

Improving Academic Performance Using Mobile Technologies of Generation Y Students

Henry J. Findlay, Professor
Tuskegee University
Tuskegee, AL 36088
findlay@tuskegee.edu
334-724-4316

The Teaching Professor Conference
May 21-23, 2010
Hyatt Regency Cambridge, Cambridge, MA

Abstract

For the Generation Y or millennial students (those born from 1980 onwards), the traditional approaches of teaching and learning may be outdated. When they come into the classroom, they expect an environment that mirrors their world. The question arises as to how to design instruction to facilitate the motivation of millennial students to learn, using some of the technologies that they bring to classroom. A five-year study was conducted at Tuskegee University to determine if the integration of cell phones in a junior level psychology tests and measurement course improved the academic performance and motivation of students. The study focused on the implementation of new approaches geared toward teaching millennial students. During Year One, the course was taught using the traditional approaches. For the ensuing four years, cell phones were used in the class as part of the instructional delivery process. Results of the study showed that infusing cell phones into the course proved successful in motivating and increasing college students' academic performance. The author found that the cell phone can be an excellent learning tool, if properly incorporated into the classroom, because it facilitates the motivation of students as well as the learning culture of anytime, anywhere, anyplace, and at any pace.

Introduction

- ✓ Much has been written about the negative effects of mobile technologies in the classroom, particularly because many educators view them as disruptive and not adding value to teaching and learning
- ✓ Very little or no data are available to support their beliefs
- ✓ Professors and administrators probably do not recognize the educational benefits of using such tools to enhance teaching and learning
- ✓ Building students' interests into the teaching/learning process is a sure means of attracting and holding their attention and intrinsically motivating them to learn
- ✓ Learning should be related to what is going on in the "real world" such as the use of technology or have the student use the technology to learn (Waxler 2007)

Characteristics of Millennial Students

- ✓ Generation Y/Millennial (1980 --) – Digital Natives -- everyone before them – Digital immigrants
- ✓ Cuspers --born near the end of one generation or the beginning of the next

The Millennial students do not know world prior to:

- ✓ The Internet
- ✓ Mobile technologies including the cell phone, digital cameras, the MP3 player, etc.)
- ✓ Text messaging
- ✓ Email
- ✓ YouTube
- ✓ iPods
- ✓ Myspace.com
- ✓ Facebook.com
- ✓ Twitter
- ✓ Blogging
- ✓ CollegeLuv.com, etc

Some Learning Characteristics

- ✓ Expect attention and quick feedback
- ✓ Multitask through multimedia (way of life)
- ✓ Habits and motivational level
- ✓ Attitudes
- ✓ Behaviors
- ✓ Expectations
- ✓ Thinking skills (let their fingers do the thinking)
- ✓ Many are “fractionally educated”
- ✓ “Edutainment” focused
- ✓ Know they have to act fast to win or stay in the game
- ✓ If you proceed slowly and cautiously, you lose

Administrators and Professors Thinking on Cell Phones Usage in the Classroom

- ✓ Negative impact of mobile technologies on the teaching/learning process and their potential to create chaos in the classroom
- ✓ Developed rules and regulations to prevent students from using their cell phones in class
- ✓ Most professors have failed to capitalize on the use of these technologies as teaching tools.
- ✓ Lack of empirical data to substantiate the arguments for or against the integration of mobile technologies in the teaching/learning process

Potential Benefits of Mobile Technologies

- ✓ Especially cell phones, if properly built into the instructional process, they can enhance the motivational levels and the academic performance of college students
- ✓ Mobile technologies have the potential to foster anytime and anywhere learning
- ✓ Bridge the digital divide, especially for students in rural areas where Internet connectivity is a major problem
- ✓ Have multiple functions that can create new teaching and learning opportunities for all levels of our education system

Theoretical Framework for the Study

Technological adaptability of millennial students -- their skills and abilities to use Short Messaging Service (SMS), popular known as text messaging to communicate with their peers, and their heightened level of motivation when using the cell phone as a learning tool.

Gibson, Hanson & Mitchell (2007): Gaining and sustaining students' attention is a key factor to learning -- sustained attention is needed for students to stay on task

Johnson & Taylor (2006): Role of neuroscience in adult learning -- new learning is dependent on what is already known; the brain sees the forest before it sees the trees, and that it responds well to novel ideas in teaching known as emotional hooks.

Visual processing: (perceive, analyze, think in visual images); if weak – unable to create picture in head

Solution: Design instruction to mirror the world of the Generation Y students

Purpose and Objectives

The purpose of the study was to determine if the integration of cell phones into an undergraduate course would enhance the motivation and academic performance of millennial students. The specific objectives were:

1. To develop strategies for teaching millennial students when using their cell phones as an instructional tool
2. To determine if the integration of cell phones in an undergraduate tests and measurement psychology course would improve the motivational level and academic performance of students
3. To identify factors that should be considered in implementing cell phones into the classroom as a teaching tool.

