their professors. Those recordings also facilitate student self-assessment, enabling students to see certain actions they may not have been aware of and to help themselves improve.

Professor Snyder believes that flipping her classroom has improved the quality of discussion during class. She says, "It's a much higher level of thinking when you go into the in-class discussion. It allows the students to really be ready for what you're going to discuss that day, so it's a richer discussion of the material."

According to one student, "Our Panopto videos have positively affected my learning experience. It's especially beneficial in difficult classes. Listening to sections of the lectures multiple times has helped me learn the material more effectively."

If you'd like to know more about how Butler University uses video across campus, [download the complete case study today](#).

Notebook:

With clear communication and expectations, consistent behavior, and a few simple strategies, any instructor or institution can launch a successful flipped classroom strategy. Keep in mind:

- Instructors should spend the first class reviewing the benefits for students and allaying misconceptions
- Instructors should prepare themselves and their assistants to act and interact consistently with their students
- For K12, keep parents in the loop and solicit their assistance in ensuring their children watch the pre-class lectures
- Be prepared to cite research and allay misconceptions from administrators too
- When in doubt, experiment with the flipped classroom on a part-time basis. It will help build confidence and demonstrate the model for further review.

Chapter 3: Building Great Flipped Classroom Content

When you're ready to begin developing your flipped class lecture materials, the first question is often the most elemental: What should I include?

For many instructors, the initial answer is simply to record the lecture content that would typically be presented in front of the class. With little more than a laptop and some screen recording software, you can capture a slide presentation along with webcam video of yourself in order to deliver a familiar classroom experience online. This is the approach Bergmann and Sams took at Woodland Park High School in 2007.

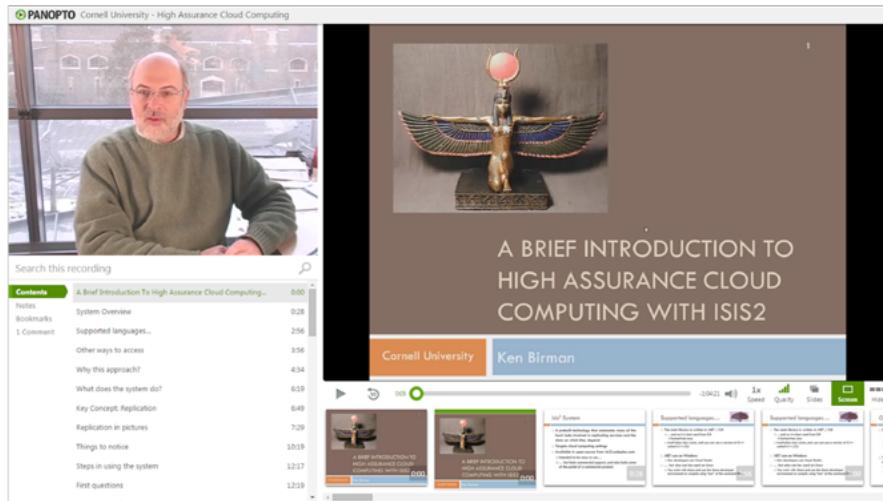
Additionally, the flipped classroom can offer an opportunity to experiment with new formats and media to deliver lecture material in different, often more engaging ways. Without the constraints of the classroom or class time, many instructors shorten their content to "microlectures," incorporate multimedia curated from across the web, and take their students on virtual tours by recording content in the field.

Below are seven ideas for the types of content you can create or curate for your flipped classroom lectures.

Foundational knowledge

The most common approach to the flipped classroom is simply to make the traditional lecture available ahead of class. As such, flipped class recordings provide a great medium for students to gain a baseline understanding of any given topic.

Although recorded PowerPoint presentations are most frequently used for this purpose, you can experiment with nonlinear presentation tools like Prezi, storytelling software like Powtoon, mindmapping tools, and more. You can also curate and incorporate existing media, such as YouTube videos and live website content. Depending on the technology you're using, you may be able to embed these media elements directly within flipped class videos. Technology options are discussed more in chapters 4 and 5.



[Click for a sample flipped classroom cloud computing lecture](#)

Lab demonstrations

For laboratory-based classes, instructors can use flipped classroom videos to visually demonstrate what students will be doing in class. This allows students to hit the ground running when they walk into class.

In addition, video can actually improve the instructional content beyond what would be possible in a face-to-face classroom environment. For example, using several webcams, you could capture a simulation from multiple angles, including close-ups that help students see the details. And by including relevant diagrams in your recording, you could also provide a bird's-eye view of the demonstration.

Finally, capturing and sharing lab demonstrations ahead of time can also help reduce student anxiety. This is especially the case when small mistakes have the potential to derail subsequent steps in the lab.

Problem solving

For STEM subjects where problem solving is a fundamental part of the course, recorded pre-lectures are a great way to present a given problem and suggest approaches to solving it. With video recording software, you can capture the contents of an interactive digital whiteboard, a document camera with pen and paper, or simply a webcam or smartphone pointed at a conventional whiteboard.

Applications and examples from the field

Field trips have always been a great way to engage students and make classroom concepts more tangible. Of course, there's no substitute for the experience of actually seeing the datacenter of a Fortune 500 company, or taking part in an archaeological excavation. Video can, however, offer a virtual experience when a class trip isn't possible. And as smartphone video cameras have become increasingly powerful, instructors can now capture broadcast-quality video of the carvings at Petra or an oil rig in Prudhoe Bay, enabling students to see the detail as though they're standing only inches away.

Audio content published as podcasts

Stemming from formats developed for radio, audio podcasts can be a great source of content for the flipped classroom. They often take the form of interviews or short stories, and today, there are podcasts available on nearly any subject. iTunes alone now boasts more than a quarter million podcasts. Most are available at no cost and can easily be played on any laptop or mobile device.

Documentaries and other online video

Many instructors find that third-party video recordings can be one of the best sources of content for the flipped classroom. The free academic videos shared at Khan Academy, as well as publically available video channels on YouTube and Vimeo, provide overviews and in-depth coverage of a wide range of subjects.

Recorded events are another great source of content from thought leaders across a wide range of disciplines. TED is one of the most famous series of freely-available video presentations. Universities have also increasingly been recording guest lecturers, which many make available to the public through their websites or Apple's iTunes U platform.

