

FLIPPED CLASSROOM: ANOTHER TOOL FOR YOUR PEDAGOGY TOOL BOX

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ABSTRACT

This paper examines the pedagogy of flipped classroom techniques to meet the changing needs of learners at a time of increased demand for information management, knowledge sharing, and rapid technological advancements. First, the flipped classroom is defined in the context of online and hybrid classrooms. Relationships between flipped classroom techniques and Bloom's taxonomy are considered. Challenges of flipped classroom management for instructor and learner are explored. Best practices for flipped classroom implementation are investigated from the perspectives of learner, teacher and technology administrator.

INTRODUCTION

Teaching and learning are dynamic complements of knowledge sharing at a time of increasingly rapid technological advancements. Moreover, online learning has evolved as new technologies have emerged. It has flourished as society's expectations of education and learners has contributed to diverse perceptions of students' responsibility for both theory and application of knowledge. For example, today's adult learner is typically a "digital native" who can maneuver through course delivery technologies while experiencing a shift in the "traditional pedagogical paradigm" (Kwek, 2011, p.2). One way educators can address the need for improved teaching delivery methods is through employing flipped classroom tactics as part of an overall teaching strategy that maximizes use of learners' technological competencies via multimedia class preparation.

THE FLIPPED CLASSROOM DEFINED

The flipped classroom is a learning environment that provides students with a variety of means to study basic

knowledge content as part of homework and preparation for class meetings; teachers then use class time more effectively for hands-on activities or other means of encouraging students to practice, apply and demonstrate mastery of the content learned from the pre-class requirements. In this manner, teachers and students are collaborative learners targeting topics, threshold concepts, and other areas of learner weakness as needed to ensure better understanding of the course content. In other words, instructors make the kinesthetic-cognitive leap to learning in action in that they use class time for hands-on activities and group practical exercises. Class time is no longer a relay of information only; class is now an amalgam of discussion, listening, and doing. While no one disputes the importance of information sharing, the students and faculty both play an active role in the overall learning process.

Hoffman-Miller (2013) credits Bergman and Sams as the "founders" of the flipped classroom initiative, as do some other education researchers. Reed and Swanson (2014) assert, "Educational decision makers are now afforded opportunities for new technologies to be tested for purposes of reaching students with diverse learning styles and modalities, as well as physical challenges that previously inhibited their learning in other classroom environments." The flipped classroom can combine new technologies such as podcasts, online videos, various collaboration tools such as Skype, games and simulations. The flipped classroom also contains homework assignments as asynchronous classroom preparation. Students may access the course materials as often as needed, and they can return to reflect upon the materials while building (scaffolding) more difficult concepts later in their course. The flipped classroom leverages these opportunities for students and teachers as partners in the learning process whether online, on-ground, or in hybrid learning environments. This paper explores and evaluates flipped classroom practices from the perspectives of learners, teachers, and technology administrators. However, first the rationale for utilizing flipped classroom techniques is considered with an emphasis on online learning.

BACKGROUND

Educators in all disciplines often pursue innovative teaching techniques. However, ground-breaking progress is occurring in online education as an important platform for reaching diverse learners. In fact, statistics show that as early as the 2007-08 academic year about 20% of US undergraduates, or over 4.3 million learners were enrolled in at least one online course and that number is still rising (National Center for Education Statistics, 2011). As time and space become crucial resources for learners and faculty, both of whom are expected to learn and know more in a dynamic and increasingly competitive global environment, the flipped classroom affords opportunities for leveraging resources so faculty and students can achieve more during their time together. In essence, flipped classroom techniques can leverage synchronous or asynchronous class meetings as means of sustaining a learning climate conducive to mutual accountability, complex problem solving, and meaningful learning experiences wherein instruction is increasingly accessible, available, and meaningful in terms of engagement and achievement.

