
ASSOCIATION OF SMALL COMPUTER USERS IN EDUCATION

*"Continuing Second Quarter Century of Service"*

# Proceedings of the 2011 ASCUE Summer Conference

44th Annual Conference
June 12 - 16, 2011

North Myrtle Beach, South Carolina

Edited by Peter Smith, Saint Mary's College, Notre Dame, IN

# Association of Small Computer Users in Education
# "Our Second Quarter Century of Resource Sharing"

Proceedings of the 2011 ASCUE Summer Conference
44th Annual Conference
June 12 – 16, 2011
Myrtle Beach, South Carolina
Web: http://www.ascue.org

## *ABOUT ASCUE*

ASCUE, the Association of Small Computer Users in Education, is a group of people interested in small college computing issues. It is a blend of people from all over the country who use computers in their teaching, academic support, and administrative support functions. Begun in 1968 as CUETUG, the College and University Eleven-Thirty Users' Group, with an initial membership requirement of sharing at least one piece of software each year with other members, ASCUE has a strong tradition of bringing its members together to pool their resources to help each other. It no longer requires its members to share homegrown software, nor does it have ties to a particular hardware platform. However, ASCUE continues the tradition of sharing through its national conference held every year in June, its conference proceedings, and its newsletter. ASCUE proudly affirms this tradition in its motto: "Our Second Quarter Century of Resource Sharing"

## *ASCUE's LISTSERVE*

Subscribe by visiting the site http://groups.google.com/a/ascue.org/group/members and follow the directions. To send an e-mail message to the Listserve, contact: members@ascue.org Please note that you must be a subscriber/member in order to send messages to the listserve.

## *NEED MORE INFORMATION*

Direct questions about the contents of the 2010 Conference to Andrea Han, Program Chair, ASCUE '11, University of British Columbia, 2329 West Mall, Vancouver, BC, Canada V6T 1Z4, 604-827-3912, han@science.ubc.ca Web: http://www.ascue.org

# Association of Small Computer Users in Education

## ASCUE 2010-2011 Board Members

(years remaining in office including current year)

# Table of Contents

# Keynote Speaker

**Tom Kuhlmann** is VP, Community for Articulate, where he manages the Articulate user community. He also writes the Rapid E-Learning Blog which is published weekly to over 73,000 readers. Tom has almost twenty years of experience in the training industry where he's developed and managed e-learning courses for both large and small organizations. He's passionate about learning technology and his core focus is on helping people succeed and grow.
He is known throughout the industry for his practical, no-nonsense approaches to e-learning. He's also a frequent speaker at ASTD and elearning industry events. He has a Master's in Education Technology from Pepperdine.

**E-Learning 101: Everything You Need to Know to Get Started**

Today's tools are making it easier than ever to build elearning courses. Being able to create courses with minimal programming represents many opportunities. But the reality is that there are also many challenges. Many elearning developers work with limited budgets and resources. Is it possible to build good courses with these constraints? Join Tom as he shares some practical tips on getting the most out of the resources you have to build engaging and interactive elearning content.

You'll learn to:

- Design good courses with the resources at hand
- Create the look and feel that matches your course's content
- Apply rapid instructional design models to quickly build effective and interactive elearning

**Follow-Up Session: Become a PowerPoint Superstar**

Everyone loves to bash PowerPoint. But is all of the negative criticism misplaced? What if PowerPoint is really one of the best applications out there? That's the case. Join Tom as he shows you some cool tips and tricks that will not only help you get more out of PowerPoint, but probably also open your eyes to just how versatile PowerPoint really is.

# Pre-conference Workshops

**Pre-conference Workshop 1**
**Hands-on Drupal**
**Presented by: Steve Weir, ASCUE Web Coordinator**

This half-day workshop is your opportunity to gain some hands-on experience with Drupal. Learn how to install Drupal on your own, how to install modules to extend Drupal's functionality, and build your own theme. Lastly, we'll end with how to get support once you start working on your own.

*About the Presenter:* Steve Weir has been web coordinator for ASCUE for several years. He gives sessions on Drupal at every conference.

**Pre-conference Workshop 2**
**Second Life for Teaching and Learning: Exploring Immersive, 3-D Learning Experiences**
**Presented by: Andrea Han, University of British Columbia**

Second Life (SL) is a virtual world environment where people can meet, collaborate, and learn. The media-rich, immersive, 3D experience of SL creates a unique and engaging environment for where students and instructors can interact with others from around the world. Many educational institutions continue to utilize and explore second life for teaching and learning. In this two and a half hour workshop you will learn how to create, personalize and navigate a SL avatar and how to communicate effectively in Second Life utilizing different methods (e.g. microphone and keyboard). We will explore a wide variety of educational sites within Second Life, discuss applications both within and outside the classroom and review how other institutions are using Second Life for educational and outreach activities.

*About the Presenter:* Andrea has been presenting numerous papers and workshops in the area of online learning for many years. She was the Education Technology Coordinator at Miami University Middleton and also served as the coordinator for Miami University's Center of Online Learning until recently. She is now Technology Specialist at the University of British Columbia. She has been teaching online since 1998.

# New Organization for the Proceedings

ASCUE initiated a refereed track for paper submissions to the conference in 2008. In fact, at the 2008 business meeting, the membership approved three different presentation tracks: refereed with 3 blind reviews for each paper, regular where the author submits a paper but it is not reviewed, and software demonstration where no paper is submitted and only the abstract is included in the proceedings. To reflect this division, we will divide the proceedings into three sections. The first, up to page 35, will contain the refereed papers, the second, from 36 to 158, will hold the regular track papers, and the last will list the abstracts for the software demonstration track.

# ASCUE BOARD OF DIRECTORS FROM 1967 to 2011

At this conference we celebrate the 43rd anniversary of the founding of ASCUE at a meeting in July, 1968, at Tarkio College in Missouri of representatives from schools which had received IBM 1130 computers to help them automate their business functions and teach students how to use computers. They decided to form a continuing organization and name it CUETUG, which stood for College and University Eleven-Thirty Users Group. By 1975, many of the member schools were no longer using the IBM 1130, and were requesting to be dropped from the membership lists. At the same time, other small schools were looking for an organization that could allow them to share knowledge and expertise with others in similar situations. The name was changed from CUETUG to ASCUE at the 1975 business meeting and we opened membership to all institutions that agreed with our statement of purpose.

Our historian, Jack Cundiff, has collected the names and schools of the officers for ASCUE and its predecessor CUETUG for the last forty years and we have printed these names on the following pages.

**ASCUE BOARD OF DIRCTORS FROM 1967 to 1972**

| | 1967-68 | 1969-70 | 1970-71 | 1971-72 |
|---|---|---|---|---|
| President | Ken Zawodny<br>St. Joseph's College | Howard Buer<br>Principia College | Jack Cundiff<br>Muskingum College | Wally Roth<br>Taylor University. |
| Program Chair | Wally Roth<br>Taylor University | Jack Cundiff<br>Muskingum College | Wally Roth<br>Taylor University | James McDonald<br>Morningside College |
| Past President | Al Malveaux<br>Xavier, New Orleans | Ken Zawodny<br>St. Joseph's College | Howard Buer<br>Principia College | Jack Cundiff<br>Muskingum College |
| Treasurer | Howard Buer<br>Principia College | Al Malveaux<br>Xavier University | Al Malveaux<br>Xavier University | Al Malveaux<br>Xavier University |
| Secretary | John Robinson | Dorothy Brown<br>South Carolina State | Dorothy Brown<br>South Carolina State | Dick Wood<br>Gettysburg College |
| Board Members | James Folt<br>Dennison University | James Folt<br>Dennison University | James Foit<br>Dennison University | John Orahood<br>U. of Arkansas, LR |
| At Large | Don Glaser<br>Christian Brothers C. | Don Glaser<br>Christian Brothers | Don Glaser<br>Christian Brothers | N. Vosburg<br>Principia College |
| Public Relations | | | | Dan Kinnard<br>Arizona Western |
| Librarian | | | | Jack Cundiff<br>Muskingum College |
| Equip. Coordinator | | | | |
| Web Coordinator | | | | |
| Location: | Tarkio College | Principia College | Muskingum College | Christian Brothers |

**ASCUE BOARD OF DIRCTORS FROM 1972 to 1976**

| | 1972-73 | 1973-74 | 1974-75 | 1975-76 |
|---|---|---|---|---|
| President | James McDonald<br>Morningside College | Dan Kinnard<br>Arizona Western | T. Ray Nanney<br>Furman University | Larry Henson<br>Berea College |
| Program Chair | Dan Kinnard<br>Arizona Western | T. Ray Nanney<br>Furman University | Larry Henson<br>Berea College | Jack McElroy<br>Oklahoma Christian |
| Past President | Wally Roth<br>Taylor University | James McDonald<br>Morningside College | Dan Kinnard<br>Arizona Western | T. Ray Nanney<br>Furman University |
| Treasurer | J. Westmoreland<br>U. Tenn Martin | J. Westmoreland<br>U. Tenn Martin | Jim Brandl<br>Central College | Jim Brandl<br>Central College |
| Secretary | Ron Anton<br>Swathmore College | Ron Anton<br>Swathmore College | Harry Humphries<br>Albright College | Harry Humphries<br>Albright College |
| Board Members | John Orahood<br>U. of Arkansas, LR | Al Malveaux<br>Xavier, New Orleans | Sister Keller<br>Clarke College | Sister Keller<br>Clarke College |
| At Large | N. Vosburg<br>Principia College | Wally Roth<br>Taylor University | Wally Roth<br>Taylor University | Mike O'Heeron |
| Public Relations | Dan Kinnard<br>Arizona Western | Dan Kinnard<br>Arizona Western | Dan Kinnard<br>Arizona Western | Dan Kinnard<br>Arizona Western |
| Librarian | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College |
| Equip. Coordinator | | | | |
| Web Coordinator | | | | |
| Location: | Georgia Tech | Morningside | Furman | Berea |

**ASCUE BOARD OF DIRCTORS FROM 1976 to 1980**

| | 1976-77 | 1977-78 | 1978-79 | 1979-80 |
|---|---|---|---|---|
| President | Jack McElroy<br>Oklahoma Christian | Harry Humphries<br>Albright College | Fred Wenn<br>Caspar College | Doug Hughes<br>Dennison University |
| Program Chair | Harry Humphries<br>Albright College | Fred Wenn<br>Caspar College | Doug Hughes<br>Dennison University | J. Westmoreland<br>U. Tenn Martin |
| Past President | Larry Henson<br>Berea College | Jack McElroy<br>Oklahoma Christian | Harry Humphries<br>Albright College | Fred Wenn<br>Caspar College |
| Treasurer | William Roeske<br>Houghton College | William Roeske<br>Houghton College | James Foit<br>Central Ohio Tech | James Foit<br>Central Ohio Tech |
| Secretary | Doug Hughes<br>Dennison University | Doug Hughes<br>Dennison University | Dave Dayton<br>Grove City College | John Jackobs<br>Coe College |
| Board Members | Dave Dayton<br>Grove City College | Dave Dayton<br>Grove City College | Jan C. King<br>Chatham College | Wally Roth<br>Taylor University |
| At Large | Fred Wenn<br>Casper College | John Jackobs<br>Coe College | John Jackobs<br>Coe College | Jan C. King<br>Chatham College |
| Public Relations | Dan Kinnard<br>Arizona Western | Sister Keller<br>Clarke College | Sister Keller<br>Clarke College | Sister Keller<br>Clarke College |
| Librarian | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College |
| Equip. Coordinator | | | | |
| Web Coordinator | | | | |
| Location: | OK Christian | Albright College | Casper College | Dennison University |

**ASCUE BOARD OF DIRCTORS FROM 1980 to 1984**

| | 1980-81 | 1981-82 | 1982-83 | 1983-84 |
|---|---|---|---|---|
| President | | | | |
| | J. Westmoreland<br>U. Tenn Martin | John Jackobs<br>Coe College | Jan Carver<br>Chatham College | Wally Roth<br>Taylor University |
| Program Chair | | | | |
| | John Jackobs<br>Coe College | Jan Carver<br>Chatham College | Wally Roth<br>Taylor University | Dudley Bryant<br>Western Kentucky |
| Past President | | | | |
| | Doug Hughes<br>Dennison University | J. Westmoreland<br>U. Tenn Martin | John Jackobs<br>Coe College | Jan Carver<br>Chatham College |
| Treasurer | | | | |
| | Ron Klausewitz<br>W. Virginia Weslyan | Ron Klausewitz<br>W. Virginia Weslyan | Harry Lykens<br>Mary Institute, St L. | Harry Lykens<br>Mary Institute, St. L. |
| Secretary | | | | |
| | Jan Carver<br>Chatham College | Ken Mendenhall<br>Hutchinson CC, KS | Ken Mendenhall<br>Hutchinson CC, KS | John Jackobs<br>Coe College |
| Board Members | | | | |
| | Dudley Bryant<br>Western Kentucky | Dudley Bryant<br>Western Kentucky | William Roeske<br>Houghton University | William Roeske<br>Houghton University |
| At Large | | | | |
| | Wally Roth<br>Taylor University | Chuck Mcintyre<br>Berea College | Chuck Mcintyre<br>Berea College | Bob Renners<br>Kenyon College |
| Public Relations | | | | |
| | Sister Keller<br>Clarke College | Sister Keller<br>Clarke College | Sister Keller<br>Clarke College | Sister Keller<br>Clarke College |
| Librarian | | | | |
| | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College | Jack Cundiff<br>Muskingum College |
| Equip. Coordinator | | | | |
| Web Coordinator | | | | |
| Location: | U. Tenn Martin | Coe College | Chatham College | Taylor University |

**ASCUE BOARD OF DIRCTORS FROM 1984 to 1988**

| | 1984-85 | 1985-86 | 1986-87 | 1987-88 |
|---|---|---|---|---|
| President | | | | |
| | Dudley Bryant | Paul Pascoe | Jack Cundiff | Keith Pothoven |
| | Western Kentucky | Vincennes University | Horry-Georgetown | Central College |
| Program Chair | | | | |
| | Paul Pascoe | Jack Cundiff | Keith Pothoven | David Cossey |
| | Vincennes University | Horry-Georgetown | Central College | Union College |
| Past President | | | | |
| | Wally Roth | Dudley Bryant | Paul Pascoe | Jack Cundiff |
| | Taylor University | Western Kentucky | Vincennes University | Horry-Georgetown |
| Treasurer | | | | |
| | Harry Lykens | Harry Lykens | Maureen Eddins | Maureen Eddins |
| | Mary Institute, St. L | Mary Institute, St. L | Hadley School Blind | Hadley School Blind |
| Secretary | | | | |
| | John Jackobs | John Jackobs | John Jackobs | Dudley Bryant |
| | Coe College | Coe College | Coe College | Western Kentucky |
| Board Members | | | | |
| | Keith Pothoven | Keith Pothoven | Robert Hodge | Robert Hodge |
| | Central College | Central College | Taylor University | Taylor University |
| At Large | | | | |
| | Bob Renners | Carol Paris | Carol Paris | Ann Roskow |
| | Kenyon College | Goshen College | Goshen College | Ister CC |
| Public Relations | | | | |
| | Dough Hughes | Wally Roth | Wally Roth | Wally Roth |
| | Dennison University | Taylor University | Taylor University | Taylor University |
| Librarian | | | | |
| | Jack Cundiff | Jack Cundiff | Jack Cundiff | Jack Cundiff |
| | Muskingum College | Muskingum College | Horry-Georgetown | Horry-Georgetown |
| Equip. Coordinator | | | | |
| Web Coordinator | | | | |
| Location: | W. Kentucky | Vincennet | Myrtle Beach | Myrtle Beach |

**ASCUE BOARD OF DIRCTORS FROM 1988 to 1992**

| | 1988-89 | 1989-90 | 1990-91 | 1991-92 |
|---|---|---|---|---|
| President | | | | |
| | David Cossey<br>Union College | Tom Warger<br>Bryn Mawr College | David Redlawsk<br>Rudgers University | Bill Wilson<br>Gettysburg College |
| Program Chair | | | | |
| | Tom Warger<br>Bryn Mawr College | David Redlawsk<br>Rudgers University | Bill Wilson<br>Gettysburg College | Carl Singer<br>DePauw University |
| Past President | | | | |
| | Keith Pothoven<br>Central College | David Cossey<br>Union College | Tom Warger<br>Bryn Mawr College | David Redlawsk<br>Rudgers University |
| Treasurer | | | | |
| | Maureen Eddins<br>Hadley School Blind | Maureen Eddins<br>Hadley School Blind | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University |
| Secretary | | | | |
| | Dudley Bryant<br>Western Kentucky | Kathy Decker<br>Clarke College | Kathy Decker<br>Clarke College | Dagrun Bennett<br>Franklin College |
| Board Members | | | | |
| | Kathy Decker<br>Clarke College | Dagrun Bennett<br>Franklin College | Dagrun Bennett<br>Franklin College | Mary Connolly<br>Saint Mary's College |
| At Large | | | | |
| | Ann Roskow<br>Ister CC | Rick Huston<br>South Caolina/Aiken | Rick Huston<br>South Caolina/Aiken | Rick Huston<br>South Caolina/Aiken |
| Public Relations | | | | |
| | Wally Roth<br>Taylor University | Wally Roth<br>Taylor University | Wally Roth<br>Taylor University | Wally Roth<br>Taylor University |
| Librarian | | | | |
| | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown |
| Equip. Coordinator | | | | |
| Web Coordinator | | | | |
| Location: | Myrtle Beach | Myrtle Beach | Myrtle Beach | Myrtle Beach |

**ASCUE BOARD OF DIRCTORS FROM 1992 to 1996**

| | 1992-93 | 1993-94 | 1994-95 | 1995-96 |
|---|---|---|---|---|
| President | | | | |
| | Carl Singer<br>DePauw University | Rick Huston<br>South Carolina/Aiken | Mary Connolly<br>Saint Mary's College | Paul Tabor<br>Clarke College |
| Program Chair | | | | |
| | Rick Huston<br>South Carolina/Aiken | Mary Connolly<br>Saint Mary's College | Paul Tabor<br>Clarke College | Carl Singer<br>DePauw University |
| Past President | | | | |
| | Bill Wilson<br>Gettysburg College | Carl Singer<br>DePauw University | Rick Huston<br>South Carolina/Aiken | Mary Connolly<br>Saint Mary's College |
| Treasurer | | | | |
| | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University |
| Secretary | | | | |
| | Dagrun Bennett<br>Franklin College | Dagrun Bennett<br>Franklin College | Dagrun Bennett<br>Franklin College | Dagrun Bennett<br>Franklin College |
| Board Members | | | | |
| | Mary Connolly<br>Saint Mary's College | Gerald Ball<br>Mars Hill College | Gerald Ball<br>Mars Hill College | Rick Huston<br>South Carolina/Aiken |
| At Large | | | | |
| | Tom Gusler<br>Clarion University | Tom Gusler<br>Clarion University | Tom Gusler<br>Clarion University | Tom Gusler<br>Clarion University |
| Public Relations | | | | |
| | Don Armel<br>Eastern Illinois U. | Don Armel<br>Eastern Illinois U. | Don Armel<br>Eastern Illinois U. | Peter Smith<br>Saint Mary's College |
| Librarian | | | | |
| | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown |
| Equip. Coordinator | | | | |
| Web Coordinator | | | | |
| Location: | Myrtle Beach | Myrtle Beach | Myrtle Beach | Myrtle Beach |

**ASCUE BOARD OF DIRCTORS FROM 1996 to 2000**

| | 1996-97 | 1997-98 | 1998-99 | 1999-2000 |
|---|---|---|---|---|
| President | Carl Singer<br>DePauw University | Carl Singer(acting)<br>DePauw University | Bill Wilson<br>Gettysburg College | Dagrun Bennett<br>Franklin College |
| Program Chair | Chris Schwartz<br>Ursuline College | Bill Wilson<br>Gettysburg College | Dagrun Bennett<br>Franklin College | Carol Smith<br>DePauw University |
| Past President | Mary Connolly<br>Saint Mary's College | Mary Connolly<br>Saint Mary's College | Carl Singer<br>DePauw University | Bill Wilson<br>Gettysburg College |
| Treasurer | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University |
| Secretary | Dagrun Bennett<br>Franklin College | Dagrun Bennett<br>Franklin college | Tom Gusler<br>Clarion University | Nancy Thibeault<br>Sinclair CC |
| Board Members | Richard Stewart<br>Lutheran Theological | Richard Stewart<br>Lutheran Theological | Nancy Thibeault<br>Sinclair CC | Fred Jenny<br>Grove City College |
| At Large | Rick Huston<br>South Carolina/Aiken | Rick Rodger<br>Horry-Georgetown | Rick Rodger<br>Horry-Georgetown | George Pyo<br>Saint Francis College |
| Public Relations | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College |
| Librarian | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown |
| Equip. Coordinator | | | | Rick Huston<br>South Carolina/Aiken |
| Web Coordinator | | | | |
| Location: | Myrtle Beach | Myrtle Beach | Myrtle Beach | Myrtle Beach |

**ASCUE BOARD OF DIRCTORS FROM 2000 to 2004**

| | 2000-01 | 2001-02 | 2002-03 | 2003-04 |
|---|---|---|---|---|
| President | Carol Smith<br>DePauw University | Fred Jenny<br>Grove City College | Nancy Thibeault<br>Sinclair CC | Barry Smith<br>Baptist Bible College |
| Program Chair | Fred Jenny<br>Grove City College | Nancy Thibeault<br>Sinclair CC | Barry Smith<br>Baptist Bible College | George Pyo<br>Saint Francis College |
| Past President | Dagrun Bennett<br>Franklin College | Carol Smith<br>DePauw University | Fred Jenny<br>Grove City College | Nancy Thibeault<br>Sinclair CC |
| Treasurer | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University |
| Secretary | Nancy Thibeault<br>Sinclair CC | Kim Breighner<br>Gettysburg College | Kim Breighner<br>Gettysburg College | Kim Breighner<br>Gettysburg College |
| Board Members | Barry Smith<br>Baptist Bible College | Barry Smith<br>Baptist Bible College | David Frace<br>CC Baltimore County | David Frace<br>CC Baltimore County |
| At Large | George Pyo<br>Saint Francis College | George Pyo<br>Saint Francis College | George Pyo<br>Saint Francis College | Jim Workman<br>Pikeville College |
| Public Relations | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College |
| Librarian | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown |
| Equip. Coordinator | Rick Huston<br>South Carolina/Aiken | Hollis Townsend<br>Young Harris College | Hollis Townsend<br>Young Harris College | Hollis Townsend<br>Young Harris College |
| Web Coordinator | | | Carol Smith<br>DePauw University | Carol Smith<br>DePauw University |
| Location: | Myrtle Beach | Myrtle Beach | Myrtle Beach | Myrtle Beach |

**ASCUE BOARD OF DIRCTORS FROM 2004 to 2008**

| | 2004-05 | 2005-06 | 2006-07 | 2007-08 |
|---|---|---|---|---|
| President | George Pyo<br>Saint Francis College | Jim Workman<br>Pikeville College | Lisa Fears<br>Franklin College | George Pyo<br>Saint Francis College |
| Program Chair | Jim Workman<br>Pikeville College | Lisa Fears<br>Franklin College | George Pyo<br>Saint Francis College | Fred Jenny<br>Grove City College |
| Past President | Barry Smith<br>Baptist Bible College | George Pyo<br>Saint Francis College | Jim Workman<br>Pikeville College | Lisa Fears<br>Franklin College |
| Treasurer | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University |
| Secretary | Kim Breighner<br>Gettysburg College | Kim Breighner<br>Gettysburg College | Kim Breighner<br>Gettysburg College | Kim Breighner<br>Gettysburg College |
| Board Members | Lisa Fears<br>Franklin College | Blair Benjamin<br>Philadelphia Bible | Blair Benjamin<br>Philadelphia Bible | Janet Hurn<br>Miami U. Middleton |
| At Large | David Frace<br>CC Baltimore County | David Frace<br>CC Baltimore County | David Fusco<br>Juniata College | David Fusco<br>Juniata College |
| Public Relations | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College |
| Librarian | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown |
| Equip. Coordinator | Hollis Townsend<br>Young Harris | Hollis Townsend<br>Young Harris | Hollis Townsend<br>Young Harris | Hollis Townsend<br>Young Harris |
| Web Coordinator | Carol Smith<br>DePauw University | David Diedreich<br>DePauw University | David Diedriech<br>DePauw University | Blair Benjamin<br>Philadelphia Bible |
| Location: | Myrtle Beach | Myrtle Beach | Myrtle Beach | Myrtle Beach |

**ASCUE BOARD OF DIRCTORS FROM 2008 to 2010**

| | 2008-09 | 2009-10 | 2010-2011 |
|---|---|---|---|
| President | | | |
| | Fred Jenny<br>Grove City College | Janet Hurn<br>Miami U Middleton | Janet Hurn<br>Miami U Middleton |
| Program Chair | | | |
| | Janet Hurn<br>Miami U Middleton | Dave Fusco<br>Juniata College | Andrea Han<br>U of British Columbia |
| Past President | | | |
| | George Pyo<br>Saint Francis College | Fred Jenny<br>Grove City College | Fred Jenny<br>Grove City College |
| Treasurer | | | |
| | Tom Pollack<br>Duquesne University | Tom Pollack<br>Duquesne University | Dave Fusco<br>Juniata College |
| Secretary | | | |
| | Kim Breighner<br>Gettysburg College | Kim Breighner<br>Gettysburg College | Kim Breighner<br>Gettysburg College |
| Board Members | | | |
| | Dave Fusco<br>Juniata College | Thomas Marcais<br>Lee University | Thomas Marcais<br>Lee University |
| At Large | | | |
| | Andrea Han<br>Miami U Middleton | Andrea Han<br>Miami U Middleton | Mark Poore<br>Roanoke College |
| Public Relations | | | |
| | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College | Peter Smith<br>Saint Mary's College |
| Librarian | | | |
| | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown | Jack Cundiff<br>Horry-Georgetown |
| Equip. Coordinator | | | |
| | Hollis Townsend<br>Young Harris | Hollis Townsend<br>Young Harris | Hollis Townsend<br>Young Harris |
| Web Coordinator | | | |
| | Steve Weir<br>Philadelphia Bible | Steve Weir | Steve Weir |
| Location: | Myrtle Beach | Myrtle Beach | Myrtle Beach |

# Managing Technology-Induced Change

**Thomas A. Pollack**
**Duquesne University**
**600 Forbes Avenue**
**Pittsburgh, PA 15282**
**412.396.1639**
**pollack@duq.edu**

## Abstract

The difficulty of implementing organizational change has been a troubling management issue for many years. Frequently, change in organizations is induced by the reengineering of long-established processes and the introduction of new processes driven by enterprise-wide integrated systems. These system changes affect what people do and how they fulfill their responsibilities, and therefore, there are varied reactions.

There are extensive lists of suggestions for the successful management and handling of organizational change brought about by technological innovation, but it remains a fact that many large scale information system implementations fail. Historically, these failures are not attributable to a lack of technical feasibility and functionality but instead are the result of employee resistance.

Change has become a "way of life" in today's organizations. The pace of change has increased substantially in recent years as a result of issues such as the pressures of global competition, the impact of the Internet, customer demands and ever-changing enhancement of technical capabilities. In recent years, many organizations have undergone significant process changes dictated by enterprise resource planning (ERP) system implementations. As we anticipate the future, paramount technological changes and shifts in strategies as a result of innovations such as cloud computing, social networks, and smart phones are on the horizon.

All of the above factors focus organizational attention on the importance of change management competency as a mandatory skill for organizational success and advancement. This paper will briefly discuss organizational change and review several successful change management and implementation strategies. The paper will also provide suggestions for managers as they attempt to deal with changes that will be brought about by technological innovation.

## Introduction

Change management is the process by which an organization gets to its future state or vision. Change begins with the creation of a vision for change and then empowering individuals to act as change agents to achieve that vision (Scribd.com, 2011).

Managing organizational change is a decades, perhaps centuries, old problem that continues to create consternation for managers. It is almost universally understood that in order to maintain competitive position, willingness to change needs to be part of today's organizational culture. This is especially true for the executive associated with organizational information systems. Because managers are frequently not trained to manage change, the management of change frequently instills fear in them. It has become ever so important for executives associated with information technology to be both familiar and adept at change management processes because the introduction of new or altered systems always involves change. An IBM-sponsored white paper

entitled "Ten Ways to Establish a Strategic Advantage" (2009) boldly states that "How companies address change can differentiate the winners from the losers." People settle into a comfort zone with the way things have always been done, but in today's organizations, technology-driven initiatives, in particular, are very fast-moving, and change has become a way of life. To reinforce the fact that managing change is an age old problem, and, as managers it is imperative that we strive to encourage and build willingness to change into our organizational cultures, please consider an 1872 quote from Charles Darwin (Borland, 2007): "It is not the strongest of the species that survives, not the most intelligent, but the one most responsive to change."

As organizational change is planned, the structure and established relationships within the organization should be taken into consideration as they may be influential and impact the process. Higher levels of management support can be a positive influencing factor in organizational business process improvements. It has been demonstrated that a closer CEO-CIO reporting relationship is associated with higher levels of senior management support (Law & Ngai, 2007).

This paper will examine the importance of the effective management of change and present several models for consideration in managing the change process.

**Change in Organizations**

Today's business environment has become extremely fast-paced and competitive on a global scale. In order to remain competitive, organizations find it necessary to implement programs designed to radically re-engineer organizational processes and structures. In scope, these programs go far beyond the everyday changes that are routine in most organizations. Particularly in organizations that are facing a competitive crisis as a result of obsolete Information Technology (IT) infrastructures, there is a high likelihood that they will be forced to implement transformational programs. IT will be a central focus in this transformation and will be viewed as a mechanism for improving organizational efficiency by automating, redesigning, or eliminating organizational processes (Cunningham & Finnegan, 2004).

According to Gray (2006), organizational change comes about in many different ways. Change can come in response to a crisis or be incremental. It can be radical and revolutionary or evolutionary. It can be opportunity based or emergent. Gray opines that "rather than imposing the change from the top down, the demand should come from the frontline people who are most affected."

Since every change in an organization's information systems changes what people do and how they work, these changes can be described as both technical and highly political. Change typically has considerably more to do with the flow of information, new business practices, and customer expectations than with the technical details of IT (Gray, 2006). The implementation of new systems always involves change; therefore a comprehensive understanding of change management is extremely important to technology managers.

Whether proposed organizational changes involve a couple of processes or a system wide reengineering, it is likely that affected individuals will feel uneasy and perhaps intimidated by the change. Even the simplest organizational change will bring about a reaction, most frequently one

of resistance within the organization. Shuler Consulting (2003) has compiled a list of reasons why employees resist change:

- The risk of change is seen as greater than the risk of standing still.
- People fear the change of routine and are not willing to learn.
- People have no role models for the new activity.
- People fear they lack the competence to change.
- People feel overloaded and overwhelmed.
- People have a healthy skepticism and want to be sure that ideas are sound.
- People fear a hidden agenda among would-be reformers.
- People feel that the proposed change threatens their notion of themselves.
- People anticipate a loss of status and/or quality of life.
- People genuinely believe that the proposed change is a bad idea.

With a fair degree of certainty that some of the issues in the previous list will emerge with the introduction of organizational change, it may be prudent to ask the following questions before embarking on a significant strategic change initiative (Matejka & Murphy, 2005):

- Is this change really necessary?
- What is driving this perceived need for change?
- Would successful implementation really achieve the desired results?
- Is a better choice available?
- Realistically, can your organization successfully implement this change?
- Is this change worth the costs?

This cautionary set of questions for long-term changes is not intended to discourage change or downplay the importance of small, quick changes that can be effective and more easily achieved but can also help facilitate the realization of the organization's vision and objectives (Luftman, Bullen, Liao, Nash, & Neumann, 2004).

Although there are ample plans, research studies, and consulting firm recommendations on how to effectively manage organizational change, there are a number of well-known mistakes that are continually repeated. Manzoni, in a Financial Times (2001) article, suggested that there are about seven common mistakes that constantly emerge in the management of change.

They include:

1. There are many factors involved in why employees resist change (structural, lack of understanding, inadequate skill sets), and there is a tendency to focus on simply believing that employees don't want to cooperate, and that is an oversimplification.
2. Change takes time, and managers must be persistent in reinforcing desired behavior for many years.
3. Managers fail to develop an understanding among employees of how the organization will get from Point A to Point B.
4. The change plan fails to allocate sufficient time for managers involved to carry out assigned tasks and ensure the success of the change project.
5. Managers, through subtle behaviors, can contribute to the known human nature trait of employee resistance to change. Employees must be given a voice in the plan.
6. When deadlines approach too rapidly, there is a temptation to resort to coercive management practices rather than inclusive ones.

7. There is frequently a failure to convey a personal return on investment for time and energy to the employees.

Software that is relatively easy to configure and capable of integrating with other systems is available to assist in the change management process (Conrad, n.d.) The implementation of a structured and automated change management process can reduce both the cost and risk involved with organizational change (Hewlett-Packard, 2010).

Recent legislation has placed additional responsibility on organizations to provide extensive detailed reports to demonstrate their compliance with a range of legislation requirements. As a result, in addition to dealing with the ordinary organizational aspects of managing system and process changes, technology managers must also concern themselves with satisfying government compliance regulations as well as external and internal auditors. It is therefore important to create a full audit trail of changes to key business systems in order to be fully compliant with regulations (Conrad, n.d.).

**Strategies for Managing Change**

This section will outline three processes for managing change. As previously stated, change management has been a major research topic for many years, and therefore, there are countless plans available in a multitude of research sources. The following three plans are popular, and they also share a number of common elements. Unquestionably, the point of emphasis that surfaces as these plans are examined is the absolute necessity of having a formalized plan if you want the change process to be effective and successful.

The first plan and one of the foremost processes for managing organizational change is that proposed by the renowned leadership and change expert, John P. Kotter of Harvard University. Kotter (1996) advocates an eight step linear process for successful management of change. The steps, with significantly condensed explanation points, are as follows (Kotter, 2010):

Step One: Create a sense of urgency

- Examine market and competitive relations
- Identify and discuss crises, potential crises or major opportunities.
- Provide convincing reasons to get people involved. Kotter indicates that 75% of managers need to buy into change for success. You must work really hard on Step One.

Step Two: Create a Guiding Coalition

- Assemble a group with enough power to lead the change effort
- Encourage the group to work as a team

Step Three: Create a Change Vision

- Create a vision to help direct the change effort
- Develop strategies for achieving that vision

Step Four: Communicate the Vision Buy-in

- Use every vehicle possible to communicate the new vision and strategies
- Teach new behaviors by the example of the Guiding Coalition (from Step Two)

Step Five: Empower Broad-based Action

- Remove obstacles to change
- Change systems or structures that seriously undermine the vision
- Encourage the risk-taking and nontraditional ideas, activities, and actions

Step Six: Generate Short-term Wins

- Plan for visible performance improvements
- Create those improvements
- Recognize and reward employees involved in the improvements

Step Seven: Build on the Change

- Use increased credibility to change systems, structures and policies that don't fit the vision
- Hire, promote, and develop employees who can implement the vision
- Reinvigorate the process with new projects, themes, and change agents

Step Eight: Anchor the Changes in the Culture

- Articulate the connections between the new behaviors and organizational success
- Develop the means to ensure leadership development and succession

Kotter (2010) reports that his research experience over a 30 year period has proven that 70% of all major change efforts in organizations fail. This is largely due to the fact that organizations fail to take a holistic approach to manage the change. Kotter strongly encourages organizations to adopt his 8 step process to increase their chances of success and concludes: "Without the ability to adapt continuously, organizations cannot thrive."

The second popular change model to consider is known as the Lewin-Schein Three-Stage Model which was originally theorized by Kurt Lewin and later detailed by Edgar Schein. The Lewin-Schein Model is commonly referred to as the *Unfreezing-Change-Refreeze Model* (Wirth, 2004; Bartoli & Hermel, 2004; Luftman et al., 2004). Details of the model are depicted in Figure 1 below.

**FIGURE 1 Lewin-Schein for Managing Change Through IT.**

| **Unfreezing** | **Change** | **Refreezing** |
|---|---|---|
| • Motivation for change<br>  ➢ Pain<br>  ➢ Real improvement<br>  ➢ Charismatic leader<br>• Impediments<br>  ➢ Complex interaction between IT and culture<br>  ➢ Reaction to change | • Well-defined objective<br>• Communication<br>• Plan<br>  ➢ Leadership<br>  ➢ Right people<br>  ➢ Team building<br>  ➢ Resources<br>• Stakeholder management<br>• Plan for resistance to change | • Institutionalize change<br>• Overcome lingering resistance to change |

*Source:* Adapted from Lewin and Schein, (Luftman et al.)

The first stage of the model, *unfreezing*, is a difficult task that involves helping those affected and involved to understand that a change is required, and they must let go of how they have

always done things. Weick and Quinn (1999) state "Classic machine bureaucracies, with reporting structures too rigid to adapt to faster-paced change, have to be unfrozen to be improved." "…The challenge is to gain acceptance of continuous change throughout the organization." The second stage, *change*, means old actions are replaced with new actions that are consistent with the goals. Working in groups or obtaining support through education and training are important. The third and final stage, *refreezing*, means the new process has become the norm and changes are comfortably used all the time as they have been incorporated into everyday business processes (Luftman et al., 2004; Scribd.com, 2011).

For clarification of Figure 1 above, some of the items in each of the three stages warrant brief explanations (Luftman et al., 2004). For instance, in the *unfreezing* stage, pain is one of the stringent motivations for change. Pain occurs when it is clear that an organization is failing or about to fail. A second strong motivator occurs when one sees that his/her job will benefit from new process and technologies. A third major impetus is a charismatic and respected leader. Impediments to change in the unfreezing stage include the complexities of the many changes to the organizational culture, processes, and personnel brought about by the introduction of new technologies. Obviously, as new technologies introduce new learning curves, a negative reaction to the change is common.

A successful *change* stage mandates well-defined objectives, a well-articulated communication process, and a plan that emphasizes strong leadership, the involvement of the "right people", effective team-building practices, and a reasonable allocation of resources (time, people and money) to support the change.

The needs and demands of stakeholders, defined as "all those involved or affected by the change," must also be carefully considered and addressed. Closely related is the human reality that there will be resistance to change and therefore plans to deal with the resistance should be established in preparation.

Finally, in the *refreeze* stage, the newly introduced changes need be institutionalized to the extent that they become part of the cultural norm of the organization. Since resistance to change is natural and inevitable, it is likely that some may outwardly appear supportive of new initiatives while creatively working to sabotage efforts. The agent of change must make every effort to find the resistances and try to understand and deal with management issues of contention. Continued failure to succeed may impose the necessity for implementation of negative mechanisms such as indoctrination and coercion.

A third model that warrants consideration is referred to as the EFQM Excellence Model (Pfeifer, Schmitt, & Voight, 2005). This model is based on the principles of quality (the totality of features of a unit as regards its suitability to fulfill specified and expected requirements) in strategic change processes and contains steps similar to those of the Kotter and Lewin-Schein models. The authors state however, that the EFQM model is a control-loop model rather than a sequential model. They indicate that during the reinforcement stage, the organization environment must be examined for factors that might necessitate further development of the vision which would necessitate closing the control loop and repeating the process with the adaptation of the vision. The Lewin-Schein linear model is very relevant when it is necessary to create change. When change is continuous, the problem is not one of unfreezing, it is instead one of redirecting what's already under way (Weick & Quinn, 1999).

Pfeifer, Schmitt, & Voight, (2005) provide extensive details for the following condensed explanations of the five stage EFQM Excellence Model. Stage One of the EFQM Excellence Model is referred to as *taking a decision* and this stage seeks input from clients, competitors, society, laws and the environment. The primary result of Stage One efforts is a vision of how the company will look in about ten years.

Stage Two deals with *preparing change and creating feeling for urgency*. Strategies in this stage include showing the attractiveness of the change, confronting employees with clear expectations, showing that it can be done, and creating a positive attitude toward change. These initiatives are followed by the formation of leadership coalitions, communication of the vision and strategy, and planning first successes.

Stage Three deals with *designing changes*. Included among its steps are the identification of constraints for implementation, providing target definitions to motivate, qualify and legitimize employees, and securing first success to verify the credibility of vision and strategy.

Stage Four is a *planned and controlled implementation of changes*. Complete implementation of a new vision and strategy can take as long as several years, so controlling the process is extremely important.

Finally, Stage Five will stretch over several years after completion and implementation of the strategy and involves *reinforcement of changes*. The task here is to ensure that changes are anchored into company culture.

**Conclusion**

Whether change comes in the form of a crisis, a market shift, or a technological development, all organizations find it to be challenging (Baltzan & Phillips, 2010). Although many aspects of change management are fairly consistent from business to business, businesses are so diverse that it is impossible to design a single change management solution that can be considered effective or usable by all. Managing change depends on such variables as the size of an organization, the business processes involved in the change, and the organizational structure (Conrad, n.d.).

Companies that successfully embrace change management gain at least three significant benefits (Borland, 2007):

- They spend less than 5 percent of IT time on unplanned work.
- They experience a low number of "emergency" changes.
- They successfully implement desired changes more than 99 percent of the time, and experience no outages or episodes of unplanned work following a newly implemented change.

Successful change in organizations is the result of hard work. The selection and use of a process that suits the organization in question is extremely important. Careful planning and patience will help to improve the chances of success. The following five points serve to summarize the models presented in this paper and serve as a condensed version of change management principles (Businessballs.com, 2011):

- At all times, involve and solicit support from people within the system.

- Understand where the organization is at the moment.
- Understand where you want the organization to be; when, why, and what the measure will be for getting there.
- Plan development towards where you want the organization to be in appropriate measurable stages.
- Communicate, involve, enable and facilitate involvement from people, as early, openly and fully as possible.

**References**

Baltzan, P., & Phillips, A. (2010) *Business driven technology*. (4th ed.). New York: McGraw-Hill/Irwin.

Bartoli, A., & Hermel, P. (2004). Managing change and innovation in IT implementation process. *Journal of Manufacturing Technology Management, 15(5),* 412-425.

