The Flipped Classroom in Mass Communication Education, Using Lynda.Com

Robert Kalwinsky, Middle Tennessee State University, USA
Matthew Binford, Middle Tennessee State University, USA

Abstract

The flipped classroom is a form of instruction with growing interest in academia. There are several papers that highlight the appeal and benefits of the flipped classroom, but they are primarily limited case studies and anecdotal accounts. Our dual quantitative/qualitative study explores the flipped classroom through two mass communication courses (a 3-D animation class and a single-camera video class taught over a year and a half, offering data from eight classes total) using lynda.com for outside-of-class instruction. The results indicate that the flipped classroom increases student performance over regular class instruction. Many factors often assumed to be correlated with better performance did not show significance in this study (i.e., preferential learning modalities, comfort with online structure), but there were other factors observed (e.g., self-efficacy, instructor knowledge...) that were significantly aligned with performance in the flipped classroom.

Introduction

Presently there is a growing academic interest in the flipped classroom for use in higher education. The flipped classroom is a form of instruction involving student use of video lectures, podcasts and reading material outside of the classroom, usually at home, while the on-site class period the next day is used for task-based learning, more personalized guidance and interaction with the instructor and other students. Basically, the lectures are conducted asynchronously (both spatially and temporally, and thus usually online) before the class commences. This is formally known as a submodel of the 'rotation model' of blended learning (Chen, et. al., 2014), allowing students to work at their own pace for much of the instruction and augmenting it with brick-and-mortar application and guidance. The basic theoretical approach relies on pragmatic theory and John Dewey's learning by doing and development of practical life skills.

It is important to retain the fact that online videos are not the primary mode of instruction in the flipped classroom—as in the case of MOOCs (massive open online courses), for example, in which an entire course is delivered online—but rather supplemental to it (Herreid, 2002). This form of instruction is gaining momentum, in part due to the appreciation by students of the convenience of asynchronous learning (Lin and Overbaugh, 2007). Other factors also contribute to the growing pedagogical interest. Kathleen Fulton (2012) and Chen et. al. (2014) listed the following among the advantages of the flipped classroom:

- students move at their own pace, and thus information delivery is tailored for individual learning
- it is integrated with students' facility with technology and appropriate for "21st century learning."
- it stresses collaborative and independent learning as well as emphasizing problem solving
- doing "homework" in class gives teachers better insight into student difficulties and learning styles
- less transactional distance, and thus increasing the dialogue between students and teachers
- teachers can more easily customize and update the curriculum and provide it to students 24/7

- it equalizes student access to the instructor
- students can attend to homework in personalized time intervals, leading to lessened learner fatigue
- classroom time can be used more effectively and creatively
- teachers using the method report seeing increased levels of student achievement, interest, and engagement
- learning theory supports the new approaches
- the use of technology is flexible and
- The authors of this paper found some additional benefits to the flipped classroom:
- students who miss class for sports, etc. can watch the lectures while on the road
- the students perform better than those in the standard classroom

The flipped classroom is similar to other methods that depend heavily on student preparation outside of class. In team learning, developed by Larry Michaelsen, students are given reading assignments before class and then in class encounter individual quizzes, group quizzes, and finally case studies with increased achievement (Michaelsen, 1992; Michaelsen, Knight, & Fink, 2002). Herreid (2013) has described the successful use of Michaelsen's method in STEM courses. Just-in-Time teaching is a method that requires significant student preparation as well. Students are required to accomplish web-based assignments that are due shortly before class. The instructor reads the student submissions to adjust the classroom lesson to suit the students' needs. Class time is spent dealing with questions and introducing material on a need-to-know basis (Novak, Patterson, Gavrin, & Christian, 1999; Simkins, Maier, & Rhem, 2009). Other modalities, such as "Hybrid courses" or blended models courses have students learning their subject matter via a combination of traditional classroom interactions and some form of Internet-based learning. These and related methodologies share some of the same advantages as the flipped classroom and, as previously noted, the flipped classroom is considered a subset of the blended model. Like the flipped classroom, all of these methods allow instructors to cover principles, facts, and terms as part of out-of-class student preparation and to use classroom time to deliver the application side where students grapple with real-world problems and see the material in context. (Herreid 2002). It thus appears reasonable that the numerous reported benefits stemming from these approaches would also work for the flipped classroom.

A central theme in much of the research regarding the flipped classroom modality of learning is the idea that active learning works best, as opposed to only lecturing. Active learning is the key element in many of these accounts. Yet the research tends to rely on personal accounts of case studies and anecdotal reports; there is not much hard evidence of the flipped classroom's superiority to the standard lecture/lab. On this basis, we conducted a more rigorous research study to test the effectiveness of the flipped classroom. We explored the use of online content through lynda.com, to implement a flipped classroom in our single-camera and 3-D animation classes, while assessing its effectiveness via empirical study. We also examined the effect of this approach on student satisfaction and performance.

Literature Review

While there is literature concerning online teaching and the effect of videos on classroom instruction, there is very little at present concerning the flipped classroom in mass communication courses and actual empirical research. Most of the research involves anecdotal, instructor accounts of the flipped classroom. And most of the literature relates to online teaching, which by extension may hold some keys for the flipped classroom but is a different pedagogic modality. There is one study looking at the use of the flipped classroom in a multimedia course that focuses on web development, which will be discussed below.

There are several authors who conceptually support the flipped classroom (Mull, 2012; Milman, 2012), with arguments ranging from time for increased creative instruction to increased student participation. But there are others (Nielsen, 2012) who note the increased time requirements without real evidence of improved instruction.