THE CHANGING CLASSROOM ENVIRONMENT

Increasingly, classrooms of today are more fluid than more traditional environments wherein King's (1993) *sage on the stage* served as the center of attention. In such classrooms, instructors expected passive learners to soak up knowledge by listening intently to every word of the lecture and to receive the expert knowledge being professed. In truth, learners in such environments were often too intimidated to speak up, much less ask for clarification of a point they did not understand. Sankoff (2014) asserts that the traditional classroom lecture "often amounts to a wasteful expenditure of precious resources," failing to showcase the instructor's "experience, knowledge, and abilities, and instead consigning him or her to a lifetime of performance repetition, transmitting the same information — often inefficiently — to a different group of students year after year" (p.892). In contrast, the flipped classroom is a venue in which King's (1993) *guide on the side* serves as a facilitator of learning. Instructors make the lectures and content previously introduced in a classroom setting available to students via online videos, podcasts, audio-books, e-books, and other means. Students complete these requirements on their own (asynchronously) at their own pace. What used to be called 'homework' (e.g., assignment-type activities) is done in class so students can demonstrate their learning and enjoy a shared experience with their peers and teachers.

The goal of reaching and teaching greater and more diverse

populations of students has necessitated that educators continue to seek effective and efficient techniques and tools to engage, motivate, and inspire learners. Faculty expect students to demonstrate high levels of content mastery; teachers synthesize material for purposes of inculcating methods of creating, evaluating, and analyzing knowledge as well simply remembering, understanding and applying terms (Bloom, et al 1956; Clark, 2015). What is more is that instructors can use flipped classroom techniques to separate the levels of learning according to Bloom's Taxonomy. Students engage in the lower cognitive levels (knowledge and comprehension) in the comfort of their home; students come to class prepared to focus on application, analysis, synthesis, or evaluation (Brame, 2015). Conversely, Eikmeier and Vandersteen assert that educators cannot separate the levels of learning in Bloom's Taxonomy so easily. Students need the basic comprehension of course content so they can do analysis later (personal communication, 2015). In creating the layers of learning, one level is just as important as another. Quite simply, students cannot apply what they learned if they did not learn the content beforehand; logically, a person cannot apply what he or she doesn't have, or apply what does not exist. Thus, one view is that Bloom's Taxonomy is a sliding scale rather than a hierarchy of achievement, with students rarely staying at one level only for an entire class (Eikmeier & Vandersteen, personal communication, 2015).

In a flipped classroom, teachers still must address common goals such as ensuring students prepare for learning, submit assignments in a timely fashion, and participate in ongoing engagement with both content and class. However, student engagement in the flipped classroom relies on students taking responsibility for their learning process; they become stakeholders in cognitive processes including knowledge, skills, abilities, and attitude development. Students study new material on their own by watching lectures or other videos, reading assigned texts or articles, participating in multimedia activities such as blogs or games, or any combination thereof; truly, instructors have many venues to choose from for student engagement. What is critical is that students complete this work prior to the class meetings; the work students complete outside of class is the necessary preparation for the class meetings that follow. Then, the students can participate in class time as prepared individuals ready to engage in knowledge assimilation, problem solving, higher level analysis, and debate as warranted (Brame, 2015). "[F]lipped learning ... [delivers] all low-order content prior to the face-to-face instructional time" (Bergman & Sams, 2014, p.29). Low-order content is the lecture-ridden course material which was heavily emphasized as the center of the learning experience in prior modalities. Refer to Table 1 which provides definitions of the key terms.

**TABLE 1
DEFINITIONS**

Flipped Classroom	A learning environment that provides students with a variety of means to study basic knowledge content as part of the pre-class-meeting homework, so teachers can use class time more effectively for hands-on activities to practice, apply and demonstrate mastery of the content learned from the pre-class requirements.
Traditional Classroom	Traditional classrooms could fail to showcase the instructors experience, knowledge and abilities and consign instructors to performance repetition. A flipped classroom can allow instructors to become guides on the side and facilitators of learning

CHALLENGES OF THE FLIPPED CLASSROOM

There are challenges associated with implementing flipped classroom techniques. The flipped classroom turns the traditional classroom “upside-down,” at times taking both students and professors out of their comfort zone. For example, it is crucial for students to study and form their analysis of lecture and other course material prior to arriving for class online or face-to-face; otherwise, they will lack the necessary preparation to contribute to in-class activities. Teachers must make the course content interesting and attempt to hold students’ interests as classroom communication is multi-directional. Moreover, educators must be cognizant of the perceived risk of teachers or students developing a negative attitude towards the flipped classroom process as a result of their resistance to change. At first, the model will require both teacher and learner to shift their classroom paradigm. The flipped classroom requires them to consider themselves and each other differently as participants (partners) in the learning process.