A note regarding copyright

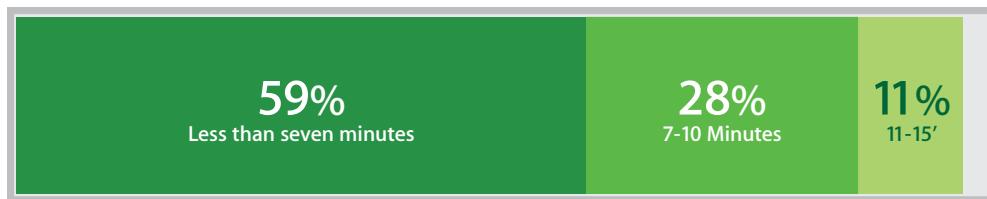
Copyright questions are a top concern for most educators and administrators when it comes to selecting third-party materials for use in the classroom (flipped or otherwise). For the most part, using third-party materials for educational purposes is generally safe under the fair uses clauses of copyright law. However, schools should still take sensible precautions. Restricting access to copyrighted materials from non-students is often a good first step, and an act of good faith respecting the property of copyright holders. If you have copyright questions on any content you intend to use for your classroom, turn to your institution's librarians for help in navigating these routine legal issues.

Student assignments

Since the in-class component of the flipped classroom lends itself well to collaboration, discussion and active learning, more and more teachers are curating content through the use of recorded student assignments. For example, students could interview a family member, survey members of their community, or capture video from an outdoor experience. These videos can then be submitted to the

teacher through an LMS or video platform (described more in chapter 5), and then shared as experiential learning for discussion with their peers in class.

Tip: *Keep it short! For each of your flipped class modules, remember that the pre-class lecture need not run the full length of the ordinary class. In fact, many videos will only run between 5 and 15 minutes. According to research from Ball State, these shorter videos make it easier for students to pay attention and remain engaged. The research suggests that the most effective microlectures may actually clock in at under 7 minutes. This is just enough time to focus each video on a single subject. And if you need to cover multiple subjects in a single module, simply record and share two or three videos.*



Students' preferred length for flipped classroom video lectures.

Source: Ball State University, 2011

The University of Birmingham rethinks the traditional lecture — and traditional student feedback delivery

In his role as Senior Lecturer and Head of Education at the University of Birmingham's School of Biosciences, Dr Jeremy Pritchard had found himself pondering this question: "How can I really engage with a lecture theatre of 300 students at 9am on a Monday morning?"

Having used lecture capture and video management software for some time to record his lectures, Dr Pritchard saw an opportunity to curate his materials in a new way that would suit his students better.

"I was thinking about how to deliver my session on the Hardy-Weinberg principle – an equation used to calculate the genetic variation in a population," Dr Pritchard reflects. "It's a tricky topic and one that students absorb at different rates. I decided to use the flipped classroom approach to deliver the lecture, to give my students the chance to review the material multiple times if needed and learn the content at their own pace. My students loved it and I got lots of positive feedback."

Along with flipping the classroom, the University of Birmingham has turned to video as a way to provide improved feedback to students on their assignments. Instead of the traditional "red pen review," Dr Pritchard and his colleagues simply record themselves talking through a student's work while using screen recording software to highlight particular sections in their assignments or passages in their essays.

"I find myself giving more nuanced, in-depth feedback when I record myself compared to when I just write comments on a student's essay. I also say more about the positives, rather than just focusing on the areas where the student needs to improve," explains Dr Pritchard. "My students really appreciate their video feedback – it helps them focus on their strengths and weaknesses more clearly."

If you'd like to know more about how the University of Birmingham uses video across campus, [download the complete case study today](#).

Notebook:

Shifting the lecture ahead of class time opens a host of opportunities to expand the scope and diversity of materials available for teaching. Key ideas to remember:

- Pre-class lectures can and should be different lesson to lesson, and can include a mix of mini-lectures, discussion setups, and curated materials
- Instructors can easily create original content using video, audio, slide presentations, and screen recording tools
- Freely available and licensable content exists all over the internet. Take advantage of it!
- Work with library and administration staff where issues of copyright are a concern

Chapter 4: Tech Tips for Recording Your Videos

The way we were taught is not necessarily the way that we should teach students. And so we need to embrace the new technology that we're surrounded with to help enhance our lessons.

Stacey Roshan, high school math teacher

Once you've built the content for your flipped classroom, the next step is to capture your recording.

The good news is that it's never been easier to create and share video content. High quality video cameras are now standard on nearly every smartphone, tablet, and laptop on the market. HD webcams can be purchased for less than \$100.

If your institution has already adopted lecture capture technology, there's even better news. The software needed to flip may already be installed in your classrooms. Often, this software can be downloaded from your school's LMS and installed directly on your laptop. We'll talk more about the benefits of this in chapter 5.

Where you record your videos is sometimes a simple matter of personal taste, and is other times driven by the technical requirements of your lecture. For

example, basic lectures that consist of webcam video and PowerPoint slides can be recorded wherever you're most comfortable — in the classroom, in your office, or at home. Other times, your lecture may require the use of a classroom or lab in order to use a document camera, whiteboard, microscope or other equipment.

Wherever you decide to record your content, you'll need two pieces of equipment: a camera and a microphone.

Selecting the right camera

The number of high quality, portable cameras in the market continues to grow, giving you a dizzying range of choices. Below, we've categorized cameras based on their capabilities and costs, and provided a few recommendations of our favorites.

Webcams

Webcams are small, typically inexpensive cameras that are used in conjunction with a computer. Most modern laptops have built-in, forward-facing webcams, many of which are adequate for you to share a basic lecture. For a higher quality image, there are external USB-powered webcams, typically available for under \$100 (as of this writing, we're fans of the Logitech c920 and c930e). Many of these external webcams also include microphones.



Camcorders and digital SLR cameras

Camcorders and digital SLR cameras come in a wide range of options. Low-end consumer camcorders may actually be less expensive than USB webcams. They often have slightly lower video quality, but come with built-in zoom capability.

Prosumer and professional cameras in this category can range from a few hundred dollars to several thousand. In these models, you'll find higher performance video sensors that provide crisp, more true-to-life images and motion. Some camcorders, and all DSLRs, support interchangeable lenses for different recording needs. Because they have internal storage, either on a hard drive or memory card, these cameras



can often be an effective option for recording on the road. And through the use of USB video cards like the Magewell XI100D, these higher-end cameras can also be used to record directly to your computer.

For consumer-level camcorders, Canon's VIXIA series provides some good options. For a step up in video quality and recording options, Sony's CX-900 is our top pick. And for high-end DSLR-style recording, Panasonic's mirrorless GH4 and Sony's A7 series are great options.