Borland: The Open ALM Company. (2007). Managing change for competitive advantage: Effective change management for software delivery. White paper. Accessed March 10, 2011. http://www.borland.com/resources/en/pdf/solutions/cm-managing-change-competitive-advantage.pdf

Businessballs.com. (2011). Change management. Accessed March 10, 2011. http://www.businessballs.com/changemanagement.htm

Conrad, B. (n.d.). The Benefits of Change Management. *Enterprisewizard, Inc*. White paper. Redwood City, CA. Accessed March 10, 2011. http://www.enterprisewizard.com/benefits-of-change-management-download.htm

Cunningham, J., & Finnegan, P. (2004). Process improvement programs and information systems: a cross-case analysis of impact. *Journal of Information Technology, 19,* 59-70.

Gray, P. (2005). *Manager's guide to making decisions about information systems.* New Jersey: John Wiley & Sons, Inc.

Hewlett-Packard. (2010). Transforming change: four steps toward more effective change management. Hewlett-Packard Development Company, L.P. Accessed March 10, 2011. http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-4245EEW.pdf

IBM. (2009). Ten ways to establish a strategic advantage. IBM: Lifecycle management white paper. New York: IBM Corporation. Accessed March 10, 2011. http://www.idgconnect.com/view_abstract/5685/ten-ways-establish-strategic-advantage-managing-change?source=connect

Kotter, J. (1996). *Leading change.* Boston: Harvard Business School Press.

Kotter, J. (2010). 8 Steps for leading change. *Kotter International.* Accessed March 10, 2011. http://www.kotterinternational.com/kotterprinciples/ChangeSteps.aspx

Law, C., & Ngai, E. (2007). It infrastructure capabilities and business process improvements: association with it governance characteristics. *Information Resources Management Journal*, 20(4),

Luftman, J. N., Bullen, C.V., Liao, D., Nash, E., & Neumann C. (2004). *Managing the information technology resource.* New Jersey: Pearson Education, Inc.

Manzoni, J.F. (2001). Classic mistakes in managing change. *Financial Times* (10/12/01).

Matejka, K., & Murphy, A. (2005). *Making change happen on time, on target, on budget.* Mountain View, CA: Davies-Black Publishing.

Pfeifer, T., Schmitt, R., & Voigt, T. (2005). Managing change: Quality-oriented design of strategic change processes. *The TQM Magazine*, 17(4).

Scribd.com. (2011). Change management: Lewin's 3-step model. Accessed march 10, 2011. http://www.scribd.com/doc/21556594/Change-Management-Lewin%E2%80%99s-3-Step-Model

Shuler, A.J. (2003). Overcoming resistance to change. Accessed March 10, 2011. http://www.schulersolutions.com/html/resistance_to_change.html

Weick, K., & Quinn, R. (1999). Organizational change and development. *Annual Review of Psychology*, 50, 361-386.

Wirth, R.A. (2004). Lewin/Schein's change theory. Accessed March 10, 2011. http://www.entarga.com/orgchange/lewinschein.pdf

# Using Social Networking Sites as a Conduit for Virtual Recitations in a Science Curriculum

**Jon R. Serra**
**Department of Natural Sciences**
**The University of Pittsburgh at Titusville**
**504 East Main Street**
**Titusville, PA 16354**
**814-827-4435**
**serra@pitt.edu**

## Abstract

The implementation, design and student usage of virtual recitations in a college science curriculum have been developed using several common social networking sites. This process includes three steps where the students and instructors interact through several common social media sites. First, students may request multimedia homework solutions by utilizing either Twitter, Facebook, or text messaging from a standard cellular phone. Next, the instructor develops a multimedia solution to the requested homework problem and then deploys the solution on YouTube or a similar cloud-hosting site. Finally, students are notified of the new multimedia file by Twitter or Facebook updates. Once this process is complete, any person that has access to YouTube or the cloud-service housing the multimedia solution, could review the solution, freely

## Introduction

With colleges and universities throughout the country facing financial obstacles, an all too common casualty is the recitation. Historically, the recitation provided a medium for students to express concern with difficult homework questions or provided them a series of questions/problems with which to challenge[1,2]. However, with cutbacks and budgetary restraints abound, the recitation has been removed from many college and university schedules.

Traditional office hours and student-faculty interactions can provide some assistance, but many students prefer a more structured approach to problem solving assistance[3]. A possible solution could be the virtual recitation. This process incorporates several social media outlets that students are already using, with a common interface outside of the classroom.

The idea of the virtual recitation is that students, while working though homework problems, may encounter difficulties. If after reviewing the text and notes, these students are still unable to solve these problems, they may suggest a worked example to those problems. This practice is similar to the traditional recitation, but this interaction is performed over the Internet. While virtual recitations sprung from necessity, the ideas presented could be used to supplement existing recitations or problem-solving sessions[4].

**Virtual Recitation Design**

The virtual recitation consists of interactions between student and instructor outside of the classroom with the aid of Internet tools such as blogs, podcasts, Twitter feeds and YouTube videos. The multistep process can be summarized as (1) Webpage Development, (2) Twitter and Texting Account Configuration, (3) YouTube Account Configuration, (4) Linking Twitter and YouTube and the Webpage, (5) Collecting Student Responses, (6) Creation of Solutions, (7) Deployment of Solutions, and (8) Student Feedback.

1. Webpage Development

Apple's iWeb[5] application was utilized to create a webpage housed on Mobile Me[6]. This allows for easy editing and access from a designers stand-point as well as password protection and a large amount of storage space. The iWeb application contains several templates that were useful in the design of the virtual recitation webpage. A main splash-page was created where students would then navigate to the appropriate course sub-page as well as view the Twitter feed for all courses and the courses calendar for the term. Next, a devoted webpage was created for each course that contained links to a texting account, YouTube videos, Blackboard site, a blog page to request homework problems, a podcast page for video demos, and finally a link to Twitter.

Students have three methods to post questions regarding homework problems. First, by utilizing the texting link, students may text their homework problems to a course texting account. Second, navigating through the Twitter link performs the same task, but allows the students to post their homework questions on the course Twitter page. Finally, the link to the course blog permits students to post homework questions via the course webpage.

The YouTube link on the course webpage provides access to all video demos posted for all courses. While the course podcast provides a page where students can find sorted video solutions that pertain to only the chosen course.

The development of the blog page for homework requests was easily created from a template within the iWeb application available within iWork. Once the blog is developed from the iWeb template, three pages are then created. First, the entries page allows the webpage creator to initiate blog discussions. For example, a blog page can be created for each chapter covered, and the students could post the homework problems they are having difficulty with as comments. These blog pages with comments then appear on the main blog page. And finally, an archive page is created where older posts can be stored. Students may also subscribe to the blog's RSS feed, which is also created by default.

The course podcast page is also easily created within Apple's iWeb application. It similarly has three pages. First, the entries page contains a page for each video file for the course as the instructor or webpage creator deems necessary. For example, YouTube links can be posted for each podcast entry where videos are housed. These are then displayed on the podcast page for the course, and finally, an archive is created for older posts. By default, iWeb creates a podcast link that will allow students to subscribe to the podcasts for that page and automatically update in iTunes when a new video is available.

The advantage to this design is that students have a one-stop-shop for all the remedial resources for the course that can be accessed either by conventional wired or wireless devices as well as handheld smart-phones and tablets. This development is also free of Blackboard limitations as well as possible university stipulations on webpage design, implementation, security and access.

The major disadvantage to this implementation is cost. While still being quite cost effective, Apple's Mobile Me account has a yearly fee, currently $100. The iWork software package, which includes Pages, Keynote, Numbers and iWeb costs about $80. This is a one time fee, and not a yearly license.

2. Twitter Account and Texting Account Configuration

A standard Twitter account was created and is commonly utilized for all courses. Once created, the Twitter feed can be aded to the Mobile Me website by adding the Profile Widget, available at https://twitter.com/about/resources/widgets/widget_profile. The widget can be customized using the features available and the HTML source code can be extracted and pasted into the Mobile Me website. This widget will display a predefined number of tweets using the format specified. One note, the Twitter account cannot be set as private, or this widget may not function properly.

A free texting account was established on TextNow, a freely available app for the iPad. This provides a dedicated email address that is easily accessible from any wireless device or, for a small fee can even provide an actual phone number. Students can then request homework solutions via their cellular phones as well as any standard email program. Those requests are then sent to the instructor's TextNow account that is accessible on the iPad.

3. YouTube Account Configuration

A standard YouTube account was created and commonly utilized for all courses. This serves as a repository for all videos created for all courses. Videos must be created or converted into formats that YouTube recognizes and supports. This can be accomplished with many software packages available. Apple's QuickTime Pro and iMovie[7] were chosen for this work. Both software packages have the ability to encode HD video in formats that YouTube supports.

High-definition video, as used here, has the distinct advantage of clarity, but the size tends to get very large and streaming via slow network connections becomes choppy and distorted. Therefore, several different resolutions are created in the low resolution, high resolution and HD formats. The chosen format for this work was mp4, an industry standard for streaming video work. Once uploaded, a link provided from YouTube permits the access of these video files from any other webpage on the Internet.

YouTube also allows for privacy as well. Account settings can be maintained that allow strict access to the videos created. For example, YouTube privacy settings can only permit selected individuals to view the video files.

4. Linking WebPage, Twitter and YouTube

Once the webpage is designed and deployed, using Mobile Me, the Twitter feed and YouTube video service are linked by the methods outlined above. With the aid of the blogs and podcasts, a

mechanism is now in place for: (1) Student's to ask for assistance on homework problems via Twitter, texting or blog, (2) Instructor to collect those homework questions, and (3) post video solutions with the aid of podcasts and YouTube.

5. Collecting Student Responses

Gathering and processing student responses can be time consuming. Students may request assistance with homework problems via different mechanisms, by posting on Twitter, by posting on the webpage blog or by sending a text message to the course texting account. The instructor or webpage administrator must then gather the requests from each source process through the requests and combine them all in a common location. This work uses a podcast to post student requests and then post video solutions to those requests.

6. Creation of Solutions

There are two types of solutions created for this work. First, screen captures with voice-overlay guides students through typically challenging aspects of software packages and web-based applications. Second, handwritten notes captured using an input device with voice overlay allows the instructor to solve problems in realtime just as though student and instructor were face to face in a classroom.

The low cost application iShowU[8] was used to video capture screen segments with voice overlay. A Belkin iMic interface and a standard boom mic was used to record the voice overlay for each screen capture. The iShowU software allows for a continuous feed recording; however, it provides very little editing capabilities. The audio-video captured files were encoded using a codec that Apple's iMovie could readily manipulate for editing. Here, the standard QuickTime movie format (.mov) was used. The iShowU software package does record in HD, and all videos were created using the standard 1080i format.

The audio-video file was then imported into Apple's iMovie for editing. Here, the multimedia file was trimmed for content and encoded into several different resolutions that could be delivered on YouTube.

To create handwritten solutions to homework problems, the Wacom Bamboo tablet captured handwritten notes to Corel's Painter Essential application supplied with the Bamboo tablet. The Bamboo tablet records handwritten notes to the computer by encoding from a stylus. The audio and video is then captured using the iShowU software and edited with iMove as outlined above.

7. Deployment of Solutions

Once created, edited and encoded these multimedia files, either homework solutions or software demos, were transferred to YouTube for storage. This is a very time consuming process. Since these files can be quite large, hundreds of megabytes, upload to YouTube can take hours, depending on bandwidth limitations from Internet Service Providers. Once uploaded, the YouTube site optimizes the videos somewhat and prepares them for distribution. At this point, the resolutions for the video files may be specified. It is common to allow for standard and low definition versions of multimedia files to be created so they can be accessed by slow Internet

connections and smaller screens. Once finished, a link is provided that can be added to the course webpage or any other use necessary.

8. Student Feedback

Once the requests are processed and multimedia solutions created and distributed, students may freely access these solutions and demonstrations at their own pace. A true advantage to this procedure is that students may replay all or part of a video file for reinforcement and review. Also, students may access these files from any device that is Wi-Fi, ethernet or 3/4G capable.

Students may then comment on the video on the podcast page and request further elaboration on a particular topic within the video file. Another advantage to this procedure is students can specify assistance with a part of a video solution file by specifying the time stamp. For instance, a student may request additional reinforcement on the topic discussed 5 minutes into the video by simply informing the instructor of that time within the video in their comment.

**Conclusion**

A process to conduct virtual recitations has been presented that includes the use of social media, audio-video files and Wi-Fi devices. This development has been an effective conduit for science courses that include computer programming, computer software applications and chemistry courses.

Students are able to request topics for further discuss via Twitter, a webpage blog, or text-messaging. Once requested, the instructor can create multimedia solutions to those topics and post the resulting videos on YouTube. The video files on YouTube can then be linked to a common podcast repository on a web-accessible site. Students can then access the video solutions freely, and comment on the effectiveness or to request further clarification.

Future use will most likely include the incorporation of Facebook as the primary conduit for virtual recitations. Over the Mobile Me account, Facebook has the advantage of containing all the necessary features for virtual recitations, as outlined, in a social media site that students are intimately familiar, while being free of yearly licensing requirements.

Overall, judicial use of social media, multimedia files and a little ingenuity can help alleviate the void when recitations are no longer warranted.

**References:**

(1) Mahalingam, Madhu; Schaefer, Fred; and Morlino, Elisabeth, "Promoting Student Learning Through Group Problem Solving in General Chemistry Recitations", J. Chem. Ed. 2008.

(2) Endorf, Robert; Koenig, Kathleen M.; Braun, Gregory A. "A Preliminary Study of the Effectiveness of Different Recitation Teaching Methods." AIP Conference Proceedings, 2006, Volume 818, Issue 1.

(3) "New Approach at Florida Atlantic U. Reduces Failures in General Chemistry", The Chronicle, 2001.

(4) Anderson, Stephen T. "Screencasting 101: A Hitchhiker's Guide--Brief Edition!", 2010 ASCUE Proceedings.

(5) "Apple in Education, Learning with Mac and iWork" http://www.apple.com/education/mac/, accessed 2011.

(6) Mobile Me, http://www.me.com, accessed 2011.

(7) "iLife in Education" http://www.apple.com/ilife/resources/, accessed March, 2010.

(8) "iShowU HD Pro - Manual", shinywhitebox ltd. downloaded March, 2010.

# Mobile Devices in the Classroom - Are You Getting It?

**Melanie O. Anderson**
**Department of Business**
**814-827-4415**
moanders@pitt.edu

**Jon R. Serra**
**Department of Natural Sciences**
**814-827-4435**
**serra@pitt.edu**

**The University of Pittsburgh at Titusville**
**504 East Main Street**
**Titusville, PA 16354**

**Abstract:**

Do you want to find out if students are getting the class material and let them use their beloved mobile phone at the same time? Don't have the money in your school budget to buy clicker systems, or don't want the setup hassle? We will review how to use student's own mobile phones to access a Survey Monkey ™ or Blackboard survey during class to gauge student understanding. These results could then be viewed immediately during class to make real-time decisions about reviewing course material, or to proceed to the next topic. This procedure will include the use of Wi-Fi enabled smart phones, iPod touch devices, and iPads.

## Introduction

Many professors at Harvard, Yale and Columbia have banned laptop use in the classroom (Newsweek, 2008). Other universities, such as UCLA, have installed "kill switches" so that Wi-Fi can be disabled to reconnect students to the classroom and the faculty member (Newsweek, 2010). However, Bill Daggett, CEO of the International Center for Leadership in Education, indicates that education is out of step with students (Daggett, 2010). Modern students are well connected with laptops, cell phones, iPods, iPads, etc. outside of school. According to Daggett, schools appear to be museums to them, when all of their connections must be shut down. The Ball State Institute for Mobile Media Research indicated that 99.7 percent of college student have a mobile device available (The Teaching Professor, 2010). Further, 85 percent of students use social networking software tools (TechTrends, 2010). The impetus of this project is to let students pursue active learning opportunities by using their mobile devices during class and providing learning opportunities to use social networking tools and mobile devices they are comfortable with outside of the classroom.

Real time feedback on students' learning in class was sought by using short practice quizzes, which students could access via their mobile devices during class. This type of in-class feedback is usually obtained with the "clicker" student response systems but these are not available at Pitt-Titusville. This project implemented the alternative system of having students access short

quizzes and polls using their mobile devices in class after key learning objectives are covered. The instructor then receives instantaneous feedback, which he/she can access on an iPad or other mobile wireless device.

This paper explores two different methods of setting up web-based surveys. Blackboard is a course management system that many institutions have available; it has a survey feature. Survey Monkey ™ is one of three popular web based survey tools that are available; the other two popular tools are Survey Gizmo and Zoomerang. Survey Monkey ™ and Survey Gizmo were both ranked comparably high in a review completed at the Web Accessibility Center at Ohio State University (WAC 2008).

**Blackboard Implementation**

Creating a survey on Blackboard begins by first entering that course as the course administrator, and then entering the Survey Manager section of that course. The administrator must then select the Add Survey button that loads the Survey Information screen. Here, the survey creator must input a survey name that will be visible to all of the survey participants, can enter a brief description of the survey and instructions for the participants. To save the survey click the "Submit" button to return to the Survey Manager screen saving the newly created survey.

Once the survey is created, questions must be created to populate the newly created survey. Now, back in the Survey Manager screen, select the Modify button for your newly created survey. Here the survey creator can select from an array of question types from the Survey Canvas Screen, but to mimic the functionality of clickers, only Opinion Scale/Likert or Multiple Choice were selected. To add a multiple-choice question, select it from the drop-down menu to gain access to the Add/Modify Multiple-Choice Question screen. The default is a multiple-choice question with 4 answers and many other formatting options exist including, total number of questions, answer orientation and an array of text formatting options. The survey creator can then add many other questions of any type from the Survey Canvas. Also, from the Survey Canvas screen, the creator may change the creation settings to add images for questions and answers.

Once a survey is created, it can be deployed on a Blackboard course similarly to any other course content. From the control panel, within a newly created or previously existing content area of the Blackboard course site, add the survey selecting Survey within the Select drop-drown menu from the Course Documents, or other course contents pages. Then click go to initiate the addition of the newly created survey, select the name of this survey to add it from the Add Survey screen, and click the submit button to add the new survey to the course-site.

The administrator or survey creator may now modify the contents of the survey and add options by navigating to the location of the survey, and selecting either Modify or Manage. From the Modify Survey/Survey Options screen, the creator can then adjust parameters for delivery, from simple topics like making the survey available to more detailed aspects like timers and presentation parameters.

Once created, modified, and made available, the survey can be accessible to students during optimal moments during class. Then, using either wireless handheld or mobile devices, students may access and complete the survey as the instructor mandates. A small netbook or iPad is ideal for these situations by both the instructor and the students.

Blackboard tallies the results almost instantaneously once responses are received from the students. The instructor then receives feedback based on the responses given that can be used to determine student's level of comprehension of a particular topic. An example of this can be seen from the Grade Book section of Blackboard by viewing the Attempt Statistics option from the drop-down menu. This data can then either be presented to the students or retained for private use of the instructor.

**Survey Monkey ™ Implementation**

Survey Monkey ™ is a web-based survey tool that is used to create and deliver surveys via a web page, email, or social media tool such as Facebook and Twitter. Users must set up an account with a user id and password to access Survey Monkey ™. The Basic plan is free, and can incorporate up to 10 questions per survey and 100 responses. Responses can be viewed only online. Templates and 15 types of questions simplify survey development. Survey Monkey ™ Basic access can be upgraded to a paid plan at any time to access more features, such as unlimited questions, responses, and downloads of survey responses.

Creation of a survey is easy. After logging on to the Survey Monkey ™ web site, click on the Create button. Users can copy an existing survey or use a template. A template is a good choice for first time users; there are over 50 templates for a variety of purposes that can be selected and modified, or used as is. The survey is created and three tabs are displayed for design survey, collect responses, and analyze results. The design tab is where the survey can be edited by clicking on the edit question button. New questions can be added by clicking on the add question button. The survey can be previewed at any point during development by clicking on the preview survey button.

Survey delivery is set up using the second tab, labeled collect responses. While surveys can be sent as a link in an email or placed on a web page, this paper covers how to put a link on Facebook. Select the Facebook link to set up a collector for this. You can edit your Facebook message, and post the message and survey to a Facebook page using the Survey Monkey™ button. A link is available that can also be manually posted to a Facebook page. If the link is shared with followers, they can click on the link and access the survey.

The survey results can be accessed by the survey creator using the third tab, labeled analyze results. The number of those who started the survey and completed the survey is reported at the top of the page. The results for each questions can be seen by percentage, number of responses, and by clicking on create chart.

Survey Monkey™ is easy to use; instructors can create a short survey in a few minutes before class. During class, instructors can gauge student understanding of course material by having them access the survey through Facebook using their mobile phones. Responses can be gathered in a few minutes, and the instructor can view the responses on the Survey Monkey ™ web site. Decisions can be made to move on to additional material, or to review concepts that students do not understand.

## Future Deployment

Facebook could be implemented as an entry-point for student access to survey information from sites such as Survey Monkey™, or applications within the Facebook framework, by implementing a Facebook Ad/Page for a course. Students could then "like" the page, which would in turn allow them to view information on the course Facebook Page. The administrator/moderator of the course Facebook Page would have the ability to limit access, post information and view statistics on access. Two major advantages that Facebook has over Blackboard are: (1) The ability for anyone to access the site, not just enrolled students, and (2) Since students are already using Facebook daily, the course may get more exposure outside of class.

Links can be posted to a Facebook page much the same way they are posted on any Facebook Wall. So, the Facebook Page administrator could create a survey using Survey Monkey™, post a link to the survey on the course Facebook Page, and then students could access the survey from Facebook via a mechanism with which they are already intimately familiar. Weekly, Facebook provides the Facebook Page administrator a statistics report of access to that page which includes: monthly active users (and change from the previous week), number of people that like the page (and the change from previous week), the number of wall posts or comments this week (and the change from the previous week), and the total number of visits this week (and the change from the previous week). This statistical data could help provide insight as to student participation both in and out of the classroom.

## Conclusion

Two methods are currently being investigated and implemented that utilize student-owned Wi-Fi devices, such as iPods, iPads, smartphones, and traditional laptops, that access surveys both during a class period and outside of class using Blackboard and Survey Monkey™. These methods illustrate examples of engaging students by using technologies with which they are intimately familiar. A distinct advantage to the Survey Monkey™ process over the Blackboard implementation is the portability of Survey Monkey™. Once created on the Survey Monkey™ website, the survey can then be distributed to any website, including privately housed sites like Apple's Mobile Me and public ones like Facebook. Another distinct advantage is cost. While the survey feature is available within Blackboard, the college or university must first subscribe before the process can be implemented. Currently, Survey Monkey™ surveys are free for small surveys with a small number of participants.

**References**

Daggett, Bill. (2010). *International Center for Leadership Education.* Retrieved December 15, 2010 from http://www.leadered.com/about.html.

Kearns, L.R. & Frey, B. A. (2010 July/August). *Web 2.0 technologies and back channel communications in online learning communities.* TechTrends. 54, 4; p. 41 – 50.

Mandernach B.J. & Hackathorn, J. (2010, December). *Embracing texting during class.* The Teaching Professor, 24, 10; p. 1 – 6.

Newsweek (2008, May 10). *The laptop gets booted.* Newsweek. Retrieved December 1, 2010 from http://www.newsweek.com/2008/05/10/the-laptop-gets-booted.html

WAC (2008). *Survey of Survey Tools.* Retrieved March 1, 2011 from http://wac.osu.edu/workshops/survey_of_surveys/ .

# The One Room School House--A Hybrid College Algebra Course

**Steve Anderson**
**Math/Computers/Decision Science**
**University of South Carolina Sumter**
**200 Miller Road**
**Sumter, SC 29150**
**(803) 938-3775**
**mrspacelysc@uscsumter.edu**

**Abstract**

The widening gap between university expectations and the reality of the mathematical preparation of our college algebra students has caused severe problems both in and out of the math classroom. In the classroom it has caused students and professors to become disillusioned and discouraged. Outside of the classroom, it has caused many students to fall into a deficit with their financial aid as the number of students earning F, D, W or WF grows to an average of around 45%. This has a direct effect on student retention as they need to pass 15 hours per semester to keep the most popular "scholarship" offered by our state lottery money.

We needed to stop doing "business as usual." Our age-old approach of "Do the odd numbered exercises at home" no longer seemed effective to today's millennial learners who revel in their media-rich online environment. We have turned to a combination of an old school approach—the one room schoolhouse; and a new-school approach—the use of online math learning modules as their major learning activity.

We have implemented a hybrid College Algebra course where students progress at various rates through an online and/or paper text book, with a goal of at least 80% mastery of the required material. It was my belief that many students were not spending the necessary out-of-class time in traditional classes utilizing the more familiar "lecture approach with 2-3 exams and a final" approach. By requiring students to perform LOTS of math inside the classroom as well as at home, we hoped their success rate would improve.

Our approach utilized a free-wheeling, professor-facilitated, computer-classroom-based, hands-on, lecture-free environment where students spent their entire class time DOING MATH on computers. They asked questions as needed, worked in small teams as desired, and they asked the professor for help as needed. The class was held in a computer classroom where every student was at a workstation every day… at the pace they needed to be successful. They tested when they felt ready (within some constraints.) They were allowed some retesting with a new exam generated each time. It was similar to a one-room schoolhouse in that there were many levels of learning occurring at individualized paces… some might be on chapter 7, while others were still on chapter 4. To complete the course, all students were required to complete the same chapters and take exams over those chapters.

**Background**

During Summer,2010, I volunteered to teach the Math portion of the OSP "head start" summer program which is geared to prepare OSP students for the university experience (TRIO funded program). I used that opportunity to begin a pilot study on utilizing a hybrid approach to teaching Math 111 at USC Sumter in the Fall of 2010. This hybrid approach utilizes an online as well as an in-class component, and it allows for much greater timing flexibility on the part of our student. Some took more time in the early part of the semester building a much needed foundation, while others actually were able to maintain an accelerated pace over portions of the course. All were required to test over the same material.

The learning material and text are published by Hawkes Learning Systems, whose offices are in Charleston SC. The online materials include four basic "levels" of math preparedness and assessment. These are labeled as:

- Instruct
- Practice
- Certify
- Web Test

The instructional modules have extremely well written text and graphic material, as well as audio and effective video materials. The student spends as much time as they need going over the instructional material, and then moves into the Practice module. The practice module generates problems that challenge the student to master the concepts. This portion is still open-book and open-notes. After they feel they have mastered the material, they are ready to "certify" in that section. This is typically a closed-book section where they must get at least 80% correct (on the first try). If they fail to do 80% or more of the problems correctly on the first try, then they go back to that section's Practice module or instructional module for more help. Each chapter is divided into typically between 5 and 9 "modules," each of which has its own Instruct, Practice, Certify modules. Once they have certified in ALL modules, they can take the chapter exam. I offer "retakes" on early chapters, to the point where they do not fall too far behind schedule. This may represent the greatest departure from "traditional approaches" where if a student fails an exam… they are often "out of luck." I will share my experience with these retakes later in this report.

**Results**

My first goal utilizing the new approach was to lower the "drop rate" as measured by the percentage of "below C" grades (F, D, WF, W). This section of Math 122 had 17 students (after drops for lack of payment and drop/add week)
Of the 17 who attempted the class,

- 3 dropped because they said they did not like the hybrid approach
  (Only one, in my opinion, was willing to DO THE WORK—the others dropped simply because their work ethic was not appropriate for university level work)
- 2 received earned F's… unwilling to do the work, but not savvy enough to withdraw on time to get a W… they simply stopped participating and would not respond to communications from the professor

- NO D's were earned
- 3 C's were earned
- 8 B's (6 B's, 2 B+'s) were earned
- 1 A was earned

So in summary… the grade distribution looked like this::
A… 1 (5.8%)
B… 8 (47%)
C… 3 (17.6%)
**D… 0**
**F… 2 (11.6%)**
**W… 3 (17.6%)**

So approximately 70% of the 17 who actually were able to try to finish the course, were "successful" in getting C or better.

Around 30% were either early W's (3) or earned F's (2)

These numbers compare favorably to the 45% "below-C-rate" we experience across all sections of Math 111 and 111i.

Also of interest was the pattern of "retakes" as color coded below. Green means one try only, pink suggests a "retake" (with a rare third attempt on very early exams if the student displayed the proper attitude and aptitude)

Each row is a student from the 12 who had a C or better. Each column is an exam, the last row in the exam average.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 73.53 | 78.87 | 80 | 90 | 91.39 | 89.3 | 81.8 | 76.7 | 77.8 |
| 70.45 | 70.3 | 76.25 | 71 | 86.8 | 80.9 | 90.9 | 100 | 100 |
| 75.32 | 80 | 75 | 84.21 | 71.4 | 68.4 | 72.7 | 93.3 | 88.9 |
| 79.22 | 73.3 | 86 | 92.5 | 68.4 | 68.4 | 81.8 | 100 | 88.9 |
| 70.45 | 80.49 | 92.5 | 84.2 | 80.9 | 67.9 | 81.8 | 83.3 | 100 |
| 93.18 | 90.24 | 82.5 | 80 | 86.2 | 78.6 | 86.4 | 90 | 66.7 |
| 72.7 | 75.3 | 87.5 | 82.5 | 78.3 | 68.4 | 77.3 | 50 | |
| 88.2 | 89.7 | 94 | 85 | 85.53 | 85.71 | 86.4 | 93.3 | 100 |
| 65.6 | 40.0 | 87.5 | 92.5 | 86.8 | 0 | 85.2 | 95.8 | 100 |
| 86.4 | 79.4 | 90 | 94.7 | 74.3 | 89.3 | 81.8 | 90 | 78 |
| 63.2 | 78.3 | 80 | 75.7 | 84.2 | 78.6 | 68 | 90 | 77.8 |
| 74.6 | 75.6 | 85 | 68.4 | 63.2 | 63.2 | 55 | 80 | 66.7 |
| **76.1** | **76.0** | **84.7** | **83.4** | **79.8** | **69.9** | **79.1** | **86.9** | **85.9** |

In summary, I found the following:

- Probably NO approach can help students who must drop due to uncontrollable external forces
- Students who are not willing to do the work are identified EARLY an drop EARLY so their negativity is removed from the class EARLY
- There were significantly more B's earned than C's… likely a result of the 80% mastery level and the allowance for some "retakes" of early exams
- There were NO D's at all… an interesting result to be sure
- Those who stayed in the class but chose not to do the work had very kittle "negative halo" effect on the class… Other students seemed to identify them early and work "in spite" of them
- The morale of the class was extremely positive after the third week after most of the non-willing students dropped.

I conducted a confidential online survey and I have the summary of answers below:

Response Summary

Total Started Survey: 9
Total Completed Survey: 9 (100%)

PAGE:

**1. Please rate how much you feel you have improved in mathematics (algebra) over the course of this semester.** Create Chart Download

| | No Improvement | Netural | Some Improvement | Much Improvement | Rating Average | Response Count |
|---|---|---|---|---|---|---|
| **Algebra Improvement** | 0.0% (0) | 11.1% (1) | **55.6% (5)** | 33.3% (3) | 3.22 | 9 |
| | | | | | Comment Show Responses | 3 |
| | | | | | **answered question** | **9** |
| | | | | | **skipped question** | **0** |

**2. Did the approach we utilized make YOU DO around the same amount of work, more than or less than a more "traditional" lecture approach?** Create Chart Download

| | Response Percent | Response Count |
|---|---|---|
| LESS math than a lecture approach | 22.2% | 2 |
| THE SAME amount of math as a lecture approach | 0.0% | 0 |
| MORE math than a lecture approach | **55.6%** | **5** |
| Comments Hide Responses | 22.2% | 2 |

| | | | |
|---|---|---|---|
| 1. | In some cases, less, because i knew the material already. But when i didnt i did just as much or more | Thu, Nov 11, 2010 6:02 PM | Find... |
| 2. | I am the type of person who is hands on and learns NOTHING unless I am forced to do it step by step.. This program is just what I needed. | Thu, Nov 11, 2010 2:16 PM | Find... |

**3. Did you utilize the text book in this class?** Create Chart Download

| | Response Percent | Response Count |
|---|---|---|
| Never | 33.3% | 3 |
| Very rarely (example: only a few times all semester) | **44.4%** | **4** |
| On a limited basis (example: around once per week) | 11.1% | 1 |
| a reasonable amount (example: a few times per week) | 0.0% | 0 |
| Quite a bit (example: many times per week) | 11.1% | 1 |
| Other (please specify) | 0.0% | 0 |
| | answered question | 9 |
| | skipped question | 0 |

**4. How did you prefer to work when doing the algebra on-line?** Create Chart Download

| | Response Percent | Response Count |
|---|---|---|
| Individually | **66.7%** | **6** |
| In groups of 2 | 22.2% | 2 |
| In groups of 3-4 | 11.1% | 1 |
| In larger groups | 0.0% | 0 |
| Other (please specify) | 0.0% | 0 |
| | answered question | 9 |
| | skipped question | 0 |

**5. Rate the experience you have had in this course in terms of your success rate. Fill in this sentence: I have been _____ using this approach than a traditional approach as in the past.** Create Chart Download

| | Response Percent | Response Count |
|---|---|---|
| less successful in absorbing material | 0.0% | 0 |
| equally successful in absorbing material | 44.4% | 4 |
| more successful in absorbing material | 55.6% | 5 |
| much more successful in absorbing material | 0.0% | 0 |
| answered question | | 9 |
| skipped question | | 0 |

**6. Is there anything you would do differently in YOUR approach if you were starting over again?** Download

| | Response Count |
|---|---|
| Hide Responses | 8 |

| | | | |
|---|---|---|---|
| 1. | work more outside of class | Thu, Nov 18, 2010 2:27 PM | Find... |
| 2. | doing more outside of class than in class | Tue, Nov 16, 2010 11:03 AM | Find... |
| 3. | I would have participated more with doing the lessons at home and asking more questions in class. I think I would have done it differently. | Tue, Nov 16, 2010 10:19 AM | Find... |
| 4. | nothing | Sat, Nov 13, 2010 11:43 AM | Find... |
| 5. | just take more time instead of being rush | Thu, Nov 11, 2010 10:58 PM | Find... |
| 6. | study more | Thu, Nov 11, 2010 6:10 PM | Find... |
| 7. | Nope | Thu, Nov 11, 2010 6:02 PM | Find... |
| 8. | No | Thu, Nov 11, 2010 2:16 PM | Find... |

| | |
|---|---|
| answered question | 8 |
| skipped question | 1 |

**7. Do you think this approach would work well as a PRE-algebra "boot camp" offered tuition-free (student pays the $100 access code fee as always) where students would progress totally on-line, in preparation for an upcoming math course... and they get to use the "course" forever.**

Create Chart Download

| | Response Percent | Response Count |
|---|---|---|
| I do not think that an on-line boot camp will help | 0.0% | 0 |
| I have serious reservations whether an on-line boot camp will help | 33.3% | 3 |
| I am reasonable confident that a boot camp might help | 33.3% | 3 |
| I am very confident that an on-line boot camp would help | 33.3% | 3 |
| answered question | | 9 |
| skipped question | | 0 |

**Summary**

The satisfaction level seemed reasonable. The morale of the class and the professor were above average as compared to other Math 111 sections I have taught. The percentage of "C or above" grades increased compared to other Math 111 and 111i sections. The approach identified students unwilling to do the workload and minimized their negative effect on morale in that they dropped much earlier than "usual."

All in all, I considered it a substantial success as supported by the data and the confidential survey.

# Quality by Design: Helping faculty develop and maintain quality online courses

**Linda Brawner**
**Director of Educational Technology Services**
**Marygrove College**
**8425 West McNichols**
**Detroit, MI 48221**
**313-927-1846**
**lbrawner@marygrove.edu**

**Abstract**

The first generation of online courses appearing on the scene in the late 1990's at most institutions of higher education were usually flat, one dimensional, and lacking in any real semblance of interactivity. This was due in part to the unavailability of tools, but also because at the time, we didn't really know much about what it takes to develop rich, engaging, interactive, online learning environments. Fast forward a few years, and the online learning landscape has changed dramatically. There are now tools available to engage students, promote interactivity, and enable students to collaborate with each other as well as with colleagues and experts around the world. However, the addition of a few well developed tools does not a quality online course make. Expertise is needed to leverage these tools to create learning environments that actually facilitate learning. This presentation will discuss how one college addressed this issue through the creation of online course development standards, and the formation of a committee to assist faculty in achieving them.

## Background of the College

Marygrove College is a small, urban, Catholic college, in Detroit, Michigan, founded by the Sister Servants of the Immaculate Heart of Mary (IHM) officially in 1927. Its history, however, can be traced as far back as 1905 when Sister Teresa Maxis, founded its forerunner, St. Mary Academy, a "Young Ladies Academy". (Marygrove College, 2007) The College is now a co-educational institution having admitted its first male students in 1972.

The mission of the College is to instill in its graduates the qualities of Competence, Compassion and Commitment. Graduates are encouraged to use their knowledge in creative, productive and socially responsible ways.

## Distance Learning at Marygrove College

Marygrove College has more than a decade's long history in distance education, having formed a partnership with Canter/Laureate in 1996 to offer a Master in the Art of Teaching program. Over twenty-two thousand graduates have completed the program since its inception. The distance-learning model used to deliver this program is based on an easy-to-use course study guide, informative DVD's, readings from textbooks and journals, collaboration with colleagues, application of skills, written assignments, and submission of coursework. The program continues today and runs parallel to the regular College programs.

In the late 1990's, distance education began making its way into the undergraduate course offerings on the physical campus as well. With the arrival of the Blackboard Course Management System at Marygrove, the College was able to offer its first fully online course which debuted in 1999. Growth in online courses at Marygrove was very gradual as faculty began to experiment with the technology, and to figure out the pedagogy best suited for this environment. Researchers such as Steve Erhman, founder of the Teaching and Learning with Technology group (TLT) and co-author of "Implementing the Seven Principles: Technology as Lever"; Dr. Tony Bates, educator and author of numerous books including Managing Technological Change, and Susan Ko PHD, author of Teaching Online: A Practical Guide were among the first to understand and write about best practices in online education. They among other things, educated us on the importance of creating dynamic online learning environments by providing prompt feedback, offering multiple forms of assessment, providing frequent opportunities for student to student, and student to instructor communication, and encouraging collaboration between and among students. The Blackboard Course Management system with its communication and collaboration tools is a shining example of how technology could be used to support these practices.

For the next few years online course development at Marygrove continued on a path of gradual growth.

In 2006, with the arrival of a new president, online learning at Marygrove became a part of the College's strategic vision with a goal to increase in the number of online courses offered. To promote this goal, the president created the Online Learning Standards Committee. This was an Ad Hoc committee and its membership consisted of the Director of Educational Technology Services who served as the Chair, and four faculty members. All of the faculty members selected had at least two years of online teaching experience.

The committee was charged with a number of responsibilities, chief among them was to develop a set of quality standards for online courses at Marygrove, and to establish a process for the review and approval of those courses before they were offered.

To develop these standards, committee members spent the summer of 2006 consulting with colleagues at other institutions, conducting literature reviews, and reflecting on their own experiences as online instructors. In 2006 research existed on "best practices" for online learning, but those practices had not yet evolved into a set of standards. The Quality Matters group, a group of Maryland distance educators, was among the first to identify standards for the development of online courses (Quality Matters Program, 2011) At the time the Quality Matters group was discovered by the Marygrove committee, the organization was still in its formative stages, and was in the last year of it FIPSE grant. The organization was and continues to be a literal clearinghouse for everything you need to know about standards for online courses. Their literature review alone is a goldmine of research done on the topic. Their strategy of mapping standards to activities, to outcomes, and their use of a rubric to evaluate courses was groundbreaking for online courses at the time. The ideas and information contained on the site were invaluable to the Marygrove committee not only for offering a conceptual framework for developing our own standards, but also in helping us develop a course approval process.

The committee also reviewed work done by the Illinois Online Network (ION) on online course standards. The QOCI (Quality Online Course Initiative) Rubric was developed by the network, as a tool to assist in the design, redesign, and/or evaluation of online courses. (Illinois Online

Network, 2011) This rubric is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License and can be used freely. Like the Quality Matters Rubric, the QOCI Rubric identified areas of focus or standards around which to review an online course.

The committee adapted elements from both organizations' research to create the Standards for Online Courses at Marygrove College, and to create a process for online course approval.

**The Standards**

The Online Learning Standards committee at Marygrove College identified six standards with accompanying benchmarks for use in reviewing online courses. They are: (1) Organization and Structure, (2) Content, (3) Usability, (4) Communication, (5) Instructional Design, and (6) Assessment/Evaluation. Appendix A lists the Standards for Online Courses at Marygrove College with accompanying benchmarks.

A course evaluation rubric that aligns with the standards was also created for use during course review.

Finally, an end of course evaluation that aligns with the standards was designed for students to complete at the end of a course.

**The Course Review and Approval Process**

After developing the standards, course evaluation rubric and the end of course evaluation, the committee began work on the course review process. They proposed that all new online courses be approved by the Online Learning Standards Committee before delivery. The approval process includes attendance at an online course developer's orientation where faculty receives an overview of the approval process. During the orientation, they receive copies of all of the documents and forms needed to complete the review process including, the standards (Appendix A), a model syllabus, the Online Course Approval form on which they are to discuss details of the course including, communication strategies, technologies used, and course management system training needed. They also receive a Course Evaluation Rubric to show them how their course will be evaluated, a Stipend Application Form to be completed to receive a $1500.00 stipend for developing the course, and a course review schedule.

The course review schedule was designed to enable faculty to actually plan their courses up to a year in advance and includes the following steps

1. Fall – Instructor attends orientation
    a. Submit Online Course Proposal form.
    b. Committee reviews the proposal and notifies the instructor on the status of the proposal with recommendations for changes if necessary.
2. Winter – Instructor begins development of the course.
3. Committee conducts a final review of at least four weeks of content in the Blackboard Course Management System using the Online Course Evaluation Rubric
4. Course is approved or recommendations are made for changes ( a score of 40 or greater receives approval)
5. Summer or Fall – Course is offered and instructor receives a $1500.00 stipend for creating the course.

During the course development process faculty work closely with members of the instructional design team, participate in training on the effective use of the Blackboard Course Management System, and attend workshops on online pedagogy where they learn strategies for successfully delivering an online course.