Initially, students may perceive the take-home content (class preparation) as less important than the in-class instruction. However, teachers can emphasize the importance of the take-home content as a prerequisite for engagement; additionally, faculty can demonstrate how the take-home content is integrated with the in-class activities. Also, instructors must remind students to stay current with assignments; otherwise, students may perceive the flipped classroom experience as confusing or frustrating, rather than an engaging means to enlightenment. Hoffman-Miller emphasizes that the flipped classroom “centers around four basic themes: flexible environments, a shift in the culture of learning, intentional content, and professional educators” (2013, para. 2). The flipped classroom replaces the teacher-centered approach, or King’s (1993) *sage on the stage* with a student-centered approach to learning. The student-centric approach enables flexible learning so students can travel multiple paths to learning and content mastery. Flexible learning incorporates student preferences and proficiency, and it addresses the diverse individual learning styles of students (Moran & Milsom, 2015). Professional educators need to be mindful of learning styles while creating their courses, and they must be prepared to address any student confusion and frustration the flipped classroom may pose. Notably, learning – or constructing meaning from information, is often an uncomfortable process. In the flipped classroom, instructors and students create

meaning together.

In the flipped classroom, instructors should allocate some time to re-explaining key concepts if needed. The take-home content is still content students must comprehend; otherwise, students will not be ready for advanced topics later in the course. As with any innovative approach, educators will experience some trial and error while experimenting a different teaching method. Notably, one of the biggest fears of both students and teachers is failure, or looking weak or unprepared in front of others. New instructors who lack experience with the flipped classroom may lose faith that the model is not working. Both instructors and students who lack confidence in the new method may face challenges and will have to overcome setbacks. Indeed, setbacks are common and are expected in any venture. “Failure underlies the scientific method ... The qualities of persistence and resiliency ... underlie successful innovation in every sphere and lie at the core of nearly all successful learning” (Brown, McDaniel & Roediger, 2014). Hence, the faculty and students work together to achieve success.

Another challenge that naturally arises is the issue of remediation. Even though instructors may be prepared to implement the flipped classroom fully, they still must make themselves available to teach and assist students as needed. The in-class instruction does not have to consist solely of group activities and projects; faculty can (and should) teach the difficult topics with which students are struggling. Hence, faculty can use class time to explain key concepts and receive feedback that students understand the course materials; the online instruction may not be enough to clarify all teaching points. The explanation of key concepts is essential, especially for confused students.

A third challenge is tutoring. One possibility is teachers may add tutorial time into the flipped classroom process after the face-to-face session; another is instructors may refer students to tutors for remediation. In either case, the faculty identify the students lacking the knowledge base or skill sets essential to completing the course objectives. Tutoring can be costly in terms of time, money, and effort, but it may be necessary to address gaps in student learning. Instructors must not assume that students possess the prior skills or will master a subject after one session (Eikemeier & Vandersteen, personal communication, 2015). Likewise, instructors cannot assume that students will understand all concepts presented in the online lectures for the take-home portion of the flipped classroom. Continuous reinforcement of the course material and flexibility are the keys to success.

Table 2 provides a summary of the challenges discussed.

**TABLE 2
SUMMARY OF CHALLENGES**

Paradigm shift	Faculty and students must overcome the resistance to change and be willing to explore other educational approaches.
Fear	Group dynamics play a huge role. The interplay of interpersonal and social skills can create or dissuade the anxiety depending upon the unique cohort of learners.
Remediation	If instructors elect to add remediation, there is now another part of the flipped classroom model (FCM). The FCM now consists of the take-home content + in-class activities + remediation.
Tutoring	If students decide to seek tutoring on their own, there is another step in the FCM. One possibility could look like this: Take-home content + tutoring + in-class activities + tutoring

Addressing both challenges and advantages of the flipped classroom, the authors discuss some of the best practices of its implementation and explore student, teacher, and technology perspectives in the next section.

