

# **When Worlds Collide: The Digital Age Meets Traditional Pedagogy**

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## **ABSTRACT**

Today's college students demand more than traditional lecture format and testing from their professors. Due to their techno-savvy, multi-tasking abilities, this generation requires additional stimuli to keep their attention in the classroom and to stimulate their minds in a learning environment. Add to this their desire for independence and teaching this new cohort can be a challenge. This paper explores the development of one pedagogy classroom model that addresses the diverse learning styles and integration of technology in the classroom. The model allows students to choose course delivery methods and supplemental material that suit their individual needs for course success.

Today's students bring to the learning environment a rich and different set of literacy practices and backgrounds that are often unrecognized or underused by educators (Considine, Horton and Mooreman 2009). The newest generation of college students are techno-savvy and are intellectually ready to build Power Point Presentations with hypertext video links (Stanford and Reeves 2007). This presents a unique challenge for the main stream professor who was reared under traditional pedagogy, which lacked in technological advances such as the World Wide Web, instant messaging, blogs iPods, and text messages.

This paper seeks to create a course model which addresses the needs and desires of this independent, fast paced, techno-savvy cohort. Based on student input over the course of 36 months, classroom pedagogy is proposed that will provide an enhanced learning experience utilizing technology to address the individual learning styles of college students while also allowing each student freedom of choice to explore options that maximize their experience. Students are allowed to choose their preferred learning style in terms of course delivery and use of supplemental material. Course outcomes are monitored and the course is adjusted over the period of three years until balanced course outcomes results are achieved. The result is a well received workable course model which is diverse enough to be applied across a broad spectrum to include adaptation of an academically sound online delivery.

## **Learning Styles**

Learning style is "a distinctive and habitual manner of acquiring knowledge, skills, or attitudes through study or experience while learning preference is favoring of one particular mode of teaching over another (Sadler-Smith 1996). It is imperative that students understand their learning style in order for success to take place. However, all too often students will sacrifice learning style for learning preference, which is imply what the student desires to do. Learning theory literature reveals several mainstream

classifications of learning styles. Traditional learning styles include Hill's Cognitive Mapping, Kolb's learning Styles and Dunn and Dunn Learning Styles. However, Chen, Toh, and Ismail (2005) take learning one step towards today's student. Their study explores guided and non guided virtual reality (VR) learning against traditional methodology. The results indicate that learners benefit most from guided VR irrespective of their learning style. Additionally the study suggest that offering VR guided and unguided enhances the learning experience.

The mass education system, typical of today's learning environment, is designed and developed based upon "scientific management" ideas of Fredrick Taylor. Initially created in the late 19<sup>th</sup>/early 20<sup>th</sup> century, little change has taken place with regards to delivery mode (Johnson, J. 2006). A typical class is delivered by presenting material in a classroom then administering a test to determine the level of comprehension. Learning styles have progressed past the typical active, passive, visual, aural, read/write and kinesthetic. Technology has driven how we learn to new levels. Blashki et al (2007) found that most students describe the current learning environment as boring and irrelevant because students want ownership of their own learning process. This poses the question as to what type of learning environment is conducive to the new generation of college students. According to Jewitt (2005), today's learning environment cannot be dominated by teacher curriculum but rather it must encompass a broader learning community that includes original and innovative presentational and communication resources. The result is Immerse Learning Theory, which is a learner-centered approach. The approach focuses on learners and their tasks, while utilizing available technologies as assistive tools (Blashki et al 2007).

### **Teaching trends**

Teachers tend to teach utilizing the teaching methods in which they are reared (Stanford and Reeves 2007). Given the average age of tenure-track assistant professors is 42, for associate professors 50.1, and for full professors 58.7, this means that Baby Boomers (Boomers) are primarily teaching today's college students (phdinhistory.blogspot.com). Boomers are not characterized as techno-savvy, multi-taskers as are their subsequent generations of Gen X, Gen Y (or Millennial), who are the modern day undergraduate and graduate college students. Rather, Boomers are slower paced, traditionalists, who enjoy the old way of life (Martin & Prince, 2008, Elam, Stratton and Gibson 2007). They are more apt to utilize, chalk or white boards, textbooks and overheads rather than technology enhanced methods (Stanford and Reeves 2007). Boomers were raised under the British Style of teaching which consists of lecture, homework and testing with little to no interaction from the student. It is the student's responsibility to attend class, take notes, and learn the material. Boomer's are hesitant with technology and will utilize traditional means such as overheads and handouts. However, if we explore immersed learning pedagogy, that allows for immersion ( the active involvement of physical, emotional, and cognitive processes and concentration), engagement (the ability to attract and sustain the user's prolong interest), risk/creativity (the ability to move beyond the expected and experimental boundaries) and, agency (the user's active control over the learning and playing process), we find the opportunity to create an engaging learning environment utilizing today's technology (Blashki et al 2007).

