2012 CAMPUS TECHNOLOGY
19th Annual Education Technology Conference

Flipping the Classroom:
Succeeding With Reverse Instruction

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July 16-19, 2012 • Seaport World Trade Center • Boston, MA

EmergingEdTech
Engaging students and enhancing learning
outcomes with Internet & Instructional Technologies

A blog and website focused on emerging education technologies

July 16-19, 2012 • Seaport World Trade Center • Boston, MA

Goals for today's session ...

- **Exploring what the flipped classroom IS and what it IS NOT**

- **Dispel some myths about 'the flip'**

- **"Why I Love It, How I Use It" – hearing about teacher's experiences in their words**

- **Learn about how to succeed with flipping the classroom – examples of what works, and what not to do, lessons learned**

- **Examine some of the learning science behind 'the flip'**

Goals for today's session …

- **Realizing that it's not too hard to try this – it's not as difficult as some might think (start small)**

- **Get inspired to try flipping some of your own class/course content**

- **Learn about useful flipped content tools & techniques**

- **Provide resources where you can learn more on your own**

This presentation is available on EmergingEdTech at:
EmergingEdTech.com/CT2012

[CT2012 Presentations should also be made available on the CT2012 web site in the coming weeks]

"The Flipped Classroom"
by Chris Faulkner

Lage, Platt, and Treglia (2000) introduced this model in 2000. Their initial premise was that individuals learn with [a] wide variety of learning styles. "The general principle is to provide a menu of options for the students to use in learning. The instructors focus on the desired outcome (for instance, having the student prepared for discussion) and allow the student to choose the best method to reach that outcome."

Lage, M.J., Platt, G.J., & Treglia, M. (2000). Inverting the classroom: a gateway to creating an inclusive learning environment. The Journal of Economic Education, 31(1), Retrieved from http://www.jstor.org/stable/1183338
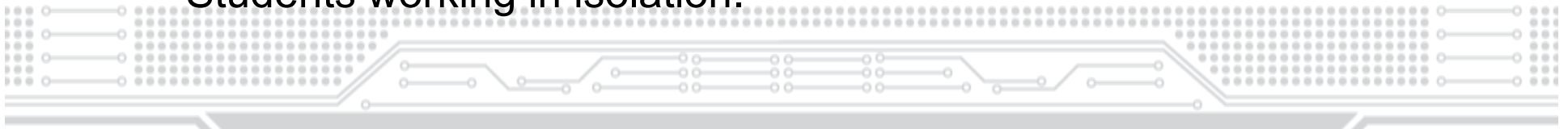
"The Flipped Classroom: What it is and What it is Not"
by Jon Bergmann, Jerry Overmyer and Brett Wilie

The Flipped Classroom is NOT:

- A synonym for online videos. When most people hear about the flipped class all they think about are the videos. It is the interaction and the meaningful learning activities that occur during the face-to-face time that is most important.

- About replacing teachers with videos.

- An online course.

- Students working without structure.

- Students spending the entire class staring at a computer screen.

- Students working in isolation.

"The Flipped Classroom: What it is and What it is Not"
*by Jon Bergmann, Jerry Overmyer and Brett Wilie*

The Flipped Classroom IS:

- A means to **increase** interaction and personalized **contact time** between students and teachers.

- An environment where students take **responsibility for their own learning**.

- A classroom where the teacher is not the "sage on the stage", but the "**guide** on the side".

"The Flipped Classroom: What it is and What it is Not"
by Jon Bergmann, Jerry Overmyer and Brett Wilie

The Flipped Classroom IS:

- A **blending** of direct instruction with constructivist learning.
- A classroom where students who are **absent** due to illness or extra-curricular activities such as athletics or field-trips, don't get left behind.
- A class where content is permanently **archived** for review or remediation.
- A class where all students are **engaged** in their learning.
- A place where all students can get a **personalized** education.
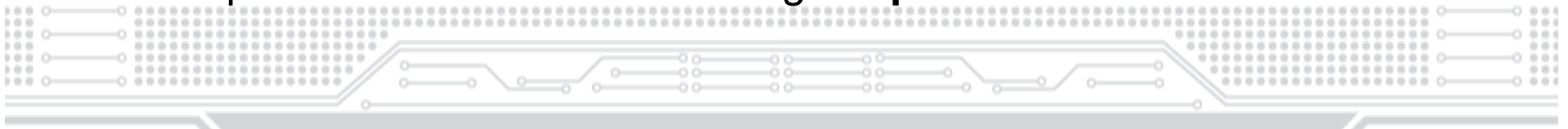
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"The Flip: Why I Love It, How I Use It"
by Shelley Wright

"I love the flip. I do. And I realize by saying this I'm making a controversial statement. I believe if used judiciously, in the right context, the flip can free up valuable class time and provide the background knowledge that is fundamental for students to then go forward and wrestle with higher order thinking."

The Flipped Classroom:
Succeeding With Reverse Instruction

"The Flip: Why I Love It, How I Use It"
by Shelley Wright

"As much as I like the flip, I don't believe that it's the savior of education (or the epitome of evil) as some would suggest. **The point of the flip is to capture more of the time when teacher and students are together for deeper learning** — to create more opportunities to apply knowledge and skills to challenging in-class assignments. Bottom line: it's not always the right instructional choice, it's only one tool in our educational repertoire. But it can be a powerful one."

"The Flip: Why I Love It, How I Use It"
by Shelley Wright

How Can We Flip Successfully?