Smartphone cameras

It is often said that the best camera is the one that you have with you. For sheer convenience and availability, nothing beats a smartphone. In fact, many of today's smartphones include HD video cameras with astounding quality — quality, that until a few years ago, was only achievable with expensive, professional video cameras.

For example, Apple's iPhone 6 and 6 Plus can capture full 1080p HD video in up to 60 frames per second. And when used in conjunction with apps like Videon, you can achieve near cinema-quality image stabilization on these phones.



Tip: Two smartphone accessories can make your videos appear more professional and give you additional shooting options.

First, smartphone tripods are inexpensive and give your videos a more polished look. Second, snap-on smartphone lenses, like the Olloclip, Moment, and instaLens can help you capture tight shots, better bokeh,

and wide-angle views than your phone's built-in lens. For science classes and computer engineering, Bodelin's ProScope and AidMics uHandy enable you to record with up to 100x magnification of your subject.

Action cameras

For instructors who are often out in the field, the smartphone might be just the beginning. Designed for adventure sports, cameras like the GoPro give instructors a durable case and a high-quality image in a highly portable format. Since the GoPro can be attached to just about anything, it makes a great solution for capturing video on geological expeditions, on-site facility tours, or from the sky when attached to a quadcopter.

Document cameras

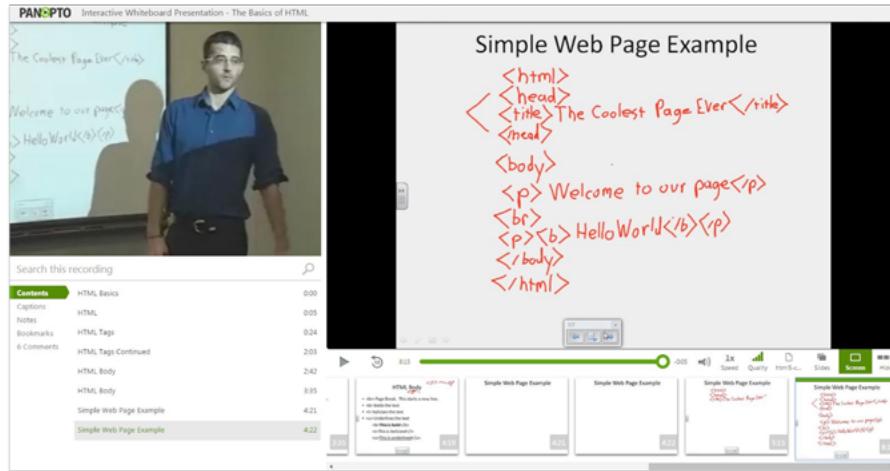
Even in traditional lecture halls, document cameras have overtaken the overhead projectors they were modelled after. Document cameras provide a static overhead camera, lighting and a surface that is well-suited to display paper documents and other small objects. Document cameras are a simple, no-fuss way for you to record anything you can write, draw, or hold in your hand.



Digital whiteboard

While it's easy to record a traditional whiteboard or chalkboard with a camcorder or webcam (just point and shoot), a digital whiteboard offers a key difference. With these "smartboards," the instructor's hand and body never get in the way of the content as it's recorded on the board.

Like a document camera, the smartboard gives you a way to record drawings, equations, and notes without changing your delivery style. Electronically tracked markers allow you to write on the board as normal, while the smartboard digitally reproduces whatever is on the board in real time.



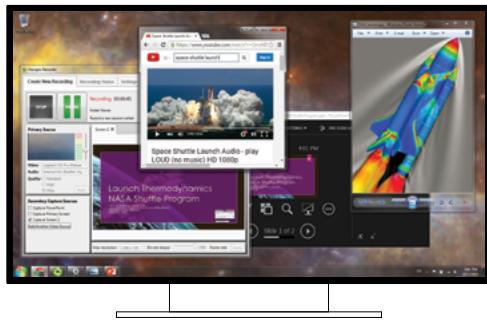
[Click for an example flipped classroom video featuring a teacher using an interactive whiteboard.](#)

Screen capture tools

Although not actually a “camera,” screen capture software may be the most versatile recording tool for creating flipped classroom visual aids. With screen recording software, anything that can be shown on a computer screen can also be used to present the information to your students. Stand-alone screen recording software is widely available online, and many “video platforms,” which we discuss in more detail in chapter 5, include built-in screen recorders.

Tip: Using two monitors is a great way to stage your content and make screen recording easier. Simply set just one screen to record, and use the other screen to prepare your content. Then when ready, bring the content over to the active recording screen. This provides a level of certainty for the presenter about what will be shown on screen.

① Staging



② Recording



Take advantage of multi-camera video

Sometimes a single camera angle just isn't enough. You may need to capture a simulation from different perspectives, record each participant in a debate individually, or capture multiple break-out group activities simultaneously. Sometimes you'll want to add materials that can supplement your PowerPoint, such as a screen recording or curated videos. Sometimes, it's all of the above.

In the past, anything beyond a single stream of video would have presented an incredibly complicated challenge. Splicing multiple videos together required professional editing equipment, expertise, and often a considerable check written to an AV specialist.

Today though, software is making it easier than ever to incorporate all of your media content into a single recording. Modern video platforms being used for lecture capture and video management in many schools today already allow for additional video streams and screen recordings. Some of these platforms enable you to record or upload a virtually unlimited number of additional video feeds and automatically synchronize them. The result: With multi-camera video, you can tell almost any story in your flipped class recordings, no matter how complex or creative it may be, all without requiring the help of expensive AV specialists.



[Click to see how multi-camera video can add a new dimension to your videos](#)

Selecting the right microphone

If good video quality is important, then good audio quality is essential. Even if you have broadcast-quality HD video, your efforts will be for naught if your audio sounds like you're in a wind tunnel. Delivering flipped class videos with high-quality audio begins with finding the right microphone.

Laptop microphones

All laptops come with built-in microphones, and like all technology, onboard mics continue to get better year after year. So for a basic flipped classroom recording, it may suffice. Just keep in mind that most laptop mics can't distinguish between good noise (i.e., your voice) and bad noise, such as background noise or the tapping sound your keyboard makes. As a result, they aren't the best solution if you can't record from a quiet location.