It is commonly understood that the use of high tech technology emerged mainstream with Generation X (Gen X), those born between 1965 and 1978 (Tulgan 2001). However, Generation Y (Gen Y) has taken this to the next level, having experienced computers, cell phones and high-tech gadgets their entire lives. New creations such as blogs, wikis, instant messenger (IM), podcast, and vodcasts are redefining the traditional delivery methods into an interactive technological environment (Asmus, Bonner, Esterhay, Lechner, and Rentfrow 2005). The integration of these technologies is enhancing the learning experience and engaging students in the learning process, while allowing communication on a broader level (Baird and Fisher 2005).

### **Non traditional course delivery**

From a once thought of “paper degree” to Duke offering an online MBA, online learning environments have grown in popularity and acceptance in the past decade. Ching (1998) finds that when students are exposed to computers in the learning process that the learning style of the student changes within weeks. Given the typical college student today was reared in a computer enhanced environment one can deduce they already possess these skills. Liu (2007) found this to be true and gives further evidence that online learning strategies should be integrated into current curricula to help facilitate learning and reduce drop –out rate.

While classrooms typically host Power Point presentations, few professors integrate interactive learning tools to move past traditional course delivery. Students today learn better from a multi-media, class seminar approach. In order to facilitate the learning process, professors will need to move past Power Point and embrace interactive technologies (Schrand 2008). Students will learn best when their learning styles are matched to instructional strategies (Akdemir and Koszalka 2007). Given the techno-savvy diversity of Gen Y, a diverse array of supplements should be utilized to help facilitate the learning process.

### **Course Model Development**

From the literature review and student survey feedback the following model is proposed to address the issues of utilizing technology to address different learning and testing styles. The base line for this model begins in fall of 2007, which the courses referenced do not utilize technology and traditional delivery methods is utilized. Throughout the course development, the same professor teaches utilizing in class Power Point Presentations. Each course is given 4 tests that are not cumulative. The semester results are in table 1.

In examining the course outcomes, it is important to realize the difference in averages of small classes versus larger sections. Historically, the professor notices an average difference of 5 points lower in large class averages (over 100) than smaller classes, those less than 100 and classes. Class size is a debate that is ongoing as to the teaching effectiveness in larger sections. This can be noted by observing the grade distributions in class 2 of fall 2007 and classes 1 and 2 of spring 2008 (see table 1). There is also a noted difference in the time of day delivery and final course out come. Students performed better if they took the course at 11 AM than other times of the day. This is attributed to the circadian rhythms of the average college student (Martin 2008). The larger sections for each semester are taught at 8 am.

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Place table one about here  
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The same Professor is used to deliver all phases of the course development. The same textbook is utilized to eliminate complexity inequalities. The same basic tests are used except for minor adjustments to maintain academic integrity. The expectation is that by holding these variables constant variance of consistency will be the same.

### **Phase One**

Phase one is implemented in Fall 2008. In phase one, a simple step was taken to move testing to an online method. After surveying student desire for test delivery, a remarkable 89.7% in Fall 2007 and 91.27% in Spring of 2008 stated their preferred method of test delivery is online. Due to the high demand, it is determined that online will be the only mode of testing.

The university utilizes the Blackboard Course Management System for its classroom technology. Therefore, this program is deemed the most appropriate method to administer testing over publisher online options. Utilizing Blackboard means students will not learn a new program, as they already use Blackboard for student information. For comparison purposes, the exact tests from Spring 2008 are utilized. To maintain academic integrity of testing procedures the following steps are enacted. Students are informed of the procedure prior to the test. A mock test is given two weeks in advance for students to practice.

1. Students take tests during their normally scheduled class time.
2. Tests links are only available for the first 10 minutes of class
3. Tests are time limited to 70 minutes
4. 52 Questions and answers are randomized
5. Questions appear one at a time and the student may not go back.
6. Students are allowed only 1 entry to the exam. If they experience technology issues they must contact the professor immediately to determine their course of action.

It is thought that moving the tests to an online environment without supervision may allow the students to utilize unauthorized material such as textbooks and notes. However, initial results of are adversely disturbing. The first test average is 70.2. This is significantly lower than previous years where the first test average varied from 83.29 to 87.89. Students are surveyed in class to determine the reason. The most frequent response is that they failed to study since the test is online.