There is a reasonable amount of literature on the use of video podcasts as instructional material. The literature on the efficacy of video podcasts generally indicates a positive impact on student attitudes (Bolliger, Supanakorn, & Boggs, 2010; Hill & Nelson, 2011) behavior (Chester, Buntine, Hammond, & Atkinson, 2011; McCombs & Liu, 2007); and performance (Alpay & Gulati, 2010; Traphagan, Kusera, & Kishi, 2010; Vajoczki, Watt, Marquis, & Holshausen, 2010; Enfield, 2013). All of this indirectly bodes well for the use of video in the flipped classroom.

He, Swenson, and Lents (2012) examined the use of video tutorials as a supplement to learning in an undergraduate setting and they discovered an increase in student performance. Morris, Wu and Finnegan (2005) found a strong association of student locus of control and course success, lending indirect support for the flipped classroom where the student is more in charge of learning and final results depend on their own actions. Flipped classroom teachers almost universally agree that it's not the instructional videos on their own, but how they are integrated into an overall approach, that is significant. Students cannot simply watch the video in a passive fashion. Instructors often request that notes are taken and turned in, or they administer random quizzes, to ensure students stay on task and concentrate (Tucker, 2012; Enfield, 2013).

Zappe, Leicht, Messner, Litzinger, and Lee (2009) flipped a large undergraduate architectural engineering course. Student evaluations of the course indicated that the classroom flip had a positive impact on self-reported student learning: students perceived the method of teaching as more effective than lecturing and reported that they enjoyed the class and benefited from watching the lecture videos outside of class. Ruddick (2012) described a course redesign project based on the flipped classroom concept for a college preparatory chemistry course. Students in the flipped section of the course watched video lectures at home and spent class time working on problem-solving activities. Final exam scores and "percent success" (the percentage of students who finished the course with a letter grade of C or higher) were compared between the flipped and regular-lecture sections. In addition, student feedback was gathered using student course evaluations. Results showed that the flipped-class students outperformed the standard lecture-based students, with higher final exam scores (note this is not overall exam scores).

While there are no detailed surveys indicating predictors for success in the flipped classroom, there are some suggestions for indicators of success in the online classroom revolving around several indices. Some authors find that emotional support, self-efficacy and time and study management are the key correlated factors related to success and retention in an online curse (Holder, 2007) as well as students' sense of computer self-efficacy (Morris, Finnegan and Wu, 2005).

Enfield (2013) offers the most detailed survey of the flipped classroom for web-based development. He used personally-crafted videos centered on coding for the web. In terms of development time, it took him 50 hours to create 13.5 hours of video, with tailored editing still remaining to complete. However, he notes that the time taken in production was somewhat balanced by the decrease in preparation time required for each class session. His major findings indicate that students generally found the videos very helpful, despite some technical issues (i.e., streaming and downloading factors). In the subsequent class activities, group activities to practice were considered least engaging; rather, they favored instructor-led demonstrations where students where called on to proceed with the task.

Recent research has indicated a further elaboration on elements of the flipped classroom, although the suggestions are based on self-assessments and not hard data: adding emphasis on content planning and not just delivery; more opportunities for input from students during the course sessions; and using multiple computer platforms for ready access (Chen, et. al. 2014).

In summary, there are several studies indicating the usefulness of videos to augment lecture materials, although not in the flipped classroom mode (i.e., they are using videos during class time or as part of complete online instruction). There are also indications that use of multimedia tends to increase student interest and participation. And those who have used the flipped classroom, while having some implementation issues, generally find it a successful means of increasing student performance. It is on this basis that we decided to conduct an empirical study to determine its effectiveness in several mass communication courses.

Implementation

We used lynda.com offerings for the online portion of our study. Lynda.com provides excellent professional videos on many relevant applications in mass communication, and eliminates many of the problematic issues addressed in the literature regarding creating effective videos for the classroom. Applications were chosen based on class content, and the same applications were used by all instructors for the same class.

All students were given free accounts to lynda.com for the semester. Students were also canvassed for home-computer access. In the rare case this was not available, lab computers were opened during most school hours for their use, and computers were also provided in the

library during school and evening hours. Miller (2012) offers some cautionary advice for the flipped classroom that we implemented during this study: Reasons for knowing the content were embedded and transparent as the course proceeded, with continual emphasis on the accretion of knowledge.

We ensured that all students had access to the needed technology.
We linked the pre-watched videos with the content of in-class activities.

An introductory video podcast was assigned the night before the relevant in-class activity. In class, the instructor dealt with the material at hand and incorporated the relevant skills from the lynda.com session into both lecture material and into hands-on assignments. The next night, the lynda.com tutorials were resumed. These steps were repeated as the semester continued. During night sessions, if students had questions they could use e-mail or social media (IM, D2L, Facebook) to contact peers and/or the instructor.

The study was conducted among two different courses, with five different instructors, over a one and a half year period: A single-camera production course, with a lynda.com focus on basic camera techniques and editing skillsets in FinalCut 7 or X (three instructors)

A 3-D animation course, focusing on Maya (two instructors)
Data emanated from both quantitative results (a pretest and posttest survey of attitudinal factors using a Likert scale and a concept/skills based test) as well as qualitative analysis (focus groups, individual interviews by the researcher). The concept and skills based test was the same for pre and post examination. There were also data from classes without lynda.com that took a pre-test and post-test, which served as controls. The qualitative self-reporting instrument gauged index of learning styles; intrinsic motivation; comfort with computers and online work; and self-efficacy measures.