- For me, **inquiry learning is where it's at.** I don't believe in assigning videos every night as a substitute for my own lecturing. To me, that's simply the traditional classroom rearranged, not flipped.

- **I use the flip when my students need to absorb a few chunks of new information** to continue learning. I don't use it to front-load information at the beginning of a unit. I think that can rob students of the experience of authentically building knowledge and skills as they encounter new concepts.

"The Flip: Why I Love It, How I Use It"
by Shelley Wright

How Can We Flip Successfully?

"Many times the flip can help me keep up the pace in science classes by allowing students who are struggling with new material to watch and re-watch the parts of the concept outside of class. **I've had students who are ecstatic because they can learn at their own pace at home.** During class time I'm able to interact with every student, and target those who are *really* struggling with extra time, which is not something that happened when I taught in a more traditional way."

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"The Flip: Why I Love It, How I Use It"
by Shelley Wright

How Do I Use The Flip?

"I use flip time to create curiosity in my students. [An assigned] video is an example … ask a question, "with the knowledge that you have, try to explain why you think this [event] happened?" After they've watched the video, and tried to create a plausible reason for why [the event] occurred, **we'll begin class the next day by discussing the theories they've come up with.** (This gives me a lot of information about where each student is on the concept-creation continuum.) From their theories, we'll create models, through collaboration, that we can test."

"The Flip: Why I Love It, How I Use It"
by Shelley Wright

How Do I Use The Flip?

"I've also used the flip after we've spent class time learning through inquiry**. I might assign a video that pulls together all that we've learned.** Does every student need to watch it? Not necessarily. Students who thoroughly understand a concept can decide that for themselves. But those who are still struggling with the ideas, after we've examined them for an hour, can watch the video, take notes, and see if they can pull it all together. **In the past I might have referred struggling students to a summary in the textbook for review at home.** On their own time, they're much more likely to watch and benefit from a good visual demonstration."

"The Flip: Why I Love It, How I Use It"
by Shelley Wright

How Do I Use The Flip?

"***None of this is passive learning.*** My students are required to interact with the knowledge that is being presented to them. The videos are posted on our wiki, which now serves as our digital textbook. Our wiki is custom-designed to support what we're learning. Students can then respond with either a blog post sharing their thoughts, or through interaction with their peers in a wiki discussion tab."

"Flip your classroom through reverse instruction"
by John Sowash

"Have you ever experienced the unique and rare moment when, after doing something the same way for year and years, you have an epiphany and wonder, 'why am I doing it this way?' Most of the time the answer is tradition, that's the way we've always done it."

"I stumbled across an interesting article … and had a moment like I described above. High School chemistry teachers Aaron Sams and Jonathan Bergman were having trouble with their students leaving class early due to sports events. … missing lectures and … important information, were unable to complete the assigned homework later that evening."

"Flip your classroom through reverse instruction"
by John Sowash

"… they began to record their lectures and post them on iTunes. The students downloaded them to their computers and mobile devices and watched them at home, at their convenience. When in the classroom Sams and Bergmann spent their time interacting with the students individually on "homework" assignments. When a student got stuck, they were there to help. They flipped the classroom to make it more flexible and dynamic, matching it with the needs of the students."

"Flip your classroom through reverse instruction"
by John Sowash

" … I began implementing reverse instruction into my high school Anatomy & Physiology class. It was the third time I had taught the class and I knew that I spent a lot of time lecturing. For most of my lectures I had already created PowerPoint presentations. I began the labor intensive process of putting them on the web for students to view. For some of them I created screencasts with voice narration. Others were simply Google Docs presentations shared on my classroom wiki. **For each unit I provided a lecture note outline that I required students to fill out."**
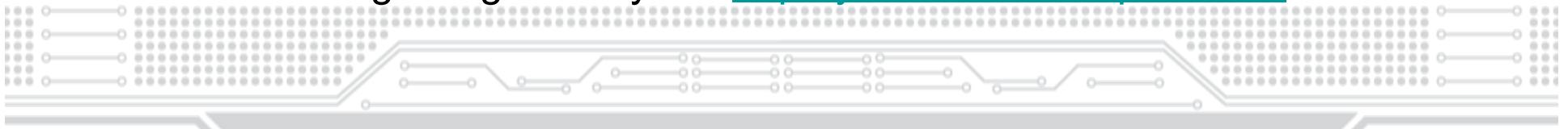
"Flip your classroom through reverse instruction"
by John Sowash

"With class time liberated from lectures I was able to incorporate more hands-on activities, projects, and helping students better understand confusing and challenging concepts.

I would not say that my first year was a complete success. I have not mastered the art of reverse instruction, but I've made progress. Here are some of the lessons that I've learned:

• **Make sure that you clearly and carefully explain the purpose of reverse instruction to students.** This is a radical idea for students as well as teachers. I did this in a class "commercial" which I show at the beginning of the year. http://youtu.be/95UTqW8C2u4

"Flip your classroom through reverse instruction"
by John Sowash

- **Stress the importance of the lectures.** Students cannot "zone out" and simply copy down the notes in five minutes and be done. They must be actively engaged as they view the lecture notes, writing down questions and fitting in the new information with what they already know.

- **Hold students accountable to the lectures.** I did a credit/no credit lecture notes check at the beginning of each class period to ensure that students were actually viewing the lectures.