The end of course results proved interesting for fall semester. The class averages for both the large and small sections are below historical normal. The grade distribution is flat with the highest failure rate for this professor. The end of semester survey comments reveal that the majority of the students did not study the same as if they were going to take a test in class. Additionally, 10.27% of the students state they were have performed better if they were allowed to take the test in class rather than online. Ironically, the majority of the students stated they received a grade that reflected the effort they put into the course.

To rectify fall 2008's outcome, additional online components were added in spring 2009. Optional homework questions are added as well as required end of chapter

quizzes. These are added to force the students to read their books. Additionally, end of fall semester results is integrated into the Spring course delivery, emphasizing the importance of studying as if the test is in class.

The result of the added pedagogy is encouraging. The course average improved for both the small and large sections. The small section actually mimics traditional methodology in course outcome; However, the large section's course average is still slightly below normal, although not significantly. A closer examination of the grades produces a satisfactory grade distribution. (see table 2)

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**Phase 2**

Phase 2 is implemented in fall of 2009 with the same format continuing in spring 2010. In phase 2, movement to allow student's freedom of delivery modes is implemented as well as the option of online or in-class testing. Class format is altered in an attempt to minimize procrastination. The course includes: lectures, homework, quizzes and tests. Lectures are recorded then placed into Blackboard enabling students to view the lesson at their leisure or attend the live session in class. Traditional power point presentations remain available on Blackboard. Homework is added as a requirement in addition to chapter quizzes. Homework is due prior to the lecture and quizzes are due 2 days after the lecture. Expectations are that students will not fall behind when given freedom of choice for class delivery methods since assignments are given due dates. Testing is available either in class or online with the same format as in phase 1. Students register for which version of the test they will take.

In order to ensure student class format comprehension, students are required to attend the first week of class. The first day course structure is explained. Students are allowed to choose between coming to class and viewing the class via the recorded lectures. The choice is theirs as long as they stay current in the course. Students falling behind will receive an email instructing them to return to the in-class method of delivery. If they fail to return, one point per day is deducted from their homework points. The second day of the first week, the same message is given to those who missed the first day. The remainder of the class is optional attendance.

Communication for this format of course delivery is critical. Each section is assigned a teaching assistant and a section email account, thus ensuring questions are answered in a timely manner. Additionally, the professor is available via yahoo instant messenger throughout the day. Students are encouraged to add the professor's id prior to the first exam and to communicate as often as needed via this mode of communication. The results are encouraging. Attendance is taken and reveals interesting and unexpected results as demonstrated in table 3.

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Review of lecture usage indicates that fewer than 20% of the students are utilizing the online lectures. If consideration is given to those who attended, only 30-45% of the students received benefit from the lecture. However, a noted 94.7% of the students

utilized the Power Point Presentations. This raises the question as to whether or not the expense of recording equaled the usage benefit.

The grade distribution represents a normal bell curve distribution. The percentage of failing students is below 1%. The large section, which historically experienced a 5 point lower difference than the smaller class is now eliminated; thus addressing the issue of large section differences. In Spring of 2010, the larger section actually performed overall better than the smaller section by .9% (see table 4).

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Student feedback from this phase indicates confusion regarding quiz due dates. This feedback is significant enough to warrant additional adjustments regarding quiz procedures. Students indicated enjoyment of the option of taking tests in class or online. Less than 20% of the students for each section chose the in class version. No difference between in-class testing versus tests taken online results is noted. Bringing students back to class after they failed to meet the requirements proves impossible. Regardless of the homework point deduction, the majority of the students failed to return to the traditional course format once released to freedom of choice.

### **Phase 3**

Phase 3 is implemented in Fall 2010 and continues. In phase three, implementation of voice over Power Point slides are utilized rather than the recorded lectures. Since the majority of the students are utilizing this supplement, it is expected that the percentage of students who did not use the lectures will use the Power Point slides. First week attendance is removed, as well as the requirement to return to class if a student fails to maintain current work. The final adjustment is to make quizzes due for each section 2 days before each test. This eliminates confusion of excessive due dates. The results of phase 3 are encouraging. There is a notable increase in class attendance for the 11:00 AM section. Daily attendance ranges from 15%-20%. The 8 AM class attendance continues to be 20%-25%.