**Evidence**

Anecdotal feedback indicates that faculty are very satisfied with the course development process. Those who are new to online teaching as well as experienced instructors report that the scaffolding they receive from the instructional design team during the development of their courses made them feel better prepared, and more confident as online instructors.

**Appendix A**

**STANDARDS FOR ONLINE COURSES AT MARYGROVE COLLEGE**

Like all Marygrove courses, online courses must meet Curriculum Committee standards. Only courses that have been approved by the Curriculum Committee may be submitted to the Online Learning Standards Committee for approval.

1. **Organization and Structure**

- Syllabus: The syllabus conforms to the model syllabus and is complete, detailed, and can be printed online. The syllabus is available in the Course Information section of Blackboard.
- Learning objectives: Learning objectives are clearly stated at the course level and for many sessions.
- Content structure: Course is designed for clarity and organization. Content is well sequenced with attention to a paced workload. Design is balanced to help students manage workload.
- Course assignments and activities:

Assignments and activities include detailed, clear instructions and directions for submission (i.e., attachment to assignment, drop box, discussion board). Assignments are posted in advance with mechanisms in place for changes and updates

2. **Content**

- Accuracy: Content is credible and sources identified.
- Clarity: Presentation of content is clear and straight-forward; text is well-written without typos grammatical errors.
- Critical Thinking: Course provides some activities/assignments to foster content mastery, critical thinking and/or problem-solving skills.
- Educational Resources: Link to library is present with instructions on library resources; external links are organized and working; images display correctly, media files work, technical instructions are provided where needed.

3. **Usability**
   - Navigation: Navigational structures make the organization of the course easy to understand.
   - Technical issues: Support resources (i.e. STIC, technical support) are identified with instructions on contact information; technical problems are referred to appropriate sources.
   - Technology Requirements: Minimal technology requirements are clearly stated.
   - Course Elements and Tools: Many course tools are used and adequately explained; grade book is organized and kept up to date.
   - Media: Instructions are in place for low bandwidth with consideration given to problems of large media files, graphics and downloads causing problems for students with low-speed connections to the internet

4. **Communication**
   - Student readiness: Instructor assures students have demonstrated mastery of minimum standards of technical competence
   - Instructor communication: A statement introduces the student to the course and to the structure of the student learning; instructor contact information is present in the Staff Information section of Blackboard; weekly announcements with links are present; instructor's communication plan is clear; instructor acknowledges completion of assignments; instructor determines and communicates time frame for reply to student queries.
   - Use of the discussion board: Netiquette expectations with regard to discussions, virtual classroom, and email communication are clearly stated; a plan for use of discussions is in place with directions for use and expectations.
   - Communication tools: Instructors and students use a variety of communication options and those options function effectively; course is designed for three types of communication/interactivity: student to student, student to instructor and student to content.

5. **Instructional Design**
   - Social rapport: Activities/assignments provide opportunities for student collaboration; group activities or group online presentations are present.
   - Interactivity: Course is designed for three types of communication/interactivity: student to student, student to instructor and student to content including group work or two way interaction with instructor or peers
   - Collaborative learning: Faculty should provide a learning environment where students can collaborate in teams.
   - Active learning: Readings, assignments and other learning events facilitate critical thinking and active learning; multiple means of engagement are used to increase student motivation; course content is presented in multiple ways; students are able to use multiple means of expression to demonstrate knowledge of course content.
   - Look and feel: Buttons and banners are unique to course; horizontal scrolling is not necessary; page numbers are present in assignments.
   - ADA requirements: Course complies with ADA requirements. Course content is presented in multiple ways.

6. **Assessment/Evaluation**

- Alignment: The assessment formats provide a reasonable way to measure the stated learning objectives; assignments are consistent with course activities; assignments measure the achievement of stated objectives and learning outcomes; assessments make use of the technologies and security typically found in an online classroom.
- Grading: A list of all activities, tests, etc. that will affect the students' grade is included at the beginning of the course; the grading policy is clear and easy to understand
- Feedback: Assessment and measurement strategies are in place to provide students with frequent, meaningful and rapid feedback; Students have ample opportunity to measure their own learning progress

**References**

(2011, May 4). Retrieved May 4, 2011, from Quality Matters Program: http://www.qmprogram.org/rubric

(2011, May 4). Retrieved May 4, 2011, from Illinois Online Network: http://www.ion.uillinois.edu/initiatives/qoci/index.asp

Marygrove College . (2007). Engaging the Future: Advancing a Mission-Driven Vision of Urban Leadership at Marygrove College, A Self-Study for Continuing Accreditation from the Higher Learning Commission of the North Central Association of Colleges and Schools. Detroit: Marygrove College.

# Addressing the technology skills needs of displaced workers and other non-traditional students: How one small college in Detroit is attempting to bridge the divide

**Linda Brawner**
**Director of Educational Technology Services**
**Marygrove College**
**8425 West McNichols**
**Detroit, MI 48221**
**313-927-1846**
**lbrawner@marygrove.edu**

## Abstract

It's no secret that the state of Michigan has been especially hard hit by the economic downturn. The collapse of the auto industry caused a domino effect impacting industry related small businesses all across the region, and unemployment in the state of Michigan is among the highest in the country. Thousands of displaced workers are taking advantage of severance packages that provide opportunities to reinvent themselves by learning new skills--skills that will undoubtedly require knowledge of computers, software, and the use of other technologies. This presentation will discuss how Marygrove College is attempting to address the technology skills development needs of displaced workers and other non-traditional students, through a computer skills assessment and development program.

## Brief History of the College

Marygrove College is a small, urban, Catholic college, in Detroit, Michigan and was founded by the Sister Servants of the Immaculate Heart of Mary (IHM) officially in 1927. Its history, however, can be traced as far back as 1905 when Teresa Maxis, a young Haitian, woman of color founded its forerunner, St. Mary Academy a "Young Ladies Academy". (Marygrove College, 2007). The College is now a co-educational institution having admitted its first male students in 1972.

The mission of the College is to instill in its graduates the qualities of Competence, Compassion and Commitment and encourages them to use their knowledge in creative, productive and socially responsible ways.

Marygrove is no stranger to economic and social upheaval having weathered the tumultuous 1960's and 1970's in Detroit. It emerged from that period more committed than ever to the City of Detroit, and the cause of social justice. In 1980 the College rejected recommendations to relocate to the suburbs choosing instead to remain in the city reaffirming their commitment to serve the people of Detroit, "whoever they may be".

## Student demographics

As racial and socio-economic demographics in Detroit have shifted over the past 30 years, Marygrove's student demographics have mirrored those shifts. Today, the typical Marygrove

student is non-traditional in that they possess one or more of the following characteristics: delayed enrollment, part-time student status, full-time employment, financial independence, responsibility for dependents, and enrollment after the twenty-fifth birthday (Choy, 2002). In addition, the typical Marygrove student is African-American, female, and either graduated from high school before computers became common in most schools and classrooms, or attended schools in communities that were victims of the "digital divide", (Commerce, 2000) and did not have access to computer and Internet technology.

**The Problem**

It's a fact of life that our world has become more reliant than ever on computer and other digital technologies to perform even the simplest tasks. Many non-traditional students, especially those who have been out of school for 7-10 years or more, do not have the computer skills they need to be successful in college. At an institution like Marygrove where such a large percentage of students have been out of school for five or more years, this posed a significant challenge. There was no "required" Introduction to Computers" course and efforts to require one were met with resistance from faculty and the General Education Committee who felt that students were already "required" to take too many courses. Faculty believed it was ultimately the responsibility of individual instructors to incorporate assignments and projects requiring use of programs such as MS Word, PowerPoint, etc thereby ensuring students got the exposure to and experience with those programs. The problem with this approach is that it only works if the instructor is skilled in the use of those applications, and unfortunately there were a number of faculty who were not. The problem was informally debated for over a year and during that time a number of questions were raised including:

1. What minimum computer skills were needed to succeed in college?
2. How to assess individual student computer skills?
3. Who was responsible for making sure students obtained the skills?
4. Where in their program students would be required to learn the skills?

**The Solution**

In 2005, a committee was formed to investigate these issues and to make recommendations on how to best meet the computer skills needs of our students. The committee consisted of the Director of Educational Technology Services, the Chair of the BUS/CIS department, the Help Desk Manager a faculty member from the Humanities department who also served on the Gen Ed Committee, and a faculty member from the CIS department.

The first issue to be addressed by the committee was to identify the minimum computer skills students need to be successful in college. In 2005 as is the case today, no standards commission or organization responsible for educational oversight has identified minimum computer skill competencies for students in higher education, however, a number of states and several organizations have identified minimum competencies for students in K-12; therefore, the committee looked to these entities for guidance. The committee reviewed the State of Michigan Technology Standards as well as standards identified by the International Society for Technology in Education (ISTE), and the International Computer Driver's License (ICDL). Appendix A shows the minimum computer competencies (by application type) that were identified as critical for success at Marygrove College.

Once the minimum competencies were identified, the next issues for the committee were to decide how students' skills would be determined, when they should be assessed, and who would conduct the assessment. It was agreed that a performance based test would best be able to measure a student's skill with a particular application. A product called Skills Assessment Manager (SAM) by Thompson Publishing was tested and selected for adoption. The program was found to be easy to use, fairly inexpensive, and highly customizable. Users could use one of the prebuilt tests that came with the program or design a test themselves.

The committee also decided the test should be given to all incoming students both non-traditional and traditional. The test would be administered by the Educational Technology Services staff during new student orientation. The test would contain 40 performance based items covering the Microsoft Office Suite. The minimum passing score was 70%. Scores from the test would be forwarded to Academic Advisors who would monitor the students who failed. Students who failed the test were also to be referred to the Educational Technology Services department to set up a plan of action designed to help them gain the skills in which they were lacking. After completing the prescribed plan, the students would be retested. Academic Advisors were to be notified and kept abreast of the status of all student plans of action.

A report with these recommendations was submitted to the Faculty Assembly, and after a year or more of fine tuning processes and procedures the recommendations were implemented.

Over the years the test has been modified to align with new versions of the Microsoft Office Suite, and to include new technologies in which students should become familiar. To date over 1600 students have been tested and of those 259 have successfully completed plans of action. Results from student satisfaction surveys indicate that those students who successfully completed their plans of action believe they are better able to complete assignments and projects where those skills are required.

**Working with displaced autoworkers**

The economic downturn of the past three years has left many Michigan residents without jobs. Auto company employees have suffered the majority of these job losses. In some cases whole families work for the same car company and are all left without jobs. Those lucky enough to have funds for retraining as a part of their severance package are seeking ways to retool, and many are finding themselves on college campuses for the first time as students. Most are non-traditional students.

Marygrove as well as most other colleges in Michigan is responding to the needs of these displaced workers and has partnered with the Ford Motor Company to establish the TASC (Teaching as a Second Career) program developed to assist their workers in transitioning to the teaching profession. For many of these workers, aside from using email and browsing the Internet, productivity applications were not a regular part of their jobs or daily life.

The Marygrove Office Certification program offered by the Office of Continuing Education is a program, was not developed as a partnership with an auto company, however, the number of displaced workers attending this certificate program has increased significantly in the past three years. Marygrove is uniquely suited to address the needs of the students in both the TASC program and the Office Certification program because of our years of experience in Detroit, educat-

ing non-traditional students. Our strategy for assessing the computer skills of incoming students using SAM which was originally created to assess computer skills nontraditional students enables us to support these workers to develop the skills they will need to succeed as a Marygrove College student and as a 21st Century worker.

## Appendix A

## Minimum Computer Competencies

| MS Word | MS PowerPoint | MS Excel | MS Outlook | Internet |
|---|---|---|---|---|
| 1. Open a document<br>2. Close a document<br>3. /Create a document<br>4. Save a document<br>5. Exit Word<br>6. Save a document<br>7. Insert a character<br>8. Insert a word<br>9. Delete a character<br>10. Delete a word<br>11. Select text<br>12. Copy text<br>13. Move text<br>14. Paste text<br>15. Rename a document<br>16. Print a document<br>17. Set margins<br>18. Set tabs<br>19. Set line spacing<br>20. Print a document<br>21. Use Spell Check<br>22. Change fonts<br>23. Change font sizes<br>24. Underline text<br>25. Italicize text<br>26. Center text | 1. Open a presentation<br>2. Close a presentation<br>3. Create a presentation<br>4. Add a slide<br>5. Add text to a slide<br>6. Change slide layout<br>7. Save a Presentation<br>8. Exit PowerPoint<br>9. Insert an image<br>10. Move an image<br>11. Resize an image<br>12. Delete an image<br>13. Add a transition<br>14. Use Spell Check<br>15. Run a slideshow | 1. Open a Workbook<br>2. Close a Workbook<br>3. Open a worksheet<br>4. Navigate a worksheet<br>5. Enter data into a cell<br>6. Edit data in a cell<br>7. Delete cell contents<br>8. Move cell contents<br>9. Copy cell contents<br>10. Create a simple formula<br>11. Save a worksheet<br>12. Preview a worksheet before printing<br>13. Print a worksheet<br>14. Move around in a workbook<br>Save | 1. Login to email account<br>2. Log out of email<br>3. Read a message<br>4. Create a message<br>5. Reply to a message<br>6. Add an attachment<br>7. Print a message | 1. Start a browser<br>2. Navigate a web page<br>3. Navigate a website<br>4. Use a search engine<br>5. Secure Identity |

## References

Choy, S. (2002). *Nontraditional undergraduates NCES 2002, 012.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Commerce, U. D. (2000). *Falling through the net, Toward digital inclusion.* Washington, DC: National Telecommunications and Information Administration.

Marygrove College. (2007). *Engaging the Future: Advancing a Mission-Driven Vision of Urban Leadership at Marygrove College, A self-Study for* Continuing *Accreditation from the Higher Learning Commission of the North Central Association of Colleges and Schools.* Detroit: Marygrove College.

# Clicker Pilot and Lending Program: Implementing an Intricate Classroom Technology

**Autumm Caines**
**Academic Technology Specialist**
**Capital University**
**1 College and Main**
**Columbus, OH 43209**
**614-236-6633**
**acaines@capital.edu**

## Abstract

There are many innovative and useful practices for using clickers in a classroom; however, managing the technology and training faculty can be a challenge. Capital University, a small liberal arts school, has met the needs of instructors that would like to utilize clickers, through their Clicker Pilot and Lending Program that started in the summer of 2008. This program standardized the university's main campus on one clicker system that is supported by the Department of Information Technology. The program allows for a limited number of instructors to pilot the technology in their classes for an entire semester, while offering a daily checkout to all instructors. Program participants attend training on how to use the clickers as well as clicker meetings throughout the term to share with each other their techniques and implantations of the technology. After the initial pilot period of one term, instructors have the opportunity to continue to borrow the daily checkout clicker sets, while others have purchased their own set of the standardized clicker technology at a department level.

## Introduction

Clickers are the common name for an audience response system that allows for input from participants during a lecture or presentation. In any environment, clickers can be used for simple voting or polling, however, in an academic setting this input can enhance the teaching and learning experience by sharing answers or opinions with the class to provide feedback to the instructor and to help inspire discussion amongst the students. Students' responses can be either anonymous or tracked. Most clicker systems are made up of the clickers themselves, a base station, and some kind of software that collects and reports the responses. The purpose of this paper is to give an overview of the creation and implementation of the Clicker Pilot and Lending Program at Capital University. This paper will start with a discussion of clicker technology at Capital University in 2008, move on to the clicker acquisition process by the Department of Information Technology, and finish with an examination of the program and some of the support functions that are provided to help things run smoothly.

## Clickers at Capital

Capital University, a mid-sized private Lutheran university located in Columbus Ohio, had many clicker systems located throughout campus by the year of 2008. These clicker systems were purchased by individuals, departments, or schools in an ad hoc fashion over many years. Because

these clicker systems were of varying brands and versions, centralized support or training was virtually impossible and those that decided to purchase their own clicker sets had to manage all of the software and hardware intricacies themselves; including hardware lending and replacement, software instillations and updates, as well as considerations of new equipment as the technology advanced. There were limitations on enterprise interactions such as integration with the university's learning management system and any support or training for the clicker system of choice was limited to the clicker company.

Clickers have a tendency to have a high satisfaction rate amongst students, (Beckert, Fauth, and Olsen. 2009) and word was spreading about them. Instructors and departments that did not own clicker sets were learning about clickers and wanting to try them in their classes, however, there was no institutional program to support the use of clickers for the entire university. The Department of Information Technology (IT) at Capital University wanted to provide a solution that could take advantage of many of the infrastructural and support systems that the university already had in place and provide instructors a cost effective way to explore the use of clickers in their courses.

**Deciding on a Clicker System**

Seeing a need to provide the university with stable and reliable access to clicker technology, IT began the process of assessing what clicker system could meet the needs of the campus community at large. The project was led by the Interim Senior Director of Information Technology, Jeff Guiler and the department's Academic Technology Specialist Autumm Caines.

**Assessing Needs and Gathering Information**

Realizing the need to involve stakeholders in the process of making this decision, (Julius, Murphy-Boyer, Smith, and Tweeten. 2007) several clicker information sessions were held and faculty, staff, and administrators with an interest in clickers were invited to attend. During these sessions, IT heard from these stakeholders about their wants and needs and had several vendors come in and present their products. It is important to point out that it was made clear to those that were using another system that they would not be forced to change anything that they were currently doing. The IT department was looking for a way to provide a large scale clicker solution to those that could benefit from such support but was not looking to stand in the way of those that were working with a particular product that was meeting their needs. While some stakeholders had no interest in changing, others indicated a need to change systems as their old systems were malfunctioning and needed to be updated anyway.

A close look at the functions and features of several clicker systems was in order and prioritized by the IT department. At the onset of the search process the features that were most important were usability, cross-platform support, scalability, data management, and cost. Although, as the search process progressed it became clear that radio frequency, clicker size, and learning management system integration were also of great concern. (Julius, Murphy-Boyer, Smith, and Tweeten) Usability was of key concern, as the department was hoping to not just support those that had experience teaching with clickers but also those that were new to the technology. The solution would also have to be cross-platform because the campus provided both Mac and PC computers in classrooms, labs and offices. Finally, it was important that this technology had the

ability to grow if it was determined that it would be beneficial for the entire campus, so the ability to scale from a small solution up to a large campus wide solution was also at the forefront.

**Clicker Decision and Technology Description**

TurningPoint clickers from TurningTechnologies were the clicker solution that was chosen. The clicker style that was chosen is a small thin design that is about the size of a credit card, though thicker. These clickers are a radio frequency solution, so the students do not need to point the clicker in a particular direction or at a particular device to make them work. The base station is a USB device that resembles a large thumb drive and can be plugged into any USB port on a computer.

The software solutions for TurningPoint were desirable because they are all free of cost and vary in platform support and complexity. One of the major factors in deciding upon TurningPoint was the fact that they have a software solution that builds itself into technologies that many stakeholders were already familiar with; Microsoft PowerPoint for presenting and collecting polls and Excel for reporting and analyzing data. For those that wanted a more flexible solution, TurningPoint also offered another piece of software that functioned as a floating toolbar and could be used over any window on a computer. This also addressed the cross-platform needs, as the floating tool bar could work on either a Mac or a PC.

While the exploration of a clicker solution for the entire campus was to start small, the option to grow the technology across campus was essential. Integration with Capital's learning management system, Blackboard, brought the ability to download rosters into the TurningPoint software and upload results from clicker sessions back to Blackboard's grading tool. TurningTechnologies also presented business models where students would purchase clickers themselves from Capital's bookstore and keep the clickers throughout their time at Capital University.

**The Beginning of the Program**

At the start of the program, in the Fall term of 2008, two clicker cases were purchased, each containing fifty clickers, one base station, a CD containing the software, and basic documentation. One clicker set was reserved by the IT department for daily check out, training, and testing. The other clicker case was given to a faculty member, Dr. Pat Shields, who had experience teaching with clickers. Both Dr. Shields, who held the clickers for the entire semester, and those that checked them out for the day took financial responsibility for them while the clickers were in their care. There was close communication between Dr. Shields and IT while he had the clickers in is possession. IT was very interested in ways that they could support him and though he was experienced with clickers, there were significant differences between the clickers that he had used in the past and the TurningPoint clickers. He was coming from an older infrared clicker system where the students had to point their clickers at a set of base stations set up on the floor at

the front of the classroom. This close communication provided the IT department with a real life example of the kind of support that faculty would need and helped to shape how the program would develop on a larger scale.

Training and information sessions were held during this time to inform those that were interested in clicker technology. Participants in these sessions included faculty, adjuncts, student affairs, and library staff. These training and information sessions acted as an advertisement for the clickers as well as a way to train those that were interested in using them. The set of clickers that the IT department retained for these training opportunities were lent out for a maximum of one day to anyone that wanted to try them for a single class, event, or training.

**Implementation**

Over the next several years the program would continue to grow and more services and support would be offered. Steps were taken to make the tracking of individual responses, access to clickers themselves, and access to the software easier.

**Tracking Individual Responses**

A major benefit of clickers is giving students the ability to participate anonymously. (Martyn. 2007) However, there are professors that desire to track their students' individual responses on some of the questions. To accomplish this, the professor will have to tie the device ID on the back of the clicker to the student's name in the clicker software. In addition, the professor will also have to assure that every student has the same clicker for every class period. This is not so difficult if the students have purchased their clickers and bring their personal clicker to every class; however, it becomes much more difficult in a situation where the professor brings the clickers to class in a case. While the device ID is unique to each clicker, it is a long mixture of letters and numbers that is hard for students to remember. Having some kind of simple numbering system to uniquely identify each clicker was one of the first requests that the program received. Initially this was met by simply giving the professor the permission to apply small stickers on the clickers in which numbers were written. However, this was seen as an opportunity to make the clicker sets more user friendly for professors looking to take advantage of the ability to uniquely identify students' answers, and so a numbering system was established.

The clickers were divided into sets of fifty and were numbered one through fifty, followed by a period and the case number. For example, case one would start 1.1, 2.1, 3.1 and so forth. A Microsoft Excel spreadsheet was also provided that tied each clicker number to the device ID.

| Clicker Number | Device ID |
|---|---|
| 1.1 | 2417D4 |
| 2.1 | 2418EB |
| 3.1 | 2418C5 |

Example of Excel Spreadsheet Information

The steps to take advantage of this functionality lessened consistently every year. At the onset of the program, a professor would have to manually type in all of the students' names and copy and paste the device ID for each clicker from the Excel spreadsheet into the TurningPoint software to take advantage of this functionality. Then the Blackboard building block was installed by IT, this allowed faculty to download their rosters from Blackboard into the software and saved them from typing the student's names. Shortly thereafter an upgrade to the TurningPoint software brought the Real-Time Registration tool, which allowed students to simply click in during class while the tool was open and their clicker would automatically be tied to their name. These two tools, together with the clicker numbering system, brought the ability to identify students' answers into reach.

**Growth and Addressing Hardware Shortage**

As time progressed, clickers gained in popularity and more people found out that they were available. The IT department itself started using clickers in the technology orientation for incoming freshmen in the summer. There was not much classroom use in the summer, so this put the clickers to good use in what would otherwise be downtime and gave all incoming freshmen an initial exposure to the clicker technology. Growth was also seen from the faculty members that were interested in clickers. While a daily check out served the needs of some of the faculty, others wanted to keep the clickers for longer. As there were not enough clickers to offer the semester long lending to more than one professor at a time, faculty were asked to share a case of clickers either with each other or with the IT department for a term. Faculty that agreed to share a set of clickers took joint responsibility for them and would pass them off between classes or sometimes leave them with a faculty secretary for storage and retrieval. Then, in 2009 another case of 50 clickers were purchased. As most of the classes at Capital University are small and many are not in need of a full case of 50 clickers, three empty cases and three base stations were then purchased so that the same number of overall clickers could be divided into smaller cases and serve more people.

Since the beginning of the program, there have been several faculty members that have thought about requiring students to purchase clickers as they would require them to purchase a textbook. While the Capital University bookstore was friendly about these inquiries there has yet to be a professor to actually make this requirement of their students. However, the Education Department has purchased their own set of clickers so that any faculty member that teaches within the department may use those clickers. There was also a member of the program that eventually applied for and was awarded a grant to purchase a set of clickers that he is open to sharing with the Conservatory of Music at Capital. The IT department assisted with each of these purchases and provides support to these clicker sets the same as it does those in the Pilot and Lending Program.

**Making the Software Accessible**

One of the major assets of the TurningPoint clickers is that the software that is used in conjunction with the clickers is free and can be downloaded from the company website by anyone. This made it easy for a professor to download and install the software on his or her office computer to create the polling slides. However, the software is needed in the classroom to run the polling slides and this was difficult because faculty do not have permission to install programs onto classroom computers. This is also complicated by the fact that IT reimages all of the classroom computers at the start of each semester to assure a clean computing experience. In the early

stages of the program this was manageable but was not optimal; the professor would just let IT know what classrooms they needed the software in and it would be manually installed. As the program grew IT decided to put the TurningPoint 2008 on to the university's PC classroom computer image. Now, all PC classrooms are "clicker ready" and any presentation created with TurningPoint 2008 can be run by simply launching the program. There are plans to install the floating toolbar software, TurningPoing Anywhere, in all of the Mac classrooms in Fall of 2011.

**Conclusion**

The Clicker Pilot and Lending Program has grown significantly since its inception in 2008 and TurningPoint is now the standardized solution for clicker technology on the main campus of Capital University. With the purchase of clicker cases by two departments and continuation of the program itself, clickers are being used more and more throughout the university. Students themselves have even on occasion approached the program asking to borrow clickers for presentations in class. This has been supported as long as it is in conjunction with a faculty member who takes financial responsibility. The IT department continues to look for ways to support faculty in their use of clickers be that updating software, assisting with purchases, or developing new training opportunities.

A consistent struggle reported by program participants is that they underestimate the amount of time that it will take to build meaningful question slides into their classes. To address this, there is consideration of creating a more advanced and in-depth training as early as summer of 2011. Such additional training would allow for detailed inspection and revisal of current pedagogies to incorporate the best use of clicker technology for that specific instructor. This additional training would rely on community building between past program participants, current program participants, and the Academic Technology Specialist to identify learning outcomes and creating the best polling questions to address those learning outcomes.

**References**

Beckert, Troy E., Fauth, Elizabeth., and Olsen, Kaelin., Clicker Satisfaction for Students in Human Development: Differences for Class Type, Prior Exposure, and Student Talkativity. *North American Journal of Psychology,* 11.3, 559-611.

Martin, Margie. (2007). Clickers in the Classroom: An Active Learning Approach. *Educause Quarterly*, 30.2, 71-74.

Julius, Jim., Murphy-Boyer, Linda., Smith, and M.K., Twetten. (2007). Successful Clicker Standardization. *Educause Quarterly, 30.4, 63-67.*

Perkins, Katherine K., & Turpen, Chandra. (2009). Student Perspectives on Using Clickers in Upper-division Physics Courses. *AIP Conference Proceedings, 1179, 225-228.*

Wood, William B. (2004). Clickers: A Teaching Gimmick that Works. *Developmental Cell*, 7, 796-798.

[Photo of TurningPoint clicker and base station]. (2008), Retrieved 4/18/11 from: http://allinio.com/tag/net-centric-marketing-2/

# A Bit of History for Students Who Will Develop the Next Generation of Technology

**Mary V. Connolly**
**Department of Mathematics and Computer Science**
**Saint Mary's College**
**Notre Dame, Indiana 46556**
**574-284-4497**
**connolly@saintmarys.edu**

**Abstract**

Ubiquitous laptops, more mobile devices than we can keep track of, new apps coming at us daily - where are we headed? To answer this, it should help to consider where we have come from. This paper gives a bit of the history behind the computer technology we use today. Most of our students are too young to have experienced personally the rapid development of the technology they use, but an understanding of the people and places that brought us to where we are now should help these students move us to the next generation of technology.

## Introduction

Looking back at the last 70 years of developments in computing may be a trip down memory lane for some, but for current students it is decidedly history. As Joel Adams wrote, in describing a Grace Hopper Birthday Celebration at Calvin College, "It is a sad fact that most college students today have no idea who Grace Hopper was." [1, p.2] Future developments in technology are in the hands of some of these students, and it surely will help them to have some sense of the people and places that brought us to where we are now. Moreover, in the experience of this author, students are fascinated by the stories surrounding early computing. It is time to share these!

The development of computing technology can be traced by looking both at how hardware and software developed and how the need for computing power and connectivity developed. These really went hand in hand. The need for extensive computation pushed the attempts at building early computers. As the hardware moved from vacuum tubes to transistors and ultimately to microprocessors, the need for more memory and more software became obvious. Eventually the hardware and software was sufficiently developed for people to find a need for connectivity. As Bill Gates wrote in The Road Ahead, for the Internet to take off PCs had to be available, modems had to be fast enough and communications switches cheap enough. [9, p. xi]

The need to build some of the first computers was certainly driven by the need to perform extensive computations efficiently. John Atanasoff, who earned a Ph.D. in Physics from the University of Wisconsin in 1930, wanted a machine that could solve partial differential equations.[14, p. 26] In 1939 he hired Clifford Berry to work with him, and together they built a prototype of a machine based on vacuum tubes. The prototype did addition and subtraction on binary numbers. Although they might not have realized it at the time, working on information in binary form was a critical step. Others, including Alan Turing, came to the same realization that storing information in binary simplified the electronics. The Atanasoff machine was later called the ABC

computer, and this history begins with the ABC computer because the federal government recognized Atanasoff as the modern computer's inventor in 1973 (when the ENIAC patent was invalidated). World War II called Atanasoff and Berry in different directions, and the ABC machine was eventually dismantled. [14, p. xvii] The war provided the incentive to develop two of the more famous machines. The MARK I was built at Harvard during the war, under the direction of Howard Aiken. The cost was covered by IBM and the US Navy. It was large (5 tons!) and slow (3-5 seconds for a multiplication operation). The machine continued to be used until 1959 despite the fact that programming it was a distinctly tedious task.

Grace Hopper (eventually Rear Admiral Grace Hopper) came to the rescue and began to establish her reputation as a programmer. Nevertheless, Aiken, in 1947, thought that six digital computers would be plenty to cover the computing needs of the entire country. John Mauchly and John Eckert developed the ENIAC machine, funded by the Army. It was finished in 1945 and was much faster than the MARK I, but programming changes required weeks. John von Neumann became involved with the ENIAC project and did important theoretic work. His ideas became known as the "von Neumann Architecture", a critical piece of which was the fetch-decode-execute cycle of instructions.[14, p. 40] In addition to needing these machines to do mathematical calculations, machines were also needed during the war to break the German codes. British code breakers were brought to Bletchley Park outside London, where Alan Turing served as lead code breaker. A major problem was the length of time needed to break codes. To help solve the problem, eventually the British built a total of ten Colossus machines during the war, machines built with vacuum tubes. For obvious reasons the work was kept top secret both during the war and for many, many years afterwards, but the time required to break codes was dramatically shortened. A recent fund raising campaign was successful in saving a collection of Alan Turing's work for Bletchley Park Trust. [15]

In 1946 Eckert and Mauchly started the Eckert-Mauchly Computer Corporation. Grace Hopper joined them in 1949. Their first client was the US Census Bureau. Unfortunately the research to build the contracted for computer (the UNIVAC) did not go well and the company ultimately experienced serious financial problems. The company was sold to Remington Rand in 1950. Forty-six UNIVAC computers were built both for government and business, and Remington Rand became the first American manufacturer of commercial computer systems. [3] As a publicity stunt, the UNIVAC was used to predict the winner of the 1952 presidential election (which it did quite accurately). In 1953, Grace Hopper, now working for Remington, invented the compiler, which ultimately led to the development of COBOL. [13]

These early machines were enormous, slow, lacking in memory, lacking in efficient ways to input data and instructions, and tedious to program. As development moved into the fifties, progress was made in all of these areas. Magnetic core memory solved some of the memory problems. A major step forward in terms of hardware development came with the invention of transistors, earning the inventors the Nobel Prize in Physics in 1956. Researchers at the Stanford Research Institute worked on automating the processing of checks and came up with magnetic ink character recognition. This was first tested on bank accounts in 1956. [3] A number of large computer companies emerged, including GE, RCA, Raytheon, Honeywell and IBM, to name a few. According to IBM, its 701 machine, unveiled in 1952, was the first commercially successful general purpose computer. Since the contents of each memory location appeared as dots on cathode ray tubes, IBM first built the machine with a transparent glass front. Unfortunately when the photographer at the unveiling used a flashbulb to take a picture, the memory contents

were reset with random bits![14, p. 53] John Backus invented FORTRAN for IBM; it was released in 1957, making real progress on the programming front. Now the industry has a language for scientific and engineering applications and a language for data processing (COBOL). During this time, most of the software being written was written for individual applications. [14, p. 54]

In 1959 two patents were issued for integrated circuits, another crucial hardware step. In 1965, the Digital Equipment Corporation introduced the PDP-8, the first mass-produced computer based on integrated circuits.[14, p.69] This began a new mini computer market, with a number of other companies marketing mini computers (including Prime Computing and Hewlett-Packard). These were popular in scientific and academic fields. Operating system software was developed during this time period to allow for time-sharing on these computers. Multiple users used the same computer although at any given time only one user's program was actually using the cpu. Programs were swapped in and out as each user received a "time-slice."

Progress was made in the 60s on both hardware and software. IBM devoted a much greater fraction of its research and development operations to software than it had in the past, although by the end of the decade these operations were separated under pressure from a possible antitrust lawsuit. The first IBM System/360 was shipped in 1965, standardized on 8 bits to a word.[14, pp.72-76]. This system provided the ground work for much of the technology used in the IBM 1130, IBM's least expensive computer to date and aimed at education and engineering users. [2] Users still needed software and often were willing to work with each other to develop what was needed. In 1968 representatives from schools which had IBM 1130 machines gathered at Tarkio College in Missouri and formed an organization named CUETUG (College and University Eleven-Thirty Users Group). Attendees were expected to come with a piece of software to share. Although eventually many of these member schools no longer used the IBM 1130, the need for collaboration still existed. The name was changed to ASCUE in 1975 and the organization exists to this day with dedicated members supporting one another both during the vibrant annual meeting and electronically throughout the rest of the year.[7, p.10]

A couple of other software developments from this decade are worthy of note. The first patent on software was issued in 1968. Another well known company was founded in 1962 by Ross Perot, namely EDS (Electronic Data Systems). It was during this decade that a team at Dartmouth developed the language BASIC. This language became very important as personal computers were developed in the next two decades, but it was known for the GO TO statement, which many programmers felt led to "spaghetti code." In 1968, in a brief article in the Communications of the ACM, Edsger Dijkstra made the argument that this statement was not necessary and in fact should not be used. He claimed it was "too much an invitation to make a mess of one's program."[8, p.147] This opened the door for the development of the languages C and Pascal and the introduction of structured programming.[14,p. 79] Also in 1968, Robert Noyce and Gordon Moore founded Intel. Within a year they had produced a microchip to replace magnetic core memory; microprocessor technology made it possible for computers to shrink in size. Bring on the 70's!

In January 1975 a minicomputer kit, the Altair 8800, was advertised. It was designed by Ed Roberts, was based on Intel's 8080 chip, and sold for $397. Memory inside the machine was limited to 256 bytes. There were no input or output devices, so the only way to communicate with the machine was through the switches (input) and two rows of red LEDs (output) on the

front panel. The kit was extremely popular as orders started to flow in, four hundred in one afternoon.[11, p.190] Alas, there was no software for this wonderful machine. Bill Gates and Paul Allen saw the future staring them in the face and did not want to get left behind. They decided to write a version of BASIC for this machine. After five weeks, the project was done and Microsoft was born. [9, pp.17-18]

The microcomputer revolution had begun. The Homebrew Computer Club, based in Silicon Valley, was a group of talented folks intensely interested in this new kind of computer. Members wanted one of these computers in their homes to work and play with. The philosophy of the group was one of sharing – develop something and share it. Steve Wozniak and Steve Jobs were regular attendees at the meeting. The first Apple was put together by Steve Wozniak to impress his friends at Homebrew.[4] Demand for both the machines and peripherals was growing quickly, and other companies began selling microcomputers. Some of the more familiar names were the Commodore PET, the Radio Shack's TRS-80, and machines made by Atari. [14, p. 90] The Apple II, designed by Steve Wozniak, was released in 1977. It cost $790 with 4K RAM or $1,795 with 48K RAM. It was great for hobbyists, but people did not think of it as useful for business applications until Dan Bricklin and Bob Frankston wrote the first "killer app," namely VisiCalc, a spreadsheet. John Draper wrote EasyWriter, the first word processing application for Apple II. [14, pp.92-93]

Until 1980, IBM was a company which provided mainframe computers for large companies, operating with conservative, careful business practices. By the late 1970's IBM took notice of the explosive growth of personal computers and became concerned that it could get left behind. However, if it stuck to its usual business practices, there was no way it could put out its own personal computer quickly. Bill Lowe, head of IBM's PC development team, convinced the head of IBM that the only way to do this in a timely fashion was to buy components off the shelf and assemble them – essentially an open architecture using non IBM technology and software. However, IBM still needed an operating system for its new microcomputer. At the time Gary Kildall had invented CP/M, PC's first operating system, and Microsoft was supplying computer languages for PCs. This seemed like a good division of functions, but, due to a curious sequence of circumstances, Microsoft ended up with the deal and had to produce an operating system fairly quickly. Microsoft bought Tim Patterson's operating system from Seattle Computer Products for $50,000 and for whatever usage Microsoft wanted. This turned out to be a critical contract for Microsoft because it allowed them to sell this operating system to companies other than IBM. Using this operating system (PC DOS 1.0) IBM joined the microcomputer competition in 1981 with a machine using Intel's 8088 chip. Microsoft also wrote Lotus 1-2-3, a spreadsheet similar to VisiCalc. At the time it seemed as if no one else would want the operating system, but before too long other companies reverse engineered the IBM ROM BIOS and were on the market with cheaper and faster machines (and Bill Gates was selling lots of copies of DOS).[5] By 1983, Apple and IBM dominated the market and these machines were no longer just for hobbyists.

Where did the GUI interface come from? In 1979, Steve Jobs, the cofounder of Apple Computer together with Steve Wozniak, visited the Xerox Palo Alto Research Center (PARC), and became interested in a different idea for a user interface. PARC was created in 1971 because Xerox was wondering if it could dominate the paperless office of the future. Researchers were given total intellectual freedom. By 1973 the researchers at PARC had created a computer that had a graphical user interface and also an object oriented programming language suited for a GUI (Smalltalk). Xerox really did not exploit these innovations (it seems that those running the company

could not appreciate the importance of the work at PARC), so many of the researchers left for other companies, including Apple.[6] Macintosh, produced by Apple Computer and based on the Motorola 688000 microprocessor, was released in 1984 as a GUI computer. The first desktop publishing program (Aldus Pagemaker) was released in 1985, and the Mac was now a true commercial product. Several other companies emerged making machines mostly based on Intel chips. Compac, Dell, Gateway and Toshiba became familiar names. Intel, due to the competition, was pushed to keep improving their products. Since the machines produced by all these companies all needed operating systems, Microsoft grew quickly. In the early 80s, it was difficult to get sufficient memory. However, once that shortage ended Windows 3.0 was released (1990) and was a great success. It actually built the user interface on top of DOS. Not until Windows 95 did Microsoft get to the ease of use found in the GUI interface of the Apple Mac.[14, p.105] None of these developments occur without the need for more powerful processors, more memory and more disk drive space. Hence throughout the 90s and into the twenty-first century, machines became more powerful and came with more and more memory, all demanded by the software users wanted to load onto them. Microsoft held the edge (and still does) in software development. Lotus 1-2-3 and WordPerfect, best sellers in 1991, were outsold by Excel and Word by 2000.

Once powerful machines loaded with helpful software became widespread, it was only a matter of time before users wanted to connect. At first this was done through phone lines, using hardware devices called modems (modulator-demodulators). These devices provided the necessary translation between the digital world of the computer and the analog world of the phone line. Early modems were decidedly not fast, transmitting only 300 or 1200 bits per second. This really ruled out transmitting anything other than text. Although modems improved, allowing faster transmission, the phone lines themselves were a limiting factor. Digital switches and fiber-optic cable would be necessary before broadband connectivity could be widespread.[9, pp. 104-105] Was there really a demand for this? Early efforts were devoted to connecting large research centers. ARPANET (1969) originally connected just four major computers; these were located at UCLA, Stanford Research Institute, UCSB, and the University of Utah. A Massachusetts company (BBN) had the contract to do the work. By the following year, Harvard, MIT and BBN were added, and very quickly other universities and research organizations joined. E-mail was adapted for ARPANET in 1972; file transfer protocol was developed in the early 70's. A major advance was the development and introduction of TCP/IP architecture, first proposed by Bob Kahn at BBN. As more and more universities, libraries and research organizations joined, there was a need for some kind of searchable index.

The first effort at this was by Peter Deutsch and others at McGill University in 1989; he introduced the computer world to Archie. A more friendly interface was developed in 1991 at the University of Minnesota, and it was named after the University mascot, a gopher. Not too long after that the University of Nevada at Reno developed VERONICA, a searchable index of gopher menus. The National Science Foundation became involved and developed, in 1986, a network which linked five super computers and eventually every major university. This formed the backbone of today's Internet.[10] The United States government stopped funding ARPANET in 1989, and by 1991 it lifted the restriction on the use of the Internet for commercial use. Clearly research universities and organizations had established the need for good connectivity, but what about owners of the early PCs? Writing in 1995, Bill Gates felt the cost of putting in digital switches and fiber-optic cable would hold things up. He wrote "Except in business districts and other areas where there is a high density of people willing to pay for the connections, broadband

methods won't be widespread for a number of years."[9, p.107] AOL (America Online) might have had other thoughts as it literally flooded the mail with sign-up disks, reaching one million subscribers in 1994 and 25 million by 2000.[14, p. 121] Perhaps it was Robert Morris who made many citizens aware that the Internet existed in 1988 when thousands of computers connected to the Internet ground almost to a halt due to a worm which he released. [9, p. 111]

Connectivity was certainly available by the time AOL put out its campaign, but it took developments in the early 90's to make searching the Internet easy. Tim Berners-Lee created a display language (HTML), a method to uniquely identify a document (the now well known URL), and a WorldWideWeb program. A team at the University of Illinois Urbana-Champaign brought out Mosaic in 1993, a graphical web browser. Now the Internet was truly accessible to lay people, not just large universities. By 1995 ASCUE (Association of Small Computer Users in Education) had a gopher site, and Bill Wilson shared with ASCUE members how Gettysburg College was using Mosaic as a vehicle for collaborative learning. [16, p. 184] Network speed, however, was still an issue.[14, pp.125-126] For a while the web search engine business became very competitive. Marc Andreessen, one of the members of the Mosaic team, founded Netscape in 1994 together with Jim Clark. Microsoft also introduced a web browser, Internet Explorer. Many of the large search engines made use of web portals. Best known among these is Google, founded in 1998 by Larry Page and Sergey Brin.