- **Beware of technical problems.** YouTube is a good way to share videos, but my school blocks YouTube. I ended up posting my screencasts as both YouTube videos and Google Docs presentations.

"Flip your classroom through reverse instruction"
by John Sowash

- If students don't have internet access at home, you will need to pre-load your lectures onto an iPod, print out your slides, or burn them to a CD.

- **Consider creating a portal for students to go to watch your lectures,** download lectures notes, and converse with one another. Google Sites and Wikispaces are both viable options for this. I've used them both.

- Use Google Docs! If you're like me, you are always updating, tweaking, and improving your lectures and presentations. Making sure that the most updated copy is available for students can become a nightmare. If you use Google Docs to share all of your presentations and handouts, when you make a change, all of the public copies are automatically updated throughout the web. What a time saver!

"Flip your classroom through reverse instruction"
by John Sowash

- Now that you've freed up class time, you need to use it productively. This can be a challenge. You've spent all of your time and energy developing your lectures and now you don't have the time/energy to develop new, innovative, interactive classroom activities. This is where I need to improve. It takes a while!

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"The Flipped Classroom Model:
A Full Picture"
by Jackie Gerstein, Ed.D.
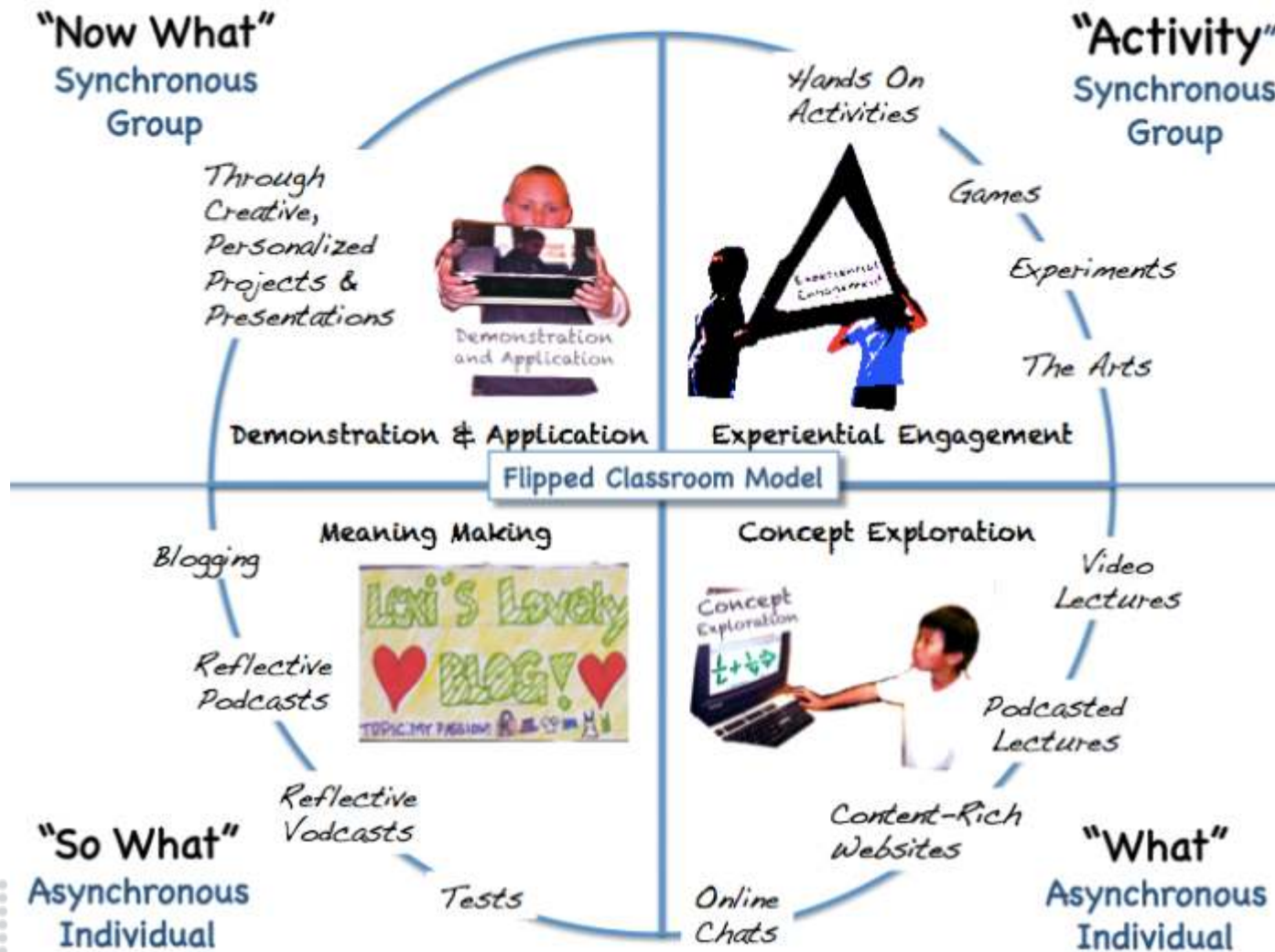
"The Flipped Classroom Model: A Full Picture"
### by Jackie Gerstein, Ed.D.