Webcam microphones

USB webcams include built-in mics. Depending on your webcam model, these mics can deliver substantially better sound than your onboard laptop mic. For example, the Logitech c930e not only delivers crisp, high-definition video, but also includes basic noise cancelling capabilities that filter out background noise. If you've already invested in a USB webcam and have the choice between the laptop onboard mic and the webcam mic, in almost all cases, the webcam mic will provide better audio quality.

Dedicated USB microphones

A step up from the webcam mic is the dedicated USB microphone. Unlike a webcam, which provides both video and audio input, these microphones only capture audio. They're larger than a webcam mic, but most are still quite portable. And starting around \$50, these mics can deliver clearer, more realistic-sounding audio. At this price point, Samson's Meteor mic is a great, highly-portable choice. At the high end of the USB mic spectrum, the Blue Yeti is your best bet at around \$120.



Smartphone microphones

Like laptops, all smartphones have built-in microphones, and like laptop onboard mics, smartphone mics are your baseline option for capturing audio. The beauty of the mic is that it's always there. The challenge with the mic is that it doesn't provide noise canceling capabilities, so in loud environments you'll pick up a lot of ambient noise around you.

To address this issue, an ecosystem of external smartphone mics has emerged in the last three to four years. These include:

- Compact mics like the iRig Mic Cast that plug directly into your smartphone's headphone jack
- Wired lavaliers like the RODE SmartLav+
- Condenser mics like the Fostex AR101
- Wireless bluetooth lavaliers like the Sony ECM-AW4

Of these, the wireless bluetooth lav often provides the best combination of quality and cost with the added flexibility to record up to 100 feet away from your phone.

78%

Agree that seeing the professor's face helps them engage with the video

In Ball State's study, they found that seeing the instructor's face while watching a video lecture helped students stay engaged.

Looking and sounding your best

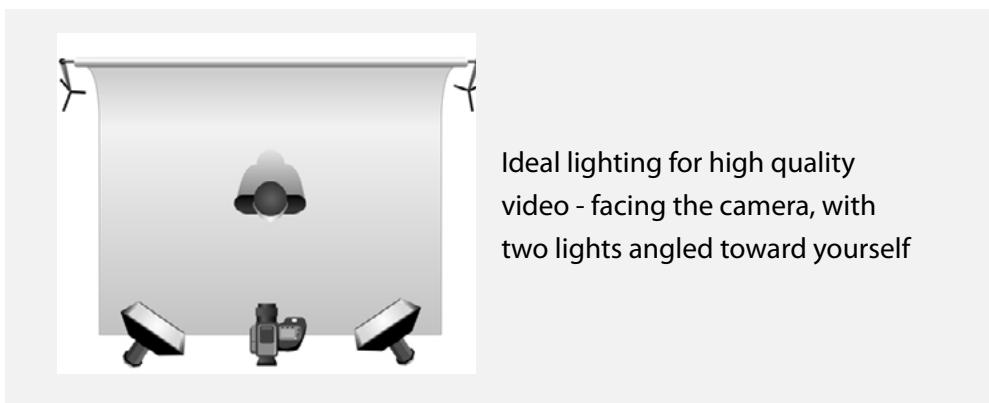
Once you've purchased your camera and mic, you're almost ready to record. With a few simple steps, you can get the most from your new AV gear and avoid common problems with video or audio quality.

Lighting

Your approach to lighting can have a big impact on the connection you make with your students. Great lighting can make your video feel more lifelike and engaging. Poor lighting can actually impact viewer perception of your content.

Here are five simple tips to improve your lighting:

- In general, the more light you can point toward yourself, the better. The most common problem with video lighting is simply that there isn't enough.
- Try to position yourself in direct light that illuminates your face evenly in order to avoid harsh shadows. This could be natural light coming through a window behind the camera or artificial light coming from a couple of bright, strategically positioned desk lamps.
- Avoid bright lights directly behind you, as this can create a silhouette effect. Recording a video while standing in front of a window is a common cause of this issue, and should be avoided.
- Home and office desk lamps make convenient and movable light sources. When using these as your light source, you should ideally use two, placing each at a 45-degree angle as shown in the diagram below. This helps create balanced, soft light on your face.
- For less than \$20, you can purchase a couple of bright, clip-on lights at home improvement or office supply stores. These lights affix to your monitor or desk and provide ample light for flipped classroom recordings.



Ideal lighting for high quality video - facing the camera, with two lights angled toward yourself

Audio quality

In an ideal world, every recording would be captured in a perfectly quiet, professional sound booth. Admittedly, this is a lofty albeit unrealistic aspiration. For most of the videos you record, your goal should simply be to capture audio that won't distract students from the content you are presenting.

Here are three tips to help you get there:

1. Record in a consistently quiet environment. Two qualities define "consistently quiet." First, the location should have minimal ambient noise like traffic or background conversation. Second, it should be in a place where you don't expect sudden noises, like doors slamming, dogs barking, or babies crying.
2. Keep your microphone close enough to your mouth so that you feel comfortable speaking at a reasonable volume without raising your voice.
3. Check your sound levels. There are two ways to do this. If your recording software supports audio monitoring (image below), you can see your audio levels on a meter to determine if you're too loud or too quiet. If your software doesn't support audio monitoring, then make a quick test recording and play it back to check your levels.

Eye contact

Finally, your engagement with the camera can affect students' perception of your recordings. In general, instructors tend to stare at the content they're presenting. This, however, is a missed opportunity. Instead, by consciously making eye contact with your camera, you can drive better engagement because your students will feel that you're addressing them directly.

Of course, it may take some time for that video eye contact to feel natural. Compared to an in-class lecture, in which you can move around the room or simply turn your head to address different students, a recorded lecture doesn't provide this flexibility. It can feel a little awkward at first to stare down a barrel of the camera for 5 to 15 minutes at a time.

Here are a few tips for making better eye-to-camera contact:

1. Use your slide transitions as an opportunity to engage the camera. When you change slides, quickly skim the first bullet or two, then look up at the camera and speak directly to your audience. At first, it doesn't need to be more than 3-5 seconds. Over time, you'll get more comfortable extending the length of your camera gaze.
2. If your video recording software includes a preview image of yourself, turn it off. Seeing yourself on-screen is a distraction. It gives you one more thing to look at and makes it all the more tempting to avoid engagement with the camera.
3. Position your camera at eye level. Too often, the webcams we use force us to look up or down at them, and this leads to two problems. First, it provides an unnatural viewing angle for your students that they wouldn't see if they were interacting with you face-to-face. Second, when the camera is below you, angled up toward your face, it generally doesn't provide the most flattering view for your audience.
4. Move away from your screen when you present. The closer you are to your screen, the more dramatic the change when shifting your focus from the camera to your content. When you sit or stand back a bit further, you can glance down at your content and back up at the camera in a less noticeable way.
5. Imagine that the camera is your class. One of the benefits of face-to-face presentations is the visual feedback you get from your students. Their eyes, smiles, facial expressions, and body language give you a sense of what's resonating and what needs to be repeated. You don't have this luxury, of course, when staring into the inanimate eye of the camera. So try this mental exercise. With practice, it can significantly decrease the sense of awkwardness when staring into the camera.