The Internet made it possible to share open source software easily. Open source grew quickly during the 90's and into the current century. Linux is a popular open source operating system, and Moodle is growing in popularity as an open source course management system. Other trends as computer technology moved into the current century include wireless connectivity, fast transmission speeds and an incredible assortment of devices with which to connect to the Internet and people and places across the world. Steven Levy, writing in 2010, argues that we are moving into the post PC era. He points out that the GUI is relatively old and that most software has origins in a time when memory was at a premium, machines were slower, and applications came in boxes. Apple's iPad and Goggle's Chrome netbook are examples of moves into this post PC era. Google has built its netbook using Chrome OS, an open source system, and it works by channeling users directly into the cloud.[12, p.75] Amazon now offers amazon cloud drive, which gives customers unlimited access to their music, videos, photos and documents from any computer. World IPv6 Day till take place on June 8, 2011. This is a 24 hour test flight of the next generation of Internet protocol, needed because IPv4 addresses are running out due to that high rate at which people are connecting to the Internet from all over the world and the huge number of new devices getting connected. Artificial intelligence took center stage earlier in 2011 when the computer called Watson defeated others on the television show Jeopardy. Social networking sites have mushroomed, with Facebook a household word. Computers have become phones (welcome to Skype), and phones have become computers.

Today's students find it hard to imagine a world without all of this. Just where all this will lead is unknown, but it is today's students who will take us there. Let them look back a bit before we force them forward!

**References**

[1] Adams, Joel (2011). "Calvin's Grace Hopper Birthday Celebration." SIGCSE Bulletin Newsletter, Vol. 43, No. 1. March, 2011.

[2] Alek, Norm & Knittel, Brian (2010). "All about the IBM 1130 Computing System." IBM1130.org. 4 April 2010. Accessed 1 April 2011 http://ibm1103.org.

[3] Bellis, Mary. "Inventors of the Modern Computer." About.com.Inventors. Accessed 1 April 2011 http://inventors.about.com/library/weekly/aa050898.htm (and subsequent pages)

[4]Cringely, Robert. "Triumph of the Nerds – The Television Program Transcripts." www.pbs.org Accessed 3 April 2011 www.pbs.org/nerds/part1.html.

[5] Cringely, Robert. "Triumph of the Nerds – The Television Program Transcripts." www.pbs.org Accessed 3 April 2011 www.pbs.org/nerds/part2.html.

[6] Cringely, Robert. "Triumph of the Nerds – The Television Program Transcripts." www.pbs.org Accessed 3 April 2011 www.pbs.org/nerds/part3.html.

[7] Cundiff, Jack & Smith, Peter (2007). "ASCUE Board of Directors from 1967 to 2007." Proceedings of the 2007 ASCUE Summer Conference. June, 2007.

[8] Dijkstra, Edsger (1968). "Letters to the Editor: Go To Statement Considered Harmful." Communications of the ACM, Volume 11, Number 3. March, 1968.

[9] Gates, Bill (1996). The Road Ahead. New York, New York: Penguin Books.

[10] Howe, Walt (2010). "A Brief History of the Internet." www.walthowe.com. 24 March 2010. Accessed 1 April 2011 http://www.walthowe.com/navnet/history.html.

[11] Levy, Steven (2010). Hackers: Heroes of the Computer Revolution. Sebastopal, California: O'Reilly Media Inc.

[12] Levy, Steven (2010) "Tabula Rasa: Why the new generation of tablet computers changes everything." Wired. April, 2010.

[13] Maisel, Merry. "About Grace Hopper." Grace Hopper Celebration of Women in Computing. Accessed 4 April 2011 http://gracehopper.org/2011/about/about-grace-hopper.

[14] Swedin, Eric & Ferro, David (2005). Computers: The Life Story of a Technology. Baltimore, Maryland: The Johns Hopkins University Press.

[15] Thomson, Iain (2011) "Bletchley Park Turing archive saved after campaign." V3.co.uk. 25 February 2011. Accessed 1 April 2011 http://www.v3.co.uk/v3-uk/news/2031176/bletchley-park-turing-archve-saved-campaign.

[16] Wagner, Robin & Wilson, Bill (1995). "Mosaic as a Vehicle for Collaborative Learning." Proceedings of the 1995 ASCE Summer Conference. June, 1995.

# Academic Dishonesty in Online Courses

**Beth Dietz-Uhler**
**Department of Psychology**
**513-727-3200**
**uhlerbd@muohio.edu**

**Janet Hurn**
**Department of Physics**
**513-727-3200**
**hurnje@muohio.edu**

**Miami University**
**Middletown, OH 45042**

## Abstract

Both students and faculty perceive that cheating is more likely to occur in online rather than face-to-face classrooms, although research shows that cheating in online courses occurs less frequently than in face-to-face ones (e.g., Grijalva, Nowell, & Kerkvliet, 2006; Stuber-McEwen, Wisely, & Hoggatt, 2009). There are many reasons for the belief that online cheating is more prevalent in online than face-to-face courses, but the most widely-held belief focuses on the greater distance between the student and faculty member in online courses compared to face-to-face ones (e.g., George & Carlson, 1999). In fact, many of the strategies proposed to reduce academic dishonesty in online settings focuses on reducing this distance between students and faculty (e.g., Adkins, Kenkel, & Lim, 2005). In this presentation, we will review the literature on the types and frequency of academic dishonesty in online settings, including definitions of what constitutes cheating. We will also review the literature on strategies to reduce cheating in online courses. Finally, we will poll participants to learn what they do in their online classes to reduce academic dishonesty.

## Introduction

When we tell someone that we are teaching online, a response that we frequently receive is: "How do you know students aren't cheating?". When we tell someone we are teaching in a classroom, we almost never receive that response. After years of hearing this same response over and over, we decided to investigate the prevalence of academic dishonesty in online versus face-to-face courses. In this paper, we will review the literature on academic dishonesty in online courses, examine perceptions of academic dishonesty in online and face-to-face courses, and discuss methods to reduce academic dishonesty in online courses.

## Defining Academic Dishonesty

Surprisingly, definitions of academic dishonesty across studies tend to be about the same. Although most investigations measure academic dishonesty using close-ended response options, some studies allow students to define it by simply asking, "Have you cheated?". Studies using more close-ended options typically use a scale designed by Don McCabe at the Center for Aca-

demic Integrity (e.g., McCabe, Trevino & Butterfield, 2002). Using this scale, academic dishonesty is operationalized as :

- Copying from another student with their permission
- Copying from another student without their permission
- Using unpermitted crib or cheat notes
- Helping someone else cheat on a test/exam
- Copying material almost word for word from any source and turning it in as your own work
- Fabricating or falsifying a bibliography
- Turning in work done by someone else
- Copying a few sentences without footnoting them

Other studies provide typologies of academic dishonesty. For example, Bunn, Caudill, and Gropper (1992) differentiate planned and panic cheating. Planned cheating includes the use of crib sheets for exams, copying homework, and plagiarizing a paper. Panic cheating includes looking at another student's test during an exam, for example.

In a study of online versus on-ground academic dishonesty, Stuber-McEwen, Wisely, and Hoggat (2009) operationalized academic dishonesty as:

- Cheating on tests
- Plagiarism
- Fabrication
- Unfair advantage
- Aiding and abetting
- Falsification of records
- Unauthorized access

The results of their study indicated that students in online classes reported cheating less than did students in on-ground classes. Regardless of whether students were in an online or on-ground class, the most frequently reported form of cheating was aiding and abetting.

Stephens, Young, and Calabrese, (2007) examined various forms of conventional (e.g., copying homework, using unpermitted notes during a test or exam) and digital cheating (e.g., plagiarizing a few sentences from the internet, plagiarizing a complete paper from the internet). Of those respondents who reported having cheated, 18.2% reported using only conventional methods, 4.2% reported using only digital methods, and 45.6% reported using both conventional and digital methods.

With regard to e-learning, Underwood and Szabo (2003) define academic dishonesty as acts of plagiarism, using concealed notes to cheat on tests, exchanging work with other students, buying essays, and asking others to take exams for them. In a similar study, Rogers (2006) defines e-cheating in online classes as:

- Looking at another student's computer
- Surfing the internet
- Communicating openly
- Instant messaging

- Cell phone/text messaging
- Printing off copies of exams and passing them on to other students

Howell, Sorensen, and Tippets (2009) reviewed various forms of technological cheating, such as using mobile phones and iPods, braindumps, organized cheating, and wireless earpieces and high tech radio transmitters.

**Frequency of Academic Dishonesty**

One of the issues with determining the frequency of cheating is that all studies are self-reported. It is suspected that cheating is more prevalent than what is reported in the research. Not surprisingly, the self-reported frequency of academic dishonesty varies widely. For example, Bunn, Caudill, and Gropper (1992) found that 50% of students report that they have cheated. Stephens, Young, and Calabrese (2007) found that 68% of students reported having engaged in some form of cheating. Krask (2007) reported that 25% of students indicated that they had cheated and 42% would cheat if given the opportunity. McCabe, Trevino, and Butterfield (2002) found that 80% of students surveyed reported having cheated. Regardless of the disparity in these numbers, it is clear that academic dishonesty is widespread.

**Motivations for Student Cheating**

As you can imagine, students engage in academic dishonesty for a variety of reasons. Some of these reasons are based on a student's individual characteristics, such as academic achievement and age, peer influences, instructor influences (e.g., attitudes about cheating), and institutional policy (Gerdeman, 2001). A major factor that is evident in several studies is peer influence or peers' acceptability of cheating. As peer acceptability increases, so does the frequency of cheating (Stephens, Young, & Calabrese, 2007). Another major influence is whether or not the institution has an honor code. Students in schools with honor codes report being less likely to cheat than students in schools without an honor code (e.g., McCabe, Trevino, & Butterfield, 2002).

In a review of the literature on motivations for cheating, Chiesl (2007) identified several common reasons that students cheat. These include:

- Fear of failure
- Desire for better grade
- Pressure from parents to do well
- Unclear instructional objectives
- "Everyone else is doing it"
- "There is little chance of being caught"
- "There is no punishment if I get caught"

In an empirical investigation of student cheating, Bunn, Caudill, and Gropper (1992) found that students identified several reasons for cheating:

- Seeing other students cheat
- Observing another student getting caught cheating
- Perception of the penalty for cheating
- Perception of the percentage of student who cheat
- Whether students believed cheating was a trivial problem

- If student knew someone who cheated

Of these reasons, seeing other students cheat and the perception of the percentage of students who cheat were the most significant predictors of cheating in this sample.

Perceptions of Cheating in Online and Face-to-Face Courses

As mentioned previously, a comment that we frequently hear in the context of online learning is that students in online classes are more likely than students in face-to-face classes to engage in academic dishonesty. There seems to be a widely –held belief among students, faculty, administrators, and non-academics that cheating is more prevalent in online and face-to-face classes (e.g., Grijalva, Nowell, & Kerkvliet, 2003; Heberling, 2002; Kennedy, Nowak, Raghuraman, Thomas, & Davis, 2000; Smith, Ferguson, & Caris, 2001). In fact, this belief is so pervasive that our administrators demand to know what methods we are employing in our online classes to reduce the frequency of cheating, yet make no such demands for our face-to-face classes. Our review of the literature on perceptions of cheating in online and face-to-face classes confirms this perception that cheating is more prevalent in online than face-to-face courses. Faculty and students perceive that cheating occurs more frequently in online classes because online students are more technologically savvy (Stuber-McEwen et al, 2009). There is also a general suspicion of the online environment in terms of teaching and learning (Mitchell, 2009). Kennedy, Nowak, Raghuraman, Thomas, and Davis (2000) found that 64% of faculty and 57% of students reported that it would be easier to cheat online than face-to-face, although note that teaching or taking an online class reduces this perception. Harmon, Lambrinos, and Buffolino (2010) found that 50% of students reported the frequency of cheating online is the same as face-to-face.

**Frequency of Cheating in Online and Face-to-Face Courses**

The question that remains is, is the frequency of cheating in online classes greater than in face-to-face ones? There have only been a handful of studies examining this question. Using McCabe's self-reported cheating items, Stuber-McEwen, Wisely, and Hoggat (2009) found that cheating was more prevalent in traditional than online courses. Stephens, Young, and Calabrese, (2007) found that conventional cheating is more prevalent than digital forms of cheating. In a study examining the frequency of cheating in online and face-to-face courses, Harmon, Lambrinos, and Buffolino (2010) identified three studies showing that cheating is less frequent in online than in traditional courses. They also found three studies showing that cheating is greater in unproctored than proctored exams.

In all, the evidence to date, although scant, suggests that cheating is no more prevalent in online than in face-to-face courses. But, the number of studies is too few to make any definitive statements about the frequency of academic dishonesty in online and face-to-face courses. What is needed are more wide-scale studies of the sort that Don McCabe has conducted around the world.

**Reducing Cheating in Online Courses**

Regardless of whether cheating is more frequent in online or face-to-face courses, it is clear that cheating does occur in higher education. As such, it behooves us to discuss ways to reduce cheating in online courses. Below is a table, compiled from multiple sources (Chiesl, 2007;

Harmon, Lambrinos, & Buffolino, 2010; Krask, 2007; Howell, Sorensen, & Tippets, 2009), that summarizes the suggestions for reducing cheating in online courses.

| |
|---|
| Using multiple versions of an exam |
| Randomizing question order and response order |
| Not using identical exam questions from previous semesters |
| Proctor vigilance |
| Use testing centers |
| Use multiple performance indicators |
| Provide clear cheating policy on syllabus |
| Test construction |
| Testing procedures |
| Technical solutions (e.g., locking an exam in Bb) |
| No-tech plagiarism solutions (e.g., look for unusual spelling, line breaks) |
| Software (e.g., Turnitin) |
| Disseminate information (e.g., cheating policies) to distance students. |
| Change process by which students turn in work (electronic only). |
| Change process by which exams are administered (e.g., sample from pool of questions). |
| Create nonsequential chapter assortment of questions. |
| "Honor system" |
| Banning/controlling electronic devices |
| Photo and/or government identification |
| Fingerprinting and palm vein scanning |
| Commercial security systems |
| Cheat-resistant laptops |
| Lawsuits (braindump services) |
| Computer-adaptive testing and randomized testing |
| Plagiarism detection and prevention: Term paper sites, Plagiarism detection programs, Search engine searches |

**Conclusion**

The purpose of this paper was to examine perceptions and frequency of academic dishonesty in online and face-to-face courses. It is clear that cheating is perceived to be more rampant in online courses than in face-to-face ones, except among those teaching or taking online courses. However, the evidence, although scant, suggests that academic dishonesty occurs frequently and equally in online and face-to-face courses. As such, it is wise for instructors of online and face-to-face classes to make serious efforts to reduce opportunities for cheating.

**References**

Bunn, D. N., Caudill, S. B., & Gropper, D. M. (1992). Crime in the classroom: An economic analysis of undergraduate cheating behavior. *Journal of Economic Education, Summer,* 197-207.

Chiesl, N. (2007). Pragmatic methods to reduce dishonesty in web-based courses. *The Quarterly Review of Distance Education, 8,* 203-211.

Gerdeman, R. (2001). *Academic dishonesty and the community college.* (Report No. EDO-J00-07). ERIC clearinghouse for Community Colleges Los Angeles, CA. (ERIC Document Reproduction Service No. ED447840).

Grijalva, T., Nowell, C., & Kerkvliet, J. (2003*).* Academic honesty in online courses. *College Student Journal, 40,* 180-185.

Harmon, O. R., Lambrinos, J., & Buffolino, J. (2010). *Online Journal of Distance Learning Administration, 13(3).*Retrieved March 18, 2011 from: http://www.westga.edu/~distance/ojdla/Fall133/harmon_lambrinos_buffolino133.html.

Heberling, M. (2002). Maintaining academic integrity in online education. *Online Journal of Distance Learning Administration, 5,* Retrieved March 2, 2011, from: http://www.westga.edu/~distance/ojdla/spring51/heberling51.html.

Howell, S. L., Sorensen, D., & Tippets, H. R. (2009). The new (and old) news about cheating for distance educators. *Online Journal of Distance Learning Administration,13(3).* Retrieved March 18, 2011 from
: http://www.westga.edu/~distance/ojdla/fall123/howell123.html.

Kennedy, K. Nowak, S., Raghuraman, R., Thomas, J., & Davis, S. F. (2000). Academic dishonesty and distance learning: Student and faculty views. *College Student Journal, 34,* 309-314.Krsak, A. M. (2007). Curbing academic dishonesty in online courses. *TCC 2007 Proceedings*, 159-170.

Krsak, A. M. (2007). Curbing academic dishonesty in online courses. *TCC 2007 Proceedings*, 159-170.

McCabe, D. L., Trevino, L. K., & Butterfield, K. D. (2002). Honor codes and other contextual influences on academic integrity: A replication and extension to modified honor code settings. *Research in Higher Education, 43,* 357-378.

Mitchell, R.L.G. (2009). Ethics in an online environment. *New Directions for Community Colleges, 148,* 63-70.

Rogers, C. F. (2006). Faculty perceptions about e-cheating during online testing. *Journal of Computing Sciences in Colleges, 22,* 206-212.

Smith, G. G., Ferguson, D., & Caris, M. (2001). Teaching college courses online vs face-to-face. *T.H.E. Journal, 28*, 19-26.

Stephens, J. M., Young, M. F., & Calabrese, T. (2007). Does moral judgment go offline when students are online? A comparative analysis of undergraduates' beliefs and behaviors related to conventional and digital cheating. *Ethics & Behavior, 17*, 233-254.

Stuber-McEwen, D., Wisely, P., & Hoggatt, S. (2009). Point, click, and cheat: Frequency and type of academic dishonesty in the virtual classroom. Online Journal of Distance Learning Administration, 7, Retrieved March 7, 2011, from: http://www.westga.edu/~distance/ojdla/fall123/stuber123.html.

Talab, R. (2009). Copyright and you: A student online plagiarism guide: Detection and prevention resources (and copyright implications!). *TechTrends, 48*, 15-18.

Underwood, J. & Szabo, A. (2003). Academic offences and e-learning: Individual propensities in cheating. *British Journal of Educational Technology, 34*, 467-477.

# Digital Citizenry – Does Your Campus Promote Good Digital Citizenship?

**Fred Jenny**
**Grove City College**
**100 Campus Drive**
**Grove City, PA**
**724-458-2071**
**fjenny@gcc.edu**

**Abstract:**

How often do we observe students, colleagues, and others misusing and abusing technology and information – and we're not sure what to do about it? Digital Citizenry or Digital Citizenship is a concept which helps faculty, IT staff, campus technology leaders, and students understand what technology users should know in order to exhibit responsible use of information and technology. This presentation will consider issues of appropriate digital citizenry and will suggest resources helpful in the leadership of digital citizenship.

**Editor's Note:** The author had not submitted his paper at the time the proceedings went to press. He will bring copies to his presentation or make the paper available on the web.

# ePortfolios and Student Engagement

**Virginia Jones**
**Ferrum College**
**P.O. Box 1000**
**Ferrum, Virginia 24088**
**816-501-3791**
**vrjones1@ferrum.edu**

## Abstract

Objectives: Explore the reflective and personal/professional growth opportunities specific in student use of ePortfolios in their college careers and enhance student engagement through use of technological media in the learning process. Content: Explore background, history, and status of ePortfolios in higher education. Detail (with examples of outcomes) the significance of establishing a college-wide learning outcomes for ePortfolio and implementing college-wide development of ePortfolios. The facilitator will describe tools for student development of ePortfolios such as Weebly.com, the learning management system of college (ANGEL with locked or instructor verified files), and other formats available. Discussion will include artifacts for ePortfolio and different digital formats available to collect data of student learning. Participants will examine two major types of ePortfolios – a repository of artifacts (process) or showcase (narrative or thematic). The conclusion will focus on the benefit of ePortfolios in reflection and learning.

## Rationale for ePortfolios

Portfolio learning has been used since the beginnings of education as a way to document success or highlight works accomplished in a specific genre such as writing, art, or photography. Portfolios, traditionally, receive recognition and value in both academia and the workplace as proof of noteworthy achievement. For the 21st century learner, the ability to take the portfolio learning system to a digital venue is a logical step. Developing an ePortfolio supports integration of technology into the overall curriculum to increase learning (Anderson, Krathwohl, & Bloom, 2001). An ePortfolio also employs 21st century skills such as learning and innovation skills of creativity, critical thinking, problem solving, communication, and collaboration. It also taps into necessary technological literacy skills such as information literacy, media, and technology artifact manipulation (Partnership for 21st Century Learning Skills, 2004).

## Historical context

Learning through and with technology, called E-learning, is strongly supportive of self-directed, reflective, and problem based learning (Buzzetto-More, 2006). Vygotsky's (1978) concept of social constructivism supports a culture where tools significantly affect the pattern and rate of development of the learner. The cultural tools provided to a learner include cultural history, social context, and language. His theory emphasized the critical importance of culture and the importance of the social context for cognitive development. In today's learning environment, learners have digital skills but not the social context for using those skills to their optimal advantage, whether professionally or socially. In 21st century learning, these cultural tools also include elec-

tronic forms of information, access, and technology tools. Vygotsky's zone of proximal development (ZPD) emphasizes that thinking and problem-solving skills include three distinct levels of assistance, minimal, moderate, and maximum (Vygotsky, 1978). EPortfolios provide all levels of ZPD assistance by guiding learners through the stages of reflective ePortfolio development. Vygotsky theories supports an involved educator, who serves as a guide and active participant in the learning environment as this involvement leads to a learner who achieves a higher, more independent zone with more highly developed skills. EPortfolio learning embraces the social constructivist model of self-reflective activity (Alvarez & Moxley, 2004) by compelling students to review their scholarly works and choose artifacts to include as examples of their scholarship. Students developing ePortfolios construct meaning from their learning experiences and develop a cohesive instrument for presenting the constructed meaning to others. From an instructional design viewpoint, the use of ePortfolios supports the classic design model of Analysis, Design, Development, Implementation, and Evaluation, or the ADDIE model (see figure 1).

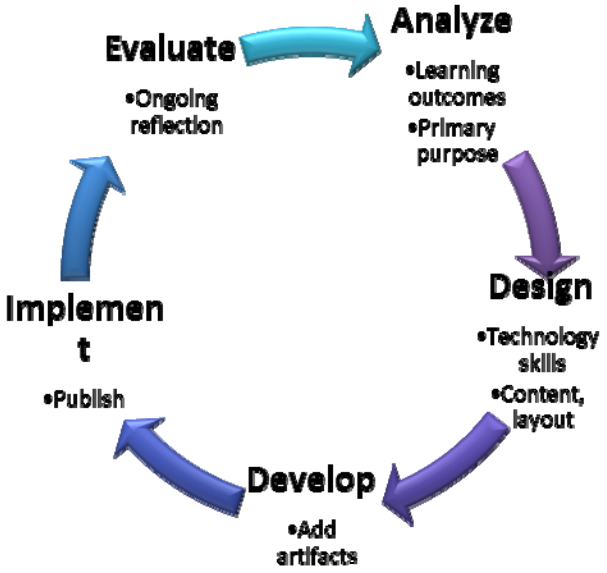



*Figure 1*. ADDIE Model of Instructional Design and Learning with embedded ePortfolio skills.

**The language of ePortfolios**

EPortfolios are a collection of artifacts developed by the ePortfolio author. An artifact is a humanly developed object for a particular purpose (Artifact, n.d.). For ePortfolio development, an artifact is a digital resource used to present, inform, and support learning. In the purest sense, an artifact is considered a learning object because it is a digital object signifying a specific unit of learning (Wang, 2009). Artifacts can be any digital file from a word processed document, spreadsheet, photo file (jpeg, png), a digital presentation, or a video such as YouTube or Jing. Artifacts serve the function of documenting learning, highlighting academic research, and accomplishments of the learner whether scholarly, athletic, or community based. Repositories, as used in ePortfolios, provide a central storage of selected artifacts. Together the repository and the ePortfolio pages provide the framework for the ePortfolio learner. This framework verifies what the ePortfolio author knows, what the author believes in, and what the author aspires to know or do with that knowledge.

**Categories of ePortfolios**

An ePortfolio may be constructed for professional use, academic use, or for special presentation use although its construction is seldom focused for one specific purpose but covers a continuum of skills (Blair & Monske, 2009). For academic purposes, ePortfolios fall into two categories: showcase and repository. A showcase ePortfolio is a tool to highlight skills and academic accomplishments. It presents a snapshot of the author to the ePortfolio viewer. Showcase ePortfolios are typically organized around a theme such as achievement of degree, student learning outcomes or academic standards (Barrett, 2010). A showcase ePortfolio is also a learning record, a type of nontraditional résumé, used for employment or graduate school purposes (Batson, 2010b). The workspace or repository ePortfolio is a digital collection of artifacts organized chronologically to support growth over time. This repository is a storage or collection area for the author to organize artifacts and maintain them in one designated area.

**Status of ePortfolios in Higher Education**

The ePortfolio initiative has been on college campuses in various configurations for over ten years but languished due to limited technology programs for publishing them online. The exponential growth of technology and widespread use of learning or content management systems has spurred the rebirth of ePortfolio development and assessment across many campuses. The recent growth and integration of social networking applications and styles has also increased the acceptance of ePortfolio artifacts such as video clips, photo albums, and blogging sites (Waters, 2007). In a report based on an annual survey by Campus Computing Project, Chen and Light (2010) state that since 2003, higher education institutions from all sectors, private and public steadily increased campus investments in ePortfolio tools and services. Also ePortfolios are increasing in use as an assessment tool to capture evidence of learning over time and learner reflections (Chen & Light, 2010). Assessment of learning using the ePortfolio raises new questions for institutions that are fixated on accountability and high-stakes learning. Assessment is easy using rubrics and achievement matrices with student learning outcomes clearly explained. Worldwide EPortfolios use by institutions seeks to prepare students for lifelong learning and to prepare learners for 21$^{st}$ century workplace skills such as critical thinking, problem solving, and collaboration (Zubizarreta, 2009). The ePortfolio requires the learner to reflect upon their artifacts for validity of learned content, revise, adjust, or modify them. Research supports the connection between ePortfolios (learning portfolios) and reflection specifically as a tool for teaching and learning reflective skills (Varner & Peck, 2003; Wall, Higgins, Miller, & Packard, 2006). An ePortfolio also helps the learners develop and hone their technology skills (Bolliger & Shepherd, 2010). Artifacts support curriculum validity as well as representing the experienced or lived curriculum as perceived by each individual learner (Chen & Light, 2010).

Campus ePortfolios offerings are presented in many configurations such as a separate course on ePortfolio construction, as part of a capstone course, or not offered formally but through handouts, optional workshops, and online information. Whatever the mode of delivery, ePortfolios offer learners hands-on experiences to reflect on their learning. An ePortfolio offers a learner a highly customizable, web-based method of documenting their learning journey as well as a mean to present this learning journey to a global society. The purpose underlying the development of the ePortfolio is for the viewer to come away with an enhanced vision and understanding of who the ePortfolio author is and what the author is capable of achieving (Villano, 2005). It

also serves as a means for the learners' institution to prove or improve their teaching expertise (Wang, 2009).

**Student Learning Outcomes**

Establishing student learning outcomes is critical to ensuring ePortfolio contain artifacts that support student learning. An established student achievement matrix of these student learning outcomes also provides the institution with assessment data to support their institutional research needs. Seventy-eight percent of higher education facilities support the use of core student learning outcomes (Chen & Light, 2010). Identification of core learning outcomes is predictive of overall student success in higher education. Some institutions establish college wide requirements for student learning outcomes as well as program outcomes for specific areas of educational concentration. These requirements are usually composed of three major non-discipline specific categories of career development, academic accomplishment, and extracurricular learning (Wang, 2009). Career development artifacts include a resume, skills or aptitude testing results, and letters of recommendation. Academic artifacts include a wide variety of skills attained throughout the educational process including research papers, presentations, videos, and reflective writings. These artifacts document learning over time and provide opportunities for the learner to reflect on their skills, knowledge, and content learned. Extracurricular learning include civic engagement activities, groups, and organizations the learner is involved with and their contributory roles within those organizations.

Beyond the campus wide student learning outcomes, specific majors should ensure learners are accountable for achieving milestones in their discipline and support these achievements through ePortfolio outcomes. Examples of discipline specific milestones include ethical and security issues, judgment and problem solving, practices issues, team building and collaboration, quantitative or qualitative foundations, internships, and foundations of the specific major. Each of these milestones is supported by specific criteria to ensure the learner attaches the appropriate artifact to document achievement of it.

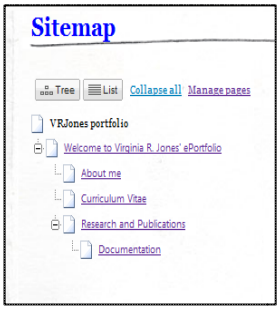
Establishment of campus wide and discipline specific student learning outcomes adds structure, consistency, and overarching purpose to ePortfolio development. Inclusion of artifacts documenting the outcomes makes the ePortfolio a repository of learning objects. These objects will increase in value to the learner as the ePortfolio takes shape and outlines the purpose of the learning, a hierarchical structure of artifacts, for the ePortfolio developer (Wang, 2009).

**Tools available for ePortfolio development**

Many commercial products are available for ePortfolio development. Most learning and content management systems have ePortfolios software embedded or available as an additional program. A free program, Google docs (www.google.com), a cloud computing system, allows users to develop an ePortfolio in a website and share it with others selected by the site developer. Weebly, another free program (www.weebly.com), requires a user account but allows each user to develop three websites including but not limited to a webpage, ePortfolio, or blog. Many other programs are available, e.g. Epsilen, FolioTek, Digication, TaskStream, Chalk & Wire, and Adobe.

Google docs is easy to use as many colleges now use Google email service. This means learners have an account with Google and can easily access their development site. The site allows users

to make pages including a "file cabinet page" to store digital artifacts. This ePortfolio site also provides a "site map" so the author can easily discern the structure and layout of the ePortfolio. This program allows customization through themes, user color changes, and more closely resembles actual web page design in its structure.

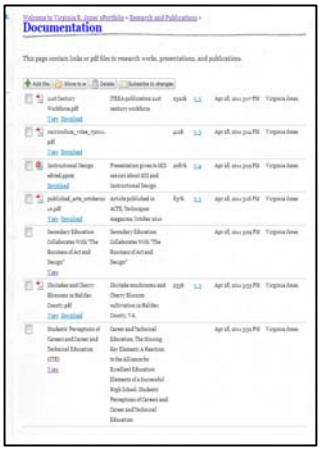




*Figure 2.* Google sites ePortfolio screen shot including site map and "file cabinet" repository page

Weebly is a very easy "drag and drop" structured program. It offers a multitude of predesigned themes, similar to Microsoft's PowerPoint or iWork's Keynote software, for the user to choose. The user chooses from the page design elements and drags them to the page and inserts content. The user is able to upload videos, slideshows, files, and presentations using the free account. There are other options available if the user purchases a pro account but for most higher education learners, a free account is sufficient.

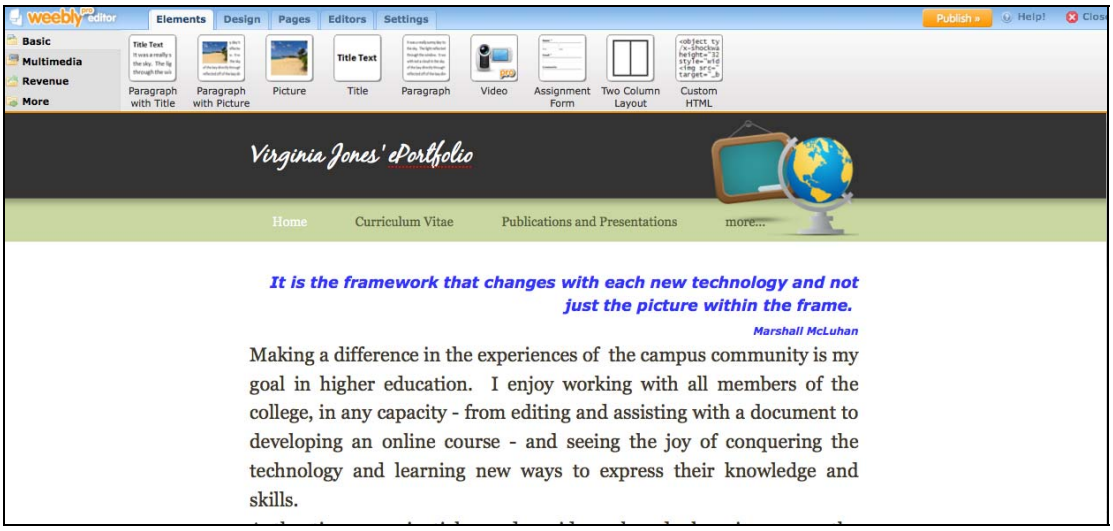



*Figure 3.* Weebly ePortfolio development view

## Conclusion

An ePortfolio is a necessary element in 21st century learning and a necessary factor for student engagement in higher education. An ePortfolio allows students to control their artifacts thereby changing their course learning from episodic to longitudinal (Batson, 2010c). As Wesch stated "we still live in a society in which identity and recognition are not givens, so most students spend most of their time trying to figure out who they are, who they want to be, and what they want to do" (Grush, 2011, para. 4). Embracing ePortfolios and using the online media environment that is intimately familiar to students is a disruptive change for higher education institutions but definitely a beneficial change for students. Higher education has embraced technologies but not wholeheartedly accepted those that allow for authentic collaborations and "transcend the boundaries and limitations of the classroom walls" (Grush, 2001, para. 6). The particular tool used for ePortfolio construction is not important but the data collection, self-reflections, and overall development process inherent in the ePortfolio are (Batson, 2010b). By adopting student learning outcomes campus wide and within disciplines, ePortfolios have the ability to transform an traditional institution into an *au currant* institution (Batson, 2010a). EPortfolios will transfrom it into an institution that truly embraces the global village concept and allows their students access to the village.

## References

*Artifact*. (n.d.). Retrieved from Merriam Webster: http://www.merriam-webster.com/

Alvarez, A. R., & Moxley, D. P. (2004). The student portfolio in social work education. *Journal of Teaching in Social Work, 24*(1/2), 87-104.

Anderson, L. W., Krathwohl, D. R., & Bloom, B. S. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* New York: Longman.

Barrett, H. C. (2010, May). Balancing the two faces of ePortfolios. *Educação, Formação & Tecnologias, 3*(1), 6-14.

Batson, T. (2010a, January 6). *ePortfolios: Let me count the ways.* Retrieved from Campus Technology: http://campustechnology.com/articles/2010/01/06/eportfolios-let-me-count-the-ways.aspx

Batson, T. (2010b, April 7). *ePortfolios, finally!* Retrieved from Campus Technology: http://campustechnology.com/articles/2010/04/07/eportfolios-finally.aspx

Batson, T. (2010c, July 28). *A profoundly disruptive technology*. Retrieved from Campus Technology: http://campustechnology.com/articles/2010/07/28/a-profoundly-disruptive-technology.aspx

Blair, K. L., & Monske, E. A. (2009, April). Developing digital literacies and professional identities: The benefits of eportfolios in graduate education. *Journal of Literacy and Technology, 10*(1), 40-68.

Bolliger, D. U., & Shepherd, C. E. (2010, November). Student perceptions of ePortfolio integration in online courses. *Distance Education, 31*(3), 295-314.

Buzzetto-More, N. (2006). Using elecronic porfolios to build information literacy. *Global Digital Business Review, 1*(1), 6-11.

Chen, H. L., & Light, T. P. (2010). *Electronic portfolios and students success: Effectiveness, efficiency, and learning.* Washington, D.C.: Association of American Colleges and Universities.

Grush, M. L. (2011, May 1). *Changing the way we teach.* Retrieved from Campus Technology: http://campustechnology.com/Articles/2011/05/01/Changing-the-Way-We-Teach.aspx?p=1

*Partnership for 21st Century Learning Skills*. (2004). Retrieved from http://www.p21.org/index.php

Perkins, D., Jay, E., & Tishman, S. (1993). New conceptions of thinking: From ontology to education. *Educational psychologist, 28*(1), 67-85.

Varner, D., & Peck, S. R. (2003). Learning from learning journals: The benefits and challenges of using learning journal assignments. *Journal of Management Education, 27*(1), 52-77.

Villano, M. (2005, August 16). *ePortfolios>>Hi-octane assessment.* Retrieved from Campus Technology: http://campustechnology.com/articles/2005/08/eportfolios--hioctane-assessment.aspx

Vygotsky, L. (1978). *Mind in society.* London: Harvard University Press.

Wall, K., Higgins, S., Miller, J., & Packard, N. (2006). Developing digital portfolios: Investigating how digital portfolios can facilitate pupil talk about learning. *Technology, Pedagogy and Education, 15*(3), 261-273.

Wang, S. (2009). Inquiry directed organization of e-portfolio artifacts for reflection. *International Journal of E-Learning and Learning Objects, 5*, 421-433.

Waters, J. K. (2007, October 1). *ePortfolios meet social software.* Retrieved from Campus Technology: http://campustechnology.com/Articles/2007/10/ePortfolios-Meet-Social-Software.aspx?Page=1

Zubizarreta, J. (2009). *The learning portfolio: Reflective practice for improving student learning* (2nd ed.). San Francisco, CA: Jossey-Bass.

# Using a simulation program to teach leadership

**Steve Knode**
**University of Maryland University College**
**3501 University Blvd. East**
**Adelphi, MD 20783**
**sknode@umuc.edu**

**Jon-David Knode**
**Methodist University**
**5400 Ramsey Street**
**Fayetteville, NC 28311**
**910-630-7095**
**jknode@methodist.edu**

**Abstract**

Most approaches to teaching leadership involve lecture and discussion of leadership theories, utilization of case study examples to illustrate key points, and limited role-playing scenarios to facilitate practice of leadership skills. Now these can be supplemented with a newer approach---one using an advanced simulation program---which allows students to practice leadership styles and leadership approaches in a more realistic environment. This approach incorporates the use of avatars, a virtual environment, and intelligent agents to provide realistic role-playing, thereby contributing to an approach that enhances leadership skills. With this software, various leadership styles can be employed in a series of five increasingly complex leadership scenarios including immediate feedback measuring effectiveness. Students are immersed in the decision-making aspects of each scenario and are achieve a score based on their effectiveness in achieving scenario goals. Collected evidence shows this approach, utilizing "practiceware", to be effective.

**Editor's Note:** The author has chosen to include his slides instead of a written paper.

Simulations and
Teaching Leadership
Steve Knode, PhD
ASCUE Conference 2011
sknode@umuc.edu Jon-David Knode, DCD

How is Leadership taught/developed?
- Learn/investigate theories
- Read/analyze case studies
- Classroom role-playing
- Real world trial by fire

So, what is the problem?
- Learn/investigate theories
- Many, with conflicting ideas
- Read/analyze case studies
- Context dependent in many cases
- Classroom role-playing
- Often forced, not natural
- Real world trial by fire
- Be right the first time

Is there a better way?
- Simulation
- Needs to be realistic
- Must be right level of complexity
- Incorporate key theory aspects
- Easy to use and learn
- "Fun"

Where does simulation fit?
- Learn/investigate theories
- Read/analyze case studies
- Classroom role-playing
- Real world trial by fire

Practice ware – try before real world

Virtual Leader – What is it?
- Simulation program designed to teach leadership
- Realistic
- Artificial Intelligence element
- Avatars to play roles
- Hands-on, interactive practiceware
- Blend of theory and practice
- Based on lots of research
- Books, articles, "Simulation and the Future of Education"

www.simulearn.net

Leadership Styles

Directive

- Authoritative
- Telling
- Autocratic

Participative

- Collaborative
- Selling
- Democratic

Delegative

- Passive
- Laissez-faire
- Hands Off

Practice and Apply Leadership Skills

- Decision Making aligned with Business Goals
- Situational Awareness
- Effective Communication
- Innovation – Foster Creativity
- Work Prioritization
- Team Building for Productivity
- Gaining Influence
- Motivation, Persuasion

Purpose of the Simulation (PTI)

Source: Clark Aldrich interview

This simulation requires the player to perform a number of tasks in order to be an effective leader. For example, the player must exercise judgment on when to introduce new ideas, when to support a speaker, when to refocus on a key idea, when to bring in a quiet or disengaged person, and when to take an idea off the table. From a leadership "systems" perspective, these choices involve a number of underlying questions:

1. Who has the power at any given point?
2. When and how should the player gain more power as the leader?
3. When should the player worry about the tension in the room, and when should he player raise or reduce this tension?
4. What ideas are out in the open, and what ideas appear to be hidden?
5. When is the right time to introduce a potentially controversial or divisive idea?
6. When should the group focus on brainstorming, and when should it focus on getting work done?
7. Where does the player draw the line between his or her work and the higher goals of the group?

Such questions are essential to any leadership role; the purpose of the simulation is to help students to address these questions within an interactive context that demands adaptation to changing circumstances.

Virtual Leader – How does it work?

- Based on a "meeting" format
- Increasingly more complex scenarios
- Each meeting has objectives
- Test out various leadership styles
- Stand-alone program, with periodic discussions
- Balancing Power, Tension, Ideas
- Combination of agreeing, disagreeing, supporting, contradicting, etc.

# From Virtual Reality to Reality


Keep going, you're on a roll!

Maybe they'll see that I'm bored and disengaged by my body language.

The virtual people and ideas are not real but…their characteristics are VERY real.