Experiential Engagement

"The cycle often begins with an experiential exercise. This is an authentic, often hands-on learning activity that fully engages the student. It is a concrete experience that calls for attention by most, if not all, the senses …

Students become interested in the topic because of the experience. They have a desire to learn more. This is in line with John Dewey's thinking regarding experience and education. The nature of experiences is of fundamental importance and concern in education and training. People learn experientially. …
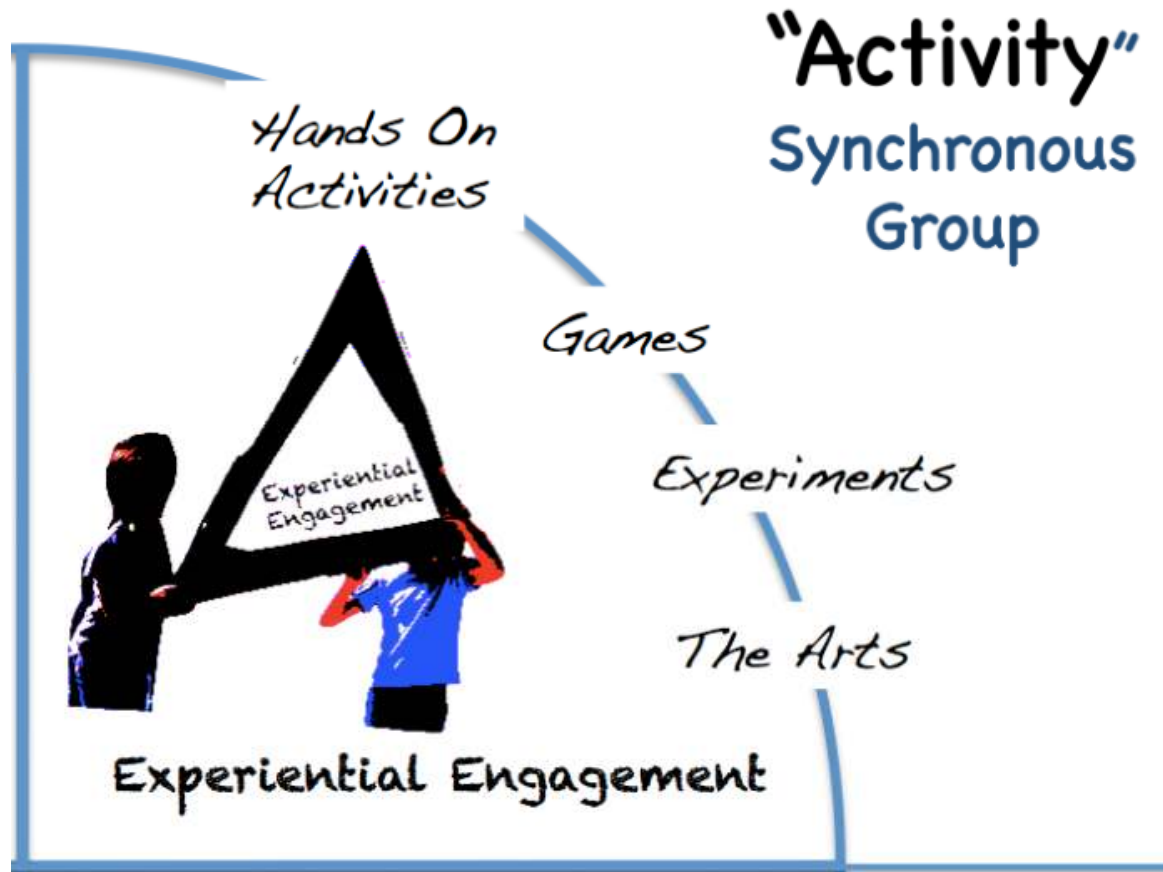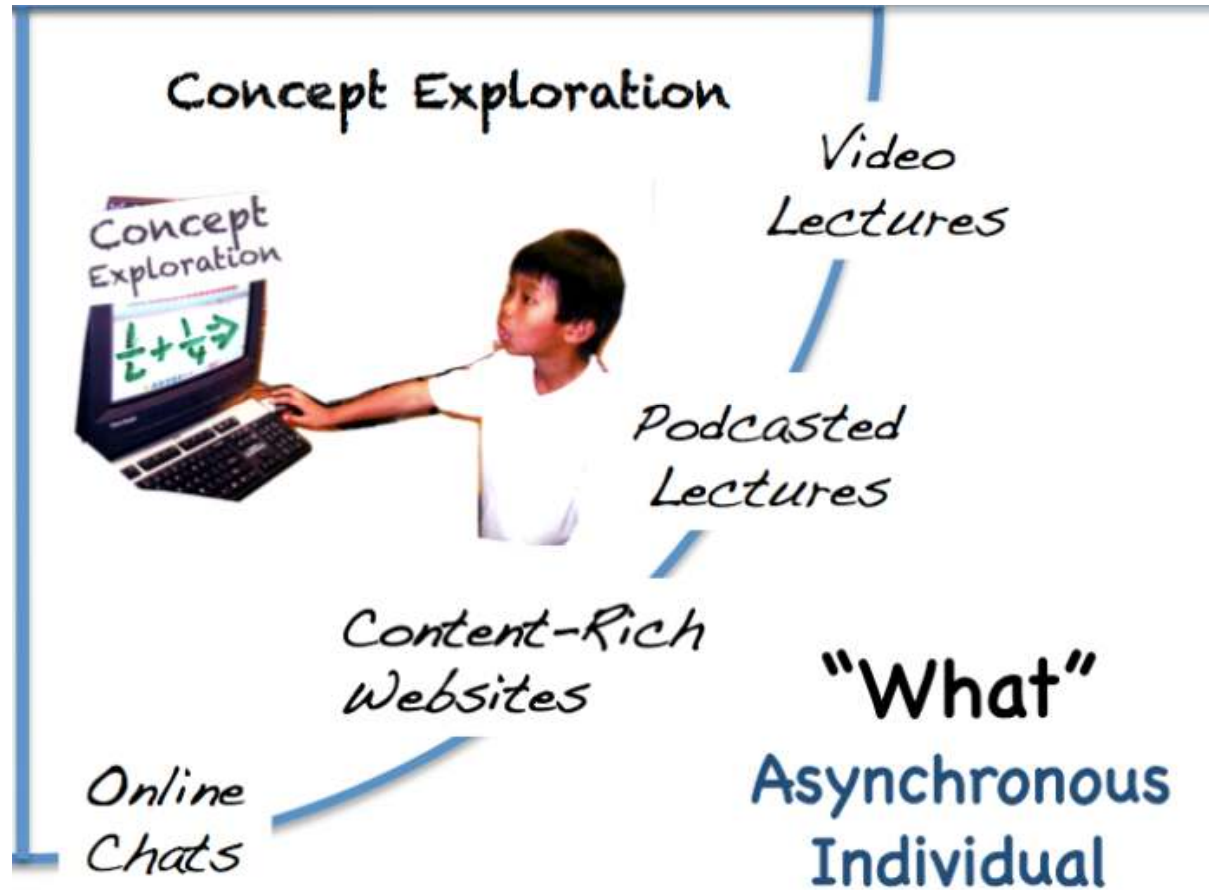
Concept Exploration