Bonus Tip: If you typically wear glasses, be aware that glare from your computer screen may become a distracting element. Turning down the monitor's brightness or sitting farther away can help alleviate the intensity of any glare.

Using a teleprompter

For some subjects, you may want to script your videos. Creating a script helps you keep your content within a given timeframe, and it enables you to present more formally when it's appropriate. Unfortunately, reading from a script traditionally required that you invest in an expensive teleprompting system, or read from a piece of paper that forced you to disengage from your audience.

Fortunately, a growing market of webcam and iPad teleprompters hopes to address these challenges. Webcam teleprompters typically sit on your laptop screen or computer monitor, placed directly over your webcam. iPad models allow you to mount your tablet directly above or below your camera. In both cases, these teleprompters help you maintain eye contact with your students without spending a fortune.

Notebook:

It's never been easier to create and share high quality video content. Whether you decide to record with your own personal equipment or your institution's existing lecture capture technology, keep in mind:

- Cameras help give your students the ability to actually see you teach. Depending on your subject, one or multiple cameras may help you best present your materials.
- Your microphone may just be the most important tool in your flipped classroom — good audio quality is essential for students to learn from your recordings.
- While recording, remember to use ample lighting and plan to make eye contact regularly with your camera.

Flipping the classroom at Stonehill College

An evolutionary geneticist by trade, Bronwyn Bleakley teaches biology at Stonehill College in Massachusetts. When Professor Bleakley wanted to get her students to stop spending class time hiding behind their laptops passively taking notes and start actively participating in discussion, she found a smart solution – the flipped classroom.

[Click to hear Professor Bleakley tell the story:](#)



Bronwyn Bleakley
Assistant Professor of Biology
Stonehill College

Chapter 5:

Sharing and

Managing Your

Videos

I use technology in my classroom... to get technology out of my classroom, and have my students focus on the material, on working together, and on solving problems.

Bronwyn Bleakley

Biology Professor, Stonehill College

When instructors decide to flip their classroom, one of the most common initial oversights is what to do with their lecture videos after they've been recorded. After all, capturing video is only the first step to successfully using it as part of your flipped classroom. In almost all cases, you'll need to plan for the following capabilities as well:

- **Video storage:** Hosting your videos somewhere they can be easily, securely accessed by students and played back on their laptops, tablets, and smartphones.
- **Basic editing:** The ability to trim the top and tail of your video, cut out portions within your video, and splice together multiple videos.

- **Search:** Enabling your students to search the content of your videos in order to use them as an effective study aid.
- **Reporting:** Providing you with insights on which lectures are most popular, which topics are hardest for students to understand, and more.

In general, you can take one of two approaches to video management — either cobble together individual technologies that offer the capabilities above, or use an integrated video platform. For academic institutions that don't already use a dedicated video platform or a lecture capture system, individual tools are often the fastest way to get started. This approach, however, has some significant downsides that are important to understand.

Using individual technologies

Many early adopters of the flipped classroom revelled in the challenge of assembling tools that would facilitate video sharing. Like Jonathan Bergmann and Aaron Sams, you could use a simple screen recording tool like CamStudio to capture your PowerPoint presentations with audio. You could then upload your videos to YouTube.

This approach, however, introduces a number of immediate challenges:

- **Public access:** All videos posted to YouTube are public by default, and can't be made entirely private. Any video you upload to YouTube will be indexed by Google and can be returned in search results. So if there's any content in your lectures that you don't want to be seen by the general public, YouTube isn't your best option.
- **Analytics:** YouTube can only report on user viewing behavior in aggregate. It doesn't allow you to see student-by-student records of who watched which video when, and for how long.
- **Search:** Although YouTube is owned by the largest search company in the world, it doesn't index the actual content inside your videos (i.e., the words you speak or show in your slides). For students, this makes it difficult and time-consuming to find specific topics in recordings as they study for exams.

- **High-fidelity recordings:** Free screen recording tools like CamStudio allow you to capture the content of your screen and audio. Many, however, don't allow you to capture video of yourself presenting. Those that do relegate your video to a small thumbnail in the corner of the video. And if you're looking to capture additional video sources, these tools don't provide the facility to do so.

This approach also shows its seams as soon as colleagues at your institution begin adopting the flipped class pedagogy. Why? Most instructors won't have the same patience or enthusiasm for building their own technology infrastructure — they simply want to teach.

Lastly, administrators often find that it's not in their school's best interests for teachers to administer their own flipped classroom technology. The use of individual solutions results in inconsistent experiences for students, missed collaboration and learning opportunities for faculty, and a steep rise in the time and cost required to support such a wide range of technologies.

Using a video platform

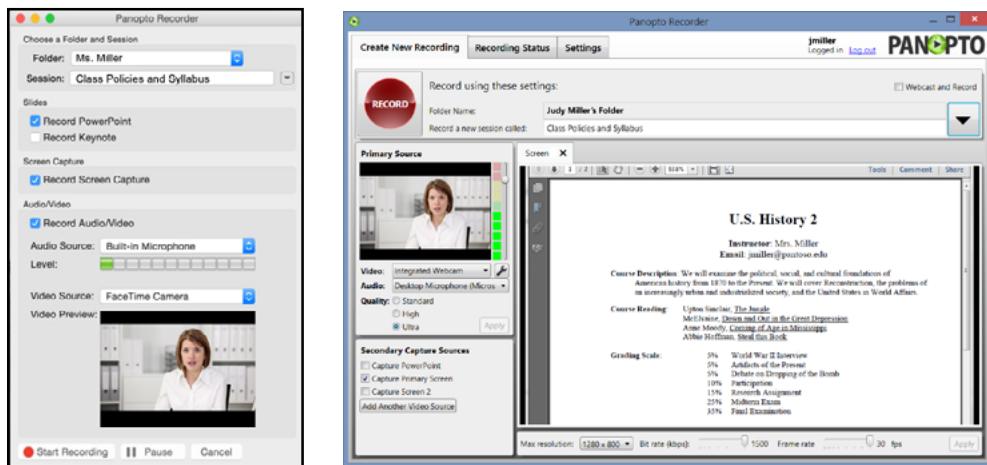
Fortunately, supporting the flipped classroom in a more scalable way across departments and entire campuses is actually easier than supporting the self-serve model described above. All that's needed is a technology that is quickly becoming ubiquitous in universities around the world — the video platform.