BEST PRACTICES FOR IMPLEMENTING A FLIPPED CLASSROOM

Since the introduction of the flipped classroom in the 1990s, the most successful and visible example is the Khan Academy, which began humbly with a few rote math lessons created for Sal Khan’s young cousin to use repeatedly at his discretion. Khan’s good intentions, curiosity, and love of sharing knowledge have grown into an enterprise used by millions and is funded by the Bill and Melinda Gates Foundation (Savitz, 2014). Building on Khan’s example, educators can approach best practices in the flipped classroom strategy through the perspectives of learners, teachers, and technology administrators. At the end of each perspective, best practices pertinent to the group are inserted in a table for ease of readability and use.

The Learner Perspective

One of the biggest challenges in teaching is getting and keeping students excited about learning. Making courses interesting for learners of diverse skills and ability levels, knowledge bases, learning styles and modalities may be achieved through the adaptability of the flipped classroom. The flipped classroom allows students to access courseware at their

convenience (asynchronously) and as frequently as needed so they can learn at their own pace; students can also easily go back to and repeat online lessons or lectures as needed. Motivated learners can view lectures, watch videos and presentations, or preview other course materials as they choose. Moreover, instructors can quickly identify unmotivated students and determine the students’ difficulties with the material or other learning struggles. When the group meets either face-to-face or online, time spent together is more focused; teachers can address specific questions, problems, or threshold concepts that might otherwise preclude learners from achieving their best work.

In short, the flipped classroom entails students preparing or doing homework before class meetings so they can maximize the value of classroom learning time with the instructor. Clearly, the flipped classroom approach is student-centric and reinforces the archetype that students are ultimately responsible for their learning. Students must not only complete homework as preparation for class, but they also share ideas with peers and professors while participating in group activities. Furthermore, students are responsible for following up with the instructor for help, collaborating with peers via online discussion forums or blogs, and maintaining an active role in communicating with the group. Maintaining student accountability and active participation for all learners provides the foundation for group problem solving, project and change management, and knowledge sharing in the rapidly changing work environment of the 21st Century. Table 3 summarizes some best practices for engaging students in flipped classroom learning.

**TABLE 3
BEST PRACTICES FROM THE LEARNER PERSPECTIVE**

Issue	Best Practice
Student engagement: Students who typically do not prepare for class might need a nudge to participate in the flipped classroom.	Hanover Research (2013) suggests developing online quizzes that correspond with lecture and other class preparation materials. Instructors may incorporate the quizzes into the students’ course grade as a means of encouraging engagement.
Student preparation: Student must complete the out-of-class requirements and have a basic understanding of the material before they come to class.	Faculty should begin each class with a summary of the preparation. Instructors can engage students in Socratic discussion or require students to create at least one question related to the material to share with the group (Itap, 2013).
Student resistance: Students are adjusting to a new teaching model, and specifically are learning “how to learn” in the flipped classroom.	It is important to remember that teachers in the flipped classroom are helping students to change habits that have been ingrained over time by the existing education system. Being prepared to answer student questions can assist with overcoming resistance. Explaining how the flipped classroom can be beneficial will help with buy-in from the students. Communicating expectations and responsibilities, as well as that class time will be used for “engaging enrichment activities” (Caldera, 2013) is crucial.

**TABLE 4
EXAMPLE OF A FLIPPED CLASSROOM**

Traditional Classroom		Flipped Classroom	
Activity	Time	Activity	Time
Warm-up	5 min	Warm-up activity	5 min
Go over previous night's homework	20 min	Q&A time about the video	10 min
Lecture new content	30-45 min	Guided and independent practice and / or lab activity	75 min
Guided and independent practice and / or lab activity	20-35 min		

The Teacher Perspective

The flipped classroom model inspires faculty to serve as coaches, guides-on-the-side, and subject matter experts. From a faculty perspective, the material can come alive due to the novelty of questions students ask and the diversity of perspectives from which their inquiries emanate. For a professor who loves teaching students the subject matter, this strategy is far more interesting than the passive transference of knowledge often relegated in traditional classrooms. With this in mind, educators need to be very clear about terminology, expectations, and assignments; otherwise, students will be confused and lost in the academic semantics. One best practice is to provide definitions of terms and to ensure those terms are published via a website or a student handbook. Additional information is available in Annex A.