The qualitative measures gave depth to the survey results, but also helped gauge the interaction of attitudes and behaviors. Individuals cannot change attitudes as readily as behaviors (Delahoussaye, 2002) and attitudes and behaviors are often nonaligned (Kerr et al., 2006 and Fishbein and Ajzen, 1975). Thus the combination of qualitative and quantitative

methods was used in part to ascertain if students stating they were good with computers actually were good with computers.

Results

The students did require some instruction on both lynda.com and social media methods of instructional interaction. This took about a week in all classes. There also was reluctance at first with time-on-task; most instructors found quizzes the best way to ensure students stayed current with the material.

Quantitative Study

For the Likert scale and simpler survey questions (e.g., age), we used a Pearson correlation coefficient, and looked at scatter plots separate for each attitude question vs. the improvement in test score (improvement was measured in two ways: a) raw learning: (the percent score at the end minus the percent score at the beginning), and b) percent of possible improvement in learning (what percent of the gap to 100 percent did they reach). The latter offers a more accurate indice for those students who demonstrated strong knowledge at the start. Any correlation with $p<.05$ is noted for significance; others are also given to if there is a pattern that is not consistent with other, often anecdotal, research, or seems likely to deserve further study. We used Pearson correlation since both variables are scale variables.

The following table shows the correlation for the students in the 3-D animation (Maya) class. Due to space limitations, representative questions are included in rows for some measures (i.e., it does not include all the questions related to comfort with technology, only some representative ones). If they are representative, they also are representative in terms of significance values.

The first column is the factor/question being evaluated, the second column is the correlation of items with the raw change in scores (e.g. post-test minus the pre-test values) while the third column is the correlation of items with the percent of possible increase in scores (e.g., the raw change/(100-pretest score). The latter calculation indicates how well a student already familiar with the material (i.e., did relatively well on the pre-test) changed.

Table One – 3-D Animation – 36 students

Items	Correlation (raw)	Correlation (% possible)
Age	r=.37 p=.01	r=.39 p=.01
I am using lynda.com for this class	r=-.31 p=.03	r=-.24 p=.08
Online training turns people into numbers	r=.16	r=.07
Online training is intimidating because it seems complex	r=-.25 p=.07 weak	r=-.21 p=.11
I look forward to online training	r=.09	r=.15
I am confident I can use online training	r=.06	r=.06
An online training module will enhance this class	r=-.08	r=-.14
I am a creative person	r=.13	r=.10
I enjoy working online	r=-.12	r=-.15
I feel confident in my technical abilities	r=.05	r=.13
Online training only helps in the beginning of the learning curve	r=.09	r=.10
Online training helps me make more efficient use of my time	r=-.11	r=-.12
Computers intimidate me	r=-.15	r=-.07
I learn best via lecture	R=-.04	R=-.02
I learn best via reading	r=-.28 p=.05	r=-30 p=.04
I learn best via hands-on	r=-.07	r=-.09

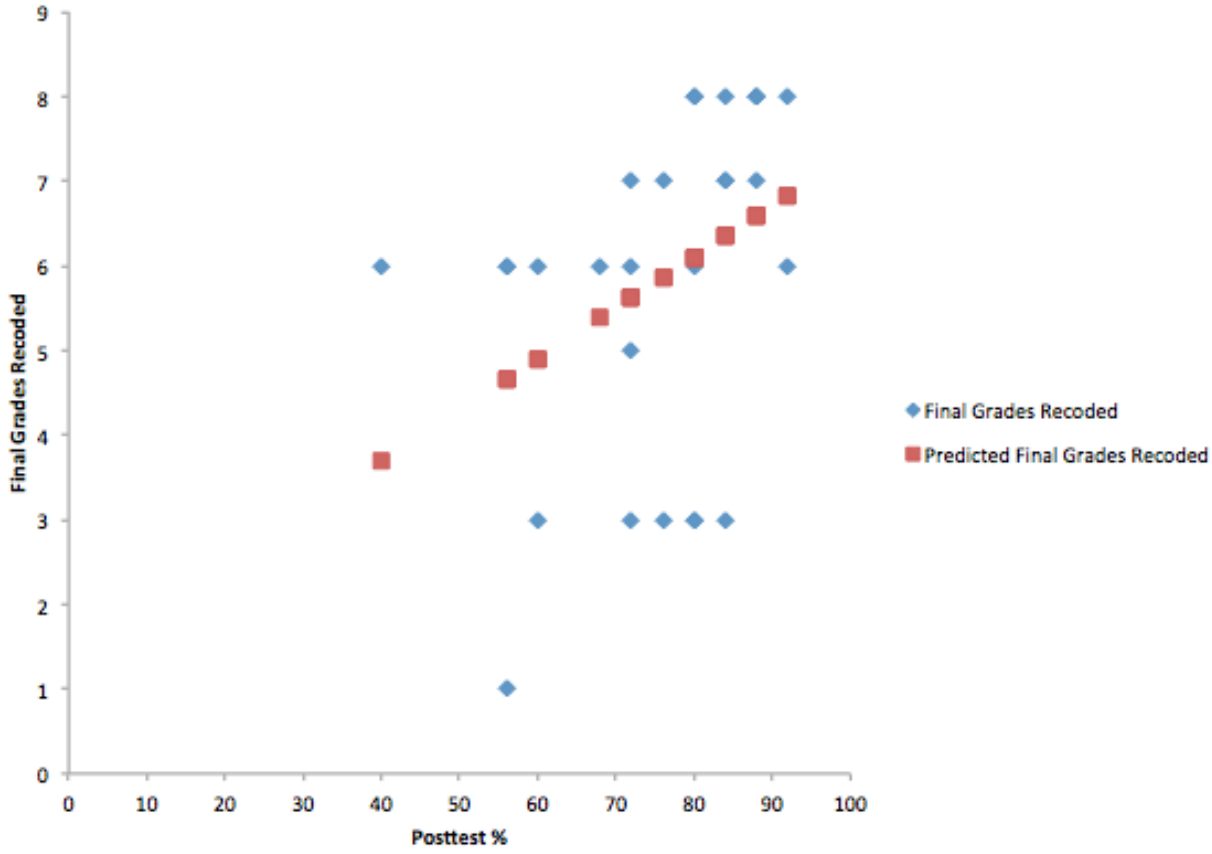
We also evaluated the results to see if any Likert item changed significantly with the amount of learning. For the Maya group, the self-assessment item "I am a creative person" significantly increased with the amount of learning. The values for correlation with the raw score was r=.62 (p=.01) and for percent improvement r=.69 (p=.00).