At its most basic level, a video platform is a repository built for storing and sharing your video and audio files. It's sometimes referred to as a Campus YouTube or a video content management system (VCMS). The fact that it's built specifically for multimedia is what makes a video platform a perfect fit for flipping the classroom.

Integrated video recording software

Video platforms include software for capturing screen recordings, audio podcasts, video presentations, and more. The software typically runs on Windows and Mac desktop and laptop computers, and sometimes includes mobile apps for recording flipped class videos on iOS and Android devices. Because the capture software is

integrated with the video platform, all recordings are automatically uploaded to your video repository where they're stored securely.



The Panopto Recorder for Mac (left) and Windows (right)

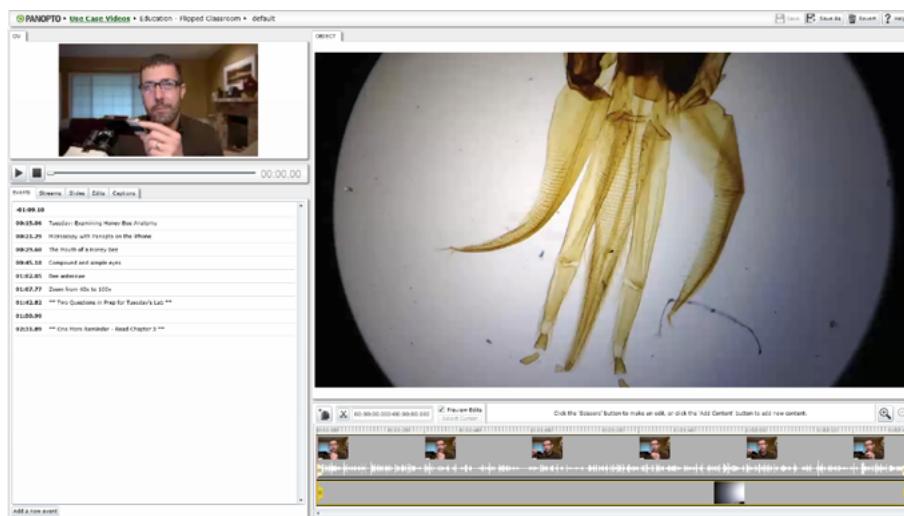
Video conversion

Once your video is uploaded, the video platform converts it into multiple formats so that it can be played back on any device. This process, called transcoding, is critical to any flipped class recording. The reason is that video file formats are notoriously incompatible with the ever-evolving range of mobile devices in the market today. Without transcoding capabilities, students who attempt to watch your lecture on their iPad or Android device might not be able to do so.

In addition to basic transcoding, many video platforms automatically detect the student's device and connection speed. This enables the platform to deliver video in the most efficient format possible. The result is a higher-quality playback experience tailored specifically to your students' phones and tablets.

Editing

With most flipped classroom videos, instructors will typically only need basic editing capabilities. These include trimming extraneous moments from the front and end of their videos, cutting out segments in the middle of the video, and splicing two or more video segments together. Most video platforms include simple web-based video editors that provide this and other related functionality.



A flipped classroom microlesson in the Panopto editor

Video search

The ability to search across your video repository and inside the content of individual videos is often overlooked by those who are new to the flipped classroom. In fact, it should be one of your top considerations as you implement the teaching model. Why? Search is one of the most valuable tools for students who need to use your recordings as effective study aids.

For example, imagine that you flip two classroom sessions each week with 20-minute mini-lectures. By the end of an 18-week semester, you'll have shared 720 minutes, or 12 hours, of video with your students. This means that at the end of the semester, your students will have a mountain of video-based information to review as part of their exam prep.

Without a video platform, they'd be left to the traditional approach of finding content inside your recordings. It's a process that is both time-consuming and frustrating. Consider a student who needs to review a 2-minute video segment on photosynthesis:

1. They'd begin by looking for the right lecture. If you happened to include the word photosynthesis in the title or description of the recording, it might take the student a minute or two to find it.
2. Once they'd found the recording, they'd have no choice but to hunt and peck in the video timeline to find the specific two minutes they're hoping to review.
3. They'd then repeat this process for every topic they need to review in your lectures.

Without a better option than hunting and pecking, students may quickly come to regard your video lectures to opaque blobs of information that can't be efficiently used as a reference.

Video platforms take a different approach — one that makes the content of your flipped classroom recordings as searchable as the web, email, or documents. When you upload videos into your video repository, every word spoken is indexed using automatic speech recognition. At the same time, every word shown on your slides or elsewhere on your screen is indexed using text recognition. As a result, the student above would be able to type photosynthesis into a search box, find the precise moment in a lecture where the topic is covered, and fast forward to that exact moment in the video.

The screenshot shows a search interface for a video library. The search bar at the top contains the text "photosynthesis". To the right of the search bar is a green magnifying glass icon. Below the search bar are several navigation links: "Contents", "Notes", "Bookmarks", "Comments", and "Hide". To the right of these links are two dropdown menus: "Search all" and "Sort by relevance". The main content area displays a list of search results. The first result is a video titled "photosynthesis" with a duration of 1:32. The second result is another video titled "photosynthesis" with a duration of 1:42. The third result is a video titled "Photosynthesis Calculations" with a duration of 2:33. Each video entry includes a small thumbnail image and its title and duration.

Video search helps students get back to past content quickly.

Analytics

When you decide to flip your classroom, a video platform can provide you with insights into the effectiveness of your lectures. This is accomplished through video analytics.

In general, video analytics provide reports on the following metrics:

- **Views:** How many times was a given lecture watched by the class?
- **Unique views:** How many individuals watched the given lecture?
- **Average duration:** Did students watch the entire lecture, or only parts of it?
- **User viewing behavior:** Which videos were watched by a given student?



A retention graph can reveal which sections of the video were most important to the students.

Video platforms designed for academic institutions not only aggregate video analytics for all students, but can actually determine the engagement of individual students as well. This level of information gives you the ability to monitor a student's engagement and intervene if low engagement correlates with low performance.