"Learners are exposed to and learn concepts touched upon during Experiential Engagement. They explore what the experts have to say about the topic. … **In the case of the flipped classroom as it is being currently discussed, this is the time in the learning cycle when the learners view content-rich videos [or other media].** This is where and when videos such as those archived by Khan Academy … or other video services are used to help students learn the abstract concepts related to the topic being covered.

... By providing learners with online resources and downloadable media, learners can control when and how the media is used. This is the major value of flipping the classroom . . . **content-based presentations are controlled by the learner as opposed to the lecturer** as would be the case in a live, synchronous, didactic-driven environment."

Concept Exploration

Concept Exploration

Video Lectures

Podcasted Lectures

Content-Rich Websites

Online Chats

"What"
Asynchronous Individual

Meaning Making

"Learners reflect on their understanding of what was discovered during the previous phases. It is a phase of … reflection on what was experienced during the first phase and what was learned via the experts during the second phase.

Learners can articulate and construct their understanding of the content or topic being covered through written blogs or … audio or video recordings.

Within the standard school system, this would be the phase when students are tested about their understanding of the content. If this is the case, it is recommended that the tests target higher levels of Bloom's Taxonomy – evaluation, applying, synthesizing."
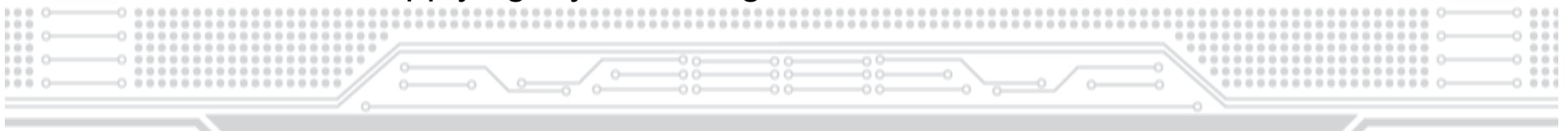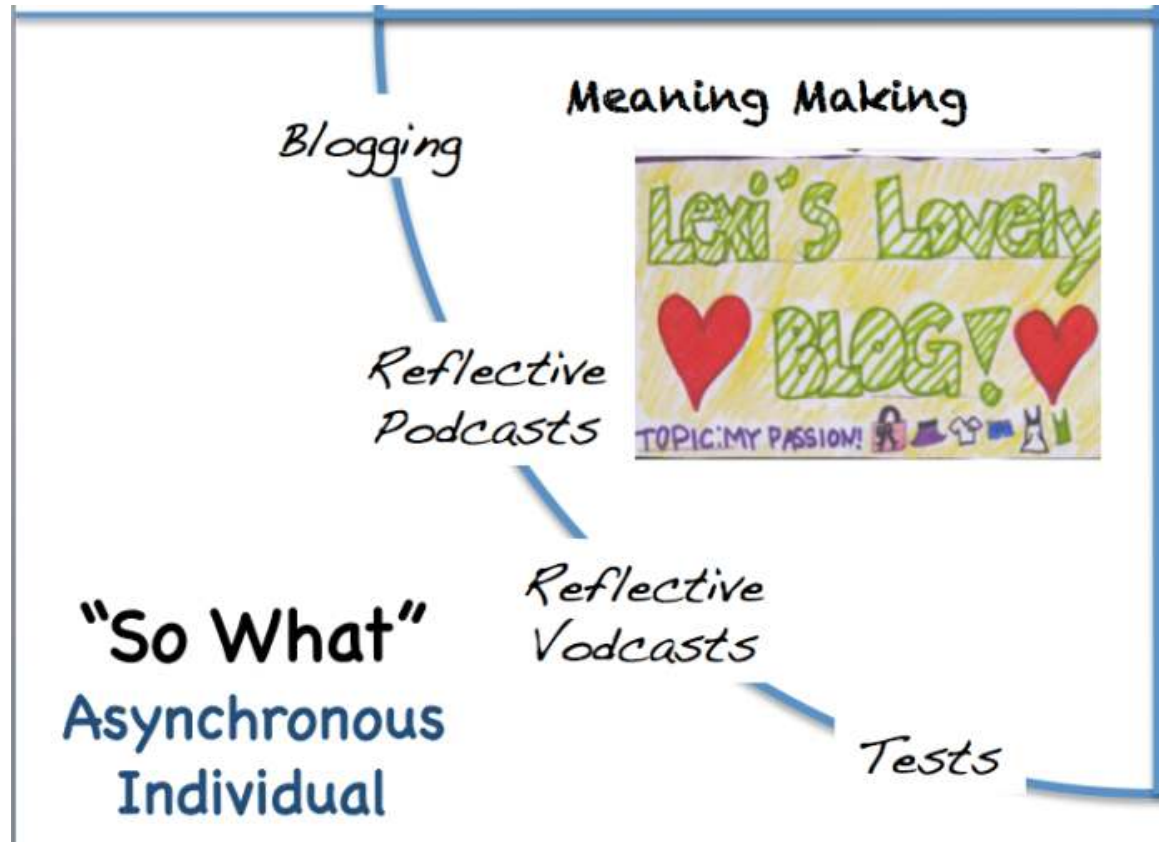
Demonstration & Application