The most significant correlations related to:

- age (the older students did better),
- the use of lynda.com (those who did not use it did not do as well),
- students' comfort with reading as a means of learning (the less a student's perceived comfort with reading as a mode of learning, the more likely s/he would do well with the flipped instruction).

Some measures of efficacy in relation to computer and online skills were weakly significant and may deserve further study, although on the whole there were no attitude variables that were strikingly significant, including the reading comfort variables. The t value for this Maya group compared with the control group is 0.00001, which is strongly significant. Thus their technical knowledge improved considerably.

While it was clear that the digital animation students' technical knowledge of the material did seem to improve as a result of the Lynda.com tutorials further analysis was needed to determine whether this enhanced technical knowledge resulted in better overall final grades for the students. To determine this relationship a regression analysis was used to determine the relationship between students' final grades and how well they did on the posttest given to each of them after completing the Lynda.com tutorials. To do this, each student's final grades had to be recoded into a quantitative variable. This scale includes grades graded on a plus or minus scale. For example grade values such as B+ and C-. No plus or minus values were added for letter grades of D or below or A or higher. This is illustrated below in Figure 1.



p-value=0.04

Figure 1 shows a statistically significant positive correlation between how well students perform on the Lynda.com posttest and their final grade in the digital animation course. As students' posttest grades go up, so too does the likelihood of those students' receiving a higher grade in the course.

The following table shows the correlation for the students in the single-camera classes. Again, due to space limitations, in the rows only representative questions are included for some measures (i.e., it does not include all the questions related to comfort with technology, only some representative ones). If they are representative, they also are representative in terms of values.

The first column is the items/questions being tested, the second column is the correlation of items with the raw change in scores, and the third column is the correlation of items with the percent of possible increase in scores.

Table Two – Single-camera – 81 students

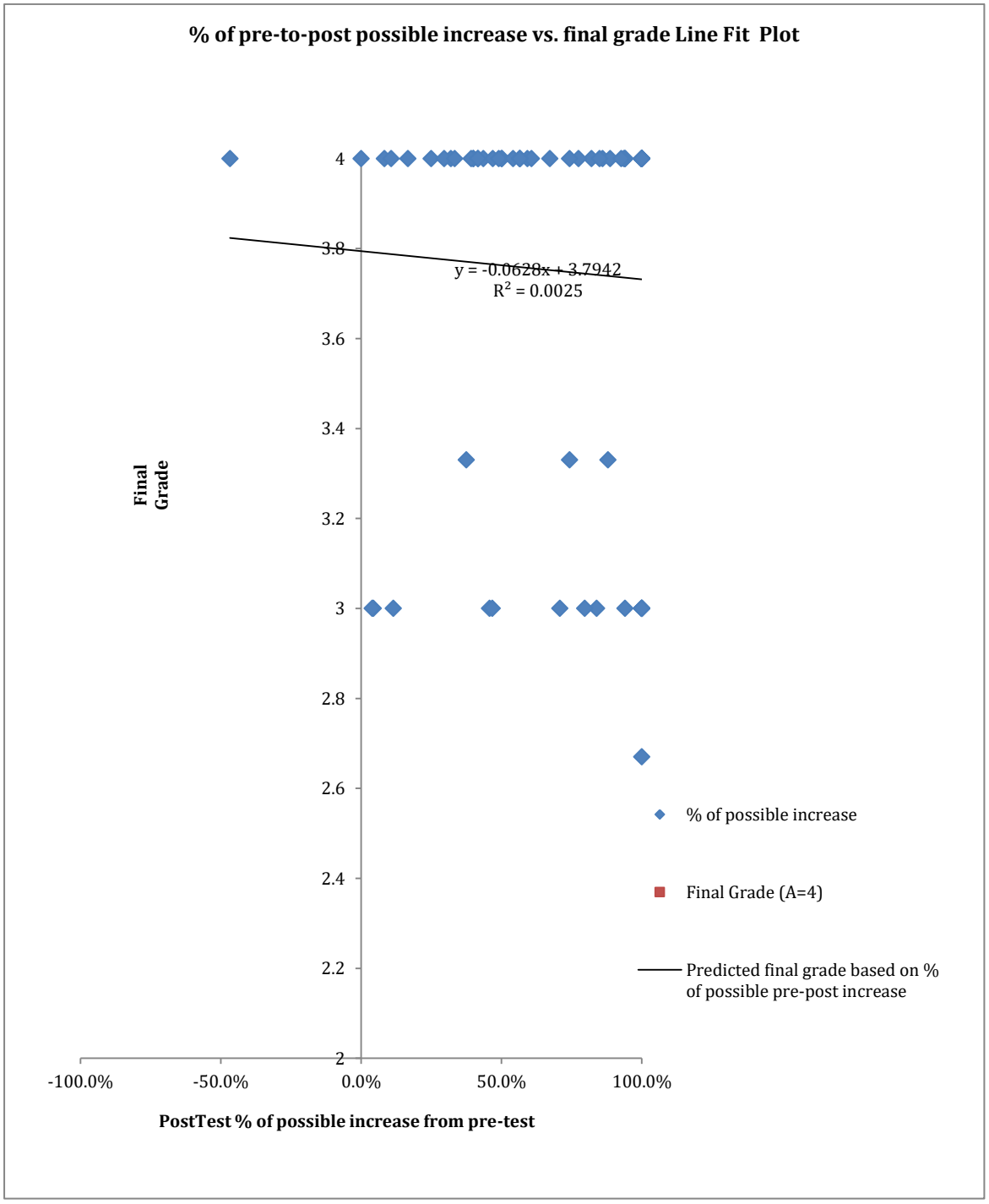
Items	Correlation (raw)	Correlations (%)
Age	r=.06	r=.2 p=.04
I am using lynda.com	r=-.17 p=.07 weak	r = -.18
I am using an additional online application	r=.23 p=.02	r=.23 p=.02
Online training turns people into numbers	r=-.08	r=.06
Online training is intimidating because it seems complex	r=-.07	r=.06
I look forward to online training	r=.06	r=.00
I am confident I can use online training	r=.02	r=.00
An online training module will enhance this class	r=.12	r=.05
I am a creative person	r=-.16 p=.08	r=-.20 p=.03
I enjoy working online	r=-.00	r=-.09
I feel confident in my abilities	r=-.08	r=-.08
Online training only helps in the beginning of the learning curve	r=-.01	r=.01
Online training helps me make more efficient use of my time	r=.07	r=.02
Computers intimidate me	r=-.06	r=.06