Although faculty may be concerned that the flipped classroom might eliminate the need for teachers, this assertion is not true. Flipped learning does not diminish the need for expert teachers or trainers. In fact, experts are crucial in a flipped setting because students' questions may require greater depth and mastery than those in a traditional, un-flipped setting. However, the role of the teacher changes from that of a sage-on-the-stage or passive presenter of content to a coach engaged in developing the talent of his or her students, a reflective practitioner of teaching and learning in action (Schon, 1982; Bergmann & Sams, 2014; Reed & Swanson, 2014). The key is

to rethink and re-imagine what class time should look like when instructors leverage class time for learning maximization. The Table 4 demonstrates how using a flipped classroom approach can diverge from the traditional 90-minute classroom experience.

At the undergraduate and graduate university levels, students engage in simulations with teams or individually; instructors use class time for debriefing, strategic planning, and other activities to reinforce learning and to illuminate areas of learning where students experience difficulty. This is an area in which research is sparse; more academic research is needed for how best to utilize the flipped classroom and other alternate models in higher education, and especially for adult learning. Given these points, the best practices mentioned in this paper are in alignment with the flipped classroom assessment strategies posited by Talbert (2015). These principles entail: 1) beginning with appropriate learning objectives; 2) using a "frequent and small" flipped classroom approach; 3) ensuring performative as well as summative assessment is built into the process; and 4) sharing data collected during the flipped classroom activities. Some of these activities may entail coordination between teachers and technology administrators.

Another best practice pertains to how faculty assign required readings. Instructors should consolidate the list of required readings or required textbooks to purchase; students will want this information at the beginning of the course. Reading assignments should align with homework preparation

TABLE 5
BEST PRACTICES FROM THE TEACHER PERSPECTIVE

Issue	Best Practice
Select and master the flipped classroom paradigm before trying it on students.	Miller (2012) asserts that faculty need to master the flipped classroom techniques, such as project-based learning (PBL), understanding by design (UBD), and game-based learning (GBL), and be able to explain why students need to know what they will learn from these activities.
Assess student learning.	The flipped classroom encourages faculty to begin with the end in mind in terms of course learning objectives and outcomes. Instructors build objectives and outcomes into each assignment and activity at the beginning of the course, as opposed to added on at the end. Thus, as Berrett (2013) states, "...it is not enough...to simply declare that the learning outcome is to cover the first four chapters of a textbook" (Itap, 2013).
Be willing to give up some classroom control.	The flipped classroom activities require teachers to be agile facilitators, <i>guides on the side</i> , alongside students who are gaining autonomy and confidence through practicing what they are learning. For many faculty members, this is a paradigm shift. Like students, some faculty will have to 'unlearn' behaviors and habits they have spent years developing. Serving as an effective leader in the flipped classroom requires that instructors relinquish some power to students, so students can engage in knowledge sharing and be responsible for their own learning throughout the course (Kovach, 2014).
Start small.	Begin integrating the flipped classroom model into units, rather than reconstructing an entire syllabus. Use as much or as little as seems to work for the students and the subject matter. Always remember to construct such lessons thoughtfully, incorporating both faculty and student expectations, course objectives and outcomes, and student enrichment through class time (Itap, 2013)
Plan activities well.	Miller (2012) asserts that built-in reflection is essential for success. "Students need metacognition to connect content to objectives, whether that is progress in a GBL unit, or work towards an authentic product in a PBL project" (Itap, 2013).
Engage students in planning the flip.	Pappas (2011) advises recruiting savvy students to research online videos to support course material. This should be done carefully and clearly so students understand what they are looking for in terms of content and course objectives.

and the face-to-face meetings; this alignment will allow students to better manage their time, reading load, and class preparation for the flipped classroom. With reading load in mind, instructors should not change the reading requirements once students have started their assignments (or purchased books); however, faculty can include current events, contemporary materials, or other scholarly publications as needed to enhance the in-class group discussion and students' learning. Adding current events and contemporary materials provides relevancy for the course and allows students to express their views about various social issues. Overall, reading assignments should reinforce the learning objectives and provide the foundation for the course content.