### **Phase 4 Full Course Roll Out**

The fourth and final phase is spring 2011. In this phase, the use of live course viewing is added to the course delivery options. Additionally, the lectures are recorded and once again made available as well as both voice over and traditional Power Point presentations. The use of discussion boards is added to the communication mix.

### **Results and Implications**

The result of this model development is depicted in figure 1. Students are demonstrating exemplary skills in time management, and are making learning decisions that are to their benefit. Students report they like the structure of the course because it allows them freedom – freedom to work, freedom to take other courses, freedom to study. They also like that acknowledgment is made that they are mature enough to make class attendance decisions on their own.

The format and control parameters enforce academic integrity in testing procedures.

The model is now at a point where the historically large class difference in course outcome is moot. Allowing students to choose means that even in a large section, those students who need and want a small environment can now have that opportunity.

## **TECHNOLOGY ENHANCED, ALTERNATIVE LEARNING MODEL**

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### **Limitations**

This study only considers one Principles of Marketing class at one university. It is unknown how other courses will be accepted. Additionally, at this point, the model does not utilize all available technology. As technology and students change, this model will need to be adjusted to meet their specific needs.

### **Future Development**

Beginning fall 2011, the course will implement the use of additional technology which will enhance the learning experience and address additional learning styles. An interactive learning component much like online course utilize will be offered. Additionally, traditional supplemental such as video snip-its, flash cards, and optional study quizzes will be made available.

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**Table 1**  
**Fall 2007 Spring 2008 No Technology**

Fall 2007 Non Technology				Spring 2008 Non Technology					
Class 1		Class 2		Class 1		Class 2		Class 3	
<b>A</b>	34	<b>A</b>	27	<b>A</b>	20		12		48
<b>A-</b>	0	<b>A-</b>	0	<b>A-</b>	0	<b>A-</b>	0	<b>A-</b>	0
<b>B+</b>	24	<b>B+</b>	3	<b>B+</b>	1	<b>B+</b>	9	<b>B+</b>	14
<b>B</b>	43	<b>B</b>	17	<b>B</b>	5	<b>B</b>	8	<b>B</b>	68
<b>B-</b>	0	<b>B-</b>	0	<b>B-</b>	0	<b>B-</b>	0	<b>B-</b>	0
<b>C+</b>	11	<b>C+</b>	1	<b>C+</b>	0	<b>C+</b>	3	<b>C+</b>	7
<b>C</b>	36	<b>C</b>	4	<b>C</b>	1	<b>C</b>	6	<b>C</b>	41
<b>C-</b>	0	<b>C-</b>	0	<b>C-</b>	0	<b>C-</b>	0	<b>C-</b>	0
<b>D+</b>	3	<b>D+</b>	0	<b>D+</b>	1	<b>D+</b>	1	<b>D+</b>	4
<b>D</b>	14	<b>D</b>	1	<b>D</b>	0	<b>D</b>	0	<b>D</b>	5
<b>D-</b>	0	<b>D-</b>	0	<b>D-</b>	0	<b>D-</b>	0	<b>D-</b>	0
<b>F</b>	4	<b>F</b>	0	<b>F</b>	0	<b>F</b>	0	<b>F</b>	6
<b>Count</b>	169	<b>Count</b>	53	<b>Count</b>	28	<b>Count</b>	39	<b>Count</b>	193
<b>MIN</b>	45.52	<b>MIN</b>	67.4	<b>MIN</b>	68.64	<b>MIN</b>	68.4	<b>MIN</b>	0
<b>MAX</b>	99.04	<b>MAX</b>	98.8	<b>MAX</b>	100.2	<b>MAX</b>	101.9	<b>MAX</b>	102.2
<b>Range</b>	53.52	<b>Range</b>	31.4	<b>Range</b>	31.6	<b>Range</b>	33.52	<b>Range</b>	102.2
<b>Average</b>	81.49	<b>Average</b>	88.4	<b>Average</b>	89.9	<b>Average</b>	86.05	<b>Average</b>	81.71
<b>Median</b>	82.24	<b>Median</b>	90.2	<b>Median</b>	91.6	<b>Median</b>	88	<b>Median</b>	82.72
<b>STDEV</b>	10.01	<b>STDEV</b>	7.21	<b>STDEV</b>	7.39	<b>STDEV</b>	8.41	<b>STDEV</b>	12.42
<b>Variance</b>	100.3	<b>Variance</b>	52	<b>Variance</b>	54.58	<b>Variance</b>	70.66	<b>Variance</b>	154.3