I learn best via lecture	r=.00	r=-.03
I learn best via reading	r=.04	r=-.01
I learn best via hands-on	r=.24 p=.01	r=.22 p=.02

For the students in the video classes:

- age mattered in terms of relative increase in score (the older students tended to make the largest increase in improvement).
- Those students who did not use lynda.com for the course did not do as well as those who did, although it was very weak (not really significant).
- For the single-camera students, using an additional online instructional application of their choosing had a significant positive effect on their score – not a surprising finding.
- Having a preference for hands-on learning is also significant, and is understandable given the large 'learn by doing' component of the flipped classroom.

What is surprising is the consistent influence of not "perceiving oneself as a creative person." This was consistently correlated with doing better in assessments. In this group, there was no significant correlation with change in Likert scale items in relation to amount of learning. The t value for this video group compared with the control group (no lynda.com instruction) is 0.00001, which is strongly significant. Note that this is comparing how students did on the assessment test, not on overall grades for the course. To determine how students' grades on the posttest assessment compared to their final grades in the class a regression analysis was used. Similarly to the regression analysis conducted for the digital animation class final grades had to be recoded from alphabetical to a numerical quantifiable variable. To do this grades were recoded in the same way as the animation class (see explanation of Figure 1). Figure 2 illustrates the possible correlation between how well students did on the Lynda.com posttest and their final grade in the class.



p-value=0.162

As one can see from the above chart this relationship did not prove to be significant; this is primarily because all students did so well in the classes, there was little variation.

Qualitative Study

In terms of the qualitative study, the significant factors were instructor expertise both in the subject matter and in using lynda.com; the motivation of the student to achieve mastery of the material; and future orientation of the student (i.e., career-oriented with specific goals).

The interaction between students and instructor remains a key factor, not simply for educational support, but also for establishing socio-emotional support. Students who did well tended to use IM to ask questions of peers, but also wanted to know they could access their instructors when needed. For the instructors, this meant online resources needed to be set up and maintained, and particularly peer-to-peer interactions fostered. It appears from the qualitative information, that while online learning provides ample opportunity for individual learning (e.g., choosing time, place and regulation of learning), it also requires interactive opportunities to be offered for help and feedback.

Students tended not to favor group activities the day after the lynda.com tutorials. In part, they wanted the instructor to lead them through quasi-lectures that brought the material together, but they also wanted to personally work on projects that encompassed the material they covered the previous night, with pertinent feedback from the instructor. Again, they did not prefer group projects; most instructors felt this was due to their eagerness to individually demonstrate what they learned. But individual attention meant more time from the instructor as he/she dealt with the demands of individual efforts. The expertise of the instructor factored greatly in student assessment: both the instructor's knowledge of the information covered in class and the instructor's knowledge of the lynda.com material.

In terms of the students who did not do as well, the basic categories involved students who were not motivated at all, and those students who had external factors influencing their performance. In the context of student retention, some students were simply not engaged in education in a general sense. However, there were also students who had economic issues. Some students from poorer households did not have the experience of those whose background included home computers, video cameras and personal editing applications. Sometimes this was the result of a lack of commitment and interest, but at other times it was simply a matter of finances. This again is part of the mentoring/counseling role of the

instructor, but some consideration given to more equitable structuring of equipment in introductory classes may be warranted.