Source: Virtual Leader Manual

Your Five Options

- Before we speak, we unconsciously choose to:
- Support/oppose person
- Support/oppose an idea
- Switch topics – refocus the conversation
- Ask a question or be neutral
- Do nothing – listen

How and when you interact and react will affect the outcome

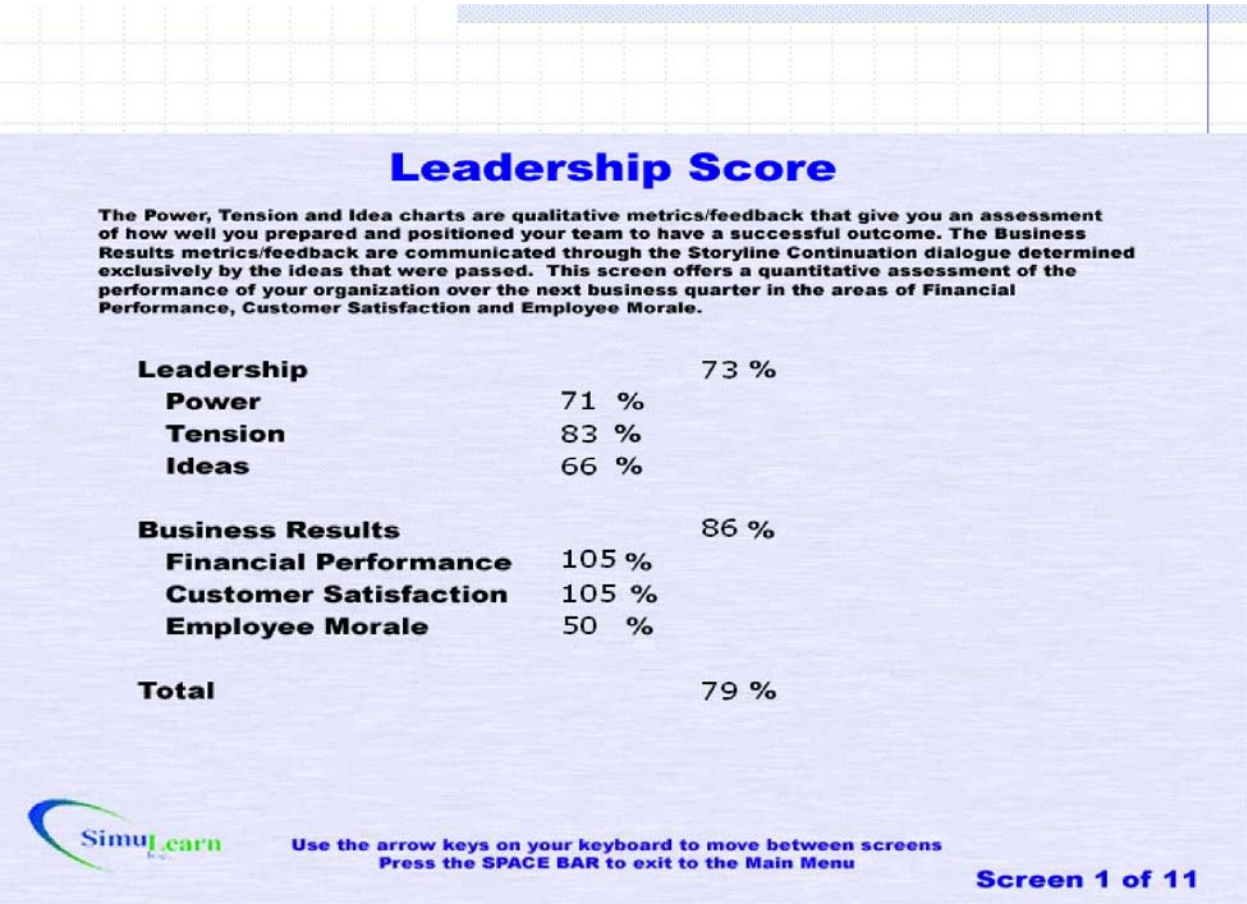
5 increasingly complex scenarios

1. One-on-one
2. The New Person
3. Status Quo
4. Two Cultures
5. Crisis and Opportunity

Align Decision Making with the Business Objectives

| | Get Nortic Cards | Computer Set Up | Do Filing Today | Team Coffee Break | Look for Apartment | Finish Meeting |
|---|---|---|---|---|---|---|
| Financial Performance (Shareholder) | +20 | +25 | -15 | 0 | -10 | |
| Customer Satisfaction | +25 | +20 | +10 | +5 | -5 | |
| Employee Morale | -5 | -5 | +5 | +15 | +15 | |
| Idea Net Value | +40 | +40 | 0 | +20 | 0 | |
| Complete This Idea? Yes/No | Yes | Yes | No | Yes | Maybe | Yes |
| Incompatible Ideas | Do Filing Today | Do Filing Today | Get Nordic Cards, Computer Set Up | None | None | None |

## Balanced Scorecard




## Virtual Leader – Does it work?

Evidence exists of successes

- Classroom evidence
- vLeader simulation compared to a traditional class environment

http://www.simulearn.net/Academic/Alice_Stewart/Alice_Stewart_AOM_2008_PDW_Presentation.html

- impact of vLeader on learning and transferability of skills to the work environment.

Study only version: about 7 minutes

http://www.simulearn.net/Academic/Frank_Shipper/Using_vLeader_to_Build_the_Neural_Paths_Study_Version.html

- US Military Academy
- cadets who used vLeader applied the correct leadership approach 75% of the time, versus 34% for the cadets who took an online case study course.
- Real world evidence from companies
- The participants who went through the Coaching/Simulation program improved their teams' relative performance rankings (a non-subjective metric on volume of successful client jobs completed), on average, 22.0%.
- The corporate managers that went through the assessment/coaching/ simulation program significantly improved their value to their organization, while strengthening their relationship with their peers, supervisors, and subordinates.

Supporting Materials

- Instructor books
- "Good play" recordings
- Instructor guidance

Additional Materials

- Virtual Leader "good play" link: www.simulearn.net/video/Good_Play_Meeting_3.wmv
- Background on how Virtual Leader was created (podcast by Clark Aldrich), http://itc.conversationsnetwork.org/shows/detail372.html
- Step-by-Step guidelines to getting started with Virtual Leader http://www.simulearn.net/leadership_training/vLeader_getstarted_for_student.html
- Virtual Leader Results: http://www.simulearn.net/download/Practiceware_Works.pdf
- Point of Contact for Educators: Pierre Thiault, 1-770-452-1777, pierre.thiault@simulearn.net

DEMO

- Scenario 1:
- One-on-one

# Using Multimedia and Game Programming with Python in Introductory Programming Classes

**Patrick Kopp**
**Avila University**
**11901 Wornall Road**
**Kansas City, MO 64145**
**816-501-3791**
**patrick.kopp@avila.edu**

## Abstract

Over the past several years, the enrollment in our computer science program has declined. Even when we had good enrollment numbers in our Intro to CS I course, the number of students continuing into Intro to CS II was low. Our theory was that if we made programming "fun" while teaching the fundamentals of programming, students would be more interested in writing programs which would lead to better performance. During this presentation, I will discuss the reasons for changing from Java to Python and the decision to use multimedia and game programming. I will also discuss the effect this has had on enrollment and grades. Finally, I will discuss the advantages of using open source software. This session should benefit computer science instructors and instructional technologists.

## Introduction

Students have a much different attitude and perspective on what computer science is than when I was an undergrad. For example, a few years ago a prospective student called and wanted information about our program. I asked him several questions about his academics. He stated he wasn't very good at math. I then asked why he wanted to be a computer science major. His reply was, "I have two loves in my life – basketball and video games. I thought computer science would be a good major while I play basketball." Students want to be entertained or they want to entertain themselves. They get bored easily and have few study skills.

At Avila University, we have been struggling with students advancing to the second semester programming course. We tried different approaches, different languages and different teaching techniques. Nothing seemed to work. I remembered an ASCUE session I attended during the 2008 conference. It was entitled "A Media Computation Approach to Teaching Java" by Robert Logan. He used the book "A Multimedia Approach" by Mark Guzdial and Barbara Ericson (Guzdial, 2010). Our computer science department discussed this and made the decision to change to Python for our CS 120 Intro to CS I, CS 121 Intro to CS II and CS 222 Data Structures courses. We also decided to use the multimedia approach in CS 120 and then implement game programming in CS 121 and CS 222.

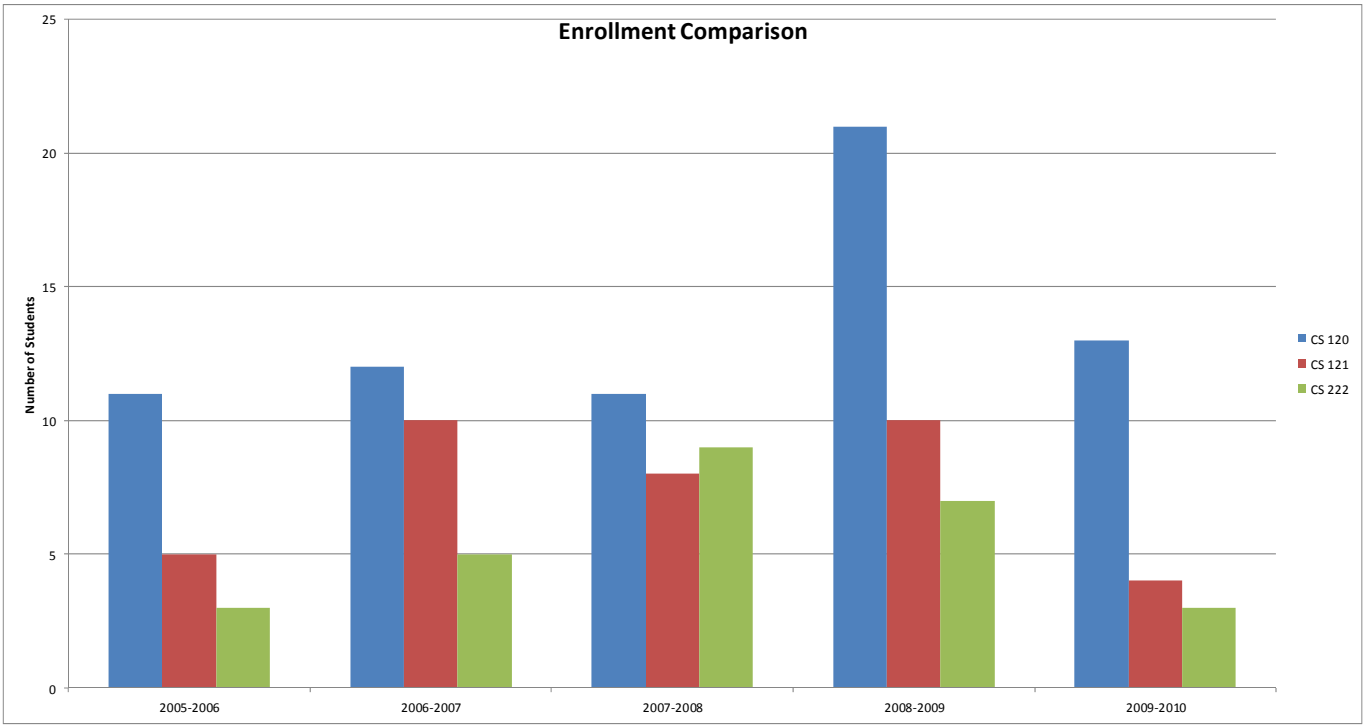
## Enrollment Statistics

In our discussions pertaining to our declining enrollment from CS 120 to CS 121, we did some research into what was actually happening with enrollments in these courses. Our introductory language in 2005 was C++. During that year we had 11 students enroll in CS 120. Of these 11

students, 5 advanced to CS 121. Of these 5 students, 3 advanced to CS 222. In 2006, the numbers were 12, 10 and 5.

In 2007 we changed our introductory language to Java. That year our numbers were 11, 8 and 9. The increase for Data Structures was due to the fact that we had 2 transfer students who had the prerequisites for Data Structures. In 2008 the enrollments were 21, 10 and 7 and in 2009 the numbers were 13, 4, and 3.

While the majority of students who took CS 120 passed, they were not continuing on to CS 121. Students were discouraged with their performance. They were also bored with the program assignments. Students had difficulty grasping the fundamentals of Java.




**Intervention**

During the fall semester of 2009, the computer science faculty made the decision to switch to Python as the introductory language. I implemented Python during the spring semester of 2010 in our CS 121 course as a pilot. While I only had 3 students, the results showed a marked improvement with respect to grades and retention.

During the fall semester of 2010 I implemented multimedia into the CS 120 course. There were 18 students enrolled in this course. All 10 computer science majors enrolled in CS 121 for the spring 2011 semester as well as two non-majors. This was our biggest retention in several years.

There were several reasons for the change from Java to Python as our introductory language. First of all, the students struggled with Java. Having to learn the overhead of Java as well as algorithm design and problem solving was more than they could handle. It was also more difficult

for the non-major students. These students had no desire to learn programming. Some of our major programs require a computer science course. Students would take this course just to meet the requirement.

Second, students were bored with the programming assignments. Students are not really interested in the traditional math and business assignments. This lack of interest would lead to assignments being turned in late, the lack of care in program design and apathy during class time.

Third, since students did poorly in this course, they were less inclined to advance to CS 121. In fact, we were losing students from our major because they felt that they couldn't succeed as a computer science major. Most students changed to business. The non-major students had no interest in taking additional computer classes.

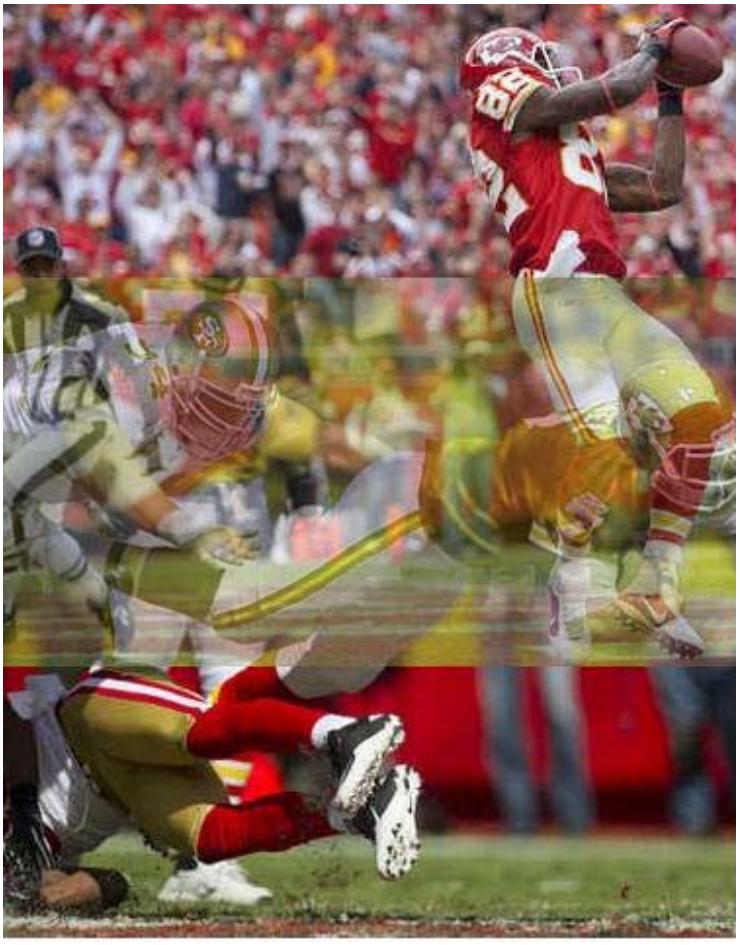
One computer science faculty member had used Python in a computer concepts class as a way to introduce non-major students to programming. He had great results using JES with multimedia. We had also discussed the prospect of teaching game programming. I did research into game programming and found that Python, with Pygame, made game programming fairly easy to start and then expand into more complex and sophisticated games.

The fall 2010 semester was the first full semester that Python was used in our three-semester introductory series. In CS 120 Introduction to CS I, Python was used, through JES, as the introductory language. Using the textbook "Fundamentals of Python" by Kenneth Lambert, (Lambert, 2010) the students learned the basic fundamentals of Python and programming structures. Using the textbook "Introduction to Computing and Programming in Python, a Multimedia Approach" by Mark Guzdial and Barbara Ericson, the students were able to reinforce the fundamentals by manipulating pictures and sound.

I rotated chapters from each book, trying to teach the fundamentals needed for the multimedia first. Sometimes this wasn't possible so I would instruct the students on the basics of a particular concept in order to use it and then later go into more detail. For example, methods are used early (chapter 2) in the multimedia book but are not covered in the fundamentals book until chapter 5. It would defeat the purpose of using multimedia in the class if I covered the first five chapters of the fundamentals book before even getting started with multimedia. In order for students to use methods in the multimedia book, I did a short overview of methods and then covered methods in more detail later in the semester.

At first students struggled with the multimedia concepts. Since loops are used almost immediately in order to manipulate the thousands of pixels in a picture file, I had to make sure students grasped the concepts of loops, especially nested for loops, early in the semester. Once they understood these concepts, the students were able to develop some very elaborate pictures.

This picture was a demonstration from the multimedia book on how to merge two pictures. The second half of the first picture is merged with the first half of the second picture. The students were to then take two different pictures and merge them vertically. The following picture demonstrates one student's (Vince) result.



Besides figuring out how to modify the program to overlap vertically, students had to work with pictures that were different sizes from the ones in the example. Other projects included changing colors, going from color to gray scale, mirroring a picture and making a collage.

The largest part of the multimedia section of the course covered picture manipulation. We also covered sound manipulation. Terminology was covered first, followed by how sound looks, what is meant by sampling and how sound is stored. We then looked at how to modify sound by changing features such as volume and also how to manipulate sound by cutting and pasting.

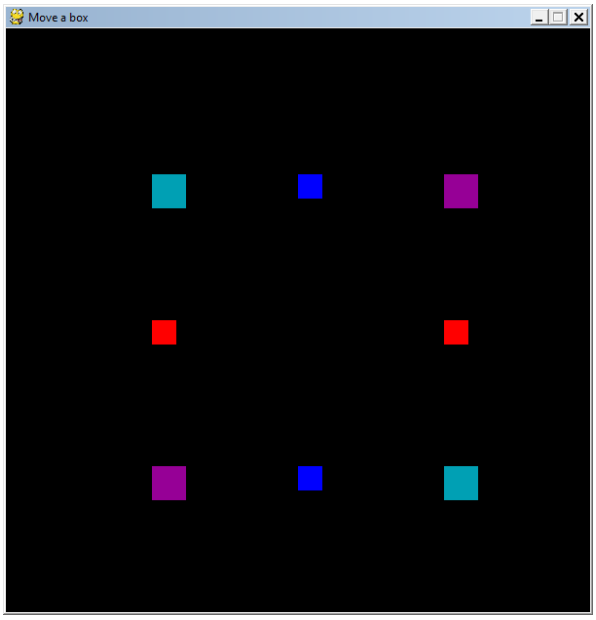
Fundamental topics that were covered included data types, functions, control statements, loops, strings and text files, lists and dictionaries, and definitions (methods). While some program assignments were from the fundamentals part of the class, the majority were from the multimedia topics.

Our Intro to CS II course is a continuation of Python. This course covers from where we left off in CS I through classes. I also switched from multimedia to game programming. I found a great book for games. The book is "Game Programming: The Express Line to Learning" by Andy Harris.

The game book uses what the author calls the IDEA/ALTER framework. The meaning of the acronym is:

I – Import and Initialize
    This is for importing libraries and initializing pygame
D – Display configuration
    Set up the screen
E – Entities
    Describe the entities of the game
A – Action (broken into ALTER steps)

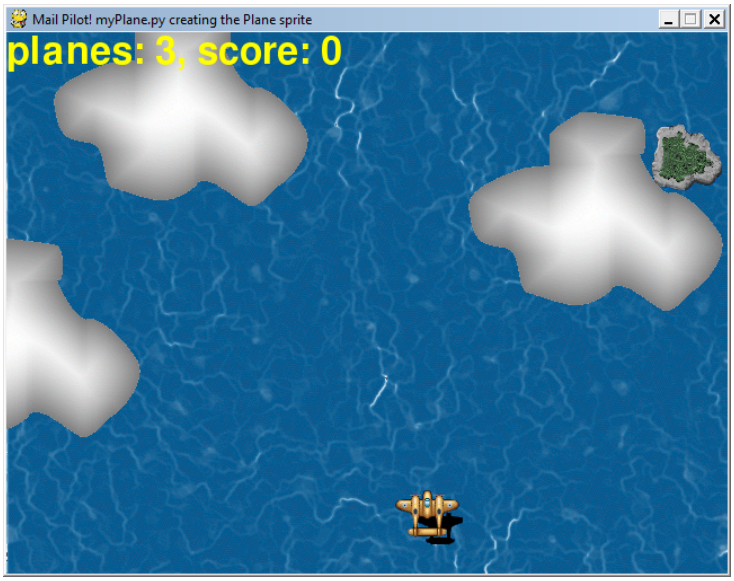
A – From IDEA is divided into ALTER
    A – Assign values to key variables
        These are used to run the clock and loop
    L – Set up the main LOOP
        Begin the actual loop that runs the game
    T – Timer to set frame rate
        Manage time so running at a consistent frame rate
    E – Event handling
        Capture events from the user
    R – Refresh the screen
        Update the visual representation of all actions




Once the students grasped the framework concept, we started on drawing and events. The first project the students were assigned was to create a background with at least four shapes. The shapes had to be different sizes and colors and had to move in different directions. Eddie created a program which contained eight shapes. The program started with the shapes located in the four corners, center top, center bottom, center left and center right. The movement had the shapes merge in the middle and then pass through to wrap around to the other side in order to appear back in the original location. The effect made it look like the shapes, after meeting in the middle, bounced back to their original position and then bounced back toward the center. Here's a screen shot of the program.

Once the students grasped the basic concepts of movement, we moved on to building basic sprites and adding sound. Discussion included different sound formats, file size and using Audacity to create and manipulate sound files.

The students then worked on creating sprites. This included location on the screen, movement and refreshing the screen.




Once the basic framework was set, students could apply the concepts of sound and sprites to expand and modify their programs for many different situations. For example, one chapter in the book shows how to write a game called mailPilot. This game has a plane that moves right and left at the bottom of the screen. Islands and clouds move down the screen. The object of the game is for the plane to fly over the islands (dropping mail) and to avoid the clouds (destroyed by lightning). Here is a screen shot of the game.

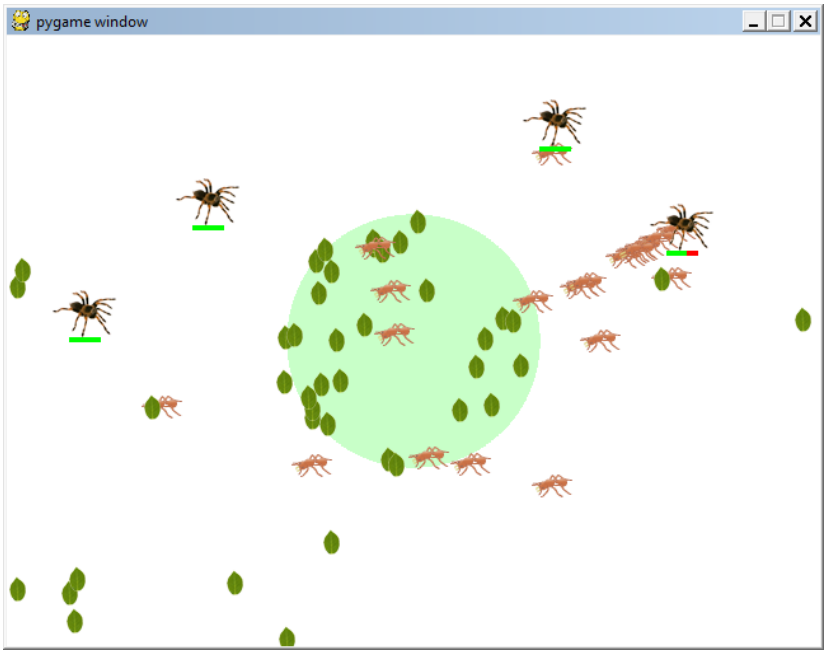

With a few modifications, this program was changed to frontier.py in which the plane is now a covered wagon, the islands are deer eating, and the clouds are attacking wolves. The ocean was changed to a dirt road with grass on the sides. To make the program a little more complicated, the students (Derrick created this one) were required to add animation. In this program, the student had the deer moving as if eating grass and the wolves were attacking. This screen shot shows an example.

Each student was required to create their own game. They could use the mailPilot.py game as a starting point but they had to change everything being used. They were also required to add additional features, such as animation and/or keyboard events. Several websites were mentioned in the book – www.flyingyogi.com/fun and http://www.reinerstilesets.de are two. These websites include animated frame pictures and image files.

This particular project reinforced the use of classes including inheritance (the sprites are children of the pygame Sprite class). So, instead of having the students create a business application using classes for people or property, they were able to create a game program based on a theme they chose and had more interest in creating. Most of the students went beyond the basic requirements of the assignments with added features such as sound.

The final step to this new format in our introductory classes will be in our CS 222 Data Structures course, which will be offered fall 2011. The Fundamentals of Python book (Lambert, 2010) will still be used to cover the basic programming concepts of data structures. The book that will be used for the game programming part of the course is "Beginning Game Development with Python and Pygame" by Will McGugan. (McGugan, 2007) The beginning of the book will be a review of gaming. This will benefit the students because the program examples are written in a different style. Students will be able to see how similar programs can be written in different ways. We will also look deeper into artificial intelligence as it pertains to games and then work on 3D programming.

One example of artificial intelligence is a program from this book that simulates an ant colony. The ants search the area (the game screen) for food. When they get close to a piece of food (a leaf) they pick it up and carry it back to the colony. Spiders randomly walk across the screen. If a spider gets too close to the colony, the ants attack. If too few ants attack, the ants die. If more attack, they kill the spider and carry it back to the colony. Here's a screen shot.




## Conclusion

While multimedia and game programming are not a solution to our problem of low enrollments and student attitudes, it is a start. Our enrollment did increase for the fall 2010 semester. This was also carried over into the spring 2011 semester. Hopefully, as the word spreads, our enrollment will continue to increase. There was also a marked improvement in the grades students earned. I contribute this improvement in grades to students showing more interest and excitement with the program assignments. Students are asking more questions, participating in class and going beyond the initial assignment in order to expand the project. I'm looking forward to the next round.

**References**

Guzdial, M. (2010). *Introduction to Computing and Programming in Python: A Multimedia Approach.* Upper Saddle River: Prentice Hall.

Lambert, K. (2010). *Fundamentals of Python from First Programs through Data Structures.* Boston: Course Technology.

McGugan, W. (2007). *Beginning Game Development with Python and Pygame.* New York: APress.

# Online Course Delivery Using Blackboard, AdobeConnect, SafeAssign, and SkyDrive

**Kuber N. Maharjan**
**Purdue University**
**College of Technology at Columbus**
**4555 Central Ave**
**Columbus, IN, 47203**
**812-348-7326**
**maharjan@purdue.edu**

## Abstract

Online courses are gradually replacing traditional classrooms. The emergence of cheaper and more powerful netbooks, notebooks, desktop PCs, user-friendly operating systems, high-speed Internet access, and easy to use online delivery technologies has enabled educational institutions to offer elementary computer courses online. The author taught an introductory computer and software applications course online using Blackboard, Adobe Connect, SafeAssign, and Sky-Drive technologies in the fall of 2010. Students from different campuses and cities were able to take this course without physically attending a session. Students received course materials and submitted their assignments online. This paper discusses the usage, advantages, challenges, and suggestions/concerns in implementing these technologies in completely online or hybrid classes.

## Introduction

In the fall of 2010, the author taught a completely online CNIT107 class of 35 students using Blackboard, SafeAssign, Adobe Connect, and SkyDrive technologies. CNIT107 is an introduction to computer and software packages class. The author provided the necessary information: course calendar, syllabus, lecture materials, video clips, online resources, and recorded sessions. Despite many interventions from the author, some students were confused and did not follow the course calendar posted on SkyDrive in Microsoft Excel format.

Blackboard is the primary online tool used by Purdue University. The author has used this technology as a portal to provide access to every resource associated with this online course, such as a URL to the course calendar on SkyDrive, assignments on SafeAssign.com, assignments on SAM, quizzes, exams, assignments, lectures, recorded lecture sessions and lab sessions, course discussions, course announcements, course email, and access to Adobe Connect class sessions. Because of the complexity of the organization of course materials, and the lack of opportunity for the author to meet with students, several students struggled with navigating Blackboard, and finding necessary information in a timely manner. Over four hundred email messages were exchanged between the author and the students. To further complicate the matter, most of the students had to use a different technology—oncourse.iu.edu—for their other course.

In the spring of 2011, the author experimented with Skills Assessment Modules provided by cengage.com. Skills Assessment Manager (SAM) is a proficiency-based assessment and training environment for Microsoft Office. This technology is provided by Course Technology Cengage Learning. SAM offers instructors a choice of the way they want to use Cenange Learning con-

tent. Students are consistently engaged in their learning. Focusing on outcomes is a key factor to using SAM successfully. (SAM Central). These modules provide students great flexibility. The author was able to provide lab assignments, training sessions for the lab exams, and lab exams from Microsoft Excel and Access.

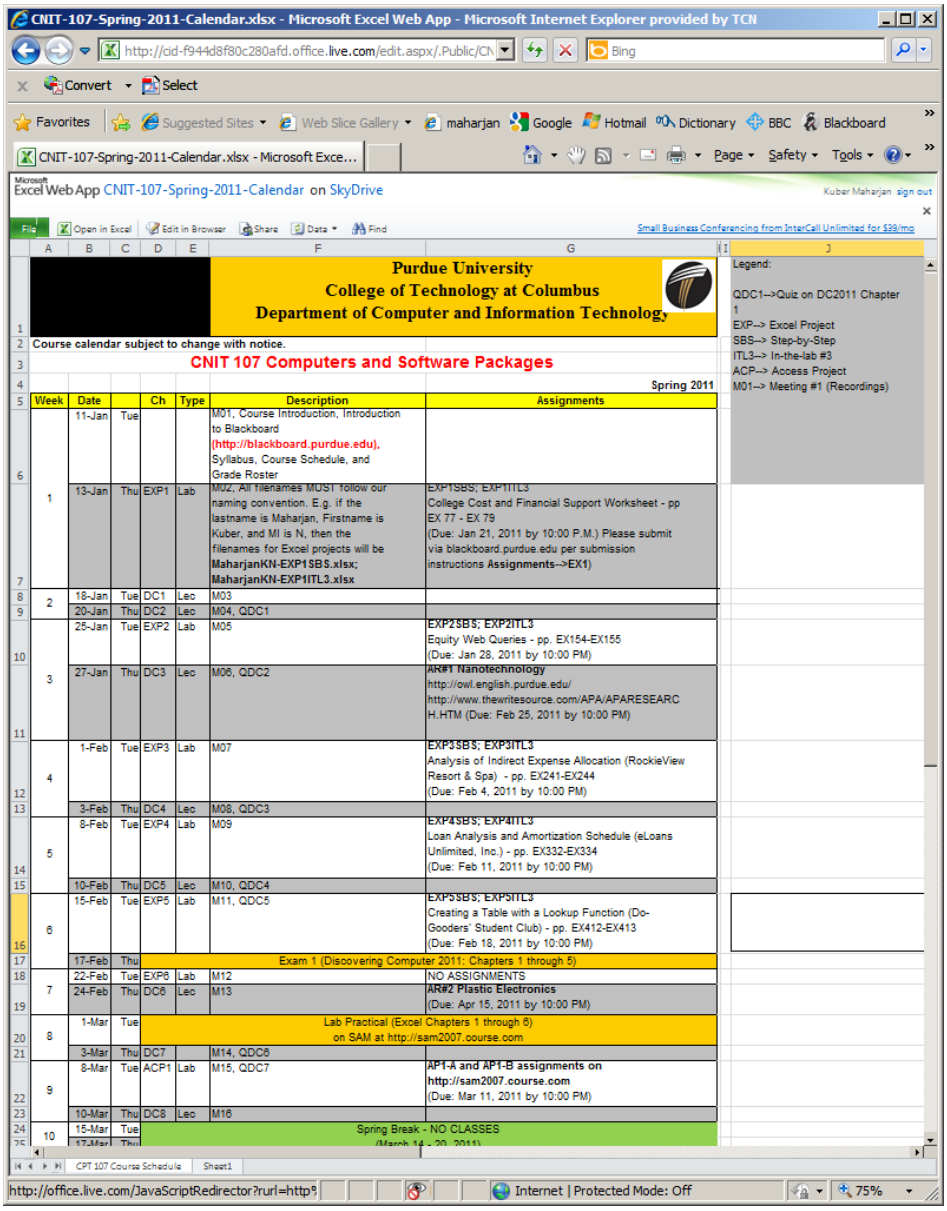



*Figure 1: Course Calendar*

In addition to using the default built-in calendar in Blackboard, the author created the course calendar in Microsoft Excel format. As depicted on Figure 1, this calendar has information about assignments, quizzes, lab practical tests, and examinations. This calendar is much easier to maintain because it is stored in the cloud—SkyDrive. Students are able to access without logging into Blackboard. However, because of the two different calendars, a few students never bothered to study this calendar, despite the instructor's numerous email messages and an-

nouncements. The instructor also gave a hard copy of this calendar to each student who attended the orientation class.

In the past, the author has used Google Docs cloud technology "docs.google.com" to share the course calendar and other related documents. The author switched from Google Docs to Microsoft's SkyDrive cloud technology, because SkyDrive allows users to edit Excel documents in Microsoft Excel environment, in addition to the ability to edit Excel document in any browser. This has become an indispensable tool, not only in an online teaching/learning environment, but also in the author's other traditional classes. Students like the fact that they have frequent access to updated information. The author likes the fact that SkyDrive is completely compatible with MS Office suite. It is also easy to update the MS Office documents from any Internet connected computer with any Internet browser, such as Internet Explorer, Firefox, and Safari.

In the past, the author used turnitin.com technology to check for plagiarism. Last semester the author used SafeAssign technology because the university adopted SafeAssign, instead of TurnItIn. The SafeAssign technology helps students detect plagiarism, to become authentic and educated in writing original papers free from plagiarism. Because SafeAssign technology is a product of Blackboard, it integrates well with Blackboard. Once the papers are graded, the grades are automatically transferred to the Blackboard grade book. This saves time for the instructor entering students' grades and avoids making mistakes by eliminating repetitive work. This is especially beneficial to instructors who have many students in the classroom and who give frequent writing assignments. Most students appreciated this technology, as it was easy to use and communicated the plagiarism feedback quickly.

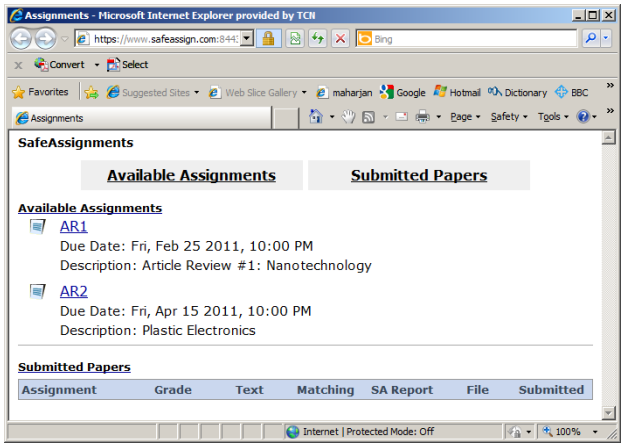



*Figure 2: SafeAssign Assignments*

Windows Live SkyDrive allows anyone to accumulate 25 GB of online storage for free. Using this technology, a user can edit Microsoft Office documents on the browser or in Office applications, such as MS Excel. The documents can be shared with anyone. The reason the author chose to use this technology, rather than Google Docs, is the ability to use MS Excel application to edit the document and save directly to SkyDrive. This gives the author flexibility and full functionality of MS Excel to edit documents. Once the documents have been saved, students have access to updated documents immediately. If the MS Office suite is not installed on a computer, the author can update the documents in any web browser, such as Microsoft Internet Explorer or Firefox.

The author provided recorded lecture materials and lab session(s) for every virtual class session besides lecture materials in PowerPoint format. The author used Adobe Connect, an Adobe Flash based technology suitable for virtual meeting and presentation, to deliver and record these sessions. In order to record a session, one requires only a web cam, a microphone, and a computer with a faster Internet connection. The recorded sessions were stored directly on the server; therefore, sharing the recorded sessions is fairly simple. These recorded sessions can be edited as necessary.

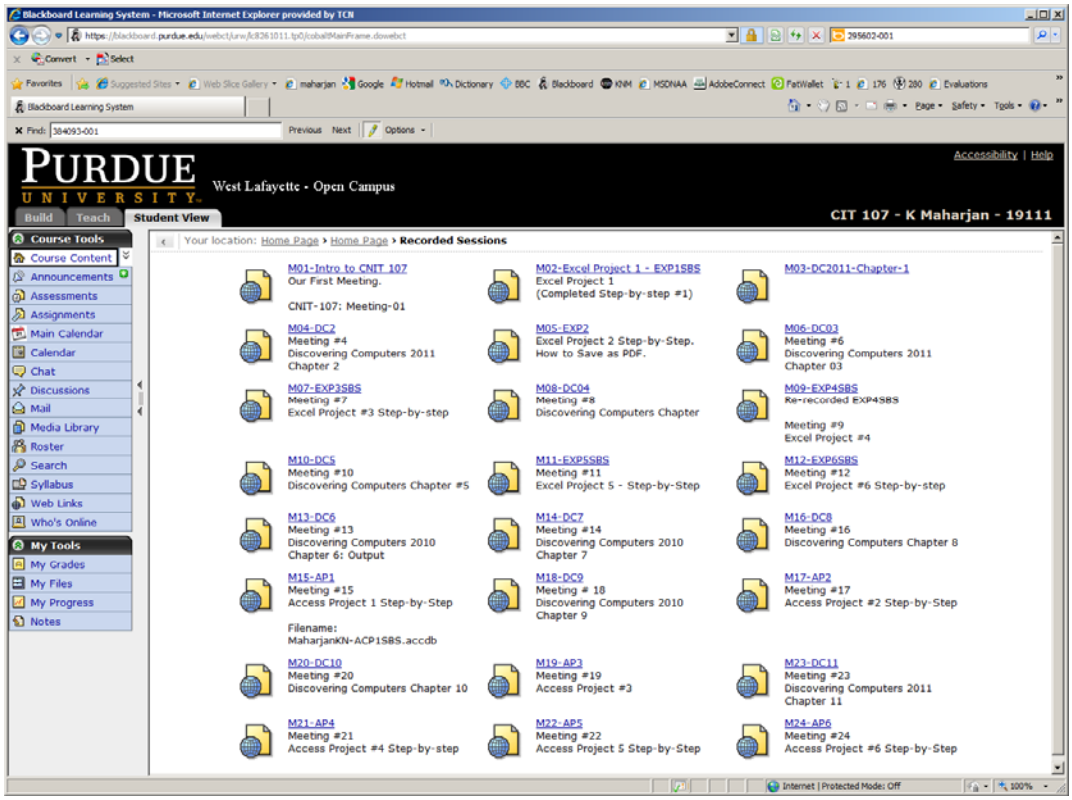



*Figure 3: Adobe Connect Recorded Sessions*

Figure 3, depicts links to all Adobe Connect recorded sessions on Blackboard. While recording these sessions, it is important not to mention any specific dates and times, if the same recordings are to be reused for different sessions and semesters. The instructor should make the recorded sessions more generic, as an example, instead of specifying when the assignments are due. He/she should ask them to check the course calendar for due dates and times.

As can be seen from Figure 4, once the students have logged onto Blackboard successfully, they have access to materials from the course's "Home Page." Many students simply did not explore these URLs (links). As a result, some of those students missed assignments and quizzes.