Methods and Procedures

The study included a convenient sample of a total of 131 students in a psychology tests and measurement junior level course, taught by the same author with different groups of students over a five-year period.

Year One: Traditional delivery approaches without cell phones, including lectures, group discussions, case studies, article review and Power Point presentations.

Years 2-5: (1) Implementation of cell Phones into the Classroom and (2) Nano-teaching --Two-Minute Student as Professor Teaching

1. Implementation of cell Phones into the Classroom

The idea of infusing the cell phone into the junior level psychology tests and measurement course started during the spring semester of 2005 when the class was divided into groups for a class activity. Students used data from their cell phones and to calculate the means and standard deviations for the number of cell phone calls received and sent, and the number of text messages received and sent during that day. Students' levels of enthusiasm and motivation were phenomenal and beyond any level that the author had observed in his 28 years of teaching at the college level. The same reaction was observed when the students were asked to determine similar calculations for the different genres of songs in their iPods.

Factors that were Considered Prior to Implementation

Prior to implementing cell phones as a teaching strategy, the author considered the following characteristics of millennial students: (1) They tend to measure time in nanoseconds; (2) they expect attention and quick feedback; (3) their lives involve a great deal of multitasking activities through the use of multimedia; (4) they are used to adapting and being comfortable in various situations; and (5) they are technologically savvy because they have grown up in the age of technology and it has become a way of life for them, and (6) their text messaging abilities.

Organization of the Course for Assessment

Class met once per week from 5:00 PM – 8:00 PM and consisted of students, majoring in psychology and teacher education. In order to assess and evaluate the students' learning, 40% of the total grade was based on out of classroom assignments and the other 60% was for three (3) scheduled examinations, including the final. **There were no grades given for class attendance, class participation or bonus points.**

Out of Classroom Assignments

In an effort to improve the writing and critical thinking skills of the millennial students, the class was structured in such a way to get students to become aware of and be responsible for their own thinking. They were required to summarize four empirical research articles: Each summary no more than one-page in length and included the following sub-headings: (1) **Appropriate APA Reference Style**; (2) **Summary/Abstract** – summary of the entire article in one to two sentences; (3) **Methodology** - a description of the methods and procedures used in the study; (4) **Main Findings/Conclusions** -- a description of the main findings and conclusions brought out in the study, and (5) **Reaction** – a description of the students' reaction to research to include, but not be limited to the implications of the findings, conclusions and recommendations, as well as how the information in the article may be used in the student's proposed field of work.

How Instruction was Delivered

1. Chapter Summaries: Students read aloud the summary of the designated chapters to become familiar with the chapter content overview and the salient concepts. Idea, based on the science of learning (the brain sees the forest before it sees the trees (Johnson & Taylor, 2006). Chapter was then discussed in an engaged teaching/learning approach.

2. Designing Instruction for Cell Phone Use

A. The 1-30-1 Rule

In the 1-30-1 Rule, the professor summarized one concept in no more than 30 words and stated it in one minute or less and students were required to use Short Messaging Service (SMS) or text messaging and type the concept into their cell phone as a text message and save it.

An example of the 1-30-1 rule is the concept of standard deviation: *Spread of scores around the mean; the larger the standard deviation, the greater the spread of scores and the smaller the standard deviation, the lesser the spread of scores.* This information was then available to them for review and study at anytime, anywhere, anyplace, and at any pace.

B. The 1-15-30 Rule

In the 1-15-30 Rule, the professor summarized one concept in no more than 15 words and stated it in 30 seconds or less and again, students were required to type the concept in their cell phone as a text message and save it, following the same procedures described in the 1-30- rule. An example of the 1-15-30 Rule is the concept of negatively skewed distribution: *Tail of curve slopes (points) to the left; few low and many high scores.*

2. Nano-Teaching -- Two-Minute Student as Professor

During a class period, a time-frame of 10-12 minutes was set aside for this activity. Student volunteers were requested to teach the class for two minutes, based on the concepts being taught. The professor would exchange seats with the students and a student would teach the class for two minutes.

Findings

Students' Qualitative Assessment of the Course

The students evaluated the class each year using both the University's structured evaluation instrument as well as the instructor prepared qualitative evaluation. Regarding the instructor's prepared instrument, when the students were asked to indicate the word that comes to their mind regarding the use of the cell phone in the class room, 82% indicated that it was "cool"; 8% said "awesome", and 10% indicated that it was "okay". With respect to the overall usage of the cell phone, 84% said they used notes stored in their cell phones anywhere and anywhere and anytime; 86% reported that it is a good learning tool, while 14% thought that it did not have any impact on their learning. Generally, the terms most often used by students to describe what they liked best about the class were: cool, awesome, keeps me motivated, enjoyable, different, piqued my interest in learning, can review notes anytime; improved my grades; class not boring; class is exciting, and I like using my cell phone in class. When students were asked to indicate what they liked least about the class, generally they wrote: "Not fast enough to write information as text in my cell and transcribing information from Power Point into the cell phones.