Other students tended to have social interaction issues that benefited from the flipped classroom. Some seemingly introverted students tended to do well in the animation classes, and offered positive feedback concerning their interest in using lynda.com. Extroverted students also did well in the courses and appreciated lynda.com, but the shyer students indicated their preference for solitary learning and the preference for social media (vs. direct) contact. Several also mentioned that it helped their confidence for the next day, when the instructor would call on them for related information.

Many students commented on the advantage of having tailored access to materials, particularly the ability to learn at their own rate:

> It's great for going at your own – faster or slower – pace so no one is left behind!

It is important to retain that we used the flipped classroom to teach the technical and practical aspects of the courses, not the theoretical or critical thinking aspects. This may explain why some researchers have found flipped classrooms offer improvement in application-type questions but not overall test scores or knowledge-type questions (Seyedmonir, Bobbie, Barry, K., and Seyedonir, M., 2014). This was also observed among our professors, who unanimously noted that overall grades did not improve with the flipped classroom (more on this in the conclusion section). This may be due to the fact that theoretical and critical-thought aspects of higher education require intensive, lengthy collaborative Socratic processes, and the asynchronous nature of introductory hands-on flipped instruction plays against those forms of interaction (e.g., the focus is largely technocentric and individualistic).

Students' achievement goals were often strikingly affiliated with learning achievement. Those who had the clearest charted career path (they are all mass communication students) did significantly better than those who were uncertain about career goals. These were usually the students who also were determined to master the material. (This was also observed by Bruisma, 2004 and Eccles and Wigfield, 2002). They were observed to make more effort, engage in more elaborate processing of information, and devote more time to questions. This also aligns with Morris et al, 2005. – students' motivation is a significant factor in course completion.

As mentioned above, it was observed that many students who in the survey perceived themselves as proficient with computers and online work were actually less adept than anticipated. This was distinctly observable with the students who performed poorly in the class. This observation will be addressed in the conclusion, below.

Much of the qualitative research results reinforced the perception that the successful online student is self-directed, independent, and personally responsible for their efforts.

Conclusion

There are problems with the current literature concerning the flipped classroom. It is all too easy to report bias when one instructor, who may support a particular teaching modality, reports via anecdotal or case study. These forms of account have their place, but need to be augmented by quantitative and qualitative studies. The number of participants should be robust, and rather than test one instructor's experience, several instructors should be included. There is a tendency in the research for reports with very limited numbers of respondents and usually only one instructor. The research reported in this paper should offer some remedies to these concerns in current scholarship. While students who used lynda.com did do better in the final assessment, in single-camera there was not always a very significant difference from those who did not use lynda.com in the same class. Upon reviewing the data, this appeared to be due to the fact that there were only a few students who did not use lynda.com, and those students already possessed significant technical application knowledge, i.e., they did not require the tutorials to do well in the class. Further, the significant increase in the test group assessment scores versus the control group, which did not use lynda.com, clearly demonstrates that the online tutorials were very successful.

Unlike the animation students, the single-camera groups had a significant negative correlation for self-perception of creativity. This makes sense in relation to the topics: animation is an art-related class, while the latter is a production related course. It appears from both data sets that the less you consider yourself a creative person in single-camera, the better you perform in class. In the informal discussions, this also was evident in the animation students' general concern with graphics and design, while the TV studio and single-camera students focused on technical aspects. This is not to say the latter are not creative, rather that they perceive themselves as more technically oriented than creative.

Interestingly, significant correlations were not found for factors related to general ability, comfort with computers, confidence with online media and comfort with online teaching; these are generally assumed to be important factors. Nor was there any clear, sustained demonstration of learning modality preference in either animation or single-camera, although there were some indications for animation students to prefer other learning modalities over reading and single-camera students' preference for hands-on instruction.

We also tabulated the correlation results for those students who were at the top 20% of the class, reflected in both final grade in the survey test and final class grade. They followed the general trend of the correlations for the class, although with less of a tendency for favoring hands-on learning.

Interestingly, the students overall grades did not increase much compared to prior semesters. This was noted in both the quantitative data and in the qualitative surveys with professors. This result counters Ruddick's (2012) finding of increase in final exam scores among flipped-classroom enrollees, but confirms the findings of Seyedmonir, Bobbie, Barry, K., and Seyedonir, M. (2014). Bergman and Sams (2012) note that the first year of flipped classroom practice is often problematic and one cannot expect to find significant grade improvement for at least a year. However, we found that even after one year, overall grades did not improve – although the assessment grades related to the technical components of camera use/editing or Maya application use did.

Along with Chen et al (2014) we found that most students who did not use the video instructional material (and did not have prior knowledge) or did so haphazardly quickly fell behind and did not do very well in the class. Interviews suggest this was due to learned passive behaviors and subsequent resistance to active engagement in activities and learning, and in a few cases to financial concerns. This finding does not support the premise of Goodwin, B. and Miller, K (2013) that the flipped classroom may provide more benefit for at-risk students. It is not unreasonable to expect at-risk students' concerns ranging beyond proffered advantages of the flipped classroom, especially for somewhat costly technological fields such as mass media. But more research is required to delineate the pertinent issues.