Similarly, instructors should compile the list of online discussion topics that engage students to answer as partners in accountability. The discussion forums can be a form of individual assessment in which students must answer questions posted by the teacher, as well as a place to engage in peer learning with other students. Moreover, discussion topics can foster online collaboration in which students answer each other's questions, give peer-to-peer feedback, and work together to solve complex problems as members of a team. Likewise, students can participate in blog sites and post their review comments for articles, academic research, and other scholarly works.

Technology Administrators

Although video is one instructional tool that can be used in a variety of ways in the flipped classroom, it would be a mistake to focus only on this form of technology. Bergmann and Sams (2014, p. 31) confess that in their early flipped classroom experiences, video had too great a focus. Learning objects can include multimedia resources such as online simulations and games, readings such as books and periodicals, and collaborative tools to include blogs, discussion forums, peer reviews, and social media. Both Bergmann and Sams (2014) have experimented with the flipped classroom approach by asking students to watch videos or listen to pre-recorded lectures prior to class time. That approach helps to maximize the opportunities for experiential learning during the face-to-face class time. However, the overuse of any approach or educational tool can become boring and uninteresting to learners; learners expect new forms of intellectual inspiration to gain and hold their attention.

Developing a flipped classroom approach requires instructors to divide course material into brief lessons that can be recorded and posted online. Simple slide show presentations with voice-over can suffice at times; in other cases, instructors

can enhance their lessons with video recordings, to include those from YouTube. A key point here is that students must be able to access the videos through a learning management system (LMS) such as Blackboard®, Moodle, or some type of learning platform; another option is to have students access the videos through a private channel, such as one available through YouTube. Additionally, the Internet is a rich source of software and creative applications (Robertson, 2014); many of these applications are free or low cost for both student and educator. Furthermore, technology administrators must be aware of the websites, programs, games, or simulations needed to support the flipped classroom model. For software that incurs costs, teachers and technology administrators must coordinate with other stakeholders to secure funding.

In terms of actual development, teachers and technology administrators can collaborate on creation of course materials; the course materials consist of all the recorded lessons and in-class activities. The technicians also fully test the courseware for functionality (e. g., Does the video really play?) prior to the start of the actual course. Educators generally prefer this development approach because building the course in tandem with teaching the same course may prove extremely problematic. Instructional resources may not be available, and the instructor may not have time for both curriculum development and student engagement, such as grading student assignments and maintaining online office hours. For example, faculty should apply for copyright permission for academic works well before the start of the course. In all cases, it is important to ensure that the ownership of software and intellectual property is clearly defined prior to beginning on such a projects.

According to Guo, et al. (2014, p. 2), the best kinds of videos for learning bear the following principles listed below in Table 6. Additional information for video recommendations and production styles is available in Annex B.

As a means of tracking how often and for how long students play the videos, technology administrators can datamine the video server log and determine the length and number of times students played the media. From this analysis, instructors can then determine the usefulness of the video and whether the video was effective in achieving the learning outcomes (Guo, et al., 2014). Usefulness, effectiveness, and learning outcomes lead quite naturally to discussions on student performance and assessment. Student measurements of learning can consist of multiple-choice or true-false questions designed to check understanding of the video contents. If the assessments are accessible immediately after student viewing of the video, data-mining can demonstrate how long after the video was watched that students attempted the end-of-video assessment. The data analysis can also reveal the overall

TABLE 6
VIDEO PRINCIPLES ACCORDING TO GUO

Shorter videos are much more engaging than longer lectures.
Videos that intersperse an instructor's talking-head with slides are more engaging than slides alone.
Videos produced with a more personal feel are more engaging than high-fidelity studio recordings.
Khan-style tablet drawings are more engaging than PowerPoint slides or code screen shots.
Even high quality pre-recorded classroom lectures are not as engaging when chopped up for a Massive Open Online Course (MOOC).
Videos where instructors speak fairly fast and with high enthusiasm are more engaging.
Students engage differently with lecture and tutorial videos.

number of attempts on a certain question and the student’s final score on the assessment instrument (Guo, et al., 2014). Instructors can then use the data-mine analyses to update and revise course materials for the next iteration.