**Table 2**  
**Online Testing Results**

Fall 2008 Blackboard test enhanced  
18

Spring 2009 Blackboard testing



<b>A</b>	0	<b>A</b>	26	<b>A</b>	23	<b>A</b>	56
<b>A-</b>	3	<b>A-</b>	0	<b>A-</b>	0	<b>A-</b>	0
<b>B+</b>	14	<b>B+</b>	11	<b>B+</b>	5	<b>B+</b>	20
<b>B</b>	0	<b>B</b>	57	<b>B</b>	19	<b>B</b>	97
<b>B-</b>	4	<b>B-</b>	0	<b>B-</b>	0	<b>B-</b>	0
<b>C+</b>	12	<b>C+</b>	11	<b>C+</b>	5	<b>C+</b>	16
<b>C</b>	0	<b>C</b>	54	<b>C</b>	10	<b>C</b>	44
<b>C-</b>	3	<b>C-</b>	0	<b>C-</b>	0	<b>C-</b>	0
<b>D+</b>	1	<b>D+</b>	4	<b>D+</b>	1	<b>D+</b>	3
<b>D</b>	0	<b>D</b>	21	<b>D</b>	0	<b>D</b>	3
<b>D-</b>	0	<b>D-</b>	0	<b>D-</b>	0	<b>D-</b>	0
<b>F</b>		<b>F</b>	12	<b>F</b>	0	<b>F</b>	3
<b>Count</b>	56	<b>Count</b>	197	<b>Count</b>	64	<b>Count</b>	243
<b>MIN</b>	0	<b>MIN</b>	0	<b>MIN</b>	0	<b>MIN</b>	0
<b>MAX</b>	98.08	<b>MAX</b>	102.9	<b>MAX</b>	99.5	<b>MAX</b>	101
<b>Range</b>	98.08	<b>Range</b>	102.9	<b>Range</b>	99.5	<b>Range</b>	101
<b>Average</b>	82.47	<b>Average</b>	77.15	<b>Average</b>	84.9	<b>Average</b>	82.9
<b>Median</b>	83.8	<b>Median</b>	79.36	<b>Median</b>	87	<b>Median</b>	83.7
<b>STDEV</b>	13.82	<b>STDEV</b>	13.55	<b>SYDEV</b>	13	<b>STDEV</b>	11.7
<b>Variance</b>	191	<b>Variance</b>	183.6	<b>Variance</b>	170	<b>Variance</b>	137

**Table 3**  
**Class Attendance**

Class Start Time	Average Percentage of Student attendance
8:00 AM	25%
9:30 AM	25%
11:00 AM	5%
12:30 PM	10%
3:00 PM	20%

**Table 4**  
**First Attendance Optional class**

Fall 2009 Online Lectures added					Spring 2010 BB or in class testing added				
<b>A</b>	11	<b>A</b>	8	<b>A</b>	20	<b>A</b>	55	<b>A</b>	16
<b>A-</b>	0	<b>A-</b>	0	<b>A-</b>	0	<b>A-</b>	0	<b>A-</b>	0
<b>B+</b>	1	<b>B+</b>	2	<b>B+</b>	29	<b>B+</b>	28	<b>B+</b>	5
<b>B</b>	18	<b>B</b>	25	<b>B</b>	105	<b>B</b>	75	<b>B</b>	19
<b>B-</b>	0	<b>B-</b>	0	<b>B-</b>	0	<b>B-</b>	0	<b>B-</b>	0

C+	8	C+	3	C+	19	C+	16	C+	5
C	8	C	8	C	22	C	23	C	7
C-	0	C-	0	C-	0	C-	0	C-	0
D+	0	D+	0	D+	3	D+	1	D+	1
D	1	D	1	D	5	D	3	D	2
D-	0	D-	0	D-	0	D-	0	D-	0
F	0	F	1	F	7	F	1	F	0
Count	47	Count	48	Count	210	Count	202	Count	55
MIN	66.2	MIN	14.92	MIN	23.4	MIN	55	MIN	63.7
MAX	96.2	MAX	95.11	MAX	96.3	MAX	95	MAX	100
Range	29.9	Range	80.18	Range	72.9	Range	40	Range	36.3
Average	83.6	Average	82.1	Average	82.1	Average	86	Average	85.1
Median	83.7	Median	83.85	Median	83.7	Median	85	Median	85.6
STDEV	6.55	STDEV	11.52	STDEV	9.27	STDEV	7.37	STDEV	7.99
Variance	42.9	Variance	132.8	Variance	85.9	Variance	54.4	Variance	63.9

**Figure 1**  
Alternative Learning Style Technology Enhanced Course Model