"During this phase, learners get to demonstrate what they learned and apply the material in a way that makes sense to them. This goes beyond reflection and personal understanding in that learners have to create something that is individualized and extends beyond the lesson with applicability to the learners' everyday lives. This is in line with the highest level of learning within Bloom's Revised Taxonomy of Learning – Creating - whereby the learner creates a new product or point of view. **In essence, they become the storytellers of their learning.**"

THE FLIPPED CLASSROOM

Turning the traditional classroom model on its head

"**Succeeding With Reverse Instruction –
One Instructor's Inspired Approach**"

Instructor and "CoreDogs" publisher Kieran Mathieson

Mathieson teaches introductory web development skills, and developed an online textbook and employed reverse instruction techniques to enable students to learn these skills in a more effective manner.

Mathieson also developed a web site, CoreDogs, where he shares his experiences, and is currently developing flippedtextbook.com, where teachers will be able to create their own online textbook, to help flip their own classroom.

"Succeeding With Reverse Instruction –
One Instructor's Inspired Approach"

Instructor and "CoreDogs" publisher Kieran Mathieson

"The learning model I use is to have a good online textbook, with lots of exercises. Students work through the textbook individually. They submit exercise solutions, through the textbook. I give formative feedback. Students can resubmit until they get it right. Class still meets, but for maybe an hour per week rather than three. I give students an exercise, and walk around the computer lab, watching and helping out."

"**Succeeding With Reverse Instruction –**
One Instructor's Inspired Approach"

Instructor and "CoreDogs" publisher Kieran Mathieson

"A Tale of Two Students"

Fictional university students Mike and Eric take the same "Web100" Web
Development course with two different professors who use very
different approaches to instruction.

While the tale is fictional, it is firmly grounded in Mathieson's successful
utilization of reverse instruction and what he has observed while
employing the technique. In it, he offers insights into the learning
science that informs the successful outcomes that flipping the
classroom can help to produce.

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"A Tale of Two Students"

by Kieran Mathieson

One fictional instructor uses the traditional lecture-based approach to delivering course content, using a standard, robust *(i.e. lengthy and large)* text book from an academic publisher.

The other instructor uses on enhanced online textbook that covers the core concepts of web development in depth, and is organized around tasks, rather than specific technology concepts. This teacher's course is blended, or "hybrid" - combining online learning and exercises with face-to-face classroom time that focuses on reinforcing the content learned by working through assignments and helping students understand material that challenges them.

"A Tale of Two Students"

by Kieran Mathieson

The following excerpt from an interview section in the story provides a sense of the shortcomings that can sometimes come with traditional lecture based course delivery:

Ann: *How did the course go this semester?*
Mike: Not good. The professor went so fast, it was hard to keep up. His examples were complicated. I didn't understand them.

Ann: *Did you read the book before class?*
Mike: Sometimes. But there was too much to read. Maybe 50 pages per class. Usually, I only had time to skim. When I did read, there was so much going on that I got confused.

Ann: How about the projects?
Mike: People goofed off. Jim, on my team, left all the work to the rest of us. I didn't want to grade him low on participation, because we're going to be in other classes together.

Ann: Did Jim learn much?
Mike: No, but he got a good grade. He pulled all-nighters before the exams. I don't think he remembers much now, though. Don't ask him to make a Web site for you!

Ann: Do you know how to make a Web site?
Mike: I hate to say it, but no. I know some HTML tags and stuff, but I don't know how to use them to build a site. Maybe I'm just not cut out for this.

"A Tale of Two Students"

by Kieran Mathieson

In contrast, these excerpts from an interview with fictional student Eric give a sense of how the flipped classroom approach can be quite challenging, but highly effective:

- **Ann:** How was WEB 100?
  Eric: Tough. More work than I expected. Stuff to turn in every week. You had to keep up.