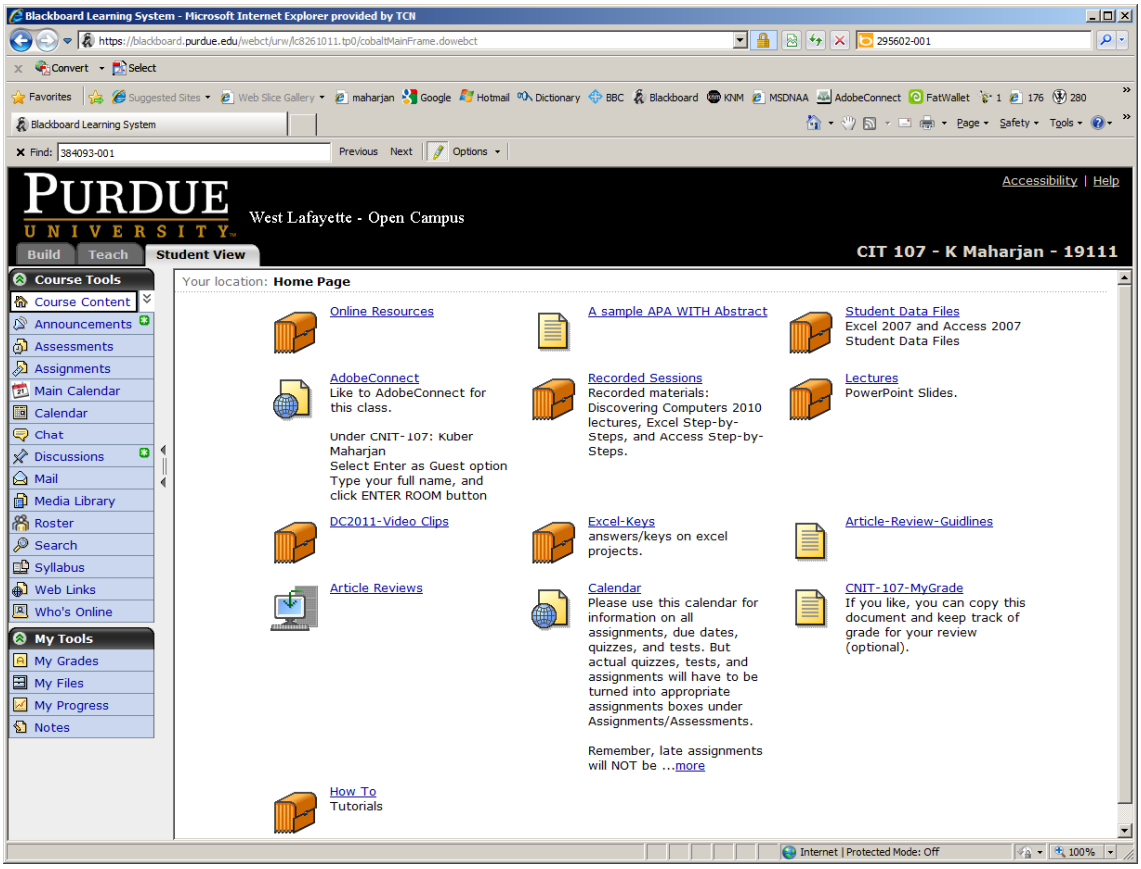
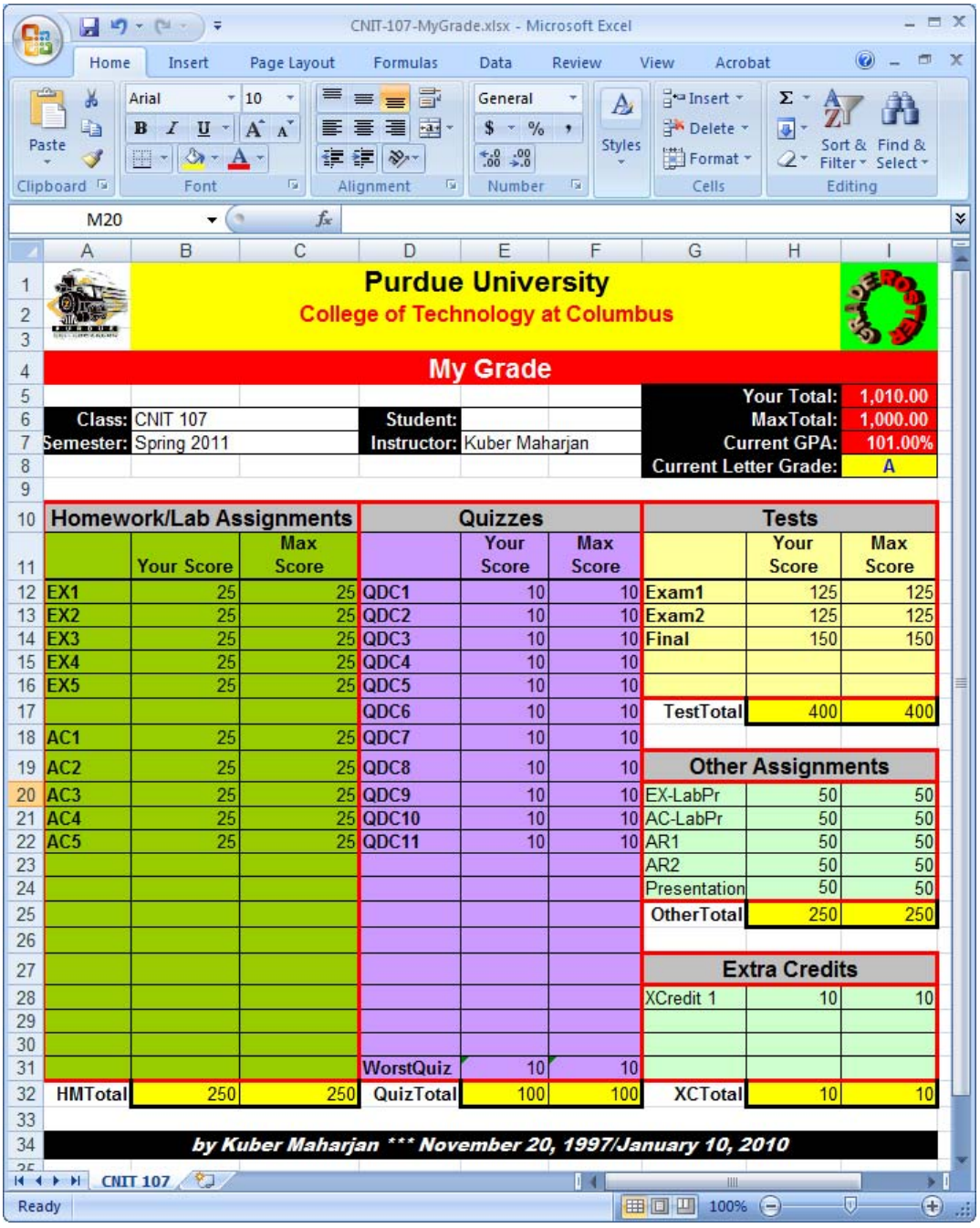



*Figure 4: Blackboard Home Page*

Grades are important to students. Students like to know their grades all the time. Even though, Blackboard has a built in grade book, the author has created an Microsoft Excel template, as depicted in Figure 5 and distributed it to the students, so that the students are able to track their grades and perform "what-if" analyses with their grades. The template can be updated for any class. The template is available for downloads and modifications from the following web site: http://web.ics.purdue.edu/~maharjan/pub/CNIT-107-MyGrade.xlsx.



CNIT-107-MyGrade.xlsx - Microsoft Excel

**Purdue University**
College of Technology at Columbus

**My Grade**

| | | | |
|---|---|---|---|
| Class: | CNIT 107 | Student: | |
| Semester: | Spring 2011 | Instructor: | Kuber Maharjan |

| | |
|---|---|
| Your Total: | 1,010.00 |
| MaxTotal: | 1,000.00 |
| Current GPA: | 101.00% |
| Current Letter Grade: | A |

| Homework/Lab Assignments | | | Quizzes | | | Tests | | |
|---|---|---|---|---|---|---|---|---|
| | Your Score | Max Score | | Your Score | Max Score | | Your Score | Max Score |
| EX1 | 25 | 25 | QDC1 | 10 | 10 | Exam1 | 125 | 125 |
| EX2 | 25 | 25 | QDC2 | 10 | 10 | Exam2 | 125 | 125 |
| EX3 | 25 | 25 | QDC3 | 10 | 10 | Final | 150 | 150 |
| EX4 | 25 | 25 | QDC4 | 10 | 10 | | | |
| EX5 | 25 | 25 | QDC5 | 10 | 10 | | | |
| | | | QDC6 | 10 | 10 | TestTotal | 400 | 400 |
| AC1 | 25 | 25 | QDC7 | 10 | 10 | | | |
| AC2 | 25 | 25 | QDC8 | 10 | 10 | **Other Assignments** | | |
| AC3 | 25 | 25 | QDC9 | 10 | 10 | EX-LabPr | 50 | 50 |
| AC4 | 25 | 25 | QDC10 | 10 | 10 | AC-LabPr | 50 | 50 |
| AC5 | 25 | 25 | QDC11 | 10 | 10 | AR1 | 50 | 50 |
| | | | | | | AR2 | 50 | 50 |
| | | | | | | Presentation | 50 | 50 |
| | | | | | | OtherTotal | 250 | 250 |
| | | | | | | **Extra Credits** | | |
| | | | | | | XCredit 1 | 10 | 10 |
| | | | WorstQuiz | 10 | 10 | | | |
| HMTotal | 250 | 250 | QuizTotal | 100 | 100 | XCTotal | 10 | 10 |

*by Kuber Maharjan *** November 20, 1997/January 10, 2010*

*Figure 5: MyGrade*

In summary, the author encountered quite a few challenges in implementing his first 100% online course delivery. Despite the availability of all of the course materials on line, quite a few students did not check their email, course calendar, or announcements. For those who actually read the messages, it seemed they usually did not completely read the instructions. As a result, many of the students had the same questions and concerns. An instructor who does not hear from a student should not assume that the student has no difficulties with the course. It is hard for instructors to motivate students if the students do not communicate in a timely manner with the instructor. Giving quizzes and examinations is a big challenge, too, as there is no way to proctor the online tests.

In the fall of 2010, the instructor was supposed to teach two separate sessions of CNIT107. One session was scheduled completely online and the second session was scheduled as a face-to-face meeting in the traditional way. Due to a conflict in the author's schedule, the author had to combine these two separate sections and teach them as a completely online course. The students who were signed up for a traditional session were disappointed, because the primary reason for enrolling in the traditional classroom format was their preference for face-to-face meeting over online classrooms. Since this change occurred, almost at the beginning of the semester, the instructor did not have the opportunity to meet with any of the students before the class began. Even though all the materials were posted online before the class began, a number of students had trouble navigating Blackboard and finding the necessary class materials. At the end of the semester, the author solicited feedback from the students to improve his future online courses. Many students thought a class orientation before the beginning of the semester would help. Most of the students, who attended the fall 2010 class, were full-time working, non-traditional students. Many had dedicated specific days to work on homework assignments and prepare for quizzes and tests for this course. Therefore, it is extremely important to schedule quizzes and assignment due dates for specific days, e.g. all quizzes are scheduled on Thursdays.

In conclusion, online courses provide tremendous flexibility to both instructors and students. However, it may be quite challenging to implement this technology in rudimentary computer classes. Students must have access to the Internet all the time and must be able to communicate well, in a timely manner. In the spring of 2011, the author is teaching this online class again. This semester the author scheduled a mandatory class orientation before the semester began. Despite numerous email messages and course announcements, only about 50% of the students attended the orientation, due to students' scheduling conflicts, not reading email in time, and not enrolling in the class in time. In order to overcome these challenges, an instructor may have to schedule multiple orientation sessions, so that every student can attend either face-to-face in a classroom or virtually, using Adobe Connect.

**References**

*Adobe Connect*. Retrieved March 10, 2011, from http://connect.brand.us.sem.adobe.com/content/try?sdid=IEAQH&skwcid=TC|22191|adobeconnect||S|b|5894726782

*Google Docs.* Retrieved March 10, 2011, from http://docs.google.com

*Safe Assign.* Retrieved March 10, 2011, from http://www.safeassign.com/

*SAM Central.* Retrieved March 10, 2011, from http://www.cengage.com/samcentral/

*SkyDrive.* Retrieved March 10, 2011, from http://skydrive.live.com

# SBC's iPad Pilot Program

**Tom Marcais**
**tmarcais@sbc.edu**

**M.J. Stinnette**
**mstinnette@sbc.edu**

**Sweet Briar College**
**764 Elijah Road**
**Sweet Briar, VA 24595**

**Abstract:**

Sweet Briar College initiated a pilot program using iPad's on campus for the 2010-2011 school year. The campus purchased iPads for a select group of faculty, students, and support personnel. This presentation will focus on some of the obstacles we faced, how we tried to overcome them, and how we envision moving forward for the future.

**Introduction:**

30 first-year students in two sections of English 104 agreed to experiment with the device to examine ways to incorporate it into their learning. Before they even arrived on campus, the students completed creative projects related to reading assignments.

Fifteen faculty members conducted a similar experiment using iPads for teaching. These were paid for by a Mellon Foundation grant that provides discretionary funds for new presidents to support initiatives important to them.

Both groups will share what they learn as part of a strategic effort to ensure that Sweet Briar is providing a digitally sophisticated education to all students. "Of course, what is meaningful in this pilot is not the iPads themselves," says President Jo Ellen Parker. "They are simply one opportunity to examine the ways in which digital tools can — or cannot — enhance pedagogy. In other words, this pilot project is about teaching, not about a device."

Select IT support personnel were also provided with iPads in order to assist with questions and implementation.

**Developing a Support Infrastructure:**

*SBC iPad User's Group*

We created a discussion group through Google Groups for iPad users on campus. All members were allowed to post to the group, with no moderation, and participation was voluntary. Within the period of one year, we built our subscription membership up to 74 and had almost 400 separate discussion topics. Primarily our members used this forum to discuss new Apps they found useful. But, they also used the forum to seek support from other members when they ran into difficulties. It has been a great example of the power of shared knowledge.

*iPad Lunch Meetings*

Throughout the fall and Spring Semesters, we held monthly iPad lunch meetings. These meetings gave iPad users a chance to meet face-to-face to share their experiences, and seek advice from others. Members were asked to volunteer to provide demonstrations of ways they were using the iPad.

*Atomic Learning – iPad Video Tutorials*

Our institution subscribes to Atomic Learning, a video tutorial service. All of our students, staff and faculty have access to their material. Atomic Learning has created a tutorial series for iPad's consisting of 131 separate videos showing short tasks/techniques for a total of over 3 ½ hours worth of training material.

*In-House Video Tutorials*

In an effort to assist our users with accessing some of our specific campus electronic resources, we created a couple of our own video tutorials: How to access your Gmail and Google Calendar accounts and How to view multiple Google Calendars. These videos were shared with the campus, and posted on YouTube. The views for these two videos combined have been over 9,500.

**Challenges and Workarounds**

*Projection*

The original iPad had great difficulties connecting to a projector. It was necessary to purchase a VGA adapter, but the adapter only worked with select Apps. It also didn't mirror the iPad screen… but rather just showed a select view (based on however that particular app was programmed). This caused some great frustration from our users.

One workaround we utilized was to have people use our AverMedia Document cameras. The advantage to this was that it would display exactly what was shown on the iPad. The disadvantages, however, included: Display quality was insufficient, inconvenient and we had a limited number of document cameras available.

Fortunately, with the release of the iPad2… this issue has been partially resolved. The iPad 2 now supports true display mirroring, either by using the original VGA adapter or a new HDMI adapter.

Unfortunately, neither of these solutions truly integrates well with the sleek, portable design of the iPad. Connecting wires or using additional hardware just seems to be burdensome and clunky. What our users really want is to be able to connect wirelessly to projectors.

Currently (at the time this paper was written) the only manufacturer that appears to be close at achieving a solution is Panasonic. They've created an App that gives an iPad the ability to wirelessly connect to certain Panasonic WiFi projector models, and display PDF or JPEG files. There is also now the ability to wirelessly play just videos through AirPlay if you have an Apple TV.

Sadly, there is still no possibility for wireless display mirroring at this time. Based on the advances shown by Panasonic and Apple, we are hopeful that it will become possible in the future.

*Google Docs*

Our campus recently became a Google Apps for Education campus. Our iPad users were excited about the prospect of utilizing Google Docs on their iPads. However, they quickly realized that Google Docs was not initially optimized to work with the iPad. iPad users were able to view Google Docs files… but they were unable to edit them.

Fortunately, Google quickly got to work at improving their system. On December 10th, 2010, Google released an update to Google Docs that provided editing capabilities through mobile devices. This was our first indication that the iPad could become a viable content creation device… and not just a content consumer. It also helped show that other technology companies were taking the success of the iPad seriously, and were making modifications to their products to either integrate or compete with Apple.

*Printing*

Again, this was a major shortcoming with the original version of the iPad. The iPad did not originally have native printing capabilities. There were 3rd-party Apps available that claimed to work with some wireless printers... but in many cases they failed to work well. Apple's own advice was to sync documents back to your computer, and print directly from your computer.

With the new iOS 4... there is now an AirPrint feature... which lets you wirelessly print to certain select HP brand printers. While this is certainly an improvement... it may not be the best fit for higher-ed infrastructures. Many campuses utilize print-management systems... and there is no indication that an iPad would fit into this kind of environment.

Our low-tech solution to deal with this issue is to use the screen-lock button on the iPad, place it on a copying machine and make a duplicate of the screen. Certainly not the best solution, but it did help in some situations.

*Not Accessible to Entire Campus*

The iPad was given to just a select group of faculty and students on campus. The 30 students were divided into 2 sections of English 104, each taught by a separate instructor. These were the only classes where every student and instructor had an iPad. As a result, some of the remaining 13 faculty members experimenting with the iPad expressed frustration. While they were able to test some Apps on their own... it did not add much to their instruction as they could not have students in their classes participate with the same Apps.

There were also some complaints from some of the student body that were not selected to participate in the pilot. Because it was such a small group of students, and because of how heavily publicized the project was, some students felt left out.

*Providing Mechanism to Deliver Pre-Paid Apps to Students*

Providing students with an identical suite of Apps to start with, proved to be a difficult challenge. Unlike computers, we didn't have any imaging software available to make identical clones. Our solution was to provide students with iTunes gift cards, which they could use to purchase and install the required Apps on their own. We had some difficulty getting this approved with our business office, but managed to make it work.

For the future, we hope to be able to participate in Apple's Education Volume Purchase Program for iOS Apps. This program would enable a single contact person on campus to purchase multiple copies of an App, and then distribute codes to other users for redemption at the App Store. This process seems to be easier to audit and more efficient.

*Insufficient Bandwidth*

The iPad certainly seems to work best in an environment with a constant, reliable wireless network. Our campus recently upgraded our wireless environment through the purchase of a Meraki cloud-managed 802.11n wireless network. This certainly provided a good core wireless network that should have been more than sufficient for iPad connectivity.

Unfortunately, wireless access is only one component of a campus's network. Our actual physical connection, which the wireless runs off of, is insufficient. While this causes all sorts of technical difficulties, it especially affects iPads. Because of the amount of media downloaded and constant App updates (which can't be streamed from a centralized on-campus server), iPads add a lot of network traffic.

We just received approval from our Board to upgrade our bandwidth this summer. While this will have a tremendous impact on all of our technological endeavors, we should certainly see an improvement with iPad usage as well.

*Issues viewing certain campus web content*

Some of our users started experimenting with the iPad in one of their most familiar environments… our campus website. It wasn't long before they noticed that our course catalog was not displaying properly on the iPad. We were able to quickly work with our developers to get this fixed rapidly.

Also, we found that some users had difficulty viewing resource files posted to our Moodle learning management system. We found an App called mTouch + which enabled resource files to be directly downloaded and viewed on the iPad. It also gave iPad users a more fluid mobile experience with our Moodle system.

Additionally, our campus website uses Adobe Flash to display some of our key marketing videos. Because iOS does not support Flash, these videos do not appear when viewing our site with an iPad. This is an area that our campus needs to address, since Apple shows no signs of supporting Flash in the future.

We credit our iPad pilot program as helping us to identify the majority of these issues before they became problems. We know more students will be accessing our content through mobile platforms, and the pilot helped us to become more aware of areas we needed to focus on.

## Future

*Y1 Program*

Sweet Briar College's y:1 program is an exciting pilot quality enhancement program that offers participating students a head start on their college careers. The program is specifically designed to promote first-year students' intellectual and academic engagement by offering them the opportunity to participate in a series of coordinated activities.

60 students will be selected to participate in the program. They will complete a summer reading-and-response assignment; participate in an orientation program of discussions, collaboration, and presentations; and enroll in small, coordinated first-year seminars – all tied to the college's annual Common Reading book, which for 2011-2012 is Reza Aslan's *Beyond Fundamentalism: Confronting Religious Extremism in the Age of Globalization*.

The y:1 program is also designed to develop students' technological skills and digital sophistication. Thus, every student selected to participate in the program receives a free iPad loaded with applications and with a digital version of the Common Reading book.

The faculty who participate in the program are selected on the basis of their demonstrated excellence in teaching and on their interest in working collaboratively with their colleagues to create a challenging and exciting program that guides students in developing the reading, research, and analytical skills that they will employ throughout their college education.

*Education Masters – 15 students*

Sweet Briar College has received a $20,000 grant from the Verizon Foundation through a program of the Virginia Foundation for Independent Colleges to fund a teacher education program using the iPad.

During the two-year pilot, faculty members in the education department will work with teacher education students in their fifth year of Sweet Briar's five-year teacher education program, as well as several in-service teachers enrolled in "Instructional Strategies for the Differentiated Classroom." Participants will be equipped with iPads and trained to use the technology as part of a differentiated curriculum, which is Sweet Briar education program's guiding philosophy.

The premise of this project is that when technology is coupled with effective differentiation, achievement levels increase for teacher education students as well as their students.

*BLUR Summer Program*

BLUR provides selected high school students an opportunity to grow in their technical skill and conceptual understanding of the arts, and explore how making art and thinking creatively improve life.

While in residence on Sweet Briar's picturesque campus—ranked among the most beautiful in the country—students are inspired by the natural world and aided by technology. Each participant receives an iPad to use whenever and wherever inspiration strikes: in the studio, in the campus art galleries, on a hiking trail or on the banks of Sweet Briar Lake.

Studies show that creativity is best nurtured through collaboration. Students spend two-thirds of their time working with master teachers in the "home" studio writing, making visual art or acting. They spend the other third working in an entirely different medium, collaborating with professional artists and with their peers—using iPad applications and traditional materials—to create exhibits and performances inspired by Sweet Briar's rich natural landscape.

All students work with members of Endstation Theatre Company, Sweet Briar's professional theatre troupe-in-residence, as they design sets, run rehearsals and edit scripts for Endstation's Blue Ridge Summer Theatre Festival, staged on locations throughout the College campus.

*HelpDesk WorkOrder System*

Our IT staff received iPads primarily in order to be able to support the instructional usage of iPads in the classroom. However, they were able to identify ways to utilize the iPad in their daily workflow. Our IT staff utilizes the Web Help Desk software program to manage their workorders. Web Help Desk developed an iPad app, which now allows our staff to update workorder tickets while they are in the field.

The workorder system is also utilized by our Physical Plant staff. The IT staff have received new iPad2 units in order to support the new iPad2 devices being utilized in the classroom. We are considering recycling our 1st generation iPads by giving them to Physical Plant workers so they can also utilize the workorder system in the field.

*Developing Additional In-House Training*

Throughout the summer we'll be working on developing several training classes to help support our iPad users on campus. We'll create a basic iPad orientation session, which will help users learn how to work with the iPad hardware and pre-installed Apps. In addition, we'll be developing training to support specific Apps based on recommendations from faculty.

**Conclusions**

In general, our initial iPad pilot program could be considered successful in some aspects. While we met many frustrations throughout the year, many of these were due to the infancy of the technology... not the possibility of what it could become. With the new iPad2 and the updates to the iOS, we feel that our next phase of the pilot will be more productive. We can hopefully concentrate more on addressing how to actually enhance instructional material and delivery. Also, we hope to be able to find ways to incorporate it into improving administrative workflow.

# CyberLaw: Recent Events

**Tina Ashford**
**Associate Professor**
**Macon State College**
**Macon, AL 31206**
**478-757-6693**
**Tina.ashford@maconstate.edu**

**John Bommer**
**Lt Col, Commander**
**26 Network Operations Squadron**

**Gary Rogers**
**Trainer, 26 Network Operations Squadron**
**Maxwell-Gunter Air Force Base**
**490 E. Moore Street,**
**MAFB-Gunter Annex, AL 36114**
**rogersgator@maxwell.af.mil**

## Abstract

We propose to provide current information on the state of the cyberlaw domain in the United States. Recent judicial decisions and legislation will be examined to show the strides, and set-backs, that have occurred in this domain. Specific examples will be provided, therefore giving a relevant view into this domain. Intriguing efforts have indeed been demonstrated in this arena. For example, though strictly not a cyberlaw case, MDY Indus. LLC v. Blizzard Entm't, Inc., Nos. 09-15932, 09-16044 (9th Cir. Dec. 14, 2010), does address this domain. For example, in this case, the district court held that purchasers of Blizzard's World of Warcraft software are not owners of their copies of the software, and hence are not entitled to a Section 117 defense that would allow the owner of a copy of a computer program to make a copy of the program, provided such copy is created as an essential step in the utilization of the program. This is central to the question of how best to resolve the recurring question of when title to a copy passes to a transferee. Those rights are an essential part of the balance Congress struck between the users of copyrighted works and copyright owners.

## Approach

First, we will provide a scope of the problem, namely how cybercrime is impacting our IT infrastructure today. Second, we will briefly discuss one organization that is in the battle against this foe. Finally, we will discuss recent court cases in the cybercrime arena to get a better grasp of this issue.

**Scope of the Problem**

Cyberspace touches practically everything and everyone every day.[1] The security and prosperity of our nation is dependent on freedom of access to and freedom of action in cyberspace. While there are many benefits that come with this access, there are numerous inherent vulnerabilities.

Threats via cyberspace pose one of the most serious national security challenges of the 21st Century. The threat is asymmetrical with a minimal cost of entry; events of the last several years show that one person, with one computer, can affect an entire nation. Growing arrays of adversaries are targeting the US military and our critical national infrastructure, commerce and citizens. The combined and coordinated efforts of government, industry and academia will be required to effectively counter many of these attacks and assure mission success in the future.

Threats to cyberspace pose one of the most serious economic and national security challenges of the 21st Century for the United States and our allies. A growing array of state and non-state actors such as terrorists and international criminal groups are targeting U.S. citizens, commerce, critical infrastructure, and government.

These actors have the ability to compromise, steal, change, or completely destroy information.[2]

The continued exploitation of information networks and the compromise of sensitive data, especially by nations, leave the United States vulnerable to the loss of economic competitiveness and the loss of the military's technological advantages. As the Director of National Intelligence (DNI) recently testified before Congress, "the growing connectivity between information systems, the Internet, and other infrastructures creates opportunities for attackers to disrupt telecommunications, electrical power, energy pipelines, refineries, financial networks, and other critical infrastructures."

The Intelligence Community assesses that a number of nations already have the technical capability to conduct such attacks.[3] Several nations are known or suspected to have this capability to include China, North and South Korea. Attacks originated in China lately have been pervasive in the news. Researchers from the University of Toronto have uncovered a network of hackers, centered in China, which has used popular online services to obtain top secret information from the Indian government, many centered around Tibetan dissident groups and the Dalai Lama. The researchers stated that they were able to observe the cyber attacks and traced them to servers located in China, and specifically to individuals located in the city of Chengdu--the home of the communist country's military intelligence collection/technical reconnaissance bureaus. These attacks uncovered "complex ecosystem of cyber espionage that systematically compromised government, business, academic and other computer networks in India, the Offices of the Dalai Lama, the United Nations, and several other countries."[4] And India is not alone. Australia has

[1] A Training Regimen for Incoming USAF Employees, Proceedings of the American Association of Small Colleges in Education conference, June, 2010.

[2] Director of National Intelligence, *Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Statement for the Record*, March 10, 2009, at 39.

[3] Director of National Intelligence, Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Statement for the Record, March 10, 2009, at 39.

[4] *Shadows in the Cloud, Investigating Cyber Espionage*, April 6, 2010, Shadowserver Foundation,

also felt this effect. Firms in that country have recently been hit by hackers originating in China, one time even dramatically slowing that nations' second largest broadband network.[5] And the recent censorship debate between Google and the Chinese government has resulted in series of hacker attacks on both Google and Chinese dissent groups living abroad.[6]

The growing sophistication and breadth of criminal activity, along with the harm already caused by cyber incidents, highlight the potential for malicious activity in cyberspace to affect U.S. competitiveness, degrade privacy and civil liberties protections, undermine national security, or cause a general erosion of trust, or even cripple society. For example:

• Failure of critical infrastructures.[7] CIA reports malicious activities against information technology systems have caused the disruption of electric power capabilities in multiple regions overseas, including a case that resulted in a multi-city power outage.

It is frequent to hear "critical infrastructure owners and operators report that their networks and control systems are under repeated cyberattack, often from high-level adversaries like foreign nation-states. Assaults vary from massive distributed denial of service attacks designed to shut down systems all the way to stealthy efforts to enter networks undetected.

Although attribution is always a challenge in cyberattacks, most owners and operators believe that foreign governments are already engaged in attacks on critical infrastructure in their country. Other cyberattackers range from vandals to organized crime enterprises. Financially motivated attacks like extortion and theft-of-service are widespread.

The impact of cyberattacks varies widely, but some of the consequences reported were severe, including critical operational failures. The reported cost of downtime from major attacks exceeds U.S. $6 million per day. Apart from cost, the most widely feared loss from attacks is damage to reputation, followed by the loss of personal information about customers. Bad as all this is, respondents believe the situation will get worse not better in the future."[8]

A new strategy being pursued by cyber attackers is that of web extortion.

A recent large scale study examined some of these issues in some depth. Six hundred IT and security executives from critical infrastructure enterprises across seven sectors in 14 countries all over the world anonymously answered an extensive series of detailed questions about their practices, attitudes and policies on security—the impact of regulation, their relationship with government, specific security measures employed on their networks, and the kinds of attacks they face.[9]

---

University of Toronto.

[5] "Chinese cyberattack targets Australia", by Rohan Sullivan, April 15, 2010, http://www.physorg.com/news190524906.html.

[6] "Chinese Human Rights Sites Hit", by Owen Fletcher, http://www.pcworld.com/businesscenter/article/187597/chinese_human_rights_sites_hit_by_ddos_attack.html.

[7] "Cyberspace Policy Review - Assuring a Trusted and Resilient Information and Communications Infrastructure", May 2009, The White House, Policy Review - Assuring a Trusted and Resilient Information and Communications Infrastructure.

[8] In the Crossfire: Critical Infrastructure in the Age of Cyber War: http://www.mcafee.com/us/resources/reports/rp-in-crossfire-critical-infrastructure-cyber-war.pdf.

[9] In the Crossfire: Critical Infrastructure in the Age of Cyber War, http://www.mcafee.com/us/resources/reports/rp-in-crossfire-critical-infrastructure-cyber-war.pdf.

Critical infrastructure owners and operators report that their IT networks are under repeated cyberattack, often by high-level adversaries. The impact of such attacks is often severe, and their cost is high and borne widely.

One-in-five critical infrastructure entities reported being the victim of extortion through cyberattack or threatened cyberattack within the past two years. This striking data was consistent with the anecdotal accounts of experts from several different countries and sectors; indeed, some suggested the real figure might even higher. Most such cases go unpublicized if not altogether unreported, they said, because of reputational and other concerns by the victim company.

Victimization rates were highest in the power (27 percent) and oil and gas (31 percent) sectors.

The following examples excerpted form that report are illuminating. “I am very worried about extortion as it relates specifically to power system interruption,” said Michael Assante chief security officer of the North American Electric Reliability Corporation. He called threats against company networks “lower level” extortion—“the safest way to pull money under the radar and off the books at a level that is not that material.” Threats against the infrastructure itself were much more serious. “If you take that to ‘hey I can make the lights go out,’ then you’re talking about a whole different situation. It’s probably a lot higher risk for the extortionist, but you could demand a whole lot more money.” In November 2009, there were reports in the U.S. media that two power outages in Brazil, in 2005 and 2007, had been caused by hackers, perhaps as part of an extortion scheme.

In September 2009, Mario Azer, an IT consultant for Long Beach, Calif.-based oil and gas exploration company Pacific Energy Resources pled guilty to tampering with computer systems after a dispute with the firm about future employment and payment. He interfered with specially built industrial control software called a Supervisory Control And Data Acquisition (SCADA) system—in this case one designed to alert operators to leaks or other damage to the miles-long undersea pipelines connecting the company’s derricks to the shore.

While the water/sewage sector had a lower rate of victimization (17 percent) the potential impact of extortion schemes is nonetheless felt very keenly in that sector.

• Exploiting global financial services. *"As the world moves into cyberspace and as all money flows into cyberspace, well, crime follows money and you're going to see it there,"* says Richard Power of the Computer Security Institute.[10] This is certainly true as cybercrime exploits in this arena are on a rapid rise as more sophisticated exploits are developed by the hacking community.

• National security. Hacking activity directed toward national defense assets are both numerous and well-publicized. Suffice it to say these attacks are continuing. In 2010 alone, there were over two hundred thousand break-in attempts directed toward Pentagon IT assets. The USAF Air Force Enterprise Network logs thousands of illegal attempts yearly.[11] Not everyone gets caught, but some who tried too hard found the FBI on their doorstep, literally.[12]

[10] http://www.ssg-inc.net/cyber_crime/financial.html.
[11] 26 NOS Operating Concept, dated March 15 2011.
[12] http://www.ssg-inc.net/cyber_crime/financial.html.

**National Security Example**

An example of hacking activity directed toward national security assets is the crucial role played by a crucial USAF organization, the 26 Network Operations Squadron. The 26 NOS is a vital part of the USAF cyberspace defense strategy. The squadron is part of the 24th Air Force, 67th Network Warfare Wing. The approximately 200-man 26 Network Operations Squadron located in Montgomery, Alabama was activated by Special Order GD-018 on 11 Aug 2009. The responsibilities of the 26 NOS are paramount to the successful operation of the USAF intranet. The 26 NOS operates the AF Enterprise computer network that consist of 16 Gateways and LAN equipment at over 250 locations that rely on over 600 WAN circuits supporting warfighting efforts for Operations IRAQI and ENDURING FREEDOM while executing 24/7 around the clock situational awareness and direction over the underlying network infrastructure and critical application operations. The squadron provides full service helpdesk for command and control and operational support network applications. The squadron also manages the AF authorized service interruption process to ensure minimal impact to sustaining base and deployed operations.

26 NOS directs the AF network security patch management process to ensure security of information riding on the AF networks. It also provides and monitors embedded implementation to detect network anomalies before mission impact to operations of all Air Force Active Duty, Air Force Reserve and Air National Guard classified/unclassified services. It is important to note that the unit maintains and, in conjunction with other USAF assets, defends the AFEN from cyber harm. The unit reports thousands of attacks against this USAF network yearly and is constantly at work thwarting these efforts.

**CyberLaw**[13]

Cyberspace poses a remarkable challenge to more traditional ideas on the concept of jurisdiction. Because of the permeability of territorial and ergo political, as well as other kinds of boundaries, any regulation of cyberspace is bound to experience a higher degree of failure than regulation of physical spaces. This poses an interesting set of questions, admirably stated by Cyberspace Law advocates as follows.[14]

"Does this mean that off-shore jurisdictions with minimal legal regulation are sure to become havens for Internet gambling, child pornography and other operations that might be banned in other places (and that most people would agree is unsavory if not totally unacceptable)?

Could it mean also that there might be a race to the top, namely that higher values such as freedom of speech necessarily will be imposed on jurisdictions that heavy-handedly regulate speech or otherwise engage in repressive governmental action?

Who decides which value system should prevail? How would this decision-making take place in the absence of a collective international representative body? What if country A is more concerned about violence, country B about hate speech, country C about sexually explicit content,

[13] http://cyberlawcases.com, authors: Brian W. Carver, Joseph C. Gratz, Aaron K. Perzanowski, Jason M. Schultz.

[14] "Introduction to Cyberspace and Law: The Relation of Law to Cyberspace and of Cyberspace to Law", *Margaret Chon Seattle University School of Law,* http://cyberspacelaw.org/chon/index.html.

and country D about maintaining political stability in the face of dire economic circumstances? Would they be able to reach some consensus about which kinds of speech should be subject to regulation? And even if they do, what about countries E and F who are not subject to this agreement? Won't they inevitably act as spoilers?

What might be the destabilizing role of net anarchists who delight in tweaking any sort of command and control action, whether it emanates from the public sector or the private sector? Will individual acts or collective preferences then supersede national or even international regulation? If so, what are the possible consequences? Is it possible to have governance based solely on netiquette or, in the alternative, customary law (perhaps analogous to customary international law)?

Some cyberspace theorists have proposed a cyberjurisdiction, in which cybercitizens determine the rules of governance. Others propose a network federation, composed loosely of entities that participate in the Internet such as ISPs, governments, as well as individuals. Is it possible to separate completely cyberactors in cyberspace from real people in physical space? Are these models workable on a practical level? What implications might they have for the important distinction in American law between public and private law?

Consider the relatively simple governance problem of regulating cyberspace within the territorial boundaries of the United States. Our federalist system of government reserves to the states their traditional police powers to protect citizens within their borders. But what happens when the regulations of state A (enacted to protect citizens in state A) begin to impact the citizens of state B? At what point does state A's regulation over-reach its concededly legitimate police power? *Pataki* shows us that these questions might be resolved by reference to the federal government's greater power (via the commerce clause - remember those mud flaps cases?) to prevent this type of state over-reaching. (Even so, then we are back to the problem discussed in the previous notes.) Does *Pataki* mean that any state regulation of cyberspace is vulnerable to a commerce clause attack? Or just those state laws that are not limited to the cyberspace equivalent of mud flaps? To take an example, consider section 3 of the Washington state unsolicited e-mail law. Under the reasoning of *Pataki*, is this statute constitutional? Why or why not?

Most acts in cyberspace are also speech. Does the speech quality of most cyber-acts mean that *all* attempted governmental regulation of cyberspace is vulnerable on first amendment grounds? What was the problem that the Georgia legislature in *Miller* was trying to address with its ban on anonymous Internet communication? What would be an appropriate analogy to the real world? State laws prohibiting anonymous political leafleting, which have found to be unconstitutional? Or state bans against wearing hoods (passed in many Southern states in light of Ku Klux Klan activities)? If those latter laws are constitutional forms of regulating expressive conduct, then why not the statute in *Miller*?

Just as law affects the direction and development of cyberspace, cyberspace inevitably impacts law. We tend to view law as formal law, that is, state-sanctioned mechanisms for imposing certain rules of liability or enforcing certain conduct upon those within the political borders of the sovereign. In the U.S. context, we equate legal regulation with big government (whether one thinks that a good or bad thing) exerting control through a top down strategy. But, more than many other domains of legal regulation, cyberspace stretches our common sense notions of law, and forces us to look to alternative constructs."

These are all intriguing issues that are being fleshed out daily in both U.S. and International courts, jurisdictions and settings. Courts are increasingly being faced with inter-jurisdictional issues where they used to be confronted with intra-jurisdictional ones.

Now, let's investigate several recent court cases in the cyber arena which have crucial impact. These are discussed by Professor Chon.[15]

**Court and Case:**

- *United States v. Cotterman*, No. 09-10139 (9th Cir. Mar. 30, 2011).

**Background**

When the colonies adopted a Constitution for these United States a few abuses of government power were of such significant concern that they were singled out as beyond the power of government in the Bill of Rights. Unreasonable searches and seizures were among these abuses and are forbidden by the Fourth Amendment.

The history of the origins of the Fourth Amendment stands in stark contrast to its interpretation in the context of searches and seizures at the international border (or its "equivalent") and this already-broad exception appears to have now "swallowed the rule" especially in digital contexts. The border search "exception" that has grown up in non-digital contexts is sometimes summarized with statements such as,

Generally, "searches made at the border… are reasonable simply by virtue of the fact that they occur at the border…" *United States v. Ramsey*, 413 U.S. 606, 616 (1977).

This exception for the international border creeps inland with the following sort of reasoning:

Searches of international passengers at American airports are considered border searches because they occur at the "functional equivalent of a border." *Almeida-Sanchez v. United States*, 413 U.S. 266, 273 (1973).

And thus, searches of various types of items have been upheld even where those searches were not based on any particularized suspicion:

- the contents of a traveler's briefcase and luggage. *United States v. Tsai*, 282 F.3d 690 (9th Cir. 2002);
- a traveler's "purse, wallet, or pockets," *Henderson v. United States*, 390 F.2d 805, 808 (9th Cir. 1967);
- papers found in containers such as pockets. *United States v. Grayson*, 597 F.2d 1225, 1228-29 (9th Cir. 1979); and
- pictures, films, and other graphic materials. *United States v. Thirty-Seven Photographs*, 402 U.S. 363, 376 (1971).

While the argument that the border search exception is fundamentally flawed in all contexts is not frivolous, it's persuasive authority would depend on displacing an extremely long line of precedents. However, more recently a narrower argument has been made that new contexts created by ubiquitous digital devices requires the case law in the border search context to take a new direction. Digital devices such as laptops, and increasingly, smartphones, are capable of massive

15 "Introduction to Cyberspace and Law: The Relation of Law to Cyberspace and of Cyberspace to Law", *Margaret Chon Seattle University School of Law,* http://cyberspacelaw.org/chon/index.html.

amounts of storage of all manner of information about the most private areas of one's life. The argument thus would suggest that this is not merely a change in the *degree* of the intrusiveness of suspicionless government searches, but a fundamental change of *kind* that requires a different result.

When applying these non-digital border search precedents to a suspicionless laptop search, the Ninth Circuit recently concluded that reasonable suspicion is not needed for customs officials to search a laptop or other personal electronic storage devices at the border. *United States v. Arnold*, 533 F.3d 1003 (9th Cir. 2008).

### *Cotterman* at the District Court

This expansion of the border search exception seemed to finally have found a limit in another laptop case, *United States v. Cotterman*, No. 07-01207, 2009 WL 465028 (D. Ariz. Feb. 24, 2009) (Order adopting Magistrate's Recommendation), in which the district court concluded that when a laptop is seized at the border and then a forensic search of the laptop is conducted 170 miles away from the border over a period of four days (without a search warrant) that this constitutes a non-routine border search that requires reasonable suspicion.

### *Cotterman* at the Ninth Circuit

On March 30, 2011, the Ninth Circuit reversed the district court. *United States v. Cotterman*, No. 09-10139 (9th Cir. 2011). The court summarized,

We find no basis under the law to distinguish the border search power merely because logic and practicality may require some property presented for entry—and not yet admitted or released from the sovereign's control—to be transported to a secondary site for adequate inspection. The border search doctrine is not so rigid as to require the United States to equip every entry point—no matter how desolate or infrequently traveled—with inspectors and sophisticated forensic equipment capable of searching whatever property an individual may wish to bring within our borders or be otherwise precluded from exercising its right to protect our nation absent some heightened suspicion.

Still, the line we draw stops far short of "anything goes" at the border. The Government cannot simply seize property under its border search power and hold it for weeks, months, or years on a whim. Rather, we continue to scrutinize searches and seizures effectuated under the longstanding border search power on a case-by-case basis to determine whether the manner of the search and seizure was so egregious as to render it unreasonable.

## Portion of Stored Communications Act Unconstitutional

### Court and Case:

*United States v. Warshak*, No. 08-3997 (6th Cir. Dec. 14, 2010).

Under the Stored Communications Act, when a governmental entity seeks disclosure of stored communications it is required by 18 U.S.C. §2703(b) to provide notice to the target.

18 U.S.C. §2705 establishes a process by which they can delay that required notice:

- For a period not to exceed 90 days;
- Only if either a court determines or a supervisory official certifies that one of five adverse results may occur if the required notice is provided; and
- 90 day extensions are allowed only by the court or certification.