Video analytics can also give you a leg up when you walk into the classroom. Specifically, you can identify points in the video lessons where students had trouble

(by looking at content that they repeatedly played), or where their attention dropped off. Armed with this information, you can jumpstart their in-class lessons with a review of the most difficult information before moving on with the day's activities.

Analytics, when used in combination with student performance metrics and qualitative feedback from student surveys, provide helpful input as you continue to experiment and iterate on your approach to flipping.

Integration with learning management systems

Learning management systems have become ubiquitous in universities in the last few years. In 2014, Wainhouse Research reported that 94% of universities interviewed in a survey had mainstreamed LMS technology across the institution. This widespread use of LMSs has made them the “technology hub” for course management and teacher-student interaction.

With this in mind, most video platforms integrate with popular learning management systems. Through a straightforward configuration (performed by your academic technology team), you and your students will be able to access and manage flipped classroom videos through the familiar interface of your LMS. Specifically:

- You and your students can use your existing LMS login ID and password to securely access your flipped classroom lecture repository.
- Students can access individual flipped classroom recordings directly from within the familiar interface of your LMS.
- You can control when to publish your videos, how long they stay active, who can access them, and more—all from within your LMS.

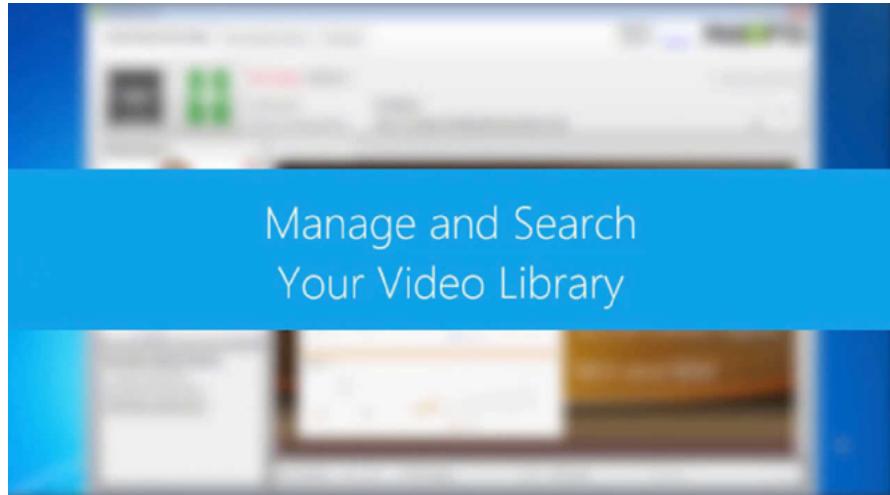
Making Your Video Accessible

In February 2015, the Massachusetts Institute of Technology (MIT) and Harvard University were both sued by the National Association of the Deaf for failing to provide captioning in their Massive Open Online Courses and other video content. While the lawsuit was a wake up call for the educational community, video itself was already offering a way forward. Through the use of closed captioning, video in the flipped classroom has the potential to support students with hearing disabilities in a manner that is both better for students and easier for instructors than in the traditional classroom. Closed captioning is supported on most specialized video hosts and content management systems and is critical for compliance with the Americans with Disabilities Act (ADA).

In summary, video platforms are an all-in-one solution for flipping classrooms. They provide you with the recording software to capture your lectures on any device, a secure location to store your videos, technology for ensuring that your students can watch your videos, editing software, video search capabilities, and analytics — all integrated with the LMS you're already using daily.

So how do you get a video platform? Chances are, your university already has one. For the more than 70% of US universities that use a lecture capture solution like Panopto, those systems will already include a video repository with the video platform capabilities described above.

By using the LMS and video platform already in place at your institution, you benefit from existing IT support for these products. In addition, expanding your flipped classroom efforts across your department or your entire campus can be done with relative ease, using existing technologies already covered in your institution's annual budget.



[Click](#) for a brief overview of how a video platform makes managing campus-wide classroom video easier

Notebook:

Succeeding with the flipped classroom often boils down to having a stable, reliable, and easy-to-use technology that helps educators provide a consistent, stress-free digital classroom for their students. The right technology can help you:

- Make recordings reliably accessible on-demand.
- Help students to search video so they can quickly access the information they need.
- Allow the instructor to record video from anywhere.
- Work with a variety of video and audio recorders, and allow for capturing multiple video feeds to tell a complete lecture story.
- Provide closed captioning to support students with hearing disabilities.

Chapter 6:

Making the Most

of In-Class Time

Flipped learning is not about how to use videos in your lessons. It's about how to best use your in-class time with students.

Aaron Sams

For first-time flippers, it can be easy to get wrapped up in the initial challenges of planning and producing pre-class lecture materials, and lose sight of what that up-front effort earns you. When you walk into your flipped classroom, you'll have a room full of informed students, ready to dig in and explore the day's lesson together with you.

This is arguably the element of the flipped classroom most essential to long-term success. Done well, the interactive class time you've cultivated by flipping will justify itself in improved student participation, interaction, and performance.

Yet, achieving that student-centered learning experience isn't a given. Just as an instructor needs to prepare for the work of providing lecture materials ahead of time, teachers in flipped classrooms must plan for how they'll make the most of their newly-structured in-class hours.

Depending on the subject and how the students in the classroom learn best, there is almost no limit to the number of ways instructors can structure their flipped class time for maximum interactivity and learning.

Let's look into some of the most common types of flipped classroom structures:

The inverted classroom

Students are assigned the "homework" of watching video lectures and reading any materials relevant to the next class. During class time, students practice what they've learned through traditional schoolwork, with their teachers freed up for additional one-on-one time.

Case-based learning

Students prepare before class, and are assigned to small groups at the beginning of class time. Groups analyze a given problem or assignment and present a solution or recommended course of action. Teachers act as guides during class, engaging groups to suggest approaches or answer questions.

Guided inquiry learning

Students review materials before class. In-class activities are Socratic in nature, guided by questions from the instructor and designed to encourage students to explore concepts or information, draw conclusions, and apply the concepts.

Team-based learning

Students prepare before class and are quizzed over the content at the start of class (either as individuals or as teams). Students are given immediate feedback on their performance, and educators tailor the day's lessons as needed with in-class microlectures to address gaps in understanding. Finally, students are assembled into teams for structured discussions or activities based on lecture content.