- **Ann:** Ever get frustrated?
  Eric: (Laughs) All the time. Making good Web pages isn't as easy as it looks. When you use the Web, you don't see all the work that goes into a good site. You have to think about goals. You have to learn how to find bugs and fix them. The HTML and stuff are only part of it.

Ann: What about the class itself? The textbook and such. Was that OK?
Eric: … The class was mostly online, easy to fit in my schedule… the thing that stressed me was that I had to do a lot of exercises. It helped being able to meet [with the instructor] in person. We could sit down and go over something.

Ann: Anything you particularly liked about the course?
Eric: Yes, I did like making my own site … it's pretty good. Oh, and CoreDogs was the cheapest textbook I've ever had. Some profs make me spend ten times what I spent on CoreDogs, for books I hardly used.

"**Succeeding With Reverse Instruction –**
One Instructor's Inspired Approach"

Instructor and "CoreDogs" publisher Kieran Mathieson

Active Skill Learning

"Research in the learning sciences suggests that the traditional approach has significant limitations, and the frustrations expressed by student 'Mike' are common with the traditional model. [I prefer] a different approach, combining features of deep learning, outcome-based learning, and active learning. Let's call it Active Skill Learning (ASL)."

**"Succeeding With Reverse Instruction –
One Instructor's Inspired Approach"**

Instructor and "CoreDogs" publisher Kieran Mathieson

Active Skill Learning courses are designed around learning outcomes. The author/instructor identifies skills students should possess by the end of the course, and then works backwards. Only material that helps meet course outcomes is included in the course. CoreDogs is a good example of outcome-based learning. Each chapter is about a task, like "Creating a Web page with text." The chapter covers only the HTML tags and CSS rules that help with that task, and nothing more.

**"Succeeding With Reverse Instruction –
One Instructor's Inspired Approach"**

Instructor and "CoreDogs" publisher Kieran Mathieson

Traditional publishers don't design textbooks around outcomes, instead they attempt to cover every topic that professors might think important. The result is that so many topics are included that few if any can be covered in depth. The course is "a mile wide and one inch deep." Students only have time to learn facts, they don't really have time to learn how to apply what they've learned.

"**Succeeding With Reverse Instruction –
One Instructor's Inspired Approach**"

Instructor and "CoreDogs" publisher Kieran Mathieson

Combining Summative And Formative Learning

- Researchers often contrast "summative" and "formative" learning assessment and feedback.

- Summative feedback is separate from learning, with the goal of measuring how much students have learned in the recent past, versus formative assessment, in which students submit work, and get feedback about what could be improved. Students are then able to correct and resubmit their work.

- Summative and formative feedback can work best when used together. Formative feedback to help learning, and summative measures to assess student achievement.

"Succeeding With Reverse Instruction –
One Instructor's Inspired Approach"

Instructor and "CoreDogs" publisher Kieran Mathieson

ASL makes heavy use of formative feedback. Students complete exercises every week, and submit them through the ASL software. Instructors assess the work, and ask for improvements. Students can change their solutions, and resubmit. The cycle continues until the grader is satisfied, and the student then gets a completion badge or other grade or 'award' for the exercise.

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"**Succeeding With Reverse Instruction –**
One Instructor's Inspired Approach"

Instructor and "CoreDogs" publisher Kieran Mathieson

"A Tale Of Two Students" also discusses Deep Learning and
Metacognition in the context of ASL and reverse instruction, and all
these discussions are more in depth and informative than what we've
summarized here. Stop by and check it out!

Flipped Classroom Tools & Resources

Using Existing Resources

There are plenty of existing resources on the web to direct students to learn about topics you are covering in classes. With some planning, some of these resources can fit perfectly into an flipped content approach.

Flipped Classroom Tools & Resources

Online Lectures & Educational Video Sites

These are an easy way to supplement learning materials and deliver flipped content.

Some of these sites allow their videos to be embedded into other web sites, so if you use a tool like an LMS or a Wiki to deliver content, you can considering incorporating video content there, otherwise access can be provided via links.

Flipped Classroom Tools & Resources

The Khan Academy (http://www.khanacademy.org/): With the backing of the Gates Foundation, Sal Khan's organization has become widely recognized as a premier source of free tutorials in dozens and dozens of subjects, over a wide range of grade levels.

The OpenCourseWare Consortium (http://www.ocwconsortium.org/): According to Makeuseof.com, "Simply put, the OpenCourseWare Consortium is the best place to begin looking for free online video lectures".

Academic Earth (http://academicearth.org/): This site provides hundreds of free video lectures from professors at leading universities such as Yale, Stanford, Harvard, and more.

WatchKnow (http://www.watchknowlearn.org/): Tens of thousands of educational videos for younger students (for K to 12, but more content is geared towards elementary and middle schools grades).

TED (http://www.ted.com)**:** The hundreds of inspiring talks from this "**T**echnology, **E**ducation, and **D**esign" non profit organization are of an intellectual level best suited for High School or Higher Education students.

'35 Sources for Curated Educational Videos':
http://gettingsmart.com/blog/2012/07/35-so...educational-videos/

Learning Upgrade: http://blog.learningupgrade.com/. "A creative team of teachers, musicians, artists, and programmers based in San Diego, California, USA. We produce reading and math online courses featuring songs, video, and games to engage today's media-savvy students."

TED Ed

Flip This Lesson

'Flip' A Video To Create Your Own Customized Lesson!