Under 18 U.S.C. 2703§(d), the Stored Communications Act *allowed* government-compelled disclosure of emails on a standard of less than probable cause:

A court order for disclosure… shall issue only if the governmental entity offers *specific and articulable facts* showing that there are *reasonable grounds to believe* that the contents of a wire or electronic communication, or the records or other information sought, *are relevant and material* to an ongoing criminal investigation. (emphases added)

Compare this with the probable cause standard for a search warrant of: "information sufficient to warrant a prudent person's belief that evidence of a crime or contraband would be found in a search."

When Warshak visited the Sixth Circuit back in 2007 in his civil suit, *Warshak v. United States*, 490 F.3d 455 (6th Cir. 2007) (now vacated) we learned the following facts:

- The Government got court-ordered access to Warshak's email accounts without notice to Warshak and violated both the SCA and the Court's Order by not notifying Warshak for over a year.
- Warshak asked the Government to provide assurances that it would not seek similar orders and the Government refused.
- Warshak sought an injunction prohibiting such future searches.

The now-vacated opinion by the Sixth Circuit from 2007 is a really great read. That panel held that email users always have a reasonable expectation of privacy against the outside world in their email.

However, the Sixth Circuit reheard the case *en banc* and in a head-scratching 9-5 decision in 2008, *Warshak v. United States*, 532 F.3d 521 (6th Cir. 2008) (*en banc*), decided that Warshak's constitutional claim was not ripe for judicial resolution. The majority wrote, "The question is whether the government will conduct another *ex parte* search of his emails, a possibility that is exceedingly remote, given that [there is no longer an ongoing investigation.]"

The dissent in that *en banc* decision was as blistering as it was eloquent:

History tells us that it is not the fact that a constitutional right is at issue that portends the outcome of a case, but rather what specific right we are talking about. If it is free speech, freedom of religion, or the right to bear arms, we are quick to strike down laws that curtail those freedoms. But if we are discussing the Fourth Amendment's right to be free from unreasonable searches and seizures, heaven forbid that we should intrude on the government's investigatory province and actually require it to abide by the mandates of the Bill of Rights.

I can only imagine what our founding fathers would think of this decision. If I were to tell James Otis and John Adams that a citizen's private correspondence is now potentially subject to ex parte and unannounced searches by the government without a warrant supported by probable cause, what would they say? Probably nothing, they would be left speechless.

Warshak's criminal case continued, and today a Sixth Circuit panel got another shot at this fact pattern in *United States v. Warshak*, No. 08-3997 (6th Cir. Dec. 14, 2010).

The most striking thing about this opinion is that two of the judges on this panel, Judges Boggs and McKeague, who wrote and joined today's majority opinion respectively, were formerly part of the ***en banc*** majority that found that ***at that time*** the issue was not ripe for adjudication. Unless other votes have shifted in the interim, this suggests that, even if this case were to be reheard

***en banc***, there are not likely to be enough votes to undo the result again. This time, email privacy may come out unscathed from the Sixth Circuit.

Today's panel held that, "Warshak enjoyed a reasonable expectation of privacy in his emails vis-a-vis NuVox, his Internet Service Provider. *See* *Katz v. United States*, 389 U.S. 347 (1967). Thus, government agents violated his Fourth Amendment rights by compelling NuVox to turn over the emails without first obtaining a warrant based on probable cause."

The court wrote,

[T]he very fact that information is being passed through a communications network is a paramount Fourth Amendment consideration…. Second, the Fourth Amendment must keep pace with the inexorable march of technological progress, or its guarantees will wither and perish. *See* *Kyllo v. United States*, 533 U.S. 27, 34 (2001) (noting that evolving technology must not be permitted to "erode the privacy guaranteed by the Fourth Amendment"); *see also* Orin S. Kerr, *Applying the Fourth Amendment to the Internet: A General Approach*, 62 Stan. L. Rev. 1005, 1007 (2010) (arguing that "the differences between the facts of physical space and the facts of the Internet require courts to identify new Fourth Amendment distinctions to maintain the function of Fourth Amendment rules in an online environment").

The court continues,

If we accept that an email is analogous to a letter or a phone call, it is manifest that agents of the government cannot compel a commercial ISP to turn over the contents of an email without triggering the Fourth Amendment. An ISP is the intermediary that makes email communication possible. Emails must pass through an ISP's servers to reach their intended recipient. Thus, the ISP is the functional equivalent of a post office or a telephone company. As we have discussed above, the police may not storm the post office and intercept a letter, and they are likewise forbidden from using the phone system to make a clandestine recording of a telephone call—unless they get a warrant, that is. *See* *Jacobsen*, 466 U.S. at 114; *Katz*, 389 U.S. at 353. It only stands to reason that, if government agents compel an ISP to surrender the contents of a subscriber's emails, those agents have thereby conducted a Fourth Amendment search, which necessitates compliance with the warrant requirement absent some exception.

The court sums up this portion of the opinion with,

Accordingly, we hold that a subscriber enjoys a reasonable expectation of privacy in the contents of emails "that are stored with, or sent or received through, a commercial ISP."… The government may not compel a commercial ISP to turn over the contents of a subscriber's emails without first obtaining a warrant based on probable cause. Therefore, because they did not obtain a warrant, the government agents violated the Fourth Amendment when they obtained the contents of Warshak's emails. Moreover, to the extent that the SCA purports to permit the government to obtain such emails warrantlessly, the SCA is unconstitutional.

**Conclusion**

As can be seen, cybercrime activity is still very much with us today. Also, however, there are effective efforts such as those exemplified by the 26 Network Operations Squadron of the USAF that are in this fight each and every day. And, as can be seen herein, recent court action is showing that the courts are, like the rest of us, struggling with this issue of technology, people, what is criminal vs. civil and jurisdictional boundaries. Over time, precedent will be set in this arena to the extent where future decisions can be made in a more expeditious manner.

# Teaching Social Media

**Jenn Shinaberger**
**Coastal Carolina University**
**P.O. Box 261954**
**Conway, SC 29528**
**843-349-2737**
**jsninabe@coastal.edu**

**Abstract**

Social media permeates our everyday lives, personally and professionally, and the lives of our students. Recognizing the importance of modeling the positive behavior and acknowledging the negative implications of social media to our students, we developed a module to address this specific issue within teacher education. This session will demonstrate how three colleagues design and developed a standards-based module on social media for an instructional technology course directed to pre-service and in-service teachers. The collaborative group consisted of an assistant professor, an associate professor and faculty technology development center assistant director. We will discuss the process we used to design the module, student feedback from the module and plans to further improve and test the module. The module is aligned to ISTE NETS-T and NETS-S standards and includes a history of social media, classification of social media applications and tools and corresponding course activities

**Editor's Note:** The author had not submitted her paper at the time the proceedings went to press. She will bring copies to her presentation or make the paper available on the web.

# An introduction to open source and freely available mapping technologies

**Robin Snyder**
**robin@robinsnyder.com**
**http://www.robinsnyder.com**

**Abstract**

Traditionally expensive to acquire and license, freely available mapping data has spawned many open source technologies that can be used for creating and enhancing mapping applications. The author/presenter has recently done extensive commercial research and software development work in open source technologies. This paper/session will cover background, working examples, and applications of mapping technologies using Open Street Map and Google Maps that can be used for student projects, classroom teaching, and institutional computing applications.

## Introduction

In an increasingly complex world, it is important to both know where one is at and how to get from one place to another place. In the old days, one learned geography to help know and understand where one was in the world. Today, one uses a GPS with mapping software with sometimes little or no idea of where one is and where one is going. One's personal viewpoint can be understood by how one reconciles the difference between the world and the map. One view is to change the map to match the world. Another view is to change the world to match the map.

## Commercial Maps

Traditional commercial mapping services were very expensive. Those companies were very proprietary about their "intellectual property" and tended to introduce small errors into their mapping systems in order to show intellectual property violations in court.

## Global Positioning

Mapping technologies have been radically changed by the GPS. The GPS (Global Positioning System) is a collection of satellites that orbit the earth in fixed locations above the earth and whose precise timing signals are used to precisely locate a GPS receiver. GPS receivers are now in many devices, including cell phones and make obtaining precise location data collection relatively easy. Sometimes too easy. In April 2011, Apple became the subject of a privacy controversy when it became known that for several years their iPhone, and later iPad, devices, were tracking and storing user's precise locations and the time they were at those locations.

Drive-by Wi-Fi hotspot detection along with GPS tracking can be used to locate users when they connect to such Wi-Fi hotspots.

**Open Street Map**

In a manner similar to Wikipedia, the Open Street Maps system was created to take publically available maps (e.g., U.S. Census maps, etc.) and allow users to update those maps to provide an Open Source collection of freely available mapping data and software systems build on that data. OpenStreetMap.org, at http://www.openstreetmap.org/ [as of Sat, Sep 12, 2009], provides free (open source) mapping data and access methods for geographic data from all over the earth.

> *OpenStreetMap is a free editable map of the whole world. It is made by people like you. OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth.* http://www.openstreetmap.org/ [as of Sat, Sep 12, 2009]

A lot of information on OpenStreetMap is available at OpenGeoData.org, [as of Mon, Sep 14, 2009] at http://www.opengeodata.org/. The URL for the OSM tile for the world is a 256x256 image at zoom level 0 is http://tile.openstreetmap.org/0/0/0.png [as of Wed, Jan 27, 2010].



The URL for the upper left quandrant, at zoom level 1, is http://tile.openstreetmap.org/1/0/0.png [as of Wed, Jan 27, 2010].

Here is zoom level 2 and the URL http://tile.openstreetmap.org/2/1/1.png [as of Wed, Jan 27, 2010].


One can keep zooming in (and out), using this scheme, in order to cover the entire earth.

**Google Maps**

Google, among others, eventually got into the mapping business. Early on, it was noticed that their satellite map of Greenwich England, had the 0 degree longitude line not going through the traditional location of the meridian. Google became embroiled in controversy in 2010 when their street driving vehicles collected more than mapping information. Due to a "bug" (or oversight), Google collected a large amount of Wi-Fi access point data (used for geolocation) including user passwords in-the-clear from open Wi-Fi access points.

Google makes much of this mapping technology freely available for use but with certain restrictions - essentially to avoid direct competition with their business.

**Cell phones**

Many cell phones contain GPS receivers and, therefore, GPS data. But every cell phone connects to local cell phone towers and via triangulation, the time and location of cell phone users is maintained and available to cell phone companies (and government surveillance).

There are marketing companies that sell systems to detect and map cell phones in, say, a mall, in order to view where people go in the mall, where they stop, in front of which stores, etc., all for "marketing purposes".

**GPS logging**

A GPS (Global Positioning System) coordinate consists of a longitude (east-west) and latitude (north-south). Garmin makes many popular GPS devices. Garmin systems can be customized with Open Source maps suitably transformed. TomTom is made by a Dutch company and is Linux-based. Their systems are proprietary.

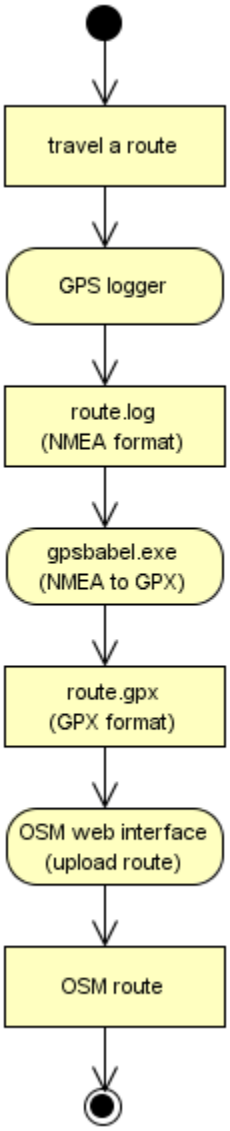
A GPS logger collects GPS data in real time. One such GPS logger is the AMOD Photo Tracker which collects and writes GPS data in NMEA format to the built-in USB flash drive. To be usable with OSM (Open Street Map) the NMEA file format must be converted to GPX format. A common format for GPS data is GPX (GPS eXchange) format which is a standardized XML schema for GPS data. KML (Keyhole Markup Language) is an XML-based notation for geographic annotation and visualization. KML was originally created for use with Google maps. GML (Geography Markup Language) is an XML-based notation for geographic information developed and used by the OGC (Open Geospatial Consortium).

The NMEA (National Marine Electronics Association) logging format is a standardized text-based format for logging GPS data. The NMEA is at http://www.nmea.org/ [as of Sat, Sep 12, 2009]. The NMEA format has tags at the start of each line that specify what data is on the rest of that line. The tags used depend on the GPS chip set used and the manufacturer of the GPS logging device. The NMEA tags for the SiRF chipset include the following.

- **`GPGGA`** is GPS location fix data.
- **`GPGLL`** is GPS latitude and logitude data.
- **`GPGSA`** is GPS satellite data.
- **`GPGSV`** is GPS detailed satellite data.
- **`GPRMC`** is the GPS recommended minimum data.
- **`GPVTG`** is GPS velocity made good.

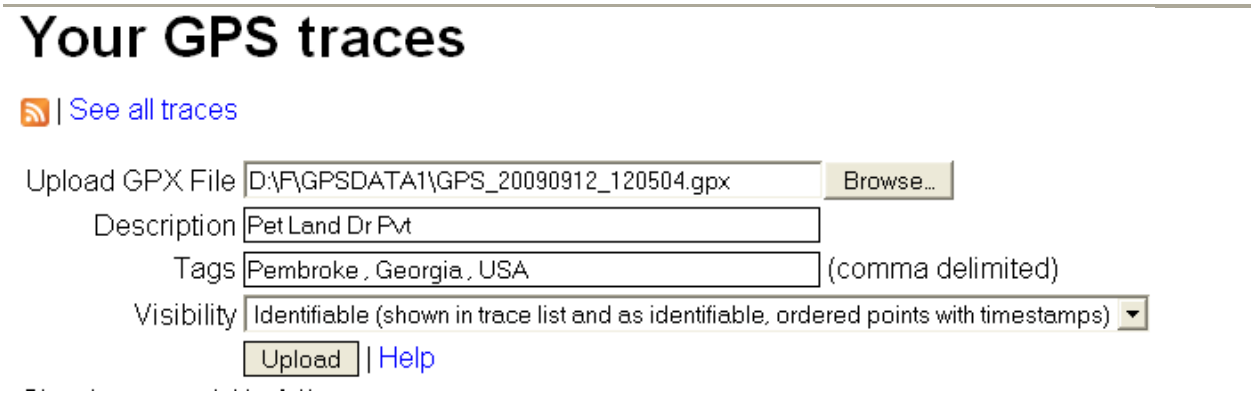
Additional tags may be added by the manufacture using the chipset in their product. A good overview and details of the NMEA format are at http://www.gpsinformation.org/dale/nmea.htm [as of Sat, Sep 12, 2009]. The format converion can be done with a progam such as GPSBabel.

Here as a UML (Unified Modeling Language) collaboration diagram for the process of recording and uploading of a route to OSM.



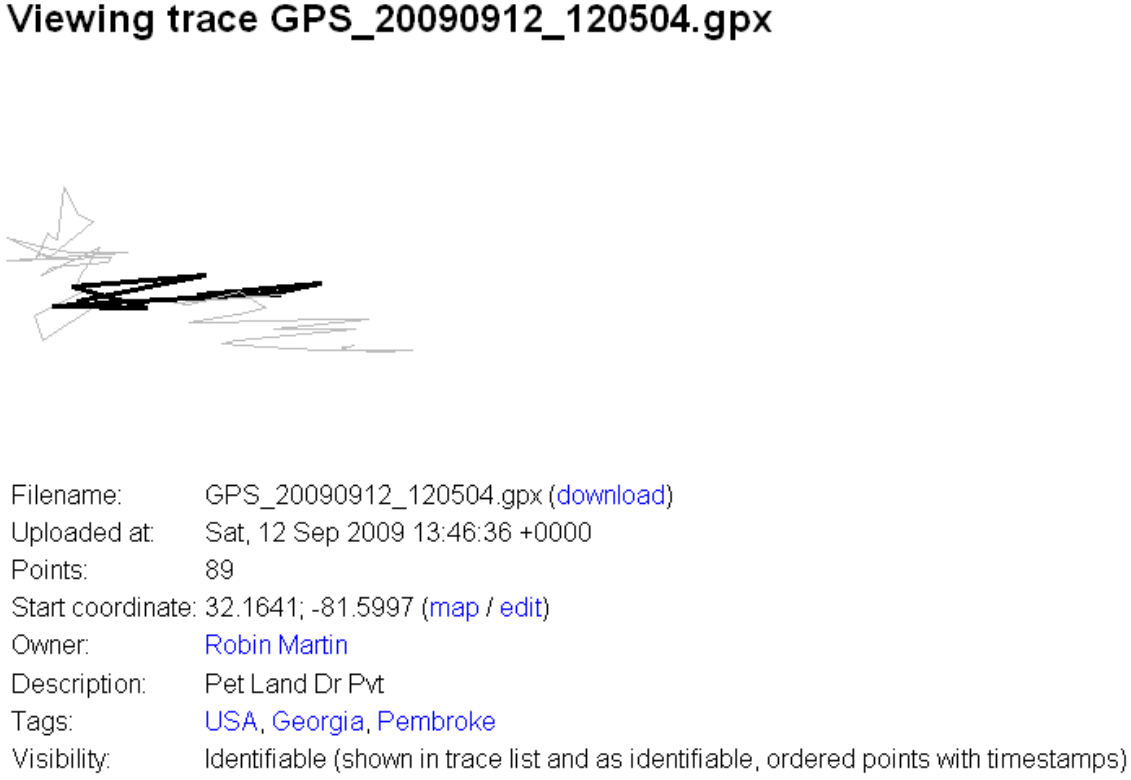

- Log the route using a GPS logger. For my logger this is NMEA.
- Convert the logged route to an appropriate format. For Open Street Maps this is GPX. I used command line GPSBabel to do the conversion.
- Upload the trace to Open Street Maps.

Here is an image of a trace being added to OSM.



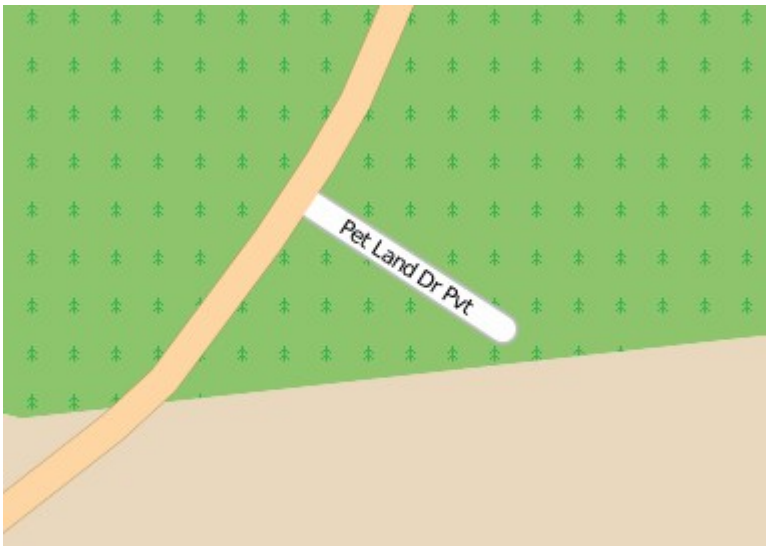

OSM provides a web interface for route uploads. Email confirmation is sent. Here is an image of a trace made by the author.


The route traversed can be seen on the map. Since the route was only about 100 feet long, the GPS error in each point is visible. Military-grade GPS would greatly reduce the error.




Yahoo has permitted OSM to use their satellite imagery as background to assist in map modifications using the route.

The OSM online editor was used to add the route traversed. A while later, the added road appeared on OSM. Here is a static image of the map.




**Slippy maps**

A **slippy map** is a map for which the user can use the mouse to grab and move the map.

Here is an image of a slippy map of the Chartlotte area from www.openstreetmap.org using an IFRAME.

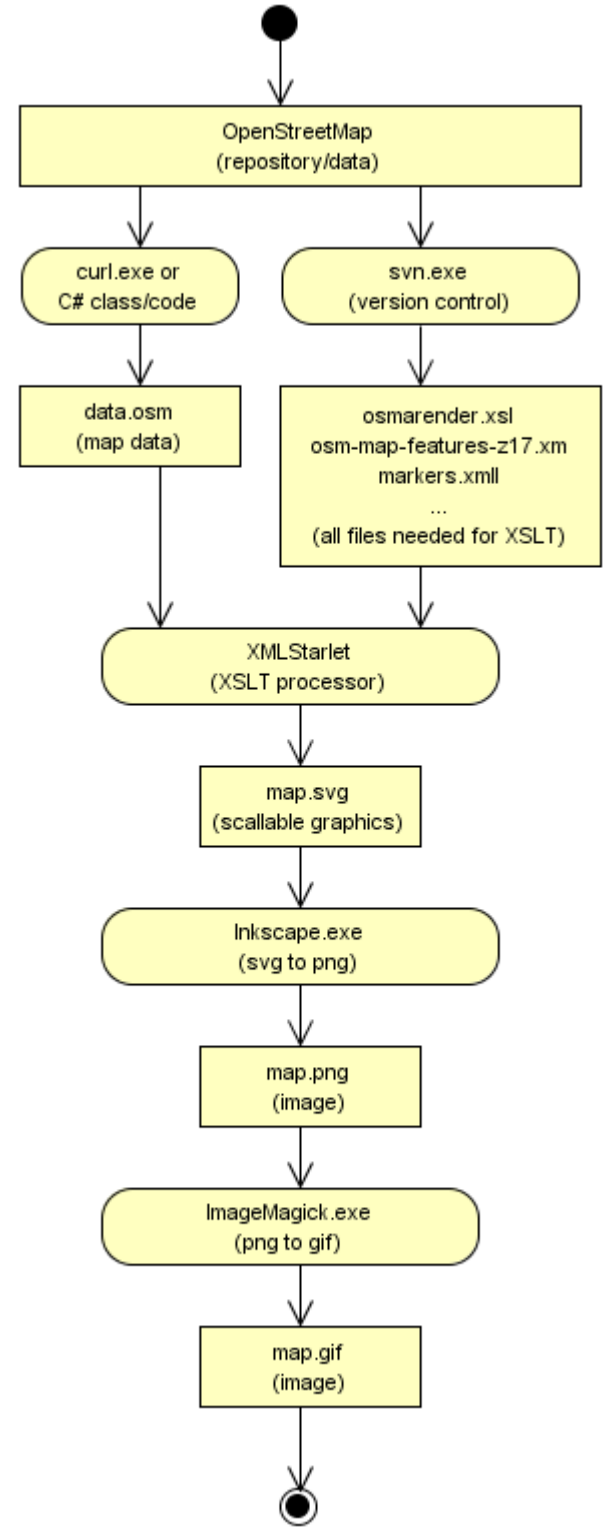

In the slippy map, one can hold down the shift key and with the mouse select a corner and then move the mouse to select an area and then release both to zoom in on that area. Here is the HTML IFRAME to get the slippy map

```
<iframe name="mapFrame1" id="mapFrame1" align="LEFT"
width="400" height="300"
frameborder="0" scrolling="no" marginheight="0" marginwidth="0"
src="http://www.openstreetmap.org/export/embed.html?bbox=-80.90,35.05,-
80.65,35.40&layer=mapnik"
style="border:solid 1px #000000;"
>
</iframe>
```

More sophisticated API methods use JavaScript in various forms. It as possible to dynamically export mapping data for selected regions and convert that data to images in the desired size and format. There are API's for specifying the rules to be used for determining and marking routes from one place to another place.

**Processing map data**

Here is a UML (Unified Modeling Language) collaboration diagram for the process of down-loading map data from OSM (Open Street Map) in their XML format, converting the data to a SVG (Scalable Vector Graphics) file, then to a PNG (Portal Network Graphics) image file, then to a GIF (Graphics Interchange Format) file.




The steps are summarized as follows.

- Obtain the desired map area using the bounding box of latitude and longitude from the OpenStreetMap repository. This can be done via an http request automatically using com-

mand line **`curl.exe`**, using the HttpRequest object (e.g., in C#), etc., or manually via a web browser. The map data in OpenStreetMap XML format should be called **`data.osm`** as the XSLT transformation expects it to be in that format.

• Obtain the necessary XSLT transformation files using **`svn.exe`** (a version control system). Not all of the files are needed, just the folder **`osmarender`** and all files and subfolders and files. The entire OpenStreetMap system is huge so just get the needed files. As it is, the **`osmarender`** folder contains almost 39MB in 1220 folders and 1871 files.

• Do the prescribed XSLT transformation. I found that the XMLStarlet XSLT processor worked while the other XSLT processors, including MSXML, did not work.

• The output is an SVG file of the desired map. This can be view in a SVG viewer such as InkScape.

• InkScape can be run in command line mode to convert the SVG file to a PNG file. ImageMagick claims to work with SVG but did not work.

• ImageMagick can be used to convert the PNG file into a JPEG or GIF file for further processing or for display as a static image in a web page.

# An introduction to web systems using UML, the Unified Modeling Language

**Robin M Snyder**
**robin@robinsnyder.com**
**http://www.robinsnyder.com**

**Abstract**

UML, the Unified Modeling Language, is designed to specify systems in a waysuch that clients and developers can communicate and agree on systemspecifications. The complete UML is complex, but most of the utility forclients and developer are in the sequence and collaboration diagrams. Thispaper/session will introduce the UML and these diagrams for specifying common web systems configurations. References to open source and low-cost software for creating and-using UML diagrams will be included.

## UML and the unified process

The UML, Unified Modeling Language, is a visual notation, or language, for specifying and developing software systems. However, a language is only part of an overall software development process. Although the UML is process independent, it is ideally suited for a software development process that is use case driven, architecture independent, iterative, and incremental, such as the Rational Unified Process.

The RUP, or Rational Unified Process, is the Rational version of the Unified Process as developed and espoused by the original developers of the UML, Ivar Jacobson, Grady Booch, and James Rumbaugh (the three amigo's). Their conception of the unified process appears in their book "The Unified Software Development Process" .

## UML diagrams and the Unified Process

The Unified Process is a software development process that is use-case driven, architecture centric, and iterative and incremental. A use-case is similar to a traditional functional requirements analysis except that every function must provide something of value to at least one of the users of that use case. A good architecture, on the other hand, provides a shared vision of various views of models of the system to be developed that allows development to proceed, risks to be mitigated, and changes to be made, both now and in the future. Instead of a once and done strategy, which cannot be done in practice, the unified process is iterative and incremental.

The UML is a visual system/language for specifying, developing, visualizing, and documenting software systems and, as such supports the Unified Process with a large number of diagrams that are connected together throughout the software development process.

In the UML, a diagram is a visual representation of a graph consisting of nodes and edges. A few are now briefly described.

Structural modeling is supported by diagrams such as class diagrams, similar to entity-relationship diagrams but with objects as entities and, naturally, allowing operations in addition to data properties. Behavioral modeling is supported by interaction diagrams, statechart diagrams, etc.

Architectural modeling is supported by component diagrams, deployment diagrams, collaboration diagrams, pattern and framework support, component diagrams, and deployment diagrams.

Some of these diagrams are now discussed in greater detail.

A UML use case is used to model the functionality of a system or part of a system, focusing on the behavior of the system from outside the system. A use case diagram consists of a collection of use cases. A use case contains typical scenarios in the form of a textual description of a flow of events. Often, a flow of events can be used to start determining classes and objects for the class diagrams of a project.

A scenario is a specific instance of a use case. That is, it is one path through the flow of events for the use case. A interaction diagram shows how objects interact to perform a task. UML has two types of interaction diagrams, sequence diagrams, and collaboration diagrams.

A sequence diagram depicts each relevant object in a horizontal row with vertical dashed lines below each object. A transition arrow, labeled with a message, is drawn from the object sending the message to the object receiving the message, with the arrowhead pointing towards the object receiving the message. Within the scenario, the time ordering is from top to bottom. Steps are often numbered to avoid confusion.

A collaboration diagram removes the restriction of the vertical dashed lines present in a UML activity diagram. A collaboration diagram has many of the same benefits as a data flow diagram.

A statechart diagram is a diagram for describing the sequence of states an object goes through in response to external events. A activity diagram is a UML statechart diagram where the states are action states.

A class diagram depicts the structure of a system in terms of classes and objects. A class is a generalization of something and acts as a blueprint from which to generate instances of that class. An object is an instance of a class. As such, an object encapsulates state and behavior. Class diagrams are similar to entity-relationship diagrams where the classes are the entities and the relationships are called associations. Throughout the UML, one must often learn new vocabulary for the same concepts from other models.

Related UML elements can be grouped into packages. A package is used to organize and group objects. Packages, however, are not objects.

A deployment diagram is used to show the relationship among run-time software components and hardware components.

All diagrams should have traces back to earlier parts of the process, so that everything that is does for a software project can be traced back to a use case that is part of a user requirement. UML supports traceability so that, if done faithfully, every part of the system can be traced back to some user requirement as part of a use case.

A large part of the usefulness of UML can be obtained in just the use case, sequence, and collaboration diagrams. The other diagrams can then be added as needed.

**The login problem**

The login problem which goes as follow. The user will start at the login form, enter a userid and password and select "**login**". If authenticated, a menu of allowable options is displayed. Otherwise, the login form is re-displayed with no indication of what went wrong.

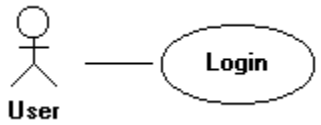
Gathering and specifying requirements using UML involves identifying actors and use cases and depicting them in terms of use case diagrams.

An actor represents anyone or anything that must interact with the system in order to input information into the system and/or receive output from the system.

- An actor is represented by a stick-person.
- An actor need not be human (e.g., a process can be an actor).
- An actor is a class with stereotype of "**Actor**".

In this problem, the actor is the user who is going to login to the system.

A use case is used to model the functionality of a system or part of a system, focusing on the behavior of the system from outside the system. A use case is depicted as an oval. The use case here is the "**Login**" use case.




A use case diagram combines the actors and use cases into a diagram.

For each use case, typical scenarios are created to depict what usually happens when the user interacts with the system for a specified use case. Use cases and scenarios provide a practical way to collect user requirements in a way that all stakeholders (i.e., users, clients, developers, etc.) can understand. Exceptional conditions are not handled in the typical case, but might be handled by another scenario. A scenario is described using text in what is called a flow of events.

A flow of events for a use case describes the things that the use case needs to do and the order in which the events should be done without getting into too many implementation details. The flow events is usually stored in a document or URL external to the project system. Here is the flow of events used for the typical login scenario for the login use case.

- 1. The user starts at the login form.
- 2. The user enters a userid and password and selects "login".
- 3. The user is authenticated.
- 4. A menu of allowable options is displayed.

Note that we would use a second flow of events for the case where the user is not authenticated.

**Sequence diagram**

As a first approximation, we can model this flow of events between the user and the system as follows in what is called a sequence diagram, here expressed using just text.

```
User System
---- ------
browses to URL -------->
                       <-------- displays login form
enter userid
enter password
select "login" -------->
                                  authenticate user
                          display menu
                       <--------
```

One of the difficulties in any specification system is putting in too much detail or not enough detail. Good judgment come from experience. Experience often comes from bad judgment in the past. Thus, there is great variation in how one can do what is being done here.

Let us now refine and operationalize this simple sequence diagram. For example purposes, this paper assumes a web-based system with the following software.

- Microsoft Internet Explorer web browser supporting client-side JavaScript
- Microsoft Internet Information Services web server supporting server-side ASP (Active Server Page)
- Microsoft SQL Server database server supporting T-SQL (Transact-SQL) and SQL (Structured Query Language)

**Analysis**

The next step is the analysis step. One way to do this is to identify boundary, entity, and control classes. Note that an object is an instance of a class. The class is the general concept. The object is the specific instance.


A boundary object represents interactions between actors and the system. This might be the user interface, but not every part of the user interface. For the login problem, the web browser will be

considered a boundary object. In addition, any client-side JavaScript will be considered part of the user interface and, therefore, part of the web browser as a boundary object.

An entity object represents persistent information tracked by the system. The most common entity object is a database. The login problem requires that the user be authenticated. That is, the system must determine if the user is who the user claims to be. This is often done with a userid and password. There are many ways to authenticate a user.

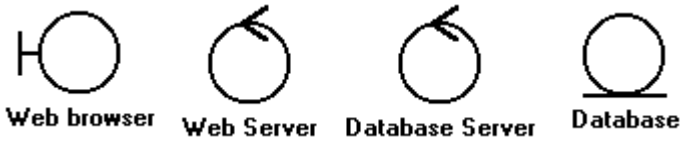
- The ASP page can have the user name and password hard-coded into the page.
- The user name and password might be stored in a database.

It is assumed that the information to authenticate the user is stored in a database. However, these details are not important for this paper. Note that the database might just store a hash of the password (and a salt value) such that the user can be authenticated but the password is not directly stored in the database.

A control object represents tasks performed by actors and supported by the system. Control objects are the glue that coordinates the other objects. In the login problem, control objects include the web server (running ASP) and the database server (running T-SQL and SQL).

A web-based system is an example of a 3-tier client-server web architecture with a presentation layer, a business logic layer, and a database layer.

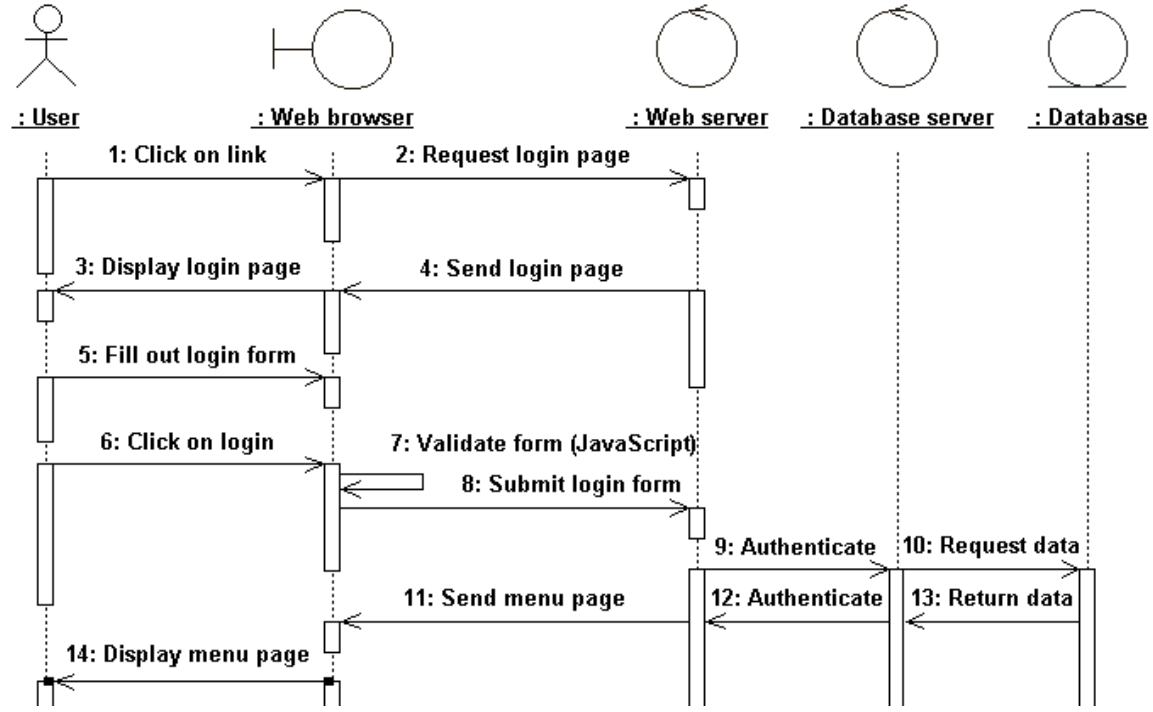
- The presentation layer is the client browser with HTML and JavaScript (for interactively and data validation).
- The business logic layer is the IIS web server with server-side processing using ASP (VBScript) and the database server supporting T-SQL.
- The data layer is a SQL database database that is on the database server.




In a simple web-based system such as this, the system for the login problem could represent a combination of

- a web browser with HTML (Hypertext Markup Language) using client-side JavaScript processing,
- connected via HTTP (hypertext transfer protocol) to
- a web server running server-side ASP (Active Server Pages), and
- connected via ADO (ActiveX Data Objects)
- a database server supporting SQL (Structured Query Language).

**Sequence diagram**




We can now refine our sequence diagram to the following using a UML sequence diagram. The steps are summarized here as the following flow of events.

- 1. The user clicks on a link to go to the login page.
- 2. The web browser requests the login page from the web server.
- 3. The web server sends the login page to the web browser.
- 4. The web browser displays the login page to the user.
- 5. The user fills out the login form.
- 6. The user clicks on the login button.
- 7. The web browser validates the information supplied by the user.
- 8. The web browser submits the login form to the web server.
- 9. The web server sends the authentication request to the database server.
- 10. The database server requests the relevant data from the database.
- 11. The relevant data is returned from the database.
- 12. The database server uses this data to authenticate the user and send the result to the web server.
- 13. The web server sends the menu page to the web browser.
- 14. The web browser displays the menu page to the user.

Note the following.

- The web server might cache the user authentication information as a session variable so that the database server need only be accessed the first time that the user is authenticated (for a given session).
- The database server would encapsulate the authentication code in a T-SQL stored procedure. Thus, the same stored procedure could be called from systems other than ASP systems,

avoiding repetition of the authentication code in ASP pages and other systems. It also keeps the exact authentication method used secret and allows for the authentication method to be changed (e.g., going from a stored password to a hash and salt scheme) without changing the code that calls the authentication procedure.

**References**

[**97**] Snyder, R. (2002). Integrating the Unified Modeling Language into a software development curriculum 32nd Annual Meeting of the Southeastern Region of the Decision Sciences Institute (February 20-22, 2002), Hilton Head, SC. pages 141-143.

[**100**] Snyder, R. (2002). A brief introduction to the Unified Modeling Language and Rational Rose software for specifying transactions in simple web-based systems 35th Annual Conference of the Association of Small Computer Users in Education (June 9-13, 2002), Myrtle Beach, SC. pages 214-222.

[**105**] Snyder, R. (2003). A strategy for introducing the Unified Modeling Language in an introductory computer literacy course 33rd Annual Meeting of the Southeastern Region of the Decision Sciences Institute (February 26-28, 2003), Williamsburg, VA. pages 72-74.

[**117**] Snyder, R. (2003). Getting started with the UML and round-trip engineering using Rational Rose 34th Annual Meeting of the Decision Sciences Institute (November 22-25, 2003), Washington, DC. CD.

[**138**] Snyder, R. (2005). A UML specification for a secure XML-based transfer of data using an intermediate server in an e-commerce system 41th Annual Meeting of the Southeastern Chapter of the Institute for Operations Research and the Management Sciences (October 6-7, 2005), Myrtle Beach, SC. pages 375-384.

# Boiler Up….for Technology Bridge Building to Future Students

**Dewey A. Swanson**
**Associate Professor, C&IT**
**(812) 314-8539**
**dswanson@purdue.edu**

**Julie Phillips**
**Associate Professor, OLS**
**(812) 314-8537**
**phillip4@purdue.edu**

**Purdue University School of Technology**
**4555 Central Avenue Suite 1200**
**Columbus, IN 47203**
**Fax (812) 314-8536**

## Introduction

The Boiler Tech Challenge (BTC) is an annual Project Lead the Way (PLTW) high school engineering competition that is hosted by Purdue University College of Technology - Columbus. Project Lead the Way is a pre-engineering curriculum for secondary students (http://www.purdue.edu/columbus/). Purdue College of Technology – Columbus is part of the Purdue University statewide technology system that brings technology programs to various locations throughout the state of Indiana. The bachelor's of science degree programs that are offered at the Columbus location are Computer and Information Technology (CNIT), Industrial Technology (IT), Mechanical Engineering Technology, and Organizational Leadership and Supervision (OLS). In order to increase enrollment in our technology programs the BTC was conceived. The inaugural event was April 23, 2010. This year's event was April 15, 2011. This paper will give a brief overview of the entire event, but specific focus will be given to the event for CNIT and how this event is being used as a recruiting event.

## Boiler Tech Challenge

### The Event

The planning for this event takes many months. Throughout the months of planning a website was set up; the competitions were defined/with rubrics; registrations were processed; event t-shirts were designed and ordered; competition materials purchased, sorted and boxed; volunteers recruited (40 volunteers) and trained; funding and donations secured; a practice run through of the competitions was completed, and final set up. The above activities could not have been accomplished without the work of the event chair, co-chair, OLS student project managers, event judges and volunteers. At this year's BTC there were 195 students, representing 8 regional high schools. The teams of 3-5 students from a given high school participated in the events. The maximum number of teams that a competition could accommodate was 10 teams. Each event declared a 3rd place, 2nd place, and 1st place winners, besides awarding an overall "traveling trophy" to the high school with the highest score, out of 3 competitions (excluding Know It). This traveling trophy is displayed at the winning high school until the next year's event. When the

high school brings the trophy back, they needed to have added something to the trophy that represents their school. Besides winning the overall traveling trophy, the winning school also wins an overall trophy, something that they can keep and display forever.

**The Competitions**

Every competition has a defined competition sheet and rubric. Each judge, volunteer, and teams are given a copy. Each competition sheet has the following categories: a problem statement, a scenario, a materials list, a timeline, a criteria statement, and presentation guidelines. Also, every competition has a rubric that evaluates the teams on four distinct areas: Working Drawings, Team Work, Condition after the Test, and Presentation. Each distinct area has a maximum of 20 pts., maximum total points for the competition is 80pts.

**Create It** (9 teams)

Teams will create a "Purdue character" for a special college day event at Holiday World. Each team will receive a materials box filled with items like duct tape, trash bags, rope, foil, bubble wrap, pipe cleaners and pompoms to name a few. The costume will be created on one member of each team from the items in the materials box. The Purdue character costume must be a family friendly design, wear shoes, and CANNOT resemble Purdue Pete. The "new" Purdue characters will participate in a fashion show at the end of the competition. OLS alumni and current OLS students will judge the competition.

**Design It** (10 teams)

Teams will create a working model of an amusement park using the Alice programming language. The park must have four rides (double Ferris wheel, octopus, carousel, & team choice) and when the simulation starts all rides must run for a minimum of one minute showing the amusement park action. CNIT faculty and current CNIT students will judge the competition.