One important factor that emerged was the significance of the level of interactivity between the instructor and students and the level of interaction of students with other students. Students often need help negotiating online content, and while a faculty member cannot be available 24 hours a day, it is possible for students to work via IM and social media forms to get satisfactory responses from peers. This had to be carefully set-up and tested by the instructor to ensure workability. And while some authors argue that the use of videos creates lessened time for lecture planning, it is also true that the preference for individual efforts in this study meant more time interacting on a one-to-one basis. There is little evidence in this study that the flipped classroom offers time savings for the instructor; in fact, quite the converse. What it does offer, however, is streamlined access to far more foundational material in an efficient fashion.

Student's assessment of the instructor's level of knowledge, collaborative feedback, and self-motivation were the factors that most successful students indicated were important for their interest and success in the flipped-classroom.

There were issues related to conflicts between self-assessment and direct observation. Some students who claimed computer self-efficacy were deceptively accurate. Many were good at some computer applications and certainly excelled at video games. But they usually had trouble navigating lynda.com and lacked basic digital knowledge (e.g., MB vs Mb, PCM, understanding rates, etc.). What is also deceptive is that social media skills were not always fully developed. Some had difficulty with social media, particularly D2L, Wordpress and Facebook. They knew how to post, but not how to blog or negotiate Facebook well, or to conduct a good Boolean search. It may be worthwhile having an initial class session that introduces foundational material related to computers, the Internet and social media.

From this study, it appears the flipped classroom with lynda.com attains many of the factors of Chickering and Gamson's "Seven Principles of Good Practice in Undergraduate Education" (the principles are in bold):

- Developing cooperation among students: via social media and next-day interactions. Not all students took advantage of this, but those who did tended to do well.
- Creates active learning: although individual activities are preferred over group

- Emphasizes time on task: students must keep up so they can negotiate and complete the following day's activities. Quizzes were needed to remain on task.
- Respects diverse talents – this was especially true of introverted and perhaps hands-on learners– although no specific preference for learning modality emerged the in data as significant.

Where it does not work as well with the principles are as follows:

- Immediate feedback – this is definitely less available, unless one is on social media - constantly.
- Communicates high expectations – in some ways it does, but a high level of critical thinking and comparative skills is not the focus. Those elements need to be deliberately developed by the instructor and often there is not time or resources to develop these skills.

The issues with the flipped classroom we discovered were:

- There is greater instructor preparation time required
- There is greater instructor interaction required, both during class time and randomly during the day as students use social media for interaction
- Since practice opportunities are performed in-class, there is immediate instructor feedback, with perceived improved learning over standard homework with delayed feedback (results from qualitative data, both students and instructors)
- Student concern over new modalities exists, and we had to take time to orient students to this new method of teaching
- Students new to the method may initially resist learning at home. Consequently, they often would come unprepared for the active learning phase in class. Both experience and quizzes helped.
- The biggest factors contributing to student success with assessments were:
    - Self-efficacy and motivation
    - The knowledge and attitude of the instructor
    - Use of collaborative feedback
- Assessed grades for technical knowledge improved dramatically, but there was no significant increase in overall class grades. This may indicate the insufficiency of

purely technical skills in developing well-rounded professionals, but this will take further research to illuminate.

These results do indicate strong support for the flipped classroom in media production courses, using the rich catalog of lynda.com. The process, especially during initial stages, does take some extra effort in adaptation, and also entails significant extracurricular attention from the instructor and the students. This alone emphasizes the importance of continuing education for the instructors in learning the appropriate tools and techniques to be successful with this form of classroom instruction. But in general, it provides an enhanced experience that results in improved student performance, and even if it does not improve overall class grades, it does improve technical abilities in a way impossible to attain in a brick-and-mortar classroom. In the qualitative surveys, everyone indicated the efficient and significant increase in technical knowledge, even if this did not translate into increase in overall course grades. The specifics of determining who is best suited for the flipped classroom by using self-assessment of interests and abilities is not well supported by this study, save for overall issues of self-efficacy and motivation. This finding is not unique and applies to most teaching modalities. It appears the suitability for the flipped classroom is general and not readily categorized, with the caveat that there is some indication of financial burden in relation to some at-risk students who did not do well – this was largely unearthed during qualitative interviews.

Future research is needed to help illuminate this new form of instruction and its relevant application, as solutions are sought for increased performance and retention among mass communication students in higher education.

References

Alpay, E., & Gulati, S. (2010). Student- led podcasting for engineering education. *European Journal of Engineering Education, 35,* 415– 442.

Beesley, A. & Apthorp, H. (Eds.) (2010). *Classroom Instruction that Works*, second edition. Research Report: Denver, CO: McRel.

Bergmann, J., & Sams, A. (2102) *Flip your Classroom: Reach Every Student in Every Class Every Day.* Washington, DC: Internal Society for Technology in Education.

Bolliger, D. U., Supanakorn, S., & Boggs, C. (2010). Impact of podcasting on student motivation in the online learning environment. *Computers & Education, 55,* 714–722.

Brickman, P. (2006). *The case of the Druid Dracula* [Case Study]. Buffalo, NY: National Center for Case Study Teaching in Science, University at Buffalo. Retrieved from http://sciencecases.lib.buffalo. edu/cs/collection/detail.asp?case_ id=492&id=492

Bruisman, M. (2004). Motivation, cognitive processing and achievement in higher education. *Learning and Instruction*. 14, 549-568.

Chen, Y., Wang, Y., Kinshuk, & Chen, N. (2014). Is FLIP enough? Or should we use the FLIPPED model instead?. Computers & Education, 16

Chester, A., Buntine, A., Hammond, K., & Atkinson, L. (2011). Podcasting in education: Student attitudes, behaviour and self-efficacy. *Journal of Educational Technology & Society, 14,* 236–247.