The TED Ed site (ed.ted.com) has a "flip this video" function that lets you to turn any video into a customized lesson. You can add your own context, and select from pre-configured quizzes or add your own questions and follow-up suggestions. You can then share the custom lesson with students through e-mail, Facebook, or Twitter – it will have its own unique page on TED Ed, and you decide who gets to see it.

Flipped Classroom Tools & Resources

Using Your Own Content

There are many free tools available today that can be used to create online versions of content that you have traditionally delivered in the classroom. You may also find that this encourages you to evolve that content a bit to make it more effective as stand-alone learning material.

Following are a few free applications that let you share digital learning materials:

Flipped Classroom Tools & Resources

Slideshare (www.slideshare.net)

Slideshare is an easy, popular, and free tool for putting PowerPoint or
OpenOffice slides, as well as many other file formats like PDFs and Word
docs, online. The viewer doesn't need to have PowerPoint or whatever app
the original file was created with, they only need web access *(free Slideshare
accounts only allow for public uploads, meaning they will be available to
everyone. For private uploads, one needs to upgrade to a Pro account, which
starts at $20/mo.)*.

Of course, simply putting a slide presentation online may not make for
particularly exciting delivery of content, but there are ways to improve on this.

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Flipped Classroom Tools & Resources

Slideshare (www.slideshare.net)

It is certainly possible for a slide-deck to constitute good delivery, as in this award winning presentation *(http://www.slideshare.net/mrcoryjim/smoke-the-convenient-truth-5602255 is about Cigarettes, great for a health class or even some science lectures)*, but your slides may need some work to play better as a stand-alone presentation. Another common technique to take your presentation to the next level is to add voice over, but this requires different tools (more on that next week).

For a quick introduction to using Slideshare to share course materials, check out this 4 minute Youtube video (http://www.youtube.com/watch?v=l-8uS9K9akc) from instructor D. Caskey.
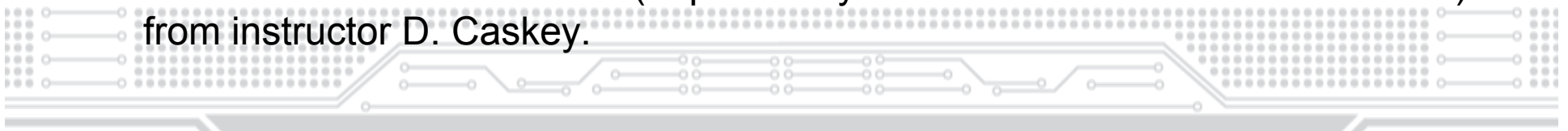
Flipped Classroom Tools & Resources

Screencasting

Screencasting tools provide a great way to take existing content and make these materials more effective as a self-contained tools. If you have slides or documents that you often project or hand out and lecture about, you can record and capture voice-over, and then make these materials readily accessible to your students. With those capabilities under your belt, you may soon wish to consider more advanced tools for editing and for adding in highlights, layover graphics or texts, hot links, and more.

Flipped Classroom Tools & Resources

Screencast-O-Matic

One of the first screencasting tools published and still around (and kept up to date), Screencast-O-Matic works with both the Mac and the PC, and requires no installation, which is nice. Access Screencast-O-Matic here: http://www.screencast-o-matic.com/. There's a quick demo video right there on the home page. You can record and host 15 minute clips for free, and unlimited clips with their Pro version which is only $12 a year *(I've heard a lot of good things about Screencast-O-Matic, but haven't looked it in a few years – I didn't realize it provided so much for so little)!*

Flipped Classroom Tools & Resources

Jing

The same folks who make Camtasia *(more on that later)* make this popular app that lets you easily capture screen activity, record voice-over, and publish clips up to 5 minutes long. Jing works on the PC and the Mac and it's pretty easy to get started with. Jing uses Screencast.com as it's online video distribution methodology, and you can also download the SWF format files to distribute them your own way. The Pro version let's you create MP4 files, but is still limited to 5 minute clips.

Here's the Jing website: http://www.techsmith.com/jing.html, and this "How It's Used" page (http://www.techsmith.com/jing-uses.html) gives a great overview of how educators and trainers are using it. I've used Jing myself and really liked it, but I soon graduated to Camtasia as my needs evolved.

Flipped Classroom Tools & Resources

Screenr

Screenr (http://www.screenr.com/) is another popular, free, web-based screencasting tool that works with the Mac and PC and offers additional functionality at a price. The makers of Screenr also make a suite of e-Learning tools, and host this e-Learning Community (http://community.articulate.com/) with tutorials, forums, community blogs and more. With 100,000 e-learning professionals registered, this is a unique and interesting twist to Screenr and the related apps from the folks who provide it.

Use a Wiki, Google Sites, or your own LMS!

Wikispaces.com: Popular wiki site that has been used by many teachers for creating course web pages

Using Google Site to create a course web page (this article discusses using Google Sites for creating an ePortfolio, but the fundmentals are the same): http://www.emergingedtech.com/2009/10/using-google-sites-to-create-e-portfolios-for-students/

Learning more

- **Flipped Class Social Network:** http://vodcasting.ning.com/
  - **FlippedClassroom.com**
- **EmergingEdTech.com "Flipped Classroom & Reverse Instruction Article Category":** http://www.emergingedtech.com/category/flipping-the-classroom-reverse-instruction/
- **"Flip Your Classroom"** book by John Bergmann and Aaron Sams (on Amazon.com): http://tinyurl.com/bosewlv

Thank You and …

Happy Flipping!