Discussion-based learning

Teachers assign lecture videos, as well as any other video or reading related to the day's subject, such as TED Talks, YouTube videos, and other resources. Class time is then devoted to discussion and exploration of the subject. This can be an especially useful approach in subjects where context is everything, such as history, art, or English.

Demonstration-based learning

Subjects like chemistry, physics, and math often require students to remember and repeat activities precisely. In these courses, it's most helpful to have a video demonstration to be able to rewind and watch again and again. In the demonstration-based model, the teacher uses screen recording software to demonstrate the activity in a way that allows students to follow along at their own pace.

Peer instruction

Students prepare for class and simply inform the teacher as to what they found confusing or difficult. Class time features a mix of mini-lectures and peer interaction, either with the class as a whole or with smaller groups, depending on the subject matter. Peer instruction deliberately avoids asking students to raise hands to answer questions, and instead insists that students openly discuss questions and work out answers together to achieve better understanding.

The faux-flipped classroom

This is a great idea for younger students, in which actual homework might not yet be appropriate. In the faux-flipped model, students watch lecture video in class, giving them the opportunity to review materials at their own pace. The teacher moves from student to student, offering whatever individual support each young learner needs.

The virtual flipped classroom

For older students and in some courses, the flipped classroom can eliminate the need for classroom time at all. Some college and university professors now share lecture videos for student viewing, assign and collect work via online learning management systems, and simply require students to attend office hours or other regularly scheduled time for brief one-on-one instruction based on that individual student's needs.

Flipping the teacher

All the video created for a flipped classroom doesn't have to begin and end with the teacher. Students, too, can make use of video to better demonstrate proficiency. Assign students to record practice role-play activities to show competency. Or ask each to film themselves presenting a new subject or skill as a means to "teach the teacher." These materials can then be reviewed and discussed during class time.

The Sauder School of Business at the University of British Columbia flips the teacher to improve students' presentation skills

"The vision for the class actually stemmed from a curriculum review," recounted Cameron Morrell, an instructor at the University of British Columbia's Sauder School of Business. "We heard from the industry that our students are incredibly intelligent — but they needed to learn how to be better presenters."

The class Sauder envisioned wouldn't just be a way for the students to learn about making presentations — it would be a total presentation laboratory, a place to experiment, self-review, and learn how to succeed as presenters. Live practice would be just the beginning — for students to review and learn from past performances, each presentation would be recorded.

Unfortunately, the solution wouldn't be as simple as setting up a camcorder. With 400 participants and a finite number of classroom hours, a standard video setup would have limited recording just one presentation per student.

"Students needed to be graded on a series of presentations, but we couldn't devote all that class time to students presenting," said

Morrell. "To solve that challenge, we created our own 'Media Lab' without spending any money. We took normal student meeting rooms with no AV equipment, set up a laptop with the university's video platform installed, and just hit 'record.' With six rooms running simultaneously, we could record 40 student presentations in less than 90 minutes."

Recording the presentations made it possible to review each student's performance after class. And since presentations were recorded individually, professors can objectively review each student's work in full and provide more in-depth comments, recommendations, and feedback.

If you'd like to know more about how the Sauder School of Business at the University of British Columbia uses video across campus, [download the complete case study today](#).

Notebook:

While every flipped classroom is a little bit different, the goal is always the same: interactive, student-centered learning. To achieve that, flipped classroom time can take many forms, including:

- Small group labs, discussions, and problem solving time.
- Further exploration of the lesson as a group, building on foundational information presented in the pre-class lesson.
- Students presenting and receiving feedback from their peers
- Time given to complete individual assignments with an opportunity to work more closely with the teacher

Chapter 7: Assessing Success and Planning for Next Year

As with any new teaching model, a switch to the flipped classroom will generate a healthy amount of interest and excitement. At the end of the year, instructors will have a wealth of new data, opinions, and ideas with which to move from a first-flip pilot to full-time flipping — and perhaps even to an institution-wide deployment.

As you complete your first semester, plan to take some time to evaluate how the pilot impacted the tone and tenor of your class's regular sessions, the final marks your students earned, and how the whole new process worked for you as an instructor.

Evaluate the impact on student performance

For most, the deciding measure of the success of a flipped classroom (or any new methodology) is its impact on students' grades. In study after study, the flipped classroom has been a resounding success when it comes to exam grades, but each instructor and school will want to determine what success looks like to them. That will require digging into some data.

Of course, final course and exam grades are simple metrics for measuring student success, but without anything to compare them to, it can be difficult to tell whether the new pedagogy or some other factor was responsible for a change.

To get a better picture, check how student grades track over the course of the semester. As students gain familiarity with the system and better understand what is expected of them, they will exhibit more confidence, engage more enthusiastically in the active learning component, and learn to unlock the resources at their fingertips.

Comparing weekly metrics, like video consumption, online checks for understanding, or participation in class against performance on exams can help instructors understand how students adjust their behavior after a few exams.

For instructors who teach multiple sections of the same class in a given semester, consider using one class as a control and in another, try out the flipped classroom. Since the content will be roughly the same, it is an opportunity to do a side-by-side comparison to generate a tighter feedback loop for your classroom and your department.

Gather student and parent feedback

Grades may give instructors quantitative data on student performance, but don't be too quick to judge a new teaching style's success based solely by a letter. Student evaluations are likely to offer instructors insights that analytics never would.

Especially in the early goings, it's a good idea to use a few minutes of class time to interact with students on a two-way basis, searching out potential lingering concerns and challenges with the flipped classroom format. With a little understanding, you can help to remedy any issues long before it comes time to complete report cards.

In the K12 setting, parents will also likely be eager to express their opinions about the flipped classroom. For the most engaged parents, the flipped classroom will have provided them a new level of connection to their student's semester. Parents will either find themselves receiving fewer requests for help with

assignments (since they were completed during class time), or that their ability to review the pre-class lectures gave them a much-needed refresher on how to help their child.

Assess the performance of your flipped classroom with a mix of qualitative and quantitative indicators. And don't forget, once you've made your evaluation, share your findings! If you are one of those educators leading the way, there will be others who want to follow. Joining the larger community of flipped educators can be an exciting moment.

Flip for flipping

When it comes to flipping a classroom, you can play a major role in shaping student, parent and administrator perceptions about this new approach to learning. By being proactive in your communications, planning for implementation needs, listening to feedback, reviewing the analytics, and continually improving the process, you can make the most of your semester, and more importantly, make a real difference in your students' learning.

Happy flipping!