CONCLUSION

The future of the flipped classroom and other teaching methodologies utilizing online tools looks promising. “The flipped classroom [is] expected to be increasingly adopted by institutions ... to make use of mobile and online learning” (Johnson et al., 2015, p. 39). While the debates continue over the effectiveness of the flipped classroom methodology, educators agree that additional research is needed. The flipped classroom model is one model educators are experimenting with to address the needs of learners and expand students’ capabilities for learning more efficiently and effectively in a time when lifelong learning is crucial to individuals and society.

Furthermore, a pervasive principle of academics is that learners must play an active role in their education and thus take responsibility for their learning. Obviously, this expectation is not viable when students are passive; passive behavior leads to

an apathetic mindset that “the instructor will tell me everything I need to know.” Unfortunately, many traditional classrooms still emphasize the instructor as the lead sage role on the classroom stage, while students patiently listen and absorb information in the cheap-seats. While all educators agree that listening skills are paramount, flaccid participation and osmosis are not. What is more is that many traditional classroom settings create codependency; students do not know how to solve problems unless they ask the instructor.

Clearly, the archetype described above is a direct contradiction to learners being active and autonomous, as well as using critical and creative thinking skills as part of lifelong learning. The flipped classroom strategy places the educational encumbrance upon the student; instructors become the experts who develop the talents of their students and eliminate the codependency. This paper has examined ways to embrace the changing needs of learners to meet the challenges of today’s educational environment. A true success of education is when students are able to think and act independently, contribute to the body of knowledge, and develop the cognitive skills to deal with future challenges.

ANNEX A EXAMPLE DEFINITIONS OF TERMS

Instructors should offer guidance early in the course to minimize student confusion; a part of that guidance is to provide clear terminology. Clear terminology (1) sets the stage for the entire course, (2) helps to control student expectations so they know how to adequately prepare, (3) facilitates course

management for both online content and in-class instruction, and (4) alleviates frustration for students and faculty alike. The chart below provides one example from Harvard University (Harvard Online Learning, 2015).

Instructional Level	<p><u>Introductory</u> - Assumes students have no prior knowledge of the topic or subject.</p> <p><u>Intermediate</u> - Assumes students have some basic knowledge and are accustomed to college-level academic courses.</p> <p><u>Advanced</u> - Assumes students have subject-specific knowledge and/or a relevant academic degree.</p>
Level of Engagement	<p><u>Low</u> - No assessments or interactive learning elements.</p> <p><u>Medium</u> - Some optional online assessments and interactive learning elements. Helpful but not essential to the learning experience.</p> <p><u>High</u> - Online and/or in-person assessments and interactive learning elements are fully integrated into the experience.</p>

ANNEX B

RECOMMENDATIONS AND PRODUCTION STYLES FOR VIDEOS ACCORDING TO GUO

When considering investing in videos for use in the flipped classroom, the following recommendations are prudent (Guo, et al., 2014, p. 2).

Invest heavily in pre-production lesson planning to segment videos into chunks shorter than 6 minutes.
Invest in post-production editing to display the instructors head at opportune times in the video.
Try filming in an informal setting; it might not be necessary to invest in big-budget studio productions.
Introduce motion and continuous visual flow into tutorials, along with extemporaneous speaking.
Coach instructors to bring out their enthusiasm and reassure that they do not need to purposely slow down.
For lectures, focus more on the first-watch experience; for tutorials, add support for re-watching and skimming.

Videos can contain multiple production styles, such as alternating between PowerPoint slides and an instructor’s talking head recorded at an office desk. The following list contains the prevailing production styles according to Guo et al. (2014, p. 4).

Slides – PowerPoint slide presentation with voice-over.
Code – Video screencast of the instructor writing code in a text editor or command-line prompt.
Khan-Style – Full screen video of an instructor drawing free-hand on a digital tablet, which is a style popularized by Khan Academy video.
Classroom – video captured from a live classroom lecture.
Studio – instructor recorded in a studio with no audience.
Office Desk – close up shots of an instructor’s head filmed at an office desk.

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