Analysis of Students' Academic Performance

Table 1: Comparative Analysis of Students' Academic Performance During the Five-year Study

Year Course Offered	Number of Students	% Mid-term Failing Grades	% of "As" for Final Grade	% of "Bs" for Final Grade	% of "Cs" for Final Grade	% of "Ds" for Final Grade
2005*	17	23%	29%	35%	35%	-
2006	16	12%	56%	31%	12%	-
2007	23	4%	43%	47%	6%	-
2008	30	6%	50%	43%	6%	-
2009	43	6%	48%	37%	9%	6%

*Base year, classes taught without cell phones

Factors to Consider in Implementing Mobile Technologies into the Curriculum

Based on the study of implementing the cell phone into the tests and measurement course at Tuskegee University, the author found that the following factors are important when implementing the cell phone into the course:

1. Use sound principles of teaching and learning: (such as active learning)
2. Design the instruction based on brain research and how it impacts the teaching learning process
3. Design the instruction to facilitate maximum motivation of millennial students
4. Assess the ability of the technology to support the course offerings
5. Understand the personal and situational characteristics of millennial students
6. Ensure frequent feedback among students and the professor
7. Use the technology to create emotional hooks -- novel ideas in teaching
8. Design instruction to mirror the world of the millennial students by using the various technologies that they bring into the classroom.
9. Use the technologies that millennial students bring into the classroom to facilitate motivation and learning
10. Recognize that millennial students are technologically savvy
11. Recognize that millennial students have a great ability to grasp new concepts -- they are a learning-oriented generation

12. Recognize that millennial students are efficient multi-taskers --they will do it faster and better than their competition
13. Use some of the text messaging jargon used in communication as well as many mnemonic techniques to help students remember information

Conclusions, Implications and Recommendations

The results of this five-year study reflected practical significance in the academic achievements among university students in a junior level psychology tests and measurement course at Tuskegee University. While the integration of mobile technologies was limited to the use of the cell phones, these findings have implications for future use of mobile technologies in the classroom at colleges and universities with similar populations. The author also concluded that because millennial students used the technologies to which they are emotionally attached in the classroom, they exhibited higher levels of motivation. Indeed, their motivational levels were much higher compared to the base year when mobile technologies were not infused into the course, or other classes that the author had previously taught.

The academic success in this study shows that when millennial students are engaged in active learning, and particularly when they are using a tool to which they are emotionally attached, they become more motivated and excited about learning. Indeed, other students feed off the excitement that is created in the classroom. The author cautions that the integration of cell phones into course offerings must be carefully planned, and such technology should only be used when it complements and augments the instructional process. If not, the classroom can become chaotic with students involved in personal activities not related to the lesson.

Limitations of the Study

First, the study consisted of millennial students who were relatively **homogeneous** regarding both age and gender -- over 90% female students. The results may not be applicable to male students. Therefore, future studies involving a wider cross-section of student groups are recommended. Notwithstanding this limitation, this study has shown that students were motivated and performed well academically when the cell phones was integrated into the course.

Implications

Mobile technology such as the cell phone can be an excellent learning tool because it facilitates the technology of anytime, anywhere, anyplace, at any pace learning culture. The results of this study revealed a complex interplay between factors that should be considered in integrating mobile technologies into college courses and management of the use of the technology. This requires a new thinking about the way college professors plan and teach their courses. Those who are interested in infusing cell phones into their courses will need to spend more time in designing the instruction and the assessment protocols to ensure positive student learning outcomes.

References

- Chester, E. (2002). Millennial and global citizens. Retrieved August 14, 2008 from www.merrillassociates.com/topic/2004/06/generation-y-the-new-global-citizens.
- Gibson, K., Hanson, K., & Mitchell, T. (2007). *Unlock the Einstein inside: Applying new brain science to wake up the smart in your child*. Colorado Springs, Co: LearningRx.
- Johnson, S. & Taylor, K. (2006, Summer). The neuroscience of adult learning. *New Directions for Adult and Continuing Education*, 110.
- Middleton, J. A. (1995). A model of intrinsic motivation Retrieved February 28, 2010 from http://www.vanderbilt.edu/cft/resources/teaching_resources/interactions/motivating.htm
- Waxler, A. (2007, December 3). Strategies for motivating students to learn. Retrieved August 26,

2009, from ezinearticles.com/?Strategies-for-Motivating-Students-to-Learn&id=863582.