Crippen, K. J., & Earl, B. L. (2004). Considering the effectiveness of web-based worked example in introductory chemistry. *Journal of Computers in Mathematics and Science Teaching, 23,* 151–167.

Eccles, J.S. and Wigfield, A. (2002). Motivational beliefs, values and goals. *Annual Review of Psychology.* 53, 109-132.

Enfield, Jacob (November/December 2013). Looking at the Impact of the Flipped Classroom Model of Instruction on Undergraduate Multimedia Students at CSUN. *TechTrends,* 57(6): 14 – 27.

Fishbein, M. & Ajzen, I. (1975). Belief, attitude, intention and behavior. An introduction to theory and research. Reading, MA: Addison-Wesley.

Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student learning. *Learning & Leading with Technology, 39*(8), 12–17.

Goodwin, B., & Miller, K. (n.d). Evidence on Flipped Classrooms Is Still Coming In. Educational Leadership, 70(6), 78-80

He, Y., Swenson, S., & Lents, N. (2012). Online video tutorials increase learning of difficult concepts in an undergraduate analytical chemistry course. *Journal of Chemical Education, 89,* 1128– 1132.

Herreid, C. F. (2002). Using case studies in science, and still covering content. In L. Michaelsen, A. Knight, & L. Fink (Eds.), *Team based learning: A transformative use of small groups* (pp. 109–118). Westport, CT: Praeger. Hill, J. L., & Nelson, A. (2011).

Herreid, Clyde Freeman and Nancy Schiller, (2013) Case Studies and the Flipped Classroom, *Journal of College Science Teaching, 42(5),* 62-66.

Hill, J.L. & Nelson, A. (2010). New technology, new pedagogy? Employing video podcasts in learning and teaching about exotic ecosystems. *Environmental Education Research, 17,* 393–408.

Holder, B. (2007). An investigation of hope, academics, environment and motivation as predictors of persistence in higher education online programs. *Internet and Higher Education 10,* 245-260.

Kay, R., & Kletskin, I. (2012). Evaluating the use of problem-based video podcasts to teach mathematics in higher education. *Computers & Education, 59,* 619–627.

Knabb, M. (2009). *Why is Patrick paralyzed?* [Case Study]. Buffalo, NY: National Center for Case Study Teaching in Science, University at Buffalo. Retrieved from http:// sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_ id=482&id=482

Lin, S. Y. & Overbaugh, R. C. (2007). The effect of student choice of online discussion format on tiered achievement and student satisfaction. *Journal of Research on Technology in Education, 39,* 399-415.

McCombs, S., & Liu, Y. (2007). The efficacy of podcasting technology in instructional delivery. *International Journal of Technology in Teaching and Learning, 3*(2), 123–134.

McGarr, O. (2009). A review of podcasting in higher education: Its influence on the traditional lecture. *Australasian Journal of Educational Technology, 25,* 309–321.

Michaelsen, L. K. (1992). Team learning: A comprehensive approach for harnessing the power of small groups in higher education. *To Improve the Academy, 11,* 107–122.

Michaelsen, L. K., Knight, A., & Fink, L. D. (2002). *Team-based learning: A transformative use of small groups* (42)5, 2013.

Miller, A. (2012, February 24). Five Best Practices for the Flipped Classroom. [Weblog]. Retrieved from http://www.edutopia.org/blog/flipped-classroom-best-practices-andrew-miller .

Moore, J.C., Sener, J., & Fetzner, M. (2006). Getting better: ALN and student success. *Journal of Asynchronous Learning Networks*, 10(3).

Morris, L.V., Finnegan, C., & Wu, S. (2005). Tracking student behavior, persistence and achievement in online courses. *The Internet and Higher Education*. 8(3): 221-231.

Novak, G., Gavrin, A., Christian, W., & Patterson, E. (1999). *Just- in-time teaching: Blending active learning with web technology*. New York, NY: Prentice Hall.

Overmyer, J. (2012). Flipped classrooms 101. *Principal* (September/October), 46–47.

Ruddick, K. W. (2012*). Improving chemical education from high school to college using a more hands-on approach*. Unpublished doctoral dissertation, University of Memphis.

Seyedmonir, B., Barry, K., & Seyedmonir, M. (2014). Developing a Community of Practice (CoP) through Interdisciplinary Research on Flipped Classrooms. Internet Learning Journal, 3(1), 85-94.

Simkins, S., Maier, M., & Rhem, J. (2009). *Just-in-time teaching: Across the disciplines, and across the academy*. Sterling, VA: Stylus Publishing.

Strayer, J. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments Research, 15*, 171–193.

Traphagan, T., Kusera, J. V., & Kishi, K. (2010). Impact of class lecture webcasting on attendance and learning. *Educational Technology Research and Development, 58*, 19–37.

Tucker, Bill. (2012). The Flipped Classroom – Online instruction at home frees class time for learning. *Education Next*, Winter 2012.

Vajoczki, S., Watt, S., Marquis, N., & Holshausen, K. (2010). Podcasts: are they an effective tool to enhance student learning? A case study from McMaster University, Hamilton Canada. *Journal of Educational Multimedia and Hypermedia, 19*, 349–362.

Zappe, S., Leicht, R., Messner, J., Litzinger, T., & Lee, H. (2009). "Flipping" the classroom to explore active learning in a large undergraduate course. *Proceedings of the 2009 American Society for Engineering Education Annual Conference and Exhibition*.