**Invent It** (9 teams)

Teams will design a roller coaster ride that can be enjoyed by physically challenged visitors who are confined to a wheelchair. Teams will use Autodesk Inventor software (used by PLTW programs) to design a loading/unloading system for wheelchair guests. Each car will contain two riders in a side by side configuration; 1 physically challenged rider and 1 fully capable rider. The wheelchair and occupant must be securely fastened to the ride. MET faculty and alumni, and current students will judge the competition.

**Launch It** (10 teams)

Teams will design and construct a "launcher" type ride using a fluid power challenge kit and water. The ride must extend at least 12 inches but no more than 15 inches, and complete 5 cycles to score maximum points. Each ride must hold 4 Lego people equally spaced around the center structure and they must stay attached to the ride during all cycles. MET faculty and current students will judge the competition.

**Swing It** (10 teams)

Teams will design and construct a "swinger" type ride using a set of Lego bricks and 8 Lego people. When stationary, riders will get in seats that are hanging from the structure. As the ride begins turning, the riders in their seats will slowly be thrown to the outside until they are nearly parallel to the ground. The ride must execute a minimum of 10 revolutions with all riders still on the ride to score maximum points. MET faculty and current students will judge the competition.

**Know It**

One team from each high school will compete in a Jeopardy style competition. The categories for the Jeopardy Board are: Mathematics, Roller Coaster Physics, Engineering, Purdue Potpourri, and Computer. MET and CNIT will judge the competition.

**CNIT participation in BTC**

**Developing a CNIT competition for the event**

In the summer of 2010 the planning group for the Boiler Tech Challenge approached the Computer and Information Technology Department (CNIT) about sponsoring a competition in the 2011 event. In order for CNIT to participate we needed to provide a positive experience for the students. The main issue we faced was time. Based on the schedule presented to us we had about 2 hours for each of the ten teams participating in the CNIT event. The event needed to be introduced, designed by the students, developed by the students, and judged in the 2 hour time period. The OLS event required no background knowledge and students in the MET event had been involved in the Project Lead the Way for the past year using the software required for some of their competitions. In that respect we had a unique challenge. It would difficult to host an activity relating to computer programming with students who may or may not have any experience with programming. Our challenge was to find an activity that would challenge the students but also be could be completed within our two hour timeframe. We decided to develop an activity using the Alice programming language developed by Carnegie Mellon. Alice is a 3D programming environment that makes it easy to create an animation for telling a story, playing an interactive game, or creating a video to share on the web. Alice is a teaching tool for introductory computing that uses 3D graphics and a drag-and-drop interface to facilitate a first programming experience. (www.alice.org). From a limited past experience it is apparent that Alice would provide a challenging yet fun experience for the BTC contestants.

CNIT was assigned the "Design It" activity. In this activity students are charged with designing something for their competition. The theme for the competition for the 2011 event was an amusement park. All of the activities from the groups: OLS, MET and CNIT were required to have a theme of amusement park. For the CNIT activity we decided to have teams use Alice to design a mini-amusement park which we defined as an amusement park with 4 rides. The students had to develop the design and then create a working model in Alice. Because the students had no experience in Alice it was necessary to get them up to speed quickly. One option was to send out the software to students in advance and give them a chance to get familiar with it. The option we chose instead was to use an Alice tutorial. When you install Alice it comes with 4 self-paced tutorials. In the tutorials students would get enough information to do the amusement

park activity. Using my freshman class as a test case I found that most could get through the tutorials in 30-35 minutes. This would still leave plenty of time to design and build the activity in Alice. One of the fortunate things that occurred was the theme of amusement park. Although this was not planned with CNIT in mind this made the activity using Alice much easier to implement. In Alice the developer creates a world and then drops objects in the world such as people, trees, cars and buildings to make up the world as he/she wishes. These objects are organized in galleries and one of the galleries was amusement park items. Without this gallery it would have been extremely difficult to develop around the amusement park theme and with it made it much easier. The complete exercise was detailed in Appendix A. This exercise is all that was given to the students and other than a brief introduction this is all the participants had to go on.

To evaluate the projects we had the 2 instructors and recruited several students to help judge. The rubric we used to judge takes into account several items including the layout and design of the park, teamwork of the groups, how well the simulation works and presentation. Each item had an equal value in judging. The criteria we used was similar to the criteria used by the other activities and the total points were equal to the other events. The rubric used by the judges is in Appendix B.

**Using BTC for recruiting**

Like many programs involving computer technology today we are fighting to build enrollment in our CNIT program. Over the last 10 years our enrollment has dropped by over fifty percent. Two of our statewide CNIT programs have closed down in the past few years. This decline is the result of a variety of factors including students scared away by the fear of outsourcing, uncertain economy, students unaware of what our program is about, changing academic requirements for our program, and increased competition from within the university from programs like Business CIS and Informatics and from outside from online programs and the growing community college Ivy Tech in Indiana. With tight state budgets it is almost impossible to get money to advertise and what little money we get at our Columbus location is divided to promote all of our programs so we don't get any advertising money directly focusing on CNIT. With these difficult times we have to take any measures we can to increase enrollment.

We feel the Boiler Tech Challenge is an opportunity for Purdue's College of Technology at Columbus and CNIT in particular. The 2010 event brought in approximately 200 high school students. MET and OLS believe they got five to seven new students from last year's event. This was an excellent way to have students see our campus and specifically our labs, faculty, and students in an effort to recruit students. Even in one of our more campuses more successful recruiting events the Day in College that we put on each fall for juniors and seniors we normally only get 25-30 students attend. Getting approximately 200 students on campus for a day and having 30-50 participating in an event focused on computer technology was a unique opportunity. Because BTC has participants from freshman to senior level we may not see results the first year but the exposure is a great way to showcase what we have to offer here in Columbus.

**Conclusion**

The consensus was that this year's event was a great success. The event was ran smoother than in the first year and appeared to be well received by the attendees. For CNIT we are very pleased with the outcome. All of the teams competed and were able to create a model

amusement park. The winning entry was able to complete layout, design and program in the allotted time. Most teams were able to create basic requirements for the event. The students seemed to enjoy the event and with help from our CNIT student volunteers we were able keep the event moving smoothly. As we thought time was our biggest challenge. Because our keynote's address ran a little long we lost 10 minutes for the competition. The place we noticed this the most was judging time. We had less than 3 minutes to listen, watch the student's demo and take notes on each team's submission. This was difficult. Next year it would help to have more time or a more streamlined rubric to use to evaluate. We feel like the event was a great success and look forward to see if we are able to capitalize on the event and get additional students into our program.

**Appendix A**

## "Design It" Challenge

Problem: The owners of Indiana Beach Amusement Resort called Purdue University College of Technology this morning with an engineering problem and we need your help! They have acquired a small area of land in Indianapolis next to the White River State Park area that features the Indiana State Museum, NCAA Hall of Champions, Indianapolis Zoo and Victory Field. What they would like to do is create what they call a Mini-Amusement Park, an idea that is popular in larger cities like New York and Chicago. A Mini-Amusement Park is an amusement park with only a few rides usually 4-7 that provide parents and kids a small break from a hectic day of sightseeing. What they want you to do is develop a small working simulation of the amusement park to show potential investors.

Scenario: Create a working model of the amusement park in Alice programming language. The park should have four rides and when the simulation starts all rides will run showing the amusement park in action.

Materials List:

- Alice software
- Pseudocode

Timeline:

- 5 minutes—Introduction
- 40 minutes—Go through the 4 tutorials on Alice programming language
- 25 minutes—Sketch a design for the park and basic logic to make each ride work
- 30 minutes—Develop the model for the amusement park using Alice
- 30 minutes—Present
- 10 minutes—Judges decision

Criteria:

- Make sure to work as a team. Everyone should have a role(s)
- Brainstorm the amusement park layout and choice of Ride 4.
- Develop a layout for the park
- Develop the logic for each ride to function, this should be pseudocode. Pseudocode is a compact and informal description of a computer program's logic. Should be completed for each ride.
- Create the working model of the amusement park with the following criteria:
    - The park should have four rides including:
        - Double Ferris Wheel
        - Octopus
        - Carousel
        - Ride 4 is one to be decided on by your team, be creative and have fun on this one
    - When the simulation begins each of the four rides will start and run for a minimum of one minute. The ride should function as a ride would do in an amusement park.

  - Each ride should be in full view during the simulation. You can move the camera around to view each individual ride if you want.
  - Use the Grass template to build the simulation on.
  - Add other objects around your park to simulate the park area. These objects do not have to have any actions associated with them.
- Run the simulation for the judges explaining the logic required to make each simulated ride function properly.
- The amusement park must be designed, created, and modeled in the allotted time.

Presentation:

- Elect a spokesperson from your team and present to the judges your teams Amusement Park Simulation. Be sure to address the following in your presentation:
  - The reasons for your choice of Ride 4
  - Discuss the logic required to make each ride function properly.
  - Run the simulation for the judges.
  - Provide the judges with your brainstorming list and logic to make each ride work.

HAVE FUN!!

**Appendix B**

## "Design It" Judges Rubric

**Layout and Design**

_____ Excellent 20 Pts.—Layout and logic are very neat, detailed and very accurate. The layout is clearly labeled. The logic for each ride is very clear and detailed enough so that the simulation can easily be coded. The logic for each ride is accurate. The simulation could be easily built from the layout and logic.

_____ Good 15 Pts. ---Layout and logic are detailed and accurate. Most of the layout is clearly labeled. The logic for each ride is clear and detailed enough so that the simulation can be coded. The logic for each ride is accurate with only a few minor errors in logic. The simulation could be built with little difficulty from the layout and logic.

_____Fair 10 Pts. --- Layout and logic are fairly neat, detailed and accurate. Some of the layout are missing or not labeled. Detailed logic for each ride is missing or not done well. The logic for each may contain major errors in logic. It would be a little difficult to build the simulation from the layout and logic.

_____ Needs Work 5 Pts. --- Layout and logic are not neat or accurate. Layout or logic for each ride may be missing. Detailed logic for each ride contains significant errors in logic. It would be a very difficult to build the simulation from the layout and logic.

**Team Work**

_____ Excellent 20 Pts. --- Every team member participated and helped to produce a workable product.

_____Good 15 Pts. -- Most team members participated and helped to produce a workable product

_____ Fair 10 Pts. --- Some team members participated and helped to produce a somewhat workable product.

_____ Needs Work 5 Pts. --- Demonstrated poor team work skills and produced an unacceptable product.

**Condition After Test**

_____ Excellent 20 Pts. --- Layout meets all basic requirements including using grass template, 4 rides all visible, rides run simultaneously and function appropriately. Choice of 4$^{th}$ ride was creative. Added creative features such as having the camera move to individual ride and additional objects to enhance the simulation are evident.

_____ Good 15 Pts. ---Layout meets all basic requirements including using grass template, 4 rides all visible, rides run simultaneously and function appropriately. Fourth ride may be basic but is functional. May have added additional objects to enhance the simulation are evident

_____ Fair 10 Pts. --- Layout meets all basic requirements including using grass template, 4 rides. All rides may not be fully visible and may have minor problems when they run or may not run simultaneously. No additional objects to enhance simulation are found

_____ Needs Work 5 Pts. --- Not all rides included or rides don't function as designed or at all

**Presentation**

- Topics to be covered in presentation:
  - The reasons for your choice of Ride 4
  - Discuss the logic required to make each ride function properly.
  - Run the simulation for the judges.
  - Provide the judges with your brainstorming list and logic to make each ride to work.

_____Excellent 20 Pts –Spokesperson was well above average in accurately and effectively addressed the topics to be discussed in presentation. Speaker used time well.

_____Good 15 Pts --- Spokesperson was above average in accurately and effectively addressed the topics to be discussed in presentation. Speaker used time well.

_____Fair 10 Pts--- Spokesperson did an average in accurately addressed the topics to be discussed in presentation. Speaker used time well.

_____Needs Work 5 Pts--- Spokesperson presentation was lacking in accuracy or omission of items, or time was not used well

_____ **Total Points out of 80 possible**

Judge's Name_____

Judges' Comments

**References**

Indiana Project Lead the Way, 2011, Available at http://www.tech.purdue.edu/pltw/.

Alice, 2011. Available at www.alice.org

# Hybrid Happenings

**Dewey A. Swanson**
**Associate Professor, C&IT**
**Purdue University School of Technology**
**4555 Central Avenue, Suite 1200**
**Columbus, IN 47203**
**(812) 314-8539**
**dswanson@purdue.edu**

## Introduction

In 2008 and 2009 I presented papers relating to hybrid classes. The initial paper focused on our first attempt at offering a hybrid class on our campus in our department. The class we chose was our C&IT 107 Computers and Software Packages. In 2009 I presented a paper developed by myself and Melissa Casner, an adjunct instructor and graduate student, about a plan for implementing hybrid education on our campus. In the time since the original paper was developed we have continued to provide additional offerings of the C&IT 107 class and offered additional classes using the hybrid format. Although, we have increased our offerings we have not implemented the plan we discussed in the 2009 presentation. In this paper I will discuss our increased use of hybrid classes not only in our curriculum but in other courses throughout our campuses.

## Hybrid Course

As a review we will use a definition for hybrid or blended course we used in the 2008 paper that states in hybrid classes much of the course learning is moved online which in turn makes it possible to reduce the time spent in the classroom. The difference between hybrid class and an online class is that in an online class the face-to-face component is eliminated or is virtually eliminated (some institutions have varying definitions for online classes where face-to-face time is only used with testing for example) and in a hybrid class the face-to-face component is merely reduced and still a significant part of the learning environment. We previously mentioned the many benefits associated with hybrid classes but the ones that are significant to our campus and program are:

- Less time for students to commute
- Ability to accommodate additional students without need for additional classrooms
- Additional ways to interact and hold discussions (to engage students)
- New pedagogical approaches
- Blend the best of online and face-to-face instruction

## Review of Initial Hybrid Course at Columbus Campus

Computer and Information Technology (CNIT) is part of the College of Technology. Purdue University's College of Technology offers different programs around the state of Indiana including Columbus Indiana. In Columbus we offer BS in CNIT. At each of the statewide locations Purdue partners with a local university to offer the non-technology courses such as English, Business, Communications, etc. In Columbus our partner is Indiana University-Purdue University Columbus (IUPUC). Our partnership allows us to offer our C&IT classes for other depart-

ments. In most cases these service courses are used to fulfill degree requirements for a computer/technology class.

Hybrid courses offered several benefits for our campus. As a commuter campus with slightly more than half of the student population non-traditional, a hybrid can reduce drive time for students. A hybrid class helps alleviate scheduling issues in our limited number of labs. Hybrid offers the best of both worlds in providing the benefit of using technology to reduce seat time but also providing a means for students to still have the face-to-face time with instructors which we feel is important in technology courses.

CNIT 107 Computers and Software Packages is an introductory course in the basics of computers. The lecture component discusses basic computer hardware and software components and issues that affect computer users in society along with a lab component that includes an introduction to Microsoft Excel and Microsoft Access. This is a service course for several departments on the IUPUC campus but the majority of students are Business majors who are required to take the class. Our first initial effort was at creating a hybrid version of this class. With generally three to five sections offered a semester we felt this gave students a choice between traditional and hybrid.

We offered our first version of CNIT 107 in the spring 2008 semester. The class had a face-to-face component that met once a week for 100 minutes. Based on comments from instructors and former students we decided to put the lecture portion online. The face-to-face lecture was eliminated and instead the students were required to post on discussion questions for each week's topic, respond to comments made by other students and discuss outside content that was relevant to the week's topic. The main tool used was Blackboard, a class management tool. Another tool used was Adobe Connect for conferencing and creating lab supplements. In the first attempt at the class all exams, assignments and quizzes used Blackboard. The lab component which involved using Microsoft Excel and Microsoft Access were delivered using the face-to-face time set aside and supplemented with content developed in Adobe Connect to review labs.

As we concluded in the 2008 ASCUE submission we were very pleased with the first offering of a hybrid class. We surveyed both the students and interviewed the faculty. It proved to be successful and popular with the faculty and students who participated. For the students it allowed more flexibility and this type of class is a great way to utilize current technology in the classroom. The class also provided the department more flexibility in scheduling available lab space.

**Additional Hybrid Course Offerings**

The CNIT 489 Advanced Topics in Database Technology is a senior level class. Students pick a topic to research. The final product is a twenty-five to thirty page paper and a thirty minute presentation on the topic. For this class we have used two variations of the hybrid format. In both versions of the class students meet as a group the first week of the semester and the last week of the semester. In one version the students supplement those meetings and online component with individual meetings with the instructor. In the second version there are no scheduled instructor meetings and additional online material was added. The first week of the class was used to introduce the topic, review class procedures, make sure everyone is comfortable with the technology and have a guest speaker come in from the library and discuss research and using the

campus facilities to perform research. This was the first time the class met as a group. The second time is the last week of class when students turn in their papers and present to the rest of the class and invited guests. The rest of the semester the students either met individually with the instructor to discuss different milestones in writing the paper or perform activities online. The meetings with the instructor occurred every three to four weeks and would include the student turning in a milestone such as topic selection, research, and outline, first or second draft. The meetings were scheduled for twenty minutes and arranged at a time convenient for the student and instructor. In the meeting the student would typically discuss the phase to turn in and answer questions about it and ask any questions about upcoming phases of the paper. In the online component students had outside reading and turned in weekly status reports and in some cases turned in milestones online.

This past fall we tried a variation of the class moving more content online. The big change involved eliminating the individual meetings with the instructor and adding more online content. Most of the content online was discussion based with students responding to questions and also responding to other students comments. Also, the structure of the paper was more defined than in the previous version of the class.

Another class we offered in hybrid format is the CNIT 487 Database Administration class. This is a senior level CNIT class offered for majors. This class was offered as a hybrid class out of necessity. The last two times we offered the class we had significant problems with the lab portion of the class. To perform the DBA lab activities we needed administrative privileges on the machines and our IT support was unwilling to give those permissions to students. Because of that we offered the class in the past in a lab that wasn't connected to the university network so students could work in a standalone environment and have administrative privileges on their machines. The time prior to that we used VMWare, a virtualization software and installed the Oracle database in that environment. This put a burden on the machines in the labs we used. In both cases the lab component was unsatisfactory. This spring we offered the class in a hybrid format. The lecture component was offered in face-to-face format and most labs were to be completed off campus. In order for students to enroll they were required to have a PC with the minimum acceptable requirements. In the class sixty percent or six out of the ten labs were completed via distance. On the days that the class was not meeting on campus the instructor was available through several options: email, Blackboard and Adobe Connect. Some students who chose to do their labs on their laptops would come to class and complete the online labs. The format used for the CNIT 487 was opposite of the approach used for CNIT 107. In the CNIT 107 class the lecture component was online and the lab component was offered face-to-face. In the CNIT 107 the lecture portion was offered face-to-face and the lab component was offered distance.

**Survey of Students Taking Hybrid Courses**

Spring 2008 was our first semester to offer the CNIT 107 in hybrid format. That semester we offered three traditional sections and the one hybrid section. In the three years since our first offering we have also added online sections of the CNIT 107 class. Gradually, we have offered less traditional sections of CNIT 107. This spring we offered three sections, two hybrid, and one online and no traditional offering. From 2008 to 2011 other departments have added hybrid classes including the Business Department. Also over the same time additional online classes have been added to the schedule. Students are being exposed to more hybrid and online classes on our campus.

In 2008 we surveyed the initial class taking our first offering of the CNIT 107 class delivered in hybrid format. Again this semester we surveyed the two hybrid sections of CNIT 107 along with the other hybrid offerings by our department, CNIT 487 and CNIT 489. The results were very similar. First we will look at the CNIT 107 in 2008 and this semester. The demographics remained consistent with most of the students were underclassmen and Business majors. Most numbers on the survey were pretty consistent between 2008 and 2011 on areas such as delivery preference, number of hours spent online, tools they believed to be helpful and number of times they met with the instructor outside of class. The only statistic that changed significantly was the question relating to attendance. In 2008 forty-two percent of the students missed two or more classes and in this year's survey only nine percent missed two or more classes.

One thing we did this year was break down our survey by traditional and non-traditional students. The results were interesting. The demographics were pretty equivalent again with a predominance of underclassmen and Business majors in the class. Following are the results of part of the survey.

Some of the findings that are interesting, the traditional students strongly (eighty-two percent) preferred hybrid over the online and traditional while the nontraditional students preferred hybrid over forty percent the online or traditional face-to-face format. Also, the traditional students prefer more content online than the non-traditional. The amount of time spent online was very similar as was the number of classes students missed and the number of times students met with the instructor outside of class. One thing was interesting in the three questions that compare the three formats of classes. The traditional students tend to strongly prefer hybrid and traditional face-to-face and dislike the online classes where the nontraditional prefer the hybrid format but not as strongly as traditional students. Then some prefer online and another group that like traditional face-to-face. This could be explained because in the non-traditional class there is a wide variety of computer skills represented with some using the tools (Excel and Access) at work daily and some students coming back to school. In the past those students have more of a fear of some of the technology and prefer a face-to-face class which we didn't offer this semester. The final question was why the student took the class and most suggested because it was the best fit for the class, although some of the students said it allowed them drive to campus less which is one of the advantages touted for hybrid. More non-traditional students felt this was an advantage. This would make since because more non-traditional students will take one or two classes a semester which would mean driving maybe one to two times a week to campus where most traditional students are full time taking at least four classes.

| **What format would or do you prefer for class?** | **Non Traditional** | **Traditional** |
|---|---|---|
| Online | 17% | 0% |
| Hybrid | 58% | 82% |
| Traditional Face-to-Face | 25% | 18% |

| **How much content would you prefer online?** | **Non Traditional** | **Traditional** |
|---|---|---|

| | | |
|---|---|---|
| 0% | 8% | 0% |
| 1-33% | 33% | 18% |
| 34-66% | 50% | 73% |
| 67-100% | 8% | 9% |

| **I spend approximately _____ hours online for class.** | **Non Traditional** | **Traditional** |
|---|---|---|
| 0 | 0% | 0% |
| 1- 2 | 58% | 64% |
| 3- 5 | 42% | 27% |
| 6-10 | 0% | 9% |
| Over 10 | 0% | 0% |

| **I have missed _____ class(es) over the semester.** | **Non Traditional** | **Traditional** |
|---|---|---|
| 0 | 67% | 27% |
| 1 | 25% | 64% |
| 2-3 | 8% | 9% |
| Over 3 | 0% | 0% |

| **I have asked the instructor to meet me before class or after class _____ time(s) this semester.** | **Non Traditional** | **Traditional** |
|---|---|---|
| 0 | 100% | 91% |
| 1 | 0% | 9% |
| 2-3 | 0% | 0% |
| Over 3 | 0% | 0% |

| **If a class is offered online and there is also a traditional section offered which class would you most likely choose?** | **Non Traditional** | **Traditional** |
|---|---|---|
| Online | 33% | 9% |
| Traditional Face-to-Face | 58% | 64% |
| No preference | 8% | 27% |

| **If a class is offered in a** | **Non Traditional** | **Traditional** |
|---|---|---|

| **hybrid format and there is also a traditional section offered which class would you most likely choose?** | | |
|---|---|---|
| Hybrid | 58% | 64% |
| Traditional Face-to-Face | 33% | 27% |
| No preference | 8% | 9% |

| **Why did you choose this hybrid section of CNIT 107 to take?** | **Non Traditional** | **Traditional** |
|---|---|---|
| Best fit schedule | 67% | 82% |
| Less driving | 33% | 18% |
| Allowed to take extra class | 0% | 9% |
| Preferred over online or traditional | 33% | 36% |
| Other | 25% | 18% |

We also surveyed students taking the CNIT 487 Database Administration class. This class is all CNIT majors who are upperclassmen who had most of their labs distance. Like the CNIT 107 group they also favored hybrid classes over online and face-to-face but not as clearly the CNIT 107. In fact looking at the head-to-head comparisons the CNIT 487 group preferred online over traditional face-to-face delivery. Part of this could be because they are a more mature group as juniors and seniors and have had more experience with online classes as they become more prevalent on campus.

| **What format would or do you prefer for class?** | **Percentage** |
|---|---|
| Online | 25% |
| Hybrid | 50% |
| Traditional Face-to-Face | 25% |

| **If a class is offered online and there is also a traditional section offered which class would you most likely choose?** | **Percentage** |
|---|---|
| Online | 63% |
| Traditional Face-to-Face | 38% |
| No preference | 0% |

| **If a class is offered in a** | **Percentage** |
|---|---|

| **hybrid format and there is also a traditional section offered which class would you most likely choose?** | |
|---|---|
| Hybrid | 63% |
| Traditional Face-to-Face | 38% |
| No preference | 0% |

Finally, the CNIT 489 Advanced Topics in Database Technology was surveyed. This is a senior level class that met as a group at the beginning and end of the semester and individually throughout the semester. Again comparing the different delivery methods they preferred hybrid. Generally, they believed the number of meetings was appropriate including the individual meetings. They differed from the CNIT 107 in that they preferred even more content online. When comparing face-to-face with hybrid and online the hybrid and online was the unanimous choice. Several reasons might be that like the CNIT 487 this is more mature students who have more experience with online classes. This class involved a lot of research and no labs, so the content was more conducive to a hybrid or even an online delivery.

| **What format would or do you prefer for class?** | **Percent** |
|---|---|
| Online | 33% |
| Hybrid | 67% |
| Traditional Face-to-Face | 0% |

| **How much content would you prefer online?** | **Percent** |
|---|---|
| 0% | 0% |
| 1-33% | 0% |
| 34-66% | 57% |
| 67-100% | 43% |

| **If a class is offered online and there is also a traditional section offered which class would you most likely choose?** | **Percent** |
|---|---|
| Online | 100% |
| Traditional Face-to-Face | 0% |
| No preference | 0% |

| **If a class is offered in a hybrid format and there is also a traditional section offered which class would you most likely choose?** | **Percent** |
|---|---|
| Hybrid | 100% |
| Traditional Face-to-Face | 0% |
| No preference | 0% |

**Conclusions**

Over the last three years we have expanded our hybrid offerings, in order to accommodate ours and our student's needs. We have added additional hybrid sections of our freshman service class, CNIT 107 and have also included hybrid sections for our upper level classes. The format we chose was different for each class to accommodate the individual goals and needs. What we found when we surveyed students taking hybrid section is a preference for the hybrid format over both online and traditional format.

One issue hybrid does not solve is an increasing push by Purdue and our statewide program to offer more online classes. This allows faculty at statewide facilities to teach in specialty areas with a larger pool of students to draw.

In conclusion, hybrid has become one of several delivery options in our program to accommodate the needs of the university and students. We will continue to offer hybrid classes and explore adding additional classes as appropriate.

# Improve Student Performance With Sound Byte Reviews

**Steve Anderson**
**Math/Computers/Decision Science**
**University of South Carolina Sumter**
**200 Miller Road**
**Sumter, SC 29150**
**(803) 938-3775**
**mrspacelysc@uscsumter.edu**

**Abstract**:

I have utilized video materials, especially screencasting productions, since the very early days of Lotus Screencam and Real Presenter. Today's software, including free web 2.0 production tools, allows us to create and publish these materials onto a web site or CMS/LMS with very little lead time and very limited skill sets as compared to just a few years ago. This session will present the anecdotal results observing the effect of short intense videos/screencasts in classes ranging from highly quantitative classes such as Statistics, College Algebra and Production/Operations Management; less structured courses such as web design, all the way to physical education classes where most of the material is skill-based training. We will present our "best practices" (as well as some less-than-best practices) in the sense of improving student performance and retention. This session will encourage participants to share their experiences with the implementation of these learning modules. If time permits and participants have the desire, we can also share and/or demonstrate some of the software utilized to create these materials. After all… "Teach a person to fish, and they can feed themselves forever!"

**Presenter Bio:**

Steve has been presenting numerous papers and workshops in the area of screencasting for over 17 years. He has been attending ASCUE for 17 years as well. He appreciates sessions where the participants walk away with something useful, at a price that does not require an NSF grant. He also makes some mean beef jerky!

# Teaching in a Hybrid Environment

**Catherine Gardner**
**cmgardner2@mercer.edu**

**Dana Lilly**
**lilly_dh@mercer.edu**

**MercerUniversity**
**McDonough GA 30253**

**Abstract**

The purpose of this presentation is to describe the process used to engage graduate students enrolled in an early childhood curriculum hybrid course in connecting theory, research and best practices in curriculum and instruction. Recommended guidelines for planning, developing, and implementing a graduate early childhood curriculum and instruction course in a hybrid environment will be delineated, including learner outcomes, course assignments, multimedia resources, guided online discussion topics, assessment and evaluation, and strategies for building an online learning community. Strategies for constructing guided online discussion topics to build on teachers' first-hand experiences and personal reflections will be provided. Differentiated instruction projects conducted in early childhood classrooms will be shared to demonstrate how developmentally appropriate instruction can be used to meet the needs of young children. Final reflections regarding the process used to teach early childhood curriculum and instruction in a hybrid environment will be presented.

**Presenter Bio:**

Dr. Catherine M. Gardner is a professor at Mercer University. In addition to chair responsibilities, she teaches technology, curriculum and science education in the Tift College of Education.

# Teaching and Learning in Second Life

**Andrea Han**
**University of British Columbia**
**2329 West Mall**
**Vancouver, BC, Canada V6T 1Z4**
**604-827-3912**
**han@science.ubc.ca**

**Abstract:**

Second Life is a virtual world environment where people can meet, collaborate and learn. The media-rich, immersive, 3D experience of SL creates a unique and engaging environment where students and instructors can interact with others from around the world. In this session we'll explore how SL is being used to support and extend teaching and learning in a variety of disciplines

**Presenter Bio:**

Andrea has been presenting numerous papers and workshops in the area of online learning for many years. She was the Education Technology Coordinator at Miami University Middleton and also served as the coordinator for Miami University's Center of Online Learning until recently. She is now Technology Specialist at the University of British Columbia. She has been teaching online since 1998.

# Even More Cool Tools!

**Janet Hurn**
**Miami University Middletown Campus**
**4200 E. University Blvd**
**Middletown, OH 45011**
**513-727-3341**
**hurnje@muohio.edu**

**Abstract:**

I will show some of this year's cool tool finds for education and demonstrate them. As always I will leave some time at the end for people who have a classroom issue that may be solved by technology to bring those issues up. I will hopefully be able to make some tool suggestions. We can all share some ASCUE Cool Tools!

**Presenter Bio:**

Janet has been a regular at ASCUE for at least 12 years. She teaches physics and acts as an instructional designer with Miami Regional's E-learning group. She is a geek in the classroom and a geek at home. Her new hobby is geocaching....just ask her....

# My First Online Course – NOT Your Typical Correspondence Course

**Fred Jenny**
**Grove City College**
**100 Campus Drive**
**Grove City, PA**
**724-458-2071**
**fjenny@gcc.edu**

**Abstract**

During the summer of 2010, Grove City College offered its first 3-credit, asynchronous online course during the month of July. In that effort we investigated a workable model of an online course for the College. The particular course, Intro to Digital Photography, had an enrollment of 16 students from around the country. Tools used were Microsoft Outlook, Ning Social Network, Camtasia Studio, Voicethread, and Jenzabar's eRacer. This presentation will describe the course development, delivery, evaluation, trials and tribulations.

**Presenter's Bio:** Fred has been a member of ASCUE since mid to late '80's. He was twice a former President and Program Chair, and currently serves as Past President. He is Professor of Computer Science and Instructional Technologist at Grove City College, having taught there for 27 years.

# Securing Your Institutions Systems with Untangle - A Powerful Open-Source Multi-functional Security Software

**Sali Kaceli**
**Philadelphia Biblical University**
**200 Manor Avenue**
**Langhorne, PA 19047**
**Sk309@pbu.edu**

**Abstract**

In this session I will demonstrate how Untangle, an open-source application and appliance, simplifies and consolidates many network and security products into one tool making system protection and filtering easy and affordable.

**Presenter's Bio:** Sali is Manager of Academic Computing at Philadelphia Biblical University. He has been a member of ASCUE for 10 years and has presented several papers during that time.

# Creating Easy Forms and Surveys with Google Docs!

**Tom Marcais**
**Sweet Briar College**
**134 Chapel Road**
**Sweet Briar, VA 24595**
**434-381-6542**
**tmarcais@sbc.edu**

**Abstract:**

This session will focus on showing how to collect data using the tools available in Google Docs. You can create your own web form that you can send to others via email, or embed in your own website. The data is all automatically collected into a Google Spreadsheet for you. You'll even be able to see charts and graphs of your data. In addition, templates exist for many of the common types of forms. And of course... it's all free! Come learn how Google Docs can make data collection quick and easy for you!

**Presenter Bio:**

Tom Marcais is the Instructional Technologist at Sweet Briar College. He is responsible for developing and delivering classes, presentations, workshops and consulting for students, faculty and staff in computer applications and technology supported at Sweet Briar College.

# Free and low cost audio and video technologies demonstration

**Vicki Mast**
**Franklin College**
**101 Branigin Boulevard**
**Franklin, IN 46131**
**317-738-8289**
**vmast@franklincollege.edu**

**Abstract:**

Explore the low cost and free tools that allow for the creation of numerous media projects. In 2009 we began to experiment with low cost Flip cams and Olympus digital audio recorders. We use free programs such as Windows Movie Maker, Audacity, as well as YouTube Downloader, Any Video Converter to add additional creative touches. Pros and cons will be discussed and you'll have an opportunity to test drive the equipment.

In 3 semesters we've added audio and video projects to foreign language courses, athletic training, biology, gerontology, world history, and education. As the projects grow in depth and breadth, faculty members have been pleased with the increased student engagement and the depth of many of the final productions.

**Presenter Bio:**

Vicki Mast, Franklin College Academic Technology Training Coordinator, is responsible for faculty and staff development including workshops, one-to-one and departmental training for most campus software and media equipment as well as the development of training materials; works with faculty to develop instructional media and other educational materials; assists the Education Department in the continuing evaluation and improvement of the educational technology plan for the seven semesters within the major.

# Erasing the Blackboard: Planning for a Successful LMS Migration

**Mark Poore**
**Roanoke College**
**221 College Lane**
**Salem, VA 24153**
**540-375-2403**
**poore@roanoke.edu**

**Abstract:**

Roanoke College faculty completed a comprehensive beta program during the Fall 2010 semester to evaluate Moodle as a potential replacement for Blackboard Learn. Based on beta faculty experiences and student feedback, Moodle was adopted to replace Blackboard Learn beginning with Summer 2011 courses. This session will describe Roanoke College's approach to the beta process and implementation & training timelines. Additionally, Roanoke College was a beta site for Datatel's ILP (Intelligent Learning Platform) with Moodle hosting provided by MoodleRooms. This session will also explain the many integration features of Datatel's ILP and the advantages of off-site Moodle hosting. Roanoke College has branded its instance of the new Datatel ILP/MoodleRooms system "Inquire" – to complement its new "Intellectual Inquiry" curriculum.

**Presenter Bio:**

Mark Poore is the Director of Instructional Technology at Roanoke College and ASCUE Board Member at Large. At Roanoke his major duties are faculty training and Blackboard administration. Before coming to Roanoke College in 1997, he held several IT positions in private industry. He holds a B.A. from Roanoke College and an M.S. from Baylor University. Mark was a Fulbright Scholar to Germany. He likes to camp with his family and play the cello.

# The Ultimate Classroom

**Anthony Rotoli**
**Manager, Business Development**
**CDW-G**
**200 N. Milwaukee Ave.**
**Vernon Hills, IL 60061**
**847-371-6090**
anthrot@cdwg.com

**Abstract:**

Technology is evolving rapidly and fundamentally changing the classroom environment to enhance the learning experience. This impacts how professors and students interact. The incoming class of college students has even higher expectations for technology. This millennial generation of students has not known life without broadband access. They expect greater connectivity, a more social learning environment & technology to be deployed to teach at their level. Anthony Rotoli, HiEd specialist, CDW, can lead an interactive session to discuss enhanced classroom technologies. Anthony can share the findings from the 2010 21st Century Campus survey that reflects expectations of the next class. In addition, Anthony can share examples of how students and professors interact using advanced technology in the classroom. The open discussion will allow attendees to discuss best practices, the importance of a robust infrastructure and the endless technology possibilities available to create the ultimate classroom for today's learners.

**Presenter's Bio:**

Anthony Rotoli is the Manager of Business Development of higher education for CDW Government, LLC., which addresses the unique needs of the government and education markets with brand name technology solutions and services. Anthony joined CDW-G in 2006 and assumed responsibility for higher education strategy and customer and partner relationships. Additionally, he specializes in Classroom technologies, e-procurement, along with several other initiatives.

# Spartans Green Sky - With VMware View™

**Jeanne Skul**
**Kevin Hodges**
**University of South Carolina Upstate**
**800 University Drive**
**Spartanburg, SC 29303**
**864-503-5960**
**jskul@uscupstate.edu**

**Abstract**

In June of 2009, USC Upstate implemented a proof of concept and pilot for a virtual desktop computing initiative, "Spartans Green Sky". After a year of testing the proof of concept was moved into production in the spring of 2010 and expanded in the summer of 2010 to over 400 virtual desktops in labs and smart classrooms.

Challenges Addressed:

- under staffed with limited resources and time
- constant requests for more labs and classrooms
- concerns about our environment and sustainability
- security issues continue to escalate
- students come to campus with computers, yet many still have to go to campus labs to complete their homework, underutilizing their personal resources and requiring more at Upstate

During this session we will demonstrate the concept and describe the benefits and lessons learned.

**Presenter's Bio:**

Jeanne Skul is the Vice Chancellor for Information Technology & Services at the University of South Carolina Upstate, Spartanburg, SC. Previously the Vice President for Information Technology at Loras College in Dubuque, Iowa. Primary responsibilities include providing tactical IT support and services, innovative strategic direction for existing technology initiatives and projects, and oversight in the development of new technologies for expanding academic and administrative plans essential to the institutional strategic plan.

# Revitalizing Learning Spaces with Technology

**M.J. Stinnette**
**Sweet Briar College**
**764 Elijah Road**
**Sweet Briar, VA 24595**
**mstinnette@sbc.edu**

**Abstract:**

Our ITC implemented a pilot classroom this year. The committee comprised of Faculty and Staff chose one classroom to totally re-vamp from top to bottom, putting as much technology in the classroom as possible. This session will demonstrate how technology can be embraced by not only the faculty but, also the students. • How easy it is to configure the classroom with mobile furniture • Inviting guests to your classroom via Skype • Sharing of ideas with other students using Huddle boards • Distributing information from both sides of the classroom • Utilizing every piece of technology • Enabling our students to learn in a comfortable inviting atmosphere Plus, we'll cover many additional features and will share some specific examples of how we've taken advantage of this technology on our campus.

**Presenter Bio:**

M.J. Stinnette is the Campus Technology Lab Coordinator at Sweet Briar College. She is responsible for maintaining the hardware and software in all the computer labs on campus.

# Access control: The good, the bad and the ugly

**Hollis Townsend**
**Young Harris College**
**P.O. Box 160**
**Young Harris, GA 30582**
**706-379-3111 x 5210**
**hollist@yhc.edu**

**Abstract**

Two years and one card system ago, Young Harris College started down the road to access control. Since that point we have grown to include: 160 lock locations, 2 dining locations, security surveillance, declining balances, and entitlements. Along the way we learned many lessons. In this session we will discuss the process Young Harris followed to pick a solution, what went well, our numerous "learning opportunities" and the number of things that would have been much easier had we known them in advance. We will also discuss the politics of access control, turf wars and our plans for the future. This session is presented by Hollis Townsend, Director of Technology Support and Operations at Young Harris College.

**Presenter Bio:**

Hollis is the Director of Technology Support and Operations at Young Harris College. He has been the ASCUE Equipment Coordinator since 2002. He is the go-to guy for any technology problem you encounter while at the conference.

# Two point oh, here we go again!

**Tori Waskiewicz**
**vwaskiewicz@ursinus.edu**

**Jean Bennett**
**jbennett@ursinus.edu**

**Ursinus College**
**601 E. Main Street**
**Collegeville, PA 19426**

**Abstract:**

Once again join us for some new and not so new Web 2.0 offerings. With the variety of Web 2.0 free and affordable resources available we will deliver some new tools and demonstrate how they can be used in or out the classroom.

**Presenter Bio:**

Victoria (Tori) Waskiewicz is a Multimedia Instructional Technologists at Ursinus College in Collegeville, PA. She brings knowledge of the corporate real estate industry through developing synchronous and asynchronous eLearning. She has presented on Web 2.0 Teaching and Learning at her own college as well as other area colleges over the past two years. She is excited about finding new technology and sharing it with the academic community.

Jean Bennett is a Pennsylvania Certified Instructional Technology Specialist, she brings 18 years of PK-12 experience as a Director of Technology and Technology Integrator into her current 4th year position as a Multimedia Instructional Technologist for Ursinus College. She has presented at several conferences on topics ranging from Digital Natives' Capabilities to Web 2.0 in Teaching and Learning. She was a Semi-finalist in the 2006 Technology & Learning Leader of the Year.

Tori and Jean have presented at ASCUE before and enjoy planning for and participating in this conference.

# Drupal - A Dorp in a Bucket

**Steve Weir**
**ASCUE**
**Langhome, PA**
**webmaster@ascue.org**

**Abstract:**

Dorp is the Dutch word for "village" - or community. Dries Buytaert, creator of Drupal, started Drupal to facilitate online communities. Drupal has come a long way since then and this session will take a look at Drupal 7 - including a short Demo. We will probably start the demo by installing Drupal 7 from scratch.

**Presenter Bio:**

Steve currently serves as the Web Coordinator for ASCUE and has been working with Drupal since 2007. He holds a Master's degree in Education and has taught as an adjunct professor at Philadelphia Biblical University. Steve now works as a free lance web programmer and designer.

# Presenters Index

| | | |
|---|---|---|
| Jeanne Skul | University of South Carolina Upstate | 169 |
| Robin Snyder | | 125,135 |
| M. J. Stinnette | Sweet Briar College | 108,170 |
| Dewey Swanson | Purdue University School of Technology | 142,151 |
| Hollis Townsend | Young Harris College | 171 |
| Tori Waskiewitz | Ursinus College | 172 |
| Steve Weir | | 